Ideas, Politics, and Technological Change

Essays on the Comparative Political Economy of Digital Capitalism

Timo Seidl

European University Institute
Department of Political and Social Sciences

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Timo Seidl

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Examining Board

Prof. Dr. Dorothee Bohle, EUI (Supervisor)
Prof. Dr. Anton Hemerijck, EUI
Prof. Dr. Anke Hassel, Hertie School
Prof. Dr. Andrea Herrmann, Utrecht University

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Department of Political and Social Sciences - Doctoral Programme

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Technology alters the physical reality, but is not the key determinant of the changes that ensue.

<div align="right">

EUGENE SKOLNIKOFF - THE INTERNATIONAL IMPERATIVES OF

TECHNOLOGY

</div>

The following study may in a modest way form a contribution to the understanding of the manner in which ideas become effective forces in history.

MAX WEBER - THE PROTESTANT ETHIC AND THE SPIRIT OF CAPITALISM

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Thesis Abstract

Digitalization – the process by which more and more of what we think, say, and do becomes mediated by digital technologies – has a commodifying and a disruptive thrust. It is commodifying to the extent that it undermines decommodifying institutions (e.g. labor regulations) and expands the reach of markets (e.g., the commodification of human attention). And it is disruptive to the extent that it radically alters the requirements for success on the individual-, firm-, and national level (e.g. by making certain skills or products obsolete). This double dynamic confronts societies with a number of challenges to which they can – and do – respond in different ways.

To explain this variation, this thesis advances – and empirically assesses – two central arguments. First, it argues that the variegated trajectories of digitalization cannot be understood without taking the politics of digital policymaking seriously. In other words, the course and character of digitalization are not preordained by digital technologies themselves. Rather, digitalization is a political and politically contested process for which the forging (and dismantling) of coalitions is decisive. Second, it argues that ideational factors – values, frames, narratives – play an important role in the politics of digitalization. The uncertainty that surrounds digitalization opens up space for competing interpretations of what digitalization is and what it will bring. This allows ideas to shape actors' perceptions and conceptions, and it incentivizes actors to use ideas to make their interpretations count.

The five papers that make up this dissertation tackle this larger problematique from different angles. What unites them is an emphasis on the importance of politics for digitalization and on the importance of ideas for the politics of digitalization. Methodologically, they use a variety of both quantitative and qualitative approaches to tease out when and how ideas matter for the coalitional politics of digital policymaking, and how ideational factors interact with structural and institutional ones.

Acknowledgements

It is a cliché to say that writing a dissertation is both a very lonely journey and an incredibly social endeavor – so much so that stating this seems like a cliché itself. But it is also an academic prejudice to discount clichés just because they appear trivial. Most clichés contain a lesson, and the lesson I learned in these last years is the following: it is true that everyone needs to find their own path, and there is really no one – not even your supervisor – that will take you by the hand and get you to where you want to get. But it is also true that the journey is so much more enjoyable if your confident enough to ask those for help that know the terrain better, to lead others on shortcuts that you have discovered after long and painful wandering, to exchange ideas with those that have a different vantage point, or to simply enjoy the view together once in a while.

I would therefore like to thank all those that have shared part of the way with me, even though they had very different starting points, destinations, and walked at a different pace. The order is a strange mix of rank and role, chronology and importance, so don't pay to much attention to it. I would first like to thank my supervisor, Dorothee Bohle, for taking a chance on me, and for showing me how to combine personal warmth, intellectual wit, and a refreshingly critical attitude towards the academic and the political world. You always gave me my head and kept me on a pleasantly long leash but reined me in with the right comments at the right time, thank you for that. I also want to thank Anton Hemerijck for showing me how academic ambition does not have to contradict political relevance, for inculcating me with the conviction that social scientists cannot do with an intimate understanding of and connection to the world they are studying, and for his academic support and guidance that always meant a lot to me.

I would also like to thank my two external committee members, Anke Hassel and Andrea Herrmann, for their very perceptive and constructive comments. I am lucky having had two

scholars with so much substantive expertise on my committee, and I hope our shared interest in the digital transformation of economies and societies will make us cross paths again in the future.

I would also like to thank Jennifer and the other administrative assistants - you were always incredibly helpful, competent and nice, which made navigating the EUI's sometimes somewhat byzantine environment so much easier. By the same token, I would like to thank the staff of the EUI library - you are doing an incredible job, and I literally never missed a single thing.

I would like to thank Moira – the most important person in my time at the EUI. Although things did not work out, I will keep many warm memories of our time here together. You made difficult moments easier and the good moments better, and you did more than most to help me grow into the person I am today. I will not forget that (nor will I forget the difference between silk and satin).

I would like to thank Johannes for his incredible stories and sharp mind, for all the spirited discussions, and for teaching me about a world which he knows so much and I know so little about. I would also like to thank Jasper for being my comrade in arms throughout all those years, for his impressive stamina in constructively commenting on what were often the very rawest versions of my papers, and for fighting the good fight with me in the Political Economy Working Group (#teamDoro!). I would like to thank Maciej for showing me what a mature and serious intellect looks like, and for his comments and suggestions which often helped me more than he knows.

I would like to thank Jonata for just being such a pleasant guy: never pretentious, always sharp, and usually up for banter (and hikes). I will miss you, old man. I would like to thank Tobias for his friendship over the years; we've come a long way since these early stats assignments, you've impressed me many times, and I could not have wished for a better person to spend that night in Careggi with. I would like to thank Fred for telling me about

this Brexit thing, for always having interesting takes on things, and for listening to mine with an open and always perspicacious mind. I would like to thank Pelle for sharing the football pitch with me more than anyone else, and for his infinite reservoir of historical knowledge, but more importantly, sports trivia and social energy.

I would like to thank Francesco C. for the big discussions on the state of politics and political science, for organizing that workshop on social democracy with me, and for being one of the most likable 'fucking annoying guys' I've ever met. I would like to thank Amanda for all the heated discussions – you always remained respectful, which meant a lot to me because I always really respected you. Thank you also for winning this pub quiz with me – it was too good beating the human rights lawyers at their own game. I would like to thank Melanie for being in many ways the heart and soul of our cohort, for being a great intellectual sparring partner, and for making me hate pie charts.

I would like to thank Jonas for his razor-sharp analyses of everything from *haute finance* to pop culture - I learned something from you in almost every conversation. I would like to thank Dani: it is always a pleasure and a learning experience to be in the company of someone that has your intellectual range but also the maturity to be vulnerable once in a while. I would like to thank Nouran for letting me into her world a bit; you have to fight many battles, but you have a warrior's heart and, behind the sawdust of shyness, a rich and multifaceted personality - I truly wish you the best for your future. I would like to thank Nico for being the staunch catholic that a staunch atheist like me deserves, I always appreciated your philosophical seriousness - in that regard, and only in that regard, you are almost a bit protestant.

I would like to thank Louisa, Martin, Sophia, Jonas, Nils, Lennart and the rest of the *SPD Freundesgruppe Fiesole* for sharing my despair about and stubborn attachment to social democracy, and for all the little things you did over the years, from introducing me to amazing board games (Martin), to organizing the post-prospectus trip with me (Louisa), to sharing

your prospectus and finally your dissertation with me (Sophia), to really making me believe that Kaufbeuren is somehow special (Lennart).

I would also like to thank Armel, Sophia and Timothée – nah, TimoTwo – for many a discussion (especially in the early days) on the big questions; your minds were true grindstones on which I could sharpen my own. I would like to thank Quentin, who only shared a small part of the path with me, but whose smarts and humor I truly missed. I would like to thank Adam as well, who, despite everything, truly helped me out many times – I wish things would have been different.

I would like to thank Francesco B. for sharing the garden floor of the library (which, by the way, is just objectively the best floor) with me over all these years, for his admirable compassion with the world, and his equally admirable passion for studying it, and his many astute comments on my work. I would like to thank Daria for the long hikes and the deep conversations, and for sometimes explaining Gennadii to me, whose unencumbered audacity and drive I will also not forget.

I would like to thank Risto for making me think hard about the things I feel good about, for many a stimulating conversation, and for his intrepid thinking. I would like to thank Leon for all the wonderful conversations over pizza and beer, and for his amazing and truly unparalleled ability to ask the right questions – there are few I respect as much.

I would also like to thank Sandra for the many long and far-ranging conversations during my last months here. You have a rare mind, and I'm glad I got to know it a bit. I would like to thank Olga for teaching me things I had been blind to, for your warmth and trust, and for showing me how these torn yet buzzingly creative minds look like that one reads about in philosophical novels and intellectual histories.

I would like to thank Luuk for the always stimulating exchanges; we really operate on a similar wave length, and I very much look forward to our future collaborations. I would like to thank Marius for showing me another side of his; you are a very talented scholar, but I've

come to respect the person behind the persona in equal measure. I would like to thank Ivo for doing the virtual library with me during some of the darker days of the pandemic; you are a very kind soul and a diligent and talented academic - all the best to you.

I would like to thank Blerta for the very open and spirited conversations during the last months. It took us a while to get to know each other, but I'm all the happier that we eventually did - you are certainly worth knowing. I also like to thank Jona for all the intellectual tête-à-têtes during his first and my last months here. You are more than a worthy sparring partner and the EUI is lucky to have you. Thanks also to Bilyana for her always incredibly good feedback; we are at least 4 standard deviations away from each other on the agreeableness-disagreeableness scale, but I respect you very much.

I would like to thank Matteo for writing this paper with me, it was fun and fruitful, and I'm glad we went for it. I would also like to thank Oliver for getting me excited about digital capitalism in the first place, and for the years of shared thinking and shared work on the spirit of digital capitalism project - I'm proud to have you as a mentor and collaborator. By the same token, I would like to thank Ulrich who first gave me the confidence to pursue an academic career, and who opened so many doors for me - I will always be grateful. Finally, I would like to thank my long-term collaborator Moritz for writing yet another paper with me, and for the friendship and stimulating intellectual exchange over the years; I'm looking forward to whatever the future holds.

There are of course many more people - especially those that I met long before the EUI - that I could and should mention here, but I will limit myself to the most important ones: my parents. Ihr seid, auf so viele Weisen, der Grund, wieso ich hier bin und der bin, der ich bin. Ich hätte mir keine besseren Eltern wünschen können, und auch wenn meine Welt nie eure war, waren eure bedingungslose Unterstützung und euer bedingungsloses Vertrauen die besten Geschenke, die ihr mir hättet machen können. Danke für alles!

1 Introduction

We live in times where hardly a day goes by without some digital company making headlines for revolutionizing yet another aspect of our lives. Digital behemoths like Google or Amazon 'disrupt' existing industries from advertising to retailing; 'unicorns' like Uber and Airbnb transform the ways we work, dwell and travel; and a host of start-ups – often backed or bought by larger tech companies – sets out to develop 'an Uber for everything' (Fowler 2015), or indeed 'smart-everythings' (homes, factories, cities, hairbrushes). What these examples teach us is that the process of digitalization, whereby more and more of what we say, think and do becomes mediated by digital technologies, is both driven by and transformative of capitalism.

On the one hand, capitalism takes on a new garb - the garb of digital capitalism - as platform-based, data-driven, and artificial-intelligence-powered businesses become ever more central to modern economies and societies. On the other hand, being largely propelled by a capitalist logic, digitalization has followed a peculiar doubly dynamic. This dynamic has both a commodifying and a disruptive thrust.[1] It is *commodifying* to the extent that it pushes economic logics ever deeper into the social fabric. Work, for example, is reorganized on digital platforms in ways that undermine existing (labor) regulations, and personal data are commodified and sold on ever more intrusive markets for human attention (Zuboff 2019). It is *disruptive* to the extent that it radically alters the requirements for success on the individual-, firm-, and national level. Workers, for example, need entirely new skills while the ones they

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[1]Due to their interwoven nature, I use the terms digitalization and digital capitalism rather interchangeably, with the former denoting more the process and the latter more the thing. However, digitalization is the broader concept because the increasing intermediation of life by digital technologies does not have to be driven by capitalism (e.g. Wikipedia)

have are becoming obsolete; markets disappear as quickly as new ones emerge; and novel physical and social infrastructures become part and parcel of our civic and economic lives.

This double dynamic – to use a terminology introduced by Toynbee (1972) – confronts societies with a number of challenges to which they can respond in different ways. On its commodifying dimension, there is a range of policy options from embracing digital markets to reembedding them in a set of decommodifying institutions, which not only comprise labor but increasingly also data protection regulations. On the disruptive dimension, the challenge is to adapt to technological and economic changes in ways that are both sustainable (efficient and forward-looking) and equitable (compensatory and inclusive), despite considerable redistributive and intertemporal tradeoffs. Importantly, political actors have already responded to these challenges - and they have done so in very different ways.

The goal of this dissertation is to theorize and explain the challenges posed by digitalization as well as the differential responses to it. It advances – and empirically assesses – two central arguments. First, it argues that the variegated response to and trajectories of digitalization cannot be understood without taking the politics of digital policymaking seriously. In other words, the course and character of digital capitalism are not preordained by digital technologies themselves. Rather, digitalization is a deeply political and politically contested process for which the forging (and dismantling) of coalitions is decisive. Second, it argues that ideational factors – values, frames, narratives – play a particularly important role in the politics of digital capitalism. This is not to say that structural and institutional factors can be ignored or that ideational factors can be treated in isolation from them. But it is to say that the uncertainty that surrounds digitalization opens up space for competing interpretations of what digital capitalism is and what it will bring. This allows ideas to shape actors' perceptions and conceptions, and it incentivizes actors to use ideas to make their interpretations count.

These two arguments – on the importance of politics in the varied responses to digital capitalism and of ideas therein – form the common thread that unites the five papers of this dissertation. The first paper uses the different outcomes of two attempts to regulate Uber in New York to theorize about the politics of platform capitalism more generally, and to demonstrate how actors can use narratives to not only forge new coalitions, but also to drive a wedge between existing ones. Using discourse network analysis and a close tracing of the policy process, it makes and defends the claim that framing and storytelling explain the shifting size and composition of coalitions, and that the size and composition of these coalitions explains the different policy outcomes. It also shows how the ability to shape the terms of public discourse is a central complement to novel as well as conventional forms of business power.

The second paper explains why the General Data Protection Regulation was adopted despite fierce lobbying by business groups and the EU's often-alleged deregulatory and business-friendly bias. It makes two arguments: first, using process tracing, it shows how the fact that certain ideas about data protection became enshrined in both primary and secondary EU law created a set of issue-specific institutions that strengthened the position of data protection advocates within the commission. This, in turn, made it much more difficult for business groups to influence the Commission's original proposal. Second, using discourse network analysis, it shows how the Snowden revelations saved the Commission's proposal from being watered down during the subsequent negotiations, mainly by increasing the salience of the issue and thereby changing the coalitional dynamics.

The third paper uses quantitative text analysis and qualitative evidence from country cases to compare discourses on the future of work in eight European countries. It argues, and empirically demonstrates, that digitalization is not only not the same everywhere, it is not even the same problem everywhere. There are clear 'country effects' in the way digitalization is talked and consequently fought about, which express themselves in the different

tone and content of public discourse. The paper shows how institutional differences are essential in explaining how the common challenge of digitalization is translated into a series of local problems which then define the scope and nature of political responses as well as the formation of political coalitions. The paper also shows how discursive differences not only reflect institutional differences, but how actors can use digitalization to challenge and change existing institutions.

The fourth paper explains why we observe marked differences in the extent to which government invest in knowledge-based capital, i.e. goods like education and R&D that make individuals and societies survive and thrive in the digital economy. Using within-between mixed-effects models on a newly compiled time-series-cross-sectional dataset, it identifies two factors that have so far been neglected by the existing literature, which has mainly focused on structural variables or the partisan composition of government. First, it argues and shows that corporatist institutions allow countries to partly overcome the intertemporal tradeoffs associated with digital investment policies, specifically by fostering a sense of common ownership of policy problems that allows for adaptive, future-oriented responses to technological change ('creative corporatism'). Second, it explores how the way in which technological change and the role of the state in the economy are discussed in discourse can influence governments' investments in the digital future.

The fifth paper complements the others but focuses less on the policymaking process and more on the digital companies themselves. Reviving, systematizing, and operationalizing the concept of the spirit of digital capitalism, it looks at the normative ideas that motivate, legitimize, and orient the actions of digital capitalists. Using supervised learning on novel text corpora, the paper identifies the normative principles dominating the discourse of tech elites themselves, of the wider tech milieu, and of capitalist discourse at large. It argues and shows that for tech elites in particular, but increasingly also for the wider world of digital capitalists, solutionist beliefs have moved center stage. Solutionism refers to the belief that

the use of technologies – by inventive and cunning entrepreneurs – is the royal road to fixing social problems, and that one can therefore make money while making the world a better place. The paper not only identifies these beliefs but also theorizes and illustrates their motivating, legitimizing, and orienting role for today's digital capitalism.

In the remainder of this introduction, I elaborate on the two theoretical arguments connecting these papers, sketching out a theory of digital capitalism, and developing a theoretical framework for understanding the role of ideas in the politics of digital policymaking. I also discuss the methodological approach used in this dissertation, and how it can substantiate the theoretical arguments. The conclusion, which follows the presentation of the papers in chapters 2 to 6, will pick up where the introduction left off. It highlights common themes of the papers, discusses their contributions and shortcomings, and points to avenues for future research. In short, the introduction discusses where we are coming from, why we partially went astray, and where we should go instead, the papers tell us how it looks like there, while the conclusion provides a summary travel report and makes suggestions for future destinations.

1.1 Theory

Based on a review of the literature on digitalization, this section first spells out what I mean by digital capitalism and why we need to take into account politics to understand its nature and trajectory. Building on this understanding, and drawing on the theoretical debate on the role of ideas in political life, I will then explicate why ideas are so critical when it comes to understanding the politics of digital capitalism.

1.1.1   The Politics of Digital Capitalism

I have defined digitalization as a process by which more and more of what we say, think and do becomes mediated by digital technologies, and I have identified a commodifying-cum-disruptive double dynamic as its central feature. What ties the abstract definition and the substantive observation together is an understanding of digitalization as a process driven and structured by capitalist actors. In other words, one cannot talk about digitalization without talking about (digital) capitalism. To substantiate this conceptual move, I first spell out what I mean by capitalism to then connect this conceptualization to the process of digitalization. Doing so will allow me to explicate the nature of digital capitalism and the challenges it poses.

1.1.1.1   What is Capitalism?

Capitalism is an essential yet essentially ambivalent social scientific concept. This ambivalence plays out in four ways. First, the concept of capitalism has both an analytical and a critical function, it is "at once a tool of scholarly insight and of social critique" (Kocka 2016, vii). Second, capitalism refers to a certain type of economy as well as to a "capitalist society" (Streeck 2012, 2), i.e. the wider social preconditions and ramifications of such an economy. Third, capitalism denotes a trans-historical 'logic' as well as the particular historical formations in which this logic takes shape (Sewell 2008). Finally, capitalism is meant to capture both varieties and commonalities of capitalist societies (Streeck 2010). In order to do justice to these ambivalences, any analytic conceptualization of capitalism has to fulfill three criteria: i) it has to be abstract enough to capture its distinct logic; ii) it has to versatile enough to do justice to diachronic and synchronic particularities; iii) and it has to be encompassing enough to capture the dialectic relationship between a capitalist economy and the society at large.

Max Weber provides us with the first element of such a conceptualization when he puts the realization of "(formally) peaceful chances of profit" (Weber 2007, xxxii) center stage. What unites early-modern merchants, modern industrialists, and today's entrepreneurs is not the nature of their activities but the motivation and expectation to make a profit from them (Fulcher 2004, 14). Modern capitalism, or "capitalism proper" (Fulcher 2004, 14), emerges when this profit-seeking attitude becomes institutionalized, that is, widely expected, practiced and enforced "under penalty of ruin" (Marx 1894, 173). Historically, this happened in the late 18th century when "the whole economy [became] dependent on the investment of capital and [when it was] not just trade that [was] financed in this way but production as well" (Fulcher 2004, 14; Kocka 2016, 53). It was not long after that the "constant revolutionising of production" and "uninterrupted disturbance of all social conditions" were recognized as capitalism's distinguishing features (Marx and Engels 1848, 16).

This points to the second element of our conceptualization, namely that capitalism – due to the institutionalization of profit-seeking – "incessantly revolutionizes the economic structure from within" (Schumpeter 2008, 83). It was Joseph Schumpeter who saw this most clearly when he noted that capitalism "is by nature a form or method of economic change and not only never is but never can be stationary" (Schumpeter 2008, 82). In Schumpeter's view, the "fundamental impulse that sets and keeps the capitalist engine going" (Schumpeter 2008, 82) is the constant creative destruction and construction of markets and business models by profit-seeking, "disequilibrating" (Schumpeter 2008, 132) entrepreneurs. This points to the great paradox at the heart of capitalism: change is its only theme and an "immense mutability" (Kocka 2016, 168) its defining feature; yet, there is a peculiar constant in capitalism that gives these changes direction. "The direction is expansion and its mechanism (...) is innovation. (...) Capitalism (...) is a social order that changes in an orderly way by systematically encouraging disorder" (Streeck 2009, 236). At capitalism's core, as William

Sewell puts it, is a "strange stillness", with capital "always churning, always self-valorizing, moving endlessly in Marx's sequence of M–C–M"' (Sewell 2008, 526).

This dynamism, however, while coming from within the economy, is not limited to it. Capitalism, and this is the third element of our conceptualization, has a "system-extending character" (Kocka 2016, 23); it is a social, not just an economic order. Capitalism, as Karl Polanyi observed most powerfully, is integrated or embedded in society (Polanyi 2001; Beckert 2009). This relationship is both supportive and subversive. It is *supportive* in that social trust or social norms grease the wheels of an economy that would otherwise grate under the weight of transaction costs (Granovetter 2017; Hirschman 2013); in that capitalism relies not only on a legal system to work but also on 'something else' to remain dynamic or 'vigorous' (Swedberg 2002) – a something else which for Weber was the capitalist spirit and for Schumpeter a "capitalist ethics that enjoins working for the future irrespective of whether or not one is going to harvest the crop oneself" (Schumpeter 2008, 160); in that capitalism's innovativeness depends not only on the public provision of public goods such as education and basic research but also on entrepreneurial states steering and crowding in investments (Block 2008; Hacker and Pierson 2016; Mazzucato 2013; Weiss 2014); in that capitalist dynamism in all its 'four Cs' – credit, competition, commodification, and creativity (innovation) – is driven by 'fictional expectations' and the constant conjuring of imagined futures that reassure, galvanize, or mobilize creditors, businesses, consumers and entrepreneurs (Beckert 2013, 2016); and in that capitalism benefits from the obligations or 'beneficial constraints' (Streeck 1997) that society imposes on it, both in terms of economic efficiency due to the collective facilitation of coordination (Hall and Soskice 2001) and in terms of political and ecological sustainability due to the collective mitigation of social costs (Streeck 2016).

It is *subversive* in that capitalism constantly expands into or 'colonializes' social spheres that have hitherto operated under different, non-market logics (Polanyi 2001; Habermas

1987). Such dynamics of spatial or social land-grabbing or *Landnahme* directly follow from capitalism's accumulative imperative – the very engine of its dynamism (Harvey 2010; Rosa, Dörre, and Lessenich 2017). Decommodifying institutions that contain and constrain capitalism's commodifying drive – even when to its own benefit – are never save from this subversive dynamism. Capitalists, after all, make "a living by specializing in the subversion of social constraints" (Streeck 2009, 242). Yet, the "strong utopia" implied by capitalism without constraints – by a self-regulating 'market society' that commodifies even the 'fictitious commodities' of land, labor, and money – will not go uncontested; for such a society "could not exist for any length of time without annihilating the human and natural substance of society" (Polanyi 2001, 3). Society will take decommodifying measures to protect itself from the vagaries of unfettered markets. This social contestation of capitalist expansion is what Polanyi refers to as the 'double movement' (Polanyi 2001, 136).

Taken together, these three elements imply an understanding of capitalism as a social order in which institutionalized profit-seeking creates an internal dynamism that not only incessantly revolutionizes the economy from within but constantly - and contestedly - runs up against, subverts, and incorporates the institutions in which the economy is (beneficially) embedded. Despite this invariant logic at its core, capitalism will vary historically and geographically depending i) on the technologies on which entrepreneurs can draw (Schumpeter 2008); and ii) on the extent to and ways in which societies constrain or support capitalism (Bohle and Greskovits 2012). Based on this conceptualization, the next sections will flesh out how digital technologies are supercharging capitalism's internal dynamism and expansionary dynamic, leading to the formation of 'digital capitalism'; which challenges this poses; and how we can and should understand how societies respond to these challenges.

1.1.1.2   What is Digital Capitalism?

Digital technologies have been around for a while, and have indeed been integral to the three most important economic transformations of the last decades: financialization (Mader, Mertens, and van der Zwan 2020), globalization (Dicken 2015), and post-industrialization (Bell 2010). It was only recently, however, that digital technologies have progressed so much that they reached an inflection point where they have become "as important and transformational to society and the economy as the steam engine" (Brynjolfsson and McAfee 2014, 9). Like the steam engine or electricity, digital technologies are 'general purpose technologies', that is, building blocks for a broad variety of future innovations (Brynjolfsson and McAfee 2014, 75–80). And like with previous general purpose technologies, it takes time before their potential can be fully harnessed because this requires "organizational and (. . .) conceptual changes in the ways tasks and products are defined and structured" (David and Thomas 2003, 147). It thus required the "confluence" (Sundararajan 2016, 47) of technological and conceptual enablers to see the shift we observe today – a "shift from the simple digitization that characterized the third industrial revolution to a much more complex form of innovation [that characterizes the fourth industrial revolution]" (Schwab 2016, 52). This more complex form of innovation is no longer about refining existing but about creating new business models that leverage the power of three digital revolutions: the platform revolution, the (big) data revolution, and the artificial intelligence revolution.

Platform Revolution   The first revolution is the platform revolution (Cusumano, Gawer, and Yoffie 2019; Parker, van Alstyne, and Choudary 2016). In 2015, Tom Goodwin made a now-famous observation: "Uber, the world's largest taxi company owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate. Something interesting is happening" (Goodwin 2015). What

is interesting here is that a new breed of asset-light and technology-heavy companies have 'disrupted' existing markets in a very short time, and they have done so with business models that radically differ from existing ones.

Platforms can be defined as "digital infrastructures that enable two or more groups to interact" (Srnicek 2017, 43). Their value derives not from the things they produce but from their ability to benefit from the matches they both facilitate and organize (OECD 2016, 7). Low marginal costs and large network effects allow digital platforms to connect producers and consumers efficiently and globally, giving platform companies an edge over traditional and smaller competitors (Parker, van Alstyne, and Choudary 2016, 5–12). Moreover, by making it much easier for people to find and trust each other, platform companies can radically change existing markets or even create entirely new ones that were previously inefficient due to high transaction costs (cf. Coase, 1937).

While platforms come in many varieties, those that intermediate online ('crowd work') or offline work ('gig work') are not only the most common; they also pose the most pressing regulatory challenges (de Stefano 2016; Koutsimpogiorgos et al. 2020; Schor et al. 2020). Specifically, such labor platforms often define and brand their workers as independent contractors in order to devolve the responsibility for assets, remuneration, insurance, taxation, and fluctuating demands to workers. At the same time, they continue to exert considerable control and power over their workers, as this is the only way to reliably and swiftly provide their services (Prassl 2018). In addition, many offline platforms also avoid industry-specific product market regulation, such as taxi regulations in Uber's case. In sum, then, platform companies are not only economic entrepreneurs that disrupt existing markets; they are also regulatory entrepreneurs that push the limits of, ignore, or try to change existing regulations – regulations that are meant to rein in markets and decommodify labor (Barry and Pollman 2017; Fleischer 2010).

Big Data Revolution   The second revolution is the big data revolution. While the platform is the organizational form of digital capitalism, data are its main resource. Digitization „turbocharges datafication" (Mayer-Schönberger and Cukier 2013, 83) – the process of converting the world into information. The resulting data deluge allows individuals and companies to create and extract new forms of value. The companies benefiting are those with "big-data mindset" (Mayer-Schönberger and Cukier 2013, 124), i.e. those understanding that the bulk of data´s value lies dormant in its future uses, and that find ways to tap this value (Mayer-Schönberger and Cukier 2013, 99). As economic value becomes tied up with the possession of data and the technical and organizational ability to extract value from them (Haskel and Westlake 2017), data turn into a "raw material (. . .) to be extracted, refined, and used in a variety of ways" (Srnicek 2017, 40) – into a new "kind of capital, on par with financial and human capital in creating new digital products and services" (MIT Technology Review and Oracle 2016, 2).

The most important data are those that can be used to better capture, direct, and sell human attention. It is this desire to manipulate human attention that lies at the heart of today's surveillance capitalism (Zuboff 2019). It is that desire that drives its army of attention merchants (Wu 2016) to find ever new ways to extract and refine data about what humans think, feel, want, and do. Like magicians, attention merchants capture someone's attention and use it against them; and like cunning capitalists, they have identified attention as the ultimate scarce resource and have drilled ever deeper holes to capture it, even into areas that were "previously walled off from commercial exploitation" (Wu 2016, 6). Since the activities of reading books, watching videos, searching for information, or connecting with friends are not done for the market, this amounts to nothing less than the commodification of yet another fictitious commodity with its own negative externalities in the form of addiction, radicalization, or abuse (cf. Jessop 2007) Its end goal, one cannot avoid observing, is the commodification of human behavior *tout court.*

Artificial Intelligence Revolution The third revolution is the artificial intelligence revolution, which has symbiotically evolved with the big data revolution. Just as artificial intelligence needs large amounts of data, so are large amounts of data only useful with artificial intelligence to analyze them. Artificial intelligence has made rapid progress in recent years, driven not only by ever more data but also by exponential increases in computing power and advances in computer science (McAfee and Brynjolfsson 2017). As a result, artificial intelligence can do more and more at less and less cost. One consequence of this is that machines can now increasingly perform human-like functions (e.g. driving, diagnosing). Artificial intelligence increasingly does for mental power what the technologies of the first machine age did for muscle power: allowing humans to go beyond past limitations in manipulating their physical and social environments (Brynjolfsson and McAfee 2014, 7–8).

This is not per se different from the introduction of (personal) computers, but its effects are much more sweeping: "the next wave of automation is likely to have effects similar to those of earlier computer technologies, but it is likely to affect more people" (Frey 2019, 339). In particular, artificial intelligence will put further pressure on relatively unskilled labor – on tasks that have survived the first wave of automation such as truck drivers, cashiers, food preparers, or call center agents – while putting a further premium on tasks that require complex social and analytic skills (cf. Acemoglu and Autor 2011). "There's never been a better time to be a worker with special skills or the right education, because these people can use technology to create and capture value. However, there's never been a worse time to be a worker with only 'ordinary' skills and abilities to offer, because computers, robots, and other digital technologies are acquiring these skills and abilities at an extraordinary rate (Brynjolfsson and McAfee 2014, 11). Artificial intelligence thus increasingly rewards knowledge-based capital, be it individually-held human capital (education, skills) or collectively-held innovational capital (scientific knowledge, data) (OECD 2013; Stiglitz and Greenwald 2014).

The confluence of these three revolutions gives rise to a new historical form of capitalism: digital capitalism.[2] This is not to say that digital capitalism outrightly replaced the previously dominant form of financial capitalism.[3] But it is to say that platform-based, data-driven, and artificial-intelligence-powered business models are capturing an increasing share of profits, control – directly or indirectly – an increasing share of economic life, and increasingly serve as role models for start-ups as well as established companies. The central argument here is that the success of these business models confronts societies with a commodifying and a disruptive challenge to which they need to and can respond in different ways.

1.1.1.3   The Challenges of Digital Capitalism

As we have seen, an endogenous dynamism and a system-extending character have been essential features of capitalism throughout. The three digital revolutions mentioned above have bolstered both of these features and have ushered in a new round of disruption and commodification. By redefining how economic activities are organized, platform-based companies often open up and subsequently exploit legal grey areas. Examples for such "regulatory arbitrage" (Fleischer 2010) abound, from content production ('we are not liable for user-generated content'), to taxi regulations ('we are not a transportation company'), to, most importantly, labor law itself ('our riders are independent contractors'). Moreover, platform companies not only often exploit existing legal grey areas. They actively seek to change the

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[2]To my knowledge, the term digital capitalism was first used in Dan Schiller's 1999 *Digital Capitalism. Networking the Global Market System* (Schiller 1999) and Peter Glotz' *Die beschleunigte Gesellschaft. Kulturkämpfe im digitalen Kapitalismus* from the same year (Glotz 1999).

[3]Rather, they coexist, sometimes symbiotically, sometimes conflictually. In fact, such simultaneities of the non-simultaneous, i.e. the coexistence of older and newer forms of capitalism have been a defining theme throughout capitalist history (Kocka 2016, 123).

law as part of their business strategy. The business model of many platform companies is "built around and based upon a plan to change the law—and, in some instances, to simply break the law in the meantime. For these companies, political activity has become a critical part of business strategy" (Barry and Pollman 2017, 386).

Thus, their platform-based business model allows these companies "to straddle the very categories that we use to organize our understanding of the political and economic world. [This places them] in the institutional cracks of the regulatory system [which they] consciously exploit (...) to thwart challenges to their power" (Atal 2020). Such regulatory arbitrage and entrepreneurship gives platform companies an edge over traditional competitors that are bound by existing regulations. The ensuing disruption – which is not just economically but also legally driven – not only transforms industries. It also puts downward pressure on regulatory standards, eroding decommodifying institutions, often through drift as existing regulations are not updated to reflect changed realities (cf. Hacker, Pierson, and Thelen 2015). This is the case, for example, in transportation markets, where the relatively restrictive licensing and safety regulations that Uber challenges were introduced precisely to mitigate the negative externalities of unregulated markets for cities (congestion) and workers (cut-throat competition) (cf. Rogers 2017). It is most apparent in labor law itself, where platform companies display a systematic disregard for or at least an instrumental attitude towards regulations that are meant to protect the fictitious commodity of labor from unfettered markets.

The hunger for personal data – the fact that companies increasingly act under a "data imperative" (Fourcade and Healy 2017, 16) to collect and monetize as many data as possible – has drawn ever more activities into the orbit of markets. As homes and hairbrushes become 'smart', economic needs and imperatives make their way into people's private lives. And as many digital companies are paid in data – instead of or in addition to money – for their ostensibly 'free services', privacy itself becomes quite literally a commodity: something that

one has to pay extra for and has thus to be able to afford. Apple, for example, increasingly justifies the higher price of its products in terms of higher privacy standards, implicitly branding privacy as a luxury good. Importantly, this commodification of the previously uncommodified through digital technologies has not gone without resistance, from a "certain 'disenchantment'" to "full-fledged 'revolt[s]'" (Wu, 2016: 7). We can understand such resistance as the first stirrings of a countermovement against markets for human attention. Thus understood, data protection regulations are decommodifying institutions that limit the reach and pervasiveness of markets for human attention. They defuse the problematic tradeoff between companies' growing demand for personal data and consumers' and workers' right to privacy and informational self-determination (Bennett and Parsons 2013, 492–93).

Artificial intelligence, meanwhile, is set to transform the world of work while upending existing and creating entirely new industries. Like previous general-purpose technologies, it will require further complementary organizational and conceptual changes to fully realize its potential – but this potential is enormous (Frey 2019, 301–41). Artificial intelligence has both a "destruction effect" and a "capitalization effect" (Schwab 2016, 36), that is, it will both substitute capital for labor and complement labor with capital. But it requires massive investments into human and innovational capital that is complementary to rather than substituted by these technologies to reap the capitalization effects and mitigate the destruction effects (Autor 2015, 17).

If artificial intelligence rings the bell for the next round in the race between technology and education (Goldin and Katz 2008; Tinbergen 1974) it is imperative that the runners are well trained, can refresh themselves along the way, and have access to the best gear and science. The respective investments in knowledge-based capital are not only essential for surviving and thriving in the digital age – they also ensure that societies can reap the 'collective gain' (Hicks and Kenworthy 1998) that digital technologies promise. To avoid the technology trap, where the long-run benefits of technological change cannot be realized

because of its short-term costs, governments must therefore "pursue policies to kickstart productivity growth while helping workers adjust to the onrushing wave of automation; [after all, if] people race alongside the machine, they are less likely to rage against it" (Frey 2019, 349).

1.1.1.4 The Coalitional Politics of Digital Policymaking

Digitalization thus confronts policymakers with a range of challenges that require managing and mitigating the negative effects of disruption and commodification while realizing the upsides of digital technologies. But while these challenges are driven by the twin forces of technological innovation and capitalist dynamism, the responses are not determined by either technology or economics. Not only do social and cultural factors – in addition to capitalism itself – shape which technologies are developed and which form they take (cf. Bijker 1995). The impact of technological change also depends how societies react to them: whether and how they regulate them and whether and to what extent they provide complementary investments. Expressing a broad consensus among historians of technology, Kranzberg's 'fourth law of technology' states that while technology "might be a prime element in many public issues (...) nontechnical factors take precedence in technology-policy decisions" (Kranzberg 1986, 550).

But how do we understand the politics of digital policymaking? What is key, I claim, is the ability of political actors to forge new coalitions or to drive existing ones apart. To substantiate this claim, I draw on a large literature from political science, public policy theory, and comparative political economy that theorizes coalitional politics in the face of disruptive or commodifying technological and economic change. Esping-Andersen famously argued that a country's welfare regime – and how it (de-)commodifies labor – "depended on political coalition-building" (Esping-Andersen, 1990: 30). Similarly, a more recent literature has ar-

gued that the institutions that were forged during the formative periods of politico-economic development, while being path-dependent and not easily changed (Pierson 2000), have coalitional underpinnings themselves. In fact, institutions derive their 'stickiness' precisely from how they sustain the coalitions on which they depend (Hall 2016, 42–44; Jackson and Deeg 2008, 696–99).

There are two implications of this argument. One is that coalitions – and the institutions they undergird – are never entirely stable but depend on the continuous mobilization of political support: "the persistence of institutions depends (. . .) on continuous processes of mobilization through which the actors test the limits of the existing institutions" (Hall and Thelen 2009, 7). And while it is true that institutions are always 'under attack' (Streeck and Thelen 2005), periods of far-reaching technological and economic change provide challengers with ammunition in the continuous struggle over the scope, legitimacy, and meaning of an institution. Such periods can be limited to specific policy domains, but they are "characterized by a particular kind of politics, intrinsically more open than usual" (Hall 2016, 41) in which actors have more leeway in cobbling together new or driving a wedge between existing coalitions (cf. Hemerijck 2013).

The second implication is that while "actors can choose among alternative policy responses with some degrees of freedom (. . .) "these responses are conditioned by certain constraints that result from the trajectory of past decisions and political coalitions, congealed around policies and institutions enacting them" (Beramendi et al. 2015, 12). In other words, while institutions shape what is possible and perhaps likely by shaping the capacities and preferences of actors, coalitional politics determines what is actually done (Beramendi et al. 2015, 23). Rinscheid et al. (2019), for example, show how critical antecedents – in the form of past technology decisions – constrained the leeway of policymakers in the wake of the Fukushima nuclear accident without diminishing the role of agency and coalitional dynamics in bringing about institutional change (in Germany) or stability (in Canada and Japan).

This argument about the importance of coalitional politics for the responses to commodifying or disruptive change can be further refined by drawing on the advocacy coalition framework. Its central argument is that actors in a policy subsystem can be classified into coalitions with competing belief systems and that public policies reflect the translated belief systems of one or more of those coalitions (Jenkins-Smith et al. 2017). But how exactly are these beliefs formed? Structural and institutional effects on preferences certainly matter. But political actors often act under uncertainty; they "experiment into an open horizon, often driven by myopic conceptions of group interests, without anyone's being able to predict today whether the path pursued will actually pay off in the longer run either for (1) the political actors and their constituencies advancing the reforms right now and/or for (2) the macroeconomic performance of the polities (or regions) in which these reforms prevail" (Beramendi et al. 2015, 60). Digitalization is riddled with such uncertainties, and it is for this reason that we have to turn to ideas to fully understand how beliefs about digitalization are formed and how this influences the coalitional politics of digital policymaking.

1.1.2   Ideas in Politics

In *How to Map Arguments in Political Science*, Craig Parsons distinguishes between structural, institutional, ideational, and psychological logics of social scientific explanation, based on the element that 'does the causal work'.

> "[S]tructural claims explain what people do as a function of their position vis-à-vis
> exogenously given 'material' structures like geography, a distribution of wealth,
> or a distribution of physical power. People's actions vary as their position in
> a given material landscape varies. Institutional claims explain what people do
> as a function of their position within man-made organizations and rules (. . .).
> Ideational claims explain what people do as a function of the cognitive and/or
> affective elements that organize their thinking, and see these elements as created

by certain historical groups of people. Psychological claims explain what people do as a function of the cognitive, affective, or instinctual elements that organize their thinking, but see these elements as general across humankind, as hard-wired features of 'how humans think'" (Parsons 2007, 12).

Table 1 arranges these four logics of explanation in a 2-by-2 matrix. The first axis distinguishes between a logic of position and a logic of interpretation, depending on whether we understand actions as a direct result of the position of an actor in a structural or institutional environment, or as the consequence of the actor´s interpretation of the environment. In other words, we can either locate the causal forces in the environment of actors or, as it were, within the actors themselves (Parsons 2007, 37). The second axis distinguishes between general and particular causes, depending on whether actions follow – deterministically or probabilistically – from exogenously-driven generalities of (human) nature, or – contingently – from particular, man-made institutions or ideas (Parsons 2007, 13–14).

Importantly, these different explanatory logics are ideal types. Like different LEGO bricks, they are building blocks that can – and should – be combined when crafting complex explanations. In other words, interests, institutions, ideas, and psychological biases invoke different but not necessarily mutually exclusive causal arguments. Distinguishing between them makes it easier to disassemble explanations – and to critically assess the role of ideas in them. The next sections will elaborate on what ideational explanations are and how they fit with the others.

Table 1: Logics of Social Scientific Explanation

		Nature of Causes	
		General (Exogenous	Particular (Man-made)
Logic of Action	Position	**Structural**	**Institutional**
	Interpretation	**Psychological**	**Ideational**

1.1.2.1   From Whether to How: A Brief History of Ideational Explanations

Social scientists have long had a somewhat standoffish relationship with ideational explanations. During the cold war, the study of ideas sounded an awful lot like the study of ideology – an anathema for a new generation of self-confident social scientists who wanted to stay clear of the muddy waters of intellectual politics (Geertz 1964). Others believed that ideas are not explanatory variables in themselves but should be seen as "the product of circumstances and interests" or, at most, as "weapons framed for the furtherance of interests" (Carr 2016, 65). Yet others conceded that ideas may well matter but are simply too hard to measure. Ideas, as Philip Converse famously quipped, are "primary exhibits for the doctrine that what is important to study cannot be measured and that what can be measured is not important to study" (Converse 1964, 206).

None of these objections, however, holds water (anymore), and so it comes as no surprise that ideational explanations have made something of a comeback in recent years. For one, the argument that ideas don't matter because the ruling ideas are merely the ideas of the ruling class never made much sense to begin with. "Either the productive forces are irresistible, in which case there is no need to justify them: or else they need to be justified, in which case they are not irresistible" (Crone 1989, 138). Likewise, if ideas don't matter there shouldn't be public relations agencies or thought leaders, advertising firms or spin doctors, and no famous napkin with a drawing of the Laffer-curve (Mehta 2011, 24). Viewed thus, it was always curious "that scholars, whose entire existence is centered on the production and understanding of ideas, should grant ideas so little significance for explaining political life" (Sikkink 1991, 1).

More importantly, however, ideational scholarship itself has advanced. It has moved away from grand claims about 'whatever holds the world together in its inmost folds' and on to answering concrete questions with clearly defined concepts and increasingly sophisticated

methods. The question no longer is whether we can trace an idea back to some ultimate cause but whether an idea can "be reduced to some other (structural) factor in the *contemporary system*" (Berman 1998, 18). This shift in perspective and focus has allowed ideational scholars to move from the question of whether ideas matter to how they matter, and, as we will see later, how they can be measured. Rather than chasing grand theories, ideational scholars thus began elucidating "the ways in which ideas make a difference, the conditions them more or less effective, and their interactions with other factors that account for social change as well as stability" (Rueschemeyer 2006, 227).

1.1.2.2   A More Refined Theory of Agency

But how exactly do ideas matter, and how exactly do ideational explanations work? In answering these questions, two things need to be said. First, ideas cannot be everything and nothing; and second, ideas are not free-floating. Put differently, "in order to function as an independent variable, ideas not only must be able to be clearly defined and identified but also must be associated with specific political actors" (Berman 1998, 22). Ideas should thus be conceptualized in a way that makes them concrete enough to identify causal mechanisms and formulate informative hypotheses (Berman 1998). The ideational literature has put a number of such concepts on the shelf, from *policy paradigms* (Daigneault 2014; Hall 1993), to *programmatic beliefs* (Berman 1998; Hansen and King 2001) to *policy narratives* (McBeth, Jones, and Shanahan 2017) to *national economic cultures* (Clift 2012; Dobbin 1994; Dyson 2014).

All of these concepts allow us to identify concrete sets of – cognitive or normative – ideas whose potential effects we can specify and test. And they allow us to move up or down the 'ladder of abstraction' (Sartori 1970) to more specific policy solutions or problem definitions on the one hand and more general worldviews on the other. For example, using

artificial intelligence to deploy police forces more efficiently might be conceived as a response to the problem of high crime rates, which is in turn construed as resulting from insufficient police presence. Both *policy solution* and *problem definition* are derived from technocratic and technophile *programmatic beliefs* about policing, which are in turn anchored in broader *worldviews* about crime and the good society.

But knowing what ideas are is not enough, we also need to know what they do. And ideas, of course, do nothing by themselves but only through the actions of those that either use them or believe in them. Eugenic ideas, for example, became powerful in some countries not out of their own "strength" but because powerful actors promoted them because they "fit" their interests (Hansen and King 2001, 256). Yet, these "interests rarely arise unambiguously from the world" (Hall 2005, 150). In fact, for actors to be able to use ideas to further their interests, the interests of other actors need to be at least somewhat malleable. There are, therefore, two types of ideational explanations: one looks at how ideas influence how actors interpret their interests, the other looks at how actors use ideas to advance their interests by influencing how others interpret theirs.

To unpack this argument about ideas, interests, and their carrier groups or *Träger-schichten* (Max Weber) it is important to elaborate on what ideational explanations are. According to Parsons, ideational scholars explain "actions as a result of people interpreting their world through certain ideational elements" (Parsons 2007, 96), e.g. narratives, frames, metaphors, symbols, identities, ideologies, myths, or collective memories. This is based on the crucial assumption that the world is riddled with enough uncertainty to make it impossible actors, even rational ones, to act on it in a straightforward, unambiguous, or self-evident way (Beckert 1996, 805). Since the world does not "come with an instruction sheet" (Blyth 2003), it needs to be constantly (re-)interpreted. And since "the world does not hand them their preferences" either, actors have to develop them by "interpret[ing] the world and their situation in it" (Hall 2005, 136). At its most rational, this may take the form of quasi-Bayesian

updating, but it will more often be characterized by cognitive biases, identity considerations, or framing effects (Hall 2005, 136; cf. Akerlof and Kranton 2010).[4] Ideas, then, are tools that actors use to organize and make sense of the uncertainty that surrounds them, or to help others – not always selflessly – to make sense of it.

Scholars that stress the importance of ideas in shaping actors' interest have identified a number of mechanisms through which this happens. Ideas can serve as *focal points* around which the interests of strategic actors converge when no single best course of action exists (Garrett and Weingast 1993); as *road maps* that guide actors through uncertain terrain "by stipulating causal patterns or by providing compelling ethical or moral motivations for action" (Goldstein and Keohane 1993, 16); as *formula for compromise* that build "bridges across class and consumption categories through the redefinition of agents' interests, and by defining the common ends of action" (Goldstein and Keohane 1993, 12; Hall 1989, 366); as *common knowledge* that not only makes negotiations possible but also normatively binds actors through the communicative nature of the bargaining process (Culpepper 2008); and as *social identities* that influence actors' utility functions (Akerlof and Kranton 2010). In sum, what actors do not only depends on their interests but on also on their ideas about i) what they are maximizing, ii) how the world works, and iii) the tools they have at their disposal to advance their interests (Rodrik 2014).

Ideas, however, not only shape actors' interests, actors also use ideas to advance their interests. This "capacity of actors (whether individual or collective) to influence other actors' normative and cognitive beliefs through the use of ideational elements" can be understood

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[4]Here, psychological explanations can help specify "the cognitive mechanisms through which politicians' and policy makers' ideational orientations shape their choices" (Jacobs 2009, 253). Drawing on concepts and finding from cognitive psychology and on case studies on pension politics, Jacobs demonstrates how elites' mental models – their understanding of pension systems either as forms of insurance or mechanisms of redistribution – guided "their attention toward certain causal logics and pieces of information and – just as important – away from others" (Jacobs 2009, 253).

as "ideational power" (Carstensen and Schmidt 2016, 321).[5] Political entrepreneurs, for example, may engage in *ideational politics* in order to "catalyze political (and policy) change" (Mukand and Rodrik 2018, 1–2). They can either use ideas to change the public´s understanding of how the world works and therefore their perception of policy outcomes (*worldview politics*). Or they can change the identity of actors and therefore their perception of which outcomes they value (*identity politics*). Or they can display *ideational leadership* by using ideas to reform resilient institutions, for example by "exposing drawbacks of old policy principles and policies built on them; legitimizing new policy principles by using cognitive and normative arguments; framing reform resistance as problematic for societal welfare and stakeholders' interests; and making efforts at political consensus-building in support of the reform initiative" (Stiller 2010, 17).

Again, scholars have identified a number of mechanisms through actors can use ideas to advance their interests. Actors can wield ideas as *weapons* in order to undermine the legitimacy of institutions (Blyth 2002, 39). More generally, they can use them as *frames* to "appropriate and manipulate public sentiments for their own purposes" (Campbell 2001, 175). By "selecting and highlighting some features of reality while omitting others" (Entman 1993, 53), frames can help actors to mobilize support for their preferred policies. For example, politicians can use frames to explain "to the population and various pressure groups why it

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[5]The concept of ideational power resonates with, and could benefit from more engagement with, similar discussion in social and political theory. Forst's concept of *noumenal power*, for example, refers to the ability "to influence, use, determine, occupy, or even seal off the space of reasons of others" (Forst 2017, 42), thus shaping what they consider as 'good' or 'bad' reasons. This is similar to Lukes' *third face of power*, which consists in the ability to influence other actors' "very wants" (Lukes 2005, 27); to *moral power*, which refers to the "ability to persuade others to adopt a particular belief or take a particular course of action" by virtue of one's "perceived moral stature" (Mehta and Winship 2010, 426); and to Bourdieu's concept of *symbolic power*, which he understands as the ability of making others accept the classifications and hierarchies that one creates; symbolic power is the ability of "world-making" (Bourdieu 1989, 22) that operates through the "unknowing 'complicity' " (Wacquant 1989, 34) of those on whom this 'world' is imposed.

is in their interest to support or oppose concrete policy alternatives" (Béland 2009: 708).
Likewise, the same policy can find support from different groups, depending on how it is
presented or framed (Boräng et al. 2014). Joining the European monetary union, for example,
can be framed "as a matter of economic advantage, as an issue of national sovereignty, or as
an effort to secure international peace" (Hall 2005: 134). Actors can also weave frames into
narratives. Narratives are frame bundles that take the form of a causal stories populated
by heroes, villains and victims.[6] They make it easier for actors to redefine problems by
shifting the burden of proof, by assigning blame and responsibility, by establishing powerful
metaphors, or by tying a particular problem definition to widely accepted cultural values or
symbols (Mehta 2011, 36; Stone 1989). The narrative of Southern sinners and Northern saints
during the euro crisis, for example, powerfully shaped actors' understanding of the crisis and
their assessment of different policy solutions (Matthijs and McNamara 2015). Narratives can
thus change the constellation of interests and thus the composition of coalitions (Jones and
McBeth 2010, 345).

Against this background, the central argument advanced here is that ideational explana-
tions can illuminate the politics of digital policymaking by helping us better understand the
behavior and preferences of political actors under conditions of uncertainty. In particular,
they help us understand how actors perceive digitalization and their role in it, which then
changes how they conceive of their own interests and coalitional alignments. The uncertainty
generated by digitalization creates an opening for ideas to influence how the challenges it
poses are construed and subsequently responded to. Ideational explanations, therefore, do
not contradict institutional or structural ones but contribute to more "rounded accounts of

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[6]Narratives often include additional narrative elements such as causal stories ('plots'), evidence
('setting'), or solutions ('morals'). Their psychological appeal has evolutionary roots and there is
a large literature showing that narratives are humans' "preferred heuristic [of] making sense of the
world" (McBeth, Jones, and Shanahan 2017, 233).

agency within institutional [or structural] settings" (Bell 2012, 718). In other words, they provide a more "sophisticated understanding of exactly how institutions [or structures] affect behavior" (Hall and Taylor 1996, 950). Structures and institutions often explain much, but rarely anything by themselves. The road from institutional or structural conditions to political responses leads through some form of discursive process imbued with ideational agency. This is why we need to take ideas seriously.

1.1.2.3   Ideas in Context

But how exactly do structures and institutions figure in such an ideationally refined theory of agency? They do so in two ways. First, they shape – but do not determine – the interests of actors. Ultimately, the view that ideas shape interests argues that interests are but a special type of idea. The argument is that interests always have certain 'cognates' such as beliefs or desires. Therefore, interests cannot be independent of the ideas that inform these beliefs and desires (Blyth 2002, 29–30; Hay 2011). If an actor is said to act in her own self-interest, she has to know what this interest is and how she can advance it. Having said this, it may nonetheless be useful to make assumption about the interests of actors based on their structural or institutional position.

While actors always need to interpret the world around them and their interests in it, they often do so in relatively predictable ways, especially when the rules of the game and the roles of the players are relatively clear (e.g. during collective bargaining). After all, "their uncertainty is not total; they have some idea of the distributive implications of alternative [strategies]" (Culpepper 2008, 27). This is particularly true for the composite actors political scientists deal with, as it is often plausible to assume that their interests are what rational-choice or historical institutionalists would expect them to be. In fact, such actors often have

a legal mandate to rationally pursue their interests – conventionally conceived – while being less affected by non-rational motives or cognitive limitations (Schoeller 2016, 44).

This notwithstanding, the fundamental preferences of actors – or at least their ordering – are not fixed. The institutional and structural position of actors in the political economy certainly have a profound influence on these preferences; but they "do not determine behavior, they simply provide a context for action that helps us to understand why actors make the choices that they do" (Immergut 1998, 26). While hard-nosed structuralists and institutionalists argue that interests can be read from the structural or institutional position of actors, 'soft-nosed' ideationalists like myself argue that they depend on actors' interpretation of the world, but that these interpretations are themselves not independent of actors' institutional or structural position. We can therefore plausibly formulate provisional expectations regarding the interests actors based on their structural and institutional position (Scharpf 1997, 51–68). These we can subsequently amend depending on the uncertainty of the situation and the existence and salience of ideational conflicts.

The second way in which structures and institutions figure in ideational explanations is affecting the viability of ideas themselves. One way to think about this is that the power of an idea depends on its *political viability*, that is, on its (perceived) fit with the goals of powerful political groups that put them into action (Sikkink 1991, 26); on its *policy viability*, that is, on its ability to offer credible solutions to the policy problems at hand; and on its *administrative viability*, that is, on its degree of fit with administrative structures and state capacities (for this terminology, see Hall 1989).

Another way to think about it is to look at whether an idea seems feasible or appealing given a country's *production regime* (e.g. corporatist ideas do not make sense in the absence of corporatist institutions); how an idea interacts with a country's *policy regime* which affects the standard venue in which an idea is presented (Baumgartner and Jones 2009) as well as the relative importance of public discourse and social partner dialogue (Schmidt 2008); and

finally whether a country's *knowledge regime* is conducive to the production and dissemination of an idea, that is, whether the policymaking process is 'permeable' (Weir and Skocpol 1985, 109; Yee 1996, 92) for certain ideas or not (for this terminology, see Campbell and Pedersen 2014).

My conceptualization thus stresses the importance of ideas in refining theories of agency by elucidating how ideas can influence how actors interpret their interests and therefore choose their coalitions, or how they use ideas to further their own interests by deliberately changing how others interpret theirs. Such an ideational approach is not idealistic. Neither does it downplay the role of structural or institutional factors in shaping actors' interests and limiting or bolstering the viability of ideas; nor does it assume that ideas by themselves determine political choices. It is clear that to "become policy, ideas must link up with politics – the mobilization of consent for policy. Politics involves power. Even a good idea cannot become policy if it meets certain kinds of opposition, and a bad idea can become policy if it is able to obtain support" (Gourevitch 1989, 87–88). However, politics is not just about powering, it is also about puzzling and persuading, not just about pursuing interests, but also about interpreting an uncertain world (Heclo 1974, 305). Since ideas are the "currency for [these] discursive political processes" (Béland and Cox 2011, 10), ideational explanations can help us understand "specific policy choices and the sometimes unpredictable coalitions that support these" (Jackson and Deeg 2008, 698). For ideas matter in political economies to "the extent that economic reality is uncertain – which in real life is nearly always" (Gourevitch 1986, 63)

1.2   Methodology

Having theoretically established that and how ideas matter, and how they interact with structural and institutional factors, it is time to explain how we can measure them. Drawing

on "neopositivist approach[es] to narratives and discourse" (Shanahan et al. 2013, 455), I argue that while ideational elements are "representations of policy created by social actors, and thus have an inter-subjective nature, they can still be examined empirically using an objective epistemology" (Radaelli, Dunlop, and Fritsch 2013, 502–3). In the spirit of being 'clear enough to be wrong' (Jones and McBeth 2010), ideational explanations should ideally be operationalized in three steps: ideas should first be clearly and rigorously identified; they should then, in one way or another, be correlated with actions/actors; and finally, it should be specified how or through which mechanisms they influenced actions/actors (Berman 1998, 22; Hansen and King 2001, 242). I will talk about these steps in turn, focusing on how to tackle them methodologically.

1.2.1 Identifying Ideas

The first step is to identify specific ideas and establish that there are "real differences between the ideas held by different individuals or groups" (Berman 1998, 22). This can be done by hand, either in a highly inductive and interpretative fashion, or in a more deductive and systematic fashion – whereby each approach has different strengths and weaknesses as well as theoretical underpinnings and methodological guidelines (Corbin and Strauss 2015; Krippendorff 2004; Neuendorf 2017). However, these approaches can be usefully supplemented with computational approaches that treat 'text as data' (Benoit 2020; Evans and Aceves 2016; Gentzkow, Kelly, and Taddy 2019; Grimmer and Stewart 2013). Such approaches convert text that is meaningful to humans into a quantitative form that one can perform math on.

The 'semantic violence' (Benoit 2020) this implies notwithstanding, text-as-data approaches have proven highly useful: for summarizing text and discovering latent concepts (Blei 2012; DiMaggio, Nag, and Blei 2013; Quinn et al. 2010; Roberts, Stewart, and Airoldi 2016), for augmenting human abilities in classifying text (D'Orazio et al. 2014; Hopkins and King 2010), or as some combination of the two (Nelson 2017). In other words, text-as-data

approaches can be very powerful tools for identifying ideas in large amounts of text (for the example of frames, see Nicholls and Culpepper 2020) as well as for establishing differences in tone or content between actors. This is particularly useful since automated translation (Proksch et al. 2019; Vries, Schoonvelde, and Schumacher 2018) or multilingual methods (Chan et al. 2020) make comparative studies with texts from different language possible.

1.2.2 Correlating Ideas and Actions

The second step is to demonstrate that there is a connection between the ideas held by actors and what actors actually do, be it the interests they express, the coalitions they choose, or policies they endorse or implement. Here, text-as-data approaches can usefully be integrated into standard correlational quantitative methods such as regressions to not only see whether or not ideas and actions correlate but also whether this correlation holds if we control for non-ideational factors. There is, however, another approach that allows us to more systematically investigate how ideas influence the coalitional politics of digital policymaking. This approach is discourse network analysis, which brings together network analysis and content analysis, actor-centered and content-centered approaches to discourse analysis (Leifeld 2013, 2017, 2020).

Discourse network analysis focuses on the " 'discursive layer' of subsystem politics" (Leifeld 2013, 173), i.e. on the expression and negotiation of beliefs in discourse (Schmidt 2008). It offers a systematic way of measuring discourse coalitions and to correlate coalitional changes with changes in the prevalence of ideas. Discourse coalitions can be understood as "actors who share a social construct" and "try to impose their views of reality on others, sometimes through debate and persuasion, but also through manipulation and the exercise of power" (Hajer 1993, 45). They can serve as proxies for the political coalitions at the heart of the advocacy coalition framework, which are defined as groups of actors who "coordinate their actions in a non-trivial manner to influence a policy subsystem" (Jenkins-Smith et al.

2017, 195). The "principal glue holding [such] a coalition together" (Sabatier 1998, 105) is agreement over policy core beliefs, that is, beliefs about "the seriousness of the problem, its basic causes, and preferred solutions for addressing it (called policy core policy preferences)" (Jenkins-Smith et al. 2017, 191). Discourse network analysis allows us to operationalize such coalitions, and to directly analyze how ideas influence the composition of coalitions, and whether the size and composition of coalitions explains political outcomes.

1.2.3   Specifying Mechanisms

The last step is to specify the mechanisms through which ideas influence policy decisions in a way that shows that ideas were essential for this decision. This is best done using process tracing, which is about the "examination of intermediate steps in a process to make inferences about (. . .) how that process took place and whether and how it generated the outcome of interest" (Bennett and Checkel 2015, 6); about the "unpacking of causal mechanisms into their constituent parts, which are then traced using in-depth case studies" (Beach and Pedersen 2016, 302). Process tracing thus forces researchers to pay close attention to how ideas travel through the political process; to document what actually motivated actors, how they perceived a problem, and why they used certain frames instead of others; and to demonstrate how ideational explanations hold their own – or not – against alternative explanation. Process tracing is therefore particularly well suited for tracing ideational effects (Jacobs 2015).

2 The Politics of Platform Capitalism. A Case Study on the Regulation of Uber in New York[7]

Abstract: Platform companies like Uber not only disrupt existing markets but also contest existing regulatory regimes. This raises the question of how, when, and why such companies are regulated. This paper develops, tests and defends a theoretical framework that explains the politics of regulatory response to the rise of platform capitalism. Using discourse network analysis and a case study on the regulation of Uber in New York, it shows that the success or failure of regulations depends on the ability of actors to mobilize broad coalition; that narratives affect the composition of these coalitions; and that platform companies have both unique political strengths and vulnerabilities. The paper makes substantive contributions to our understanding of the politics of platform capitalism, and it makes theoretical contributions to the literatures on coalitional politics, ideational institutionalism, and business power.

2.1 Introduction

Few companies have caused as many political controversies and regulatory headaches in recent years as the ride-hailing platform Uber. Perhaps more than any other company, Uber has come to epitomize both the promises and perils of platform capitalism. Uber portrays itself – and is widely praised – as a disruptor of cozy industries and as a boon to workers and consumers alike. Its opponents, however, argue that the company's lofty rhetoric of

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[7]The published version of this paper can be found in Seidl (2020).

innovation and entrepreneurship does not chime with the more mundane realities of tight labor control, tax evasion and urban congestion.

Both of these 'two narratives of platform capitalism' (Pasquale 2016) have a point. But they miss the broader point that the nature of platform capitalism is not preordained by technology itself but depends on how societies decide to regulate it. Technology, as one of its foremost historians put it, "might be a prime element in many public issues [but] nontechnical factors take precedence in technology-policy decisions" (Kranzberg 1986, 550). Richard Hyman echoes this view when he writes that "far from being an unavoidable consequence of technological progress, the nature of work always remains a matter of social choice. It is not a result of an algorithm; it is a collection of decisions by corporations and policymakers" (Hyman 2018).

But while undoubtedly correct, these arguments beg the question of how and why these 'decisions' are made. If platform companies resist and challenge existing regulations, which they often do, we need to understand the politics of regulatory response: when and how are regulations updated (Kjaer and Vetterlein 2018)? In this paper, I argue – and demonstrate empirically – that the way in which societies 'decide' to regulate platform capitalism depends on the size and diversity of the coalitions that actors are able to mobilize in support of or in opposition to specific regulations; that narratives shape the ways in which these regulatory battles are framed and fought, and therefore affect the composition of coalitions; and that platform companies both benefit from their close alliance with consumers – which they can mobilize as corporate grass-roots activists – and suffer from distinct vulnerabilities as a result of their high public visibility.

My findings thus suggest that regulatory responses require political mobilization when regulatory agencies struggle to rein in platform companies which often combine aggressive disregard for existing rules and active mobilization of popular support. My findings further suggest, the political coalitions that underpin these regulatory responses are not set in stone

but are amenable to ideational manipulation. This is not to deny that structural and institutional factors strongly affect actors' interests and thus shape the basic composition of coalitions. But while the interests of some actors may be relatively clear, interests rarely "arise unambiguously from the world" (Hall 2016, 40). Rather, actors interpret their interests – and therefore choose their coalitional alignments – based on how they perceive the world around them. The more uncertain they are about the world around them, the less clear they are about their interests. Hence, what actors make of a novel phenomenon like Uber – whether they support or oppose it – depends on how they perceive it.

Companies have therefore every reason to actively manage and manipulate the discursive 'framing contests' (Boin, Hart, and McConnell 2009) in which these perceptions are shaped (Bach and Blake 2016). Narratives, understood as bundles of frames that tell a story of victims, villains, and heroes, are powerful tools in these framing contests. They can bring actors to change their perceptions and – consequently – to reevaluate their interests, especially if they make sense in light of dominant beliefs and values (McBeth, Jones, and Shanahan 2017). By moderating the structural and institutional determinants of coalition formation, narratives thus "play a powerful role in shaping regulation" (Prassl 2018, 8).

However, the ideational playing field on which the politics of regulatory response takes place is not level but shaped by the simultaneous power and vulnerability of platform companies (Culpepper and Thelen 2019). On the one hand, their popularity with consumers and their ability to directly communicate with them allows platform companies to more easily mobilize consumers in opposition to regulations that threaten them. On the other hand, their enormous public visibility makes it easier for critics to draw attention to the negative consequences of their business models, and thus to mobilize actors against them. With great power comes great vulnerability.

This paper stands in the tradition of "analytic eclecticism", that is, it tries to "complement, engage, and selectively utilize theoretical constructs [from] contending research

traditions to build complex arguments that bear on substantive problems of interest to both scholars and practitioners" (Sil and Katzenstein 2010, 411). In this spirit, I draw on and combine elements from the literatures on coalitional politics, ideational institutionalism, and business power to make sense of the politics of platform capitalism. I argue that a framework that looks at the interplay of coalition formation, narrative framing, and platform power is better able to explain the politics of platform capitalism than alternative approaches. I empirically test this claim in a case study on the regulation of Uber in New York and defend my argument against alternative explanations. I use discourse network analysis (Leifeld 2013) to analyze the structure and structural change of coalitions as well as the frames different actors employ. In addition, I use sentiment analysis and qualitative evidence to corroborate my findings.

Why look at New York? For one thing, the regulatory battles in New York were particularly fierce, for the simple reason that a successful attempt at regulation in New York could set a precedent for other cities. As Uber's founder Travis Kalanick himself put it: "If it happens in New York, the whole world is going to see it. Which means it could happen anywhere. We can't let that happen" (Tusk 2018, 9–10). Equally importantly, the regulation of Uber in New York provides us with a particularly interesting empirical puzzle. New York's Mayor Bill de Blasio tried to put a cap on Uber twice, once in 2015 and then again in 2018. While the first attempt failed spectacularly, the second was successful. How can we explain these divergent outcomes given that both regulations were very similar in content, were proposed by the same mayor, in the same city, and only three years apart from each other?

And why look at Uber? Because Uber has come to symbolize the rise of platform capitalism. Uber spearheaded a new way of organizing work: the gig economy (Prassl 2018; Rosenblat 2018); and it "epitomizes a new form of the firm itself": the platform company (Rahman and Thelen 2019, 2). Moreover, it has become a model for a host of Uber-for-X

copycats which not only try to emulate Uber's idea of using digital technologies to tackle issues in the 'real world', but also share its disdain for existing regulations and its aggressive style of doing business (Bradshaw and Bond 2019). Last but not least, Uber epitomizes broader trends of workplace 'fissurization' (Weil 2014) and casualization (de Stefano 2016). The politics of Uber is thus also a harbinger of political debates – over the future of work and the digitalization of the physical world – yet to come. As James Farrar, Uber driver and co-claimant in a court case against the company, warns: "if Uber are successful in having this business model (. . .), then I can guarantee you on every high street, in retail, fast food, any industry you like, the same thing will go on" (Davies 2017).

This paper makes two main contributions. First, it provides an empirically rich answer to the puzzle of why New York first failed and then succeeded in regulating Uber. In doing so, it also develops and tests a theoretical framework that helps us understand the politics of platform capitalism more generally, that is, how regulations of platform companies are "produced, reproduced, contested and changed" (Kjaer and Vetterlein 2018, 498). This increasingly matters as platform companies make their way into more and more areas of contemporary societies and economies. Second, it further develops the theoretical constructs on which it draws, brings them into dialogue with each other, and empirically applies them in a way that aligns ontology and methodology (Hall 2003). It thus contributes, both empirically and theoretically, to our understanding of coalitional politics, ideas in politics, and business power.

The paper proceeds as follows: I will first discuss the rise and politico-economic nature of platform companies. I will then outline my theoretical framework, specifying the relationship between ideas and interests, and, more specifically, between narratives and coalition formation. After presenting my methodological approach, I will discuss my results and defend them against alternative explanations. I conclude by briefly discussing the implications (and limitations) of my findings.

2.2   The Rise and Politics of Platform Capitalism

Platforms are digital infrastructures that enable novel interactions between two or more economic actors (Cusumano, Gawer, and Yoffie 2019, 13; Srnicek 2017, 43). Their value derives not from the things they produce but from their ability to benefit from the interactions they both facilitate and organize. Some platforms, like Uber, specialize in intermediating the interaction between buyers and sellers of labor (Prassl 2018, 5). By making it easier for people to find, trust, and pay each other, such platforms reduce transaction costs and improve economic coordination, often disrupting existing industries in the process. While this can represent genuine innovation, it also creates a host of regulatory problems (de Stefano 2016; Prassl 2018) that require platform companies to actively managed their non-market environment (Bach and Blake 2016).

In fact, practices of regulatory arbitrage and entrepreneurship have become central to the business model of platform companies. *Regulatory arbitrage* means taking "advantage of a gap between the economic substance of a transaction and its regulatory treatment" (Fleischer 2010, 230). Uber engages in two forms of regulatory arbitrage. First, it brands itself as a technology and not as a transportation company to avoid taxi regulations. Second, it (mis-)classifies its workers as independent contractors to evade employment law obligations (Prassl 2018, 21). *Regulatory entrepreneurship*, by contrast, refers to attempts to actively change the law, as opposed to 'merely' exploiting existing legal gray areas. Platform companies like Uber "are built around and based upon a plan to change the law (...). For these companies, political activity has become a critical part of business strategy" (Barry and Pollman 2017, 386). In addition to shaping their regulatory environment, platform companies also strategically manage public perceptions by (re-)framing the debates about them (Bach and Blake 2016; Uzunca, Rigtering, and Ozcan 2018). They use, for example, the "myth of technological exceptionalism" to exempt themselves from regulations (Rosenblat 2018, 34).

And they have cultivated an "art of doublespeak" (Rosenblat 2018, 177) – like rebranding work as 'rides', 'hustles', 'lifts', and 'gigs' – to manipulate regulators and the public (Prassl 2018, 31–50).

Accordingly, the politics of platform capitalism often follows a pattern of 'disruptive regulation' (Collier, Dubal, and Carter 2018): relying on their reputation as do-gooders and innovators (perception management), platform companies 'barge into' a market by ignoring if not the letter then the spirit of the law (regulatory arbitrage), and then 'buy, bully and bamboozle' their way to a favorable regulatory response (regulatory entrepreneurship) (Borkholder et al. 2018). These tactics may not always be successful, but there is no doubt that contested existing regulatory regimes is as much part of the business model of most platform companies as disrupting existing markets.

With the sites of contestation ranging from the court of law to the court of public opinion, from town halls to town squares (Serafin 2019), platform companies often rely on the full arsenal of their business power. They use the threat of exiting a market to overturn proposed regulations (structural power) (Collier, Dubal, and Carter 2018, 925). They assemble high-ranking lobbyists and enlist the support of NGOs to exert direct pressure on regulators (instrumental power) (Collier, Dubal, and Carter 2018, 927). And they benefit from the appreciation, even admiration, that many consumers (as well as the public at large) have for their services (platform power) (Culpepper and Thelen 2019, 3).

Platform power refers to the ability of platform companies to directly mobilize their consumers as corporate grass-roots activists. For example, when scooters appeared all over the streets of Santa Monica, the city filled a criminal complaint against the scooter company Bird. Bird responded with a button in its app that encouraged its consumer to send emails to local lawmakers. The city yielded to the flood of emails and authorized Bird's operation after the company agreed to a small settlement (Manjoo 2018). Platform power thus allows platform companies to reduce the transaction costs of collective action by reaching many

individuals with zero marginal cost, and by nudging them towards 'civic' action with ease-to-use 'protest' options (Tzur 2017, 16–17).

This ability to weaponize consumers as lobbyists, however, comes at the price of high public visibility. This visibility – the flipside of popularity – often amplifies the voice of critics who want to expose the business models of platform companies as exploitative and harmful (Culpepper and Thelen 2019). For example, after workers complained about the tipping policy of the grocery delivery platform Instacart, which paid its contract workers less the more they were tipped, national newspapers and unions quickly picked up on the story. The event sparked a "national media sensation" (Roose 2019) and forced Instacart to change its policy in the space of only two weeks.

2.3   Ideas in Politics

The last section was meant to demonstrate the inherently political nature of the business model of platform companies. This section outlines how understanding the general interplay of ideas and interests as well as the more specific dynamics of narrative framing and coalition formation help us understand when platform companies succeed and when they fail in the essential task of managing their non-market environment.

2.3.1   What are ideational explanations and what are they good for?

In *How to Map Arguments in Political Science*, Craig Parsons (2007) distinguishes between structural, institutional, ideational, and psychological logics of explanation, based on the element that does the causal work. Like different LEGO bricks, these four logics of explanation are building blocks that can – and should – be combined when crafting complex explanations. They invoke different but not mutually exclusive arguments as to why actors do what they do. For structuralists in Parsons' sense (e.g. Marxists), actors' interests are the result of

their position in a given material structure (e.g. the economy). For institutionalists, actors' interests are the result of their position in an institutional setting (e.g. a political system). For ideational scholars, by contrast, actors' interest are the result of how they interpret the world around them (Parsons 2007, 96).

Since the world does not 'come with an instruction sheet' (Blyth 2003), actors need to actively interpret it and their situation in it. They do so by drawing on ideational elements such as frames, identities, metaphors, or narratives.[8] Ideational elements help actors to make sense of the uncertainty that surrounds them. Frames, for example, reduce uncertainty by promoting "a particular problem definition, causal interpretation, moral evaluation, [or solution]" (Entman 1993, 52). This uncertainty, however, is not total" (Culpepper 2008, 27), and we can reasonable impute certain interests to actors based on their structural or institutional position (Scharpf 1997, 51–68).

But the interests of actors remain – to the extent that the world is uncertain – underdetermined by their institutional and structural position (Blyth 2003). The more uncertain the world, the more actors – even rational ones – have to rely on ideational elements to make sense of it (Beckert 1996). For example, states may draw on ideas articulated and circulated by epistemic communities of experts to "identify their interests" (Haas 1992, 2) on issues marked by high levels of uncertainty (e.g. ozone depletion).

Importantly, however, actors are not only frame-takers but also frame-makers. They routinely engage in ideational politics to change other actors' understanding of how the world works (worldview politics), or their understanding of themselves (identity politics)

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[8]In psychological explanations, by contrast, actors 'interpret' the world not through man-made ideational elements but through innate psychological biases (such as those theorized by prospect theory). For the sake of simplicity, I will not theorize psychological explanations here. There is, however, is a large psychological literature that stresses the importance of ideational elements like narratives or metaphors for the ways in which humans understand themselves and the world around them (Lakoff and Johnson 2003; McBeth, Jones, and Shanahan 2017; Shiller 2019).

(Mukand and Rodrik 2018). Actors can (re-)frame issues to convince other actors that "it is in their interest to support or oppose concrete policy alternatives" (Béland 2009, 708); and they can "deliberately portray [problems] in ways calculated to gain support for their side" (Stone 1989, 282). By reframing the debates around a regulation, for example, companies – as well as their opponents – can thus shape "which actors care about [this regulation and] how those actors perceive their interests" (Bach and Blake 2016, 67).

Ideational explanations can thus refine our conception of actors' interests under conditions of uncertainty. In particular, they illuminate how actors interpret their interests, and, conversely, how actors advance their own interests by influencing how other actors interpret theirs. Ideational explanations are therefore not opposed to institutional or structural explanations, but contribute to more "rounded accounts of agency *within* institutional [or structural] settings" (Bell 2012, 718). In fact, institutional and structural explanations complement ideational explanations by providing useful expectations regarding actors' interests, and by specifying the conditions under which certain ideas will be more or less viable (Hall 1989). An idea, for example, will be more viable the better it fits the interests of powerful actors (Hansen and King 2001, 256; Sikkink 1991, 26). What is more, an idea will be more convincing if it is in accordance with or makes sense in light of other ideas, especially culturally dominant ones such as widely held beliefs or hegemonic values (Sikkink 1991, 26; Weir 1992). Figure 1 summarizes this conceptualization.

2.3.2   Narratives as Coalition Magnets

One of the ways in which ideas can become, in the words of Max Weber, 'effective forces in history' is in the form of narratives.[9] Narratives are "frame bundles" (Leifeld and Haunss

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[9]While narratives are often used in post-structuralist scholarship, this paper follows a "neopositivist approach to narratives and discourse" ((Shanahan et al. 2013, 455)), arguing that although "narratives are representations of policy created by social actors, and thus have an inter-subjective

IDEAS SHAPE THE INTERESTS OF ACTORS

	STRUCTURES	
IDEAS	INSTITUTIONS	INTERESTS
	OTHER IDEAS	

affect viability of

shape but do not determine

ACTORS USE IDEAS TO ADVANCE THEIR INTERESTS
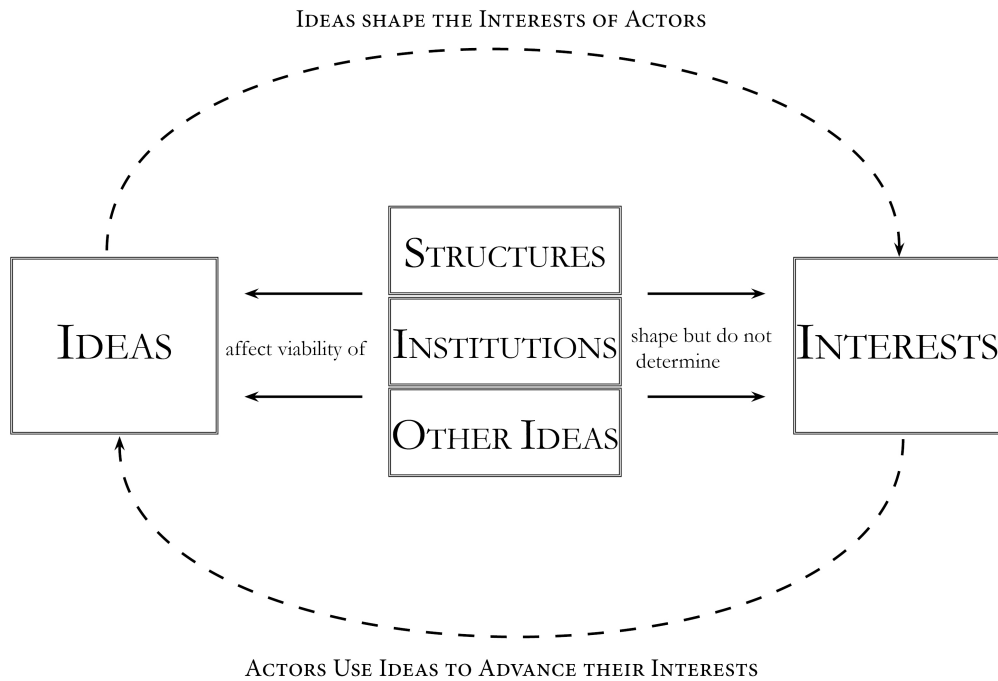
Figure 1: The conceptual relationship between ideas and interests

2012, 384) woven together along an overarching story arc and populated by villains, victims, and heroes (McBeth, Jones, and Shanahan 2017; Shanahan et al. 2013). Narratives can be a powerful tool in the hands of 'narrative entrepreneurs' that want to, contain, or change the composition of coalitions (McBeth, Jones, and Shanahan 2017, 244) – not least because narratives are many actors' "preferred heuristic [for] making sense of the world" (McBeth, Jones, and Shanahan 2017, 233).

More specifically, narratives can serve as 'coalition magnets' around which actors can "frame interests, mobilize supporters and build coalitions" (Béland and Cox 2016, 429). Narratives will be more successful as coalition magnets if they are ambiguous and attractive

nature, they can still be examined empirically using an objective epistemology" (Radaelli, Dunlop, and Fritsch 2013, 502–3; Shiller 2019).

enough to appeal to a variety of actors (Béland and Cox 2016, 432; Parsons 2016, 456). Previous scholarship has emphasized the coalitional underpinnings of institutional stability and change (Hall 2016). And it has shown that when issue salience and uncertainty are high, diverse coalitions of 'strange bedfellows' will be particularly successful (Junk 2019; Phinney 2017). Therefore, one of the main ways in which narratives can "exert influence 'of their own but not by themselves'" (Parsons 2016, 451) is by affecting the composition of coalitions, and, more specifically, by uniting diverse groups of actors.

2.4   Discourse Coalitions and Discourse Network Analysis

How can we operationalize coalitions and narratives? According to the advocacy coalition framework, the "principal glue holding a coalition together" (Sabatier 1998, 105) is agreement over policy core beliefs – understood as beliefs about "the seriousness of the problem, its basic causes, and preferred solutions for addressing it" (Jenkins-Smith et al. 2017, 191). If we assume that these beliefs are expressed, contested and negotiated discursively (Boin, Hart, and McConnell 2009; Schmidt 2008), we can operationalize political coalitions as discourse coalitions.

Discourse coalition are made up of "actors who share a social construct [and] try to impose their views of reality on others, sometimes through debate and persuasion, but also through manipulation and the exercise of power" (Hajer 1993, 45). While not all policy beliefs are expressed in discourse, discourse coalitions are good proxies for the 'underlying' political coalitions, especially under conditions of high salience (higher likelihood that actors will publicly express their interests) and high uncertainty (higher likelihood that actors will participate in discursive 'framing contests' in order to win allies for their preferred problem definitions or policy solutions) (Boin, Hart, and McConnell 2009). Discourse network analysis (DNA) offers the methodological tools to study the "discursive layer of subsystem politics

(Leifeld 2013, 173). DNA make it possible to simultaneously identify policy beliefs and the actors that express them (Leifeld and Haunss 2012, 389). By combining content and network analysis, DNA allows us to analyze the structure and structural change of discourse coalitions while also keeping an eye on the frames that different actors use. It is thus well-suited to a theoretical framework emphasizing the interplay of both.

How does DNA work in practice? In a first step, 151 newspaper articles on the regulation of Uber in New York were collected and coded.[10] The coding procedure took claims (and not articles) as the unit of analysis (Koopmans and Statham 2010). A claim is a public speech act in which an actor expresses a position, frames a problem or demands a solution. A claim, in other words, is the articulation of a policy belief. Claims were coded if they expressed an opinion on the regulation Uber in New York (e.g., regulation would hurt people living in the outer boroughs), if they have an identifiable author (e.g., Uber), and if they clearly expressed agreement or disagreement with said belief. This coding procedure resulted in 914 statements by 97 actors on 47 policy concepts.[11]

In a second step, networks and policy beliefs were visualized and analyzed. This study focuses on actor congruence networks. In such networks, actors are the nods, edges represent common policy beliefs, and the edge weight represents the number of common policy beliefs. The idea is that if actors agree (or jointly disagree) on one or several policy beliefs, they are likely to be part of a (discourse) coalition (Hajer 1993; Leifeld 2013, 174). Such clusters of actors can then be identified both visually and by community detection algorithms. At the

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[10]For more details, see appendix A.1.

[11]The coding scheme was developed in an iterative manner, that is, codes were first developed inductively and gradually refined in multiple rounds of coding. After the coding scheme was complete, all previously coded articles were coded again in a deductive manner (Leifeld 2013, 177–78). Policy beliefs were kept at a relatively low level of abstraction, that is, relatively close to what actors actually said. This minimized interpretive leeway and made sure that actors were only connected if they really agreed over a policy belief (for more details, see appendix A.2).

same time, the policy beliefs that different actors express can be analyzed and categorized, and one can check whether actors identify victims, heroes, and villains, and integrate policy beliefs in overarching narratives (Shanahan et al. 2013).

2.5   The Politics of Uber in New York

The regulation of Uber in New York presents a puzzle. Bill de Blasio, who became mayor of New York City in September 2013, tried to put a cap on Uber and other ride-hailing platforms twice, once in 2015 and then again in 2018. Both regulations were very similar in content, and both were vehemently opposed by Uber. However, while the first regulation failed, the second one was successful. Previous analysis of the politics of Uber have focused on differences in institutional legacies and constellations of interest groups (Thelen 2018; Tzur 2017). But given the absence of institutional differences and the similarity of involved interest groups, how do we explain the different fate of the two regulations?

The idea of a cap on Uber first appeared on the political stage in 2015, after Uber had experienced four years of rapid growth, the city a congestion crisis, and taxi owners a precipitous decline of the value of their medallions. New York City's responsible regulatory agency, the Transport and Limousine Commission (TLC), had subjected Uber to vehicle inspections, background checks and similar regulations before.[12] But in contrast to such "*safety regulations*", "*economic regulations*" that concern the supply of vehicles are much more controversial (Gilbert et al. 2002).

A cap is a quintessential economic regulation with obvious distributional consequences. It stops the TLC from issuing new for-hire vehicle licenses, which Uber drivers need in order

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[12]Uber had also caused a moral outrage when it used surge pricing during hurricane Sandy, which many viewed as price gouging. Eventually, Uber had to agree to limit surge pricing during emergencies, which is an interesting example for the persistence of moral economies in modern societies (Götz 2015).

to operate, and Uber needs in order to grow. The idea of a cap was therefore highly politicized from the outset and thus required a political and not just a regulatory decision. Accordingly, it was de Blasio's government that introduced the cap as part of a wider agenda to "advance the city's vital policy goals for passengers, drivers and the public" (Flegenheimer 2015), thus linking it to broader notions of the public good. In particular, de Blasio initially sold the cap as a way to mitigate the city's looming congestion crisis. The TLC, meanwhile, was careful to portray itself as "independent" from political influences (Flegenheimer and Fitzsimmons 2015). It only publicly positioned itself after the cap was proposed, even though it also viewed the cap or a similar regulation as "inevitable" (Gonen, Fredericks, and Fenton 2015).

For Uber, the cap was bad news. By undercutting the 'cross-side network effects' at the heart of its business model (Cusumano, Gawer, and Yoffie 2019, 17), the cap would hit Uber where it hurts. Simply put, Uber attracts more drivers the more consumer it has, and it attracts more consumers the more drivers it has. Since rapid and continuous growth are crucial to kickstart and sustain this positive feedback loop, we can think of Uber's opposition to a cap as a core, structurally derived interest. This economic interest in rapid growth was further fueled by cheap venture capital and supercharged by a growth-at-all-costs mindset deeply anchored in Uber's corporate culture (Isaac 2019). Thus, when de Blasio proposed a cap on the growth of for-hire vehicles, Uber's opposition was vehement. Not only is New York one of Uber's biggest markets. A (un-)successful regulation in New York would also have signaling effects across the country (Tusk 2018, 106). But Uber had a problem. De Blasio's Democrats had a 48-3 majority in the City Council, and Uber knew that mayors "generally don't lose City council votes" (Pillifant 2015). Moreover, New York had a tightly regulated taxi market with a well-organized incumbent, which made it even harder for Uber to stop the bill (Tzur 2017). The question Uber had to ask itself was why "twenty-six members of the council [would] turn on the mayor [and the well-entrenched taxi industry] to help a startup?" (Tusk 2018, 107)? Uber needed to give them a reason. And it hired Bradley

Tusk, a colorful consultant whose mission is to save startups from "death by regulators" (Tusk 2018, 13), to give them one. Tusk's job was to make "the political consequences of voting against Uber even more painful than voting against the mayor" (Tusk 2018, 107). Doing so, Tusk reasoned, would require an inside and an outside game. On the one hand, Uber hired an army of lobbyists to put direct pressure on council members. On the other hand, Uber generated "massive public opposition to the bill" through everything from TV and radio ads to clergy, community and driver support (Tusk 2018, 107). This required not only a deep war chest, but also a powerful narrative that could mobilize such a coalition of 'strange bedfellows' in opposition to the proposed regulation. Uber knew that to function as a coalition magnet, such a narrative had to appeal to many New Yorkers, including de Blasio's progressive base. And the best way to develop such a narrative was to attack de Blasio from where he would least expect it: from his left (Tusk 2018, 104). Uber thus portrayed itself as a boon to minorities that were traditionally discriminated against by taxis as well as for people living in the outer boroughs that were traditionally ignored by them. Uber also argued that it provided much needed jobs to working-class and minority New Yorkers. Putting a cap on the growth of Uber would thus hurt the very groups that de Blasio claimed to protect. Knowing full well about de Blasio's progressive credentials, Uber gleefully called the cap "about the least progressive thing [one] can imagine doing" (Dawsey 2015a). At the same time, Uber cast itself as an innovative company whose growth was stifled by a corrupt coalition of entrenched interests. Uber repeatedly questioned de Blasio's motives. It claimed that de Blasio was in bed with the taxi industry, and that the cap was his way of thanking them for their campaign contributions. "When something in government does not make sense", Uber insinuated, "usually there is another motive" (Dawsey 2015a). Uber ran a series of television ads in the run-up to the vote that further brought this powerful narrative of exclusion and collusion to life. One depicts a nurse trying to get to the night shift, another one a black father with his baby trying to get to the hospital. The message is clear. Taxis

have always ignored people like them, while Uber is there for them. But if the city were to put a cap on Uber, things would go back to how they used to be (the Uber cars that are meant to pick these people up literally disappear in the clip). Another ad shows testimonies from drivers, most of the immigrants, whose lives have changed for the better thanks to Uber. A cap, they let the viewer know, would be good for 'millionaire medallion owners' but disastrous for them. Both ads accuse de Blasio of 'pushing the agenda of his big taxi donors' and ask him not to 'strand' New Yorkers by putting "taxi donors ahead of jobs'. Uber's narrative has clear villains (the fat cats of the taxi industry and their partner in crime, Bill de Blasio), victims (minority New Yorkers and people living in the outer boroughs who are in need of both rides and jobs), and a shiny hero who finally ends the victims' decade-long plight (Uber itself). This narrative proved very successful. In particular, it drove a wedge between de Blasio's Democratic base. Brooklyn Borough president Eric Adams, a black Democrat, sided with Uber, knowing first-hand that yellow cabs were often "just passing by African-Americans, even in business attire" (Rivoli, Durkin, and Fermino 2015). This sentiment was shared by black activists and resonated with many in the City Council. Most likely, they would have not turned against the mayor had Uber simply mobilized its amorphous pool of users with a convenience story.

New York State Comptroller Scott Stringer and Governor Andrew Cuomo, who already had a strained relationship with de Blasio, also came out on the side of Uber, arguing that the government should not be in the business of stifling innovation and growth. In addition, Uber's narrative also appealed to many residents and even celebrities like Ashton Kutcher or Kate Upton, who attacked de Blasio on social media. Uber drivers themselves were also on Uber's side, not least because the working conditions of drivers were simply not part of the debate.

Figure 2 depicts the frames most commonly used during the discourse.[13] It confirms that Uber's collusion-exclusion-innovation narrative went almost unchallenged, and was, especially in the case of exclusion and innovation, also widely articulated by actors other than Uber itself. By and large, de Blasio was unable to counter the impression that he was colluding with the taxi industry at the expense of his own base. A poll conducted shortly after the vote showed that 65 per cent of New Yorkers thought that the cap was payback for campaign donations from the taxi industry (18 per cent did not think so) (Quinnipiac University 2015). Conversely, de Blasio main justification for the cap – that it would reduce congestion – stood on shaky empirical ground and was only shared by 34 percent of New Yorkers (whereas 53 per cent disagreed) (Quinnipiac University 2015).
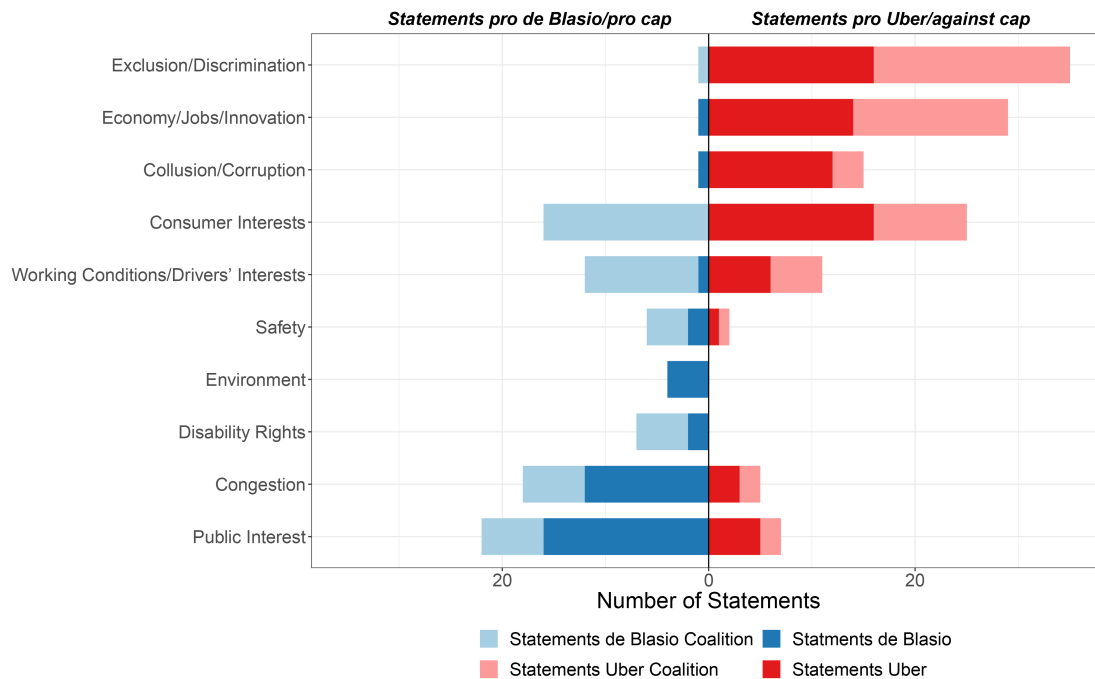
Figure 2: Most important frames 2014-2015 (aggregated from individual policy beliefs)

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[13]The frames in Figure 2 were aggregated from the less abstract policy beliefs underlying the DNA. See appendix A.2 for more details as well as a complete list of policy beliefs.

When he realized that his congestion frame did not catch on, de Blasio started to argue that the government, not Uber, was acting in the public interest, and that New Yorkers should not take lessons on inequality from a 'Walmart-on-wheels'. However, this public-interest frame lacked credibility and was too unspecific to mobilize particular actors. Other, more promising issues like disability rights remained peripheral and were only pushed by de Blasio's camp when they realized that they were losing the battle, i.e. when it was too late. The "changing messages allowed Uber to advance its contention that City Hall had no real reason for banning them. (...) 'By the end, it was like, why the hell are we doing this', said a liberal City Council member and ally of the mayor. 'The messaging was all over the place'" (Dawsey 2015b).

Likewise, de Blasio mostly failed to make the cap about consumer and worker's rights, even though many actors cared about issues like Uber's controversial surge-pricing and the wages and working conditions of drivers. It was not that Uber was without opponents. In fact, Uber has the highest degree centrality in the actor conflict network, meaning that more actors disagreed with Uber than with any other actor in the network.[14] Even more than Uber's successful mobilization strategy, it is this failure on de Blasio's side to mobilize Uber's opponents that explains the failed regulation.

In addition to being a successful narrative entrepreneur, Uber also heavily used its platform power to mobilize its consumers more directly. Days before the election, the company introduced the 'de Blasio version' of its app, depicting how Uber would look like if the bill was successful, that is, without any cars around and wait times multiplied by ten. This came with an invitation (including a link) to 'Take Action' and 'Email the Mayor and City council' (Rosenblat 2018, 182). Priming New Yorkers on their identity as consumers, Uber managed

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[14]For more details, see appendix A.3.

to drown de Blasio's camp in a flood of angry emails, putting additional pressure on hesitant Democratic lawmakers (Culpepper and Thelen 2019; Mukand and Rodrik 2018).

The story presented here is borne out by the actor congruence network for the period before the first regulation. Figure 3 depicts actors (the nodes) and their agreements over policy beliefs (the edges between them). Actors that share many policy beliefs cluster together and can be understood to form a (discourse) coalition. While Figure 3 shows de Blasio's City Government surrounded by two support coalitions, these coalitions mainly comprise the taxi industry. This made it difficult for de Blasio to dispel accusations of collusion. Uber, on the other hand, is not only supported by more and a greater variety of actors. It also managed to bring central parts of the Democratic party into its coalition (the Borough Presidents and the Governor) and to divide the allegiance of others (the City Council and its Transpiration Committee). These visual observations are corroborated by various community detection algorithms.[15]

The observed coalitional patterns clearly explain the political fate of the cap. In a "flat-out capitulation" (Rubinstein and Nahmias 2015), De Blasio quietly dropped the bill in exchange for some token concessions by Uber. While the cap might have had the votes necessary to pass, the political and public relations fallout for de Blasio was growing bigger every day as a result of the *combined* strength of Uber's inside and outside game. Had Uber only played one game, the cap might still have passed. But given both the direct pressure as well as the bright public spotlight and unfavorable publicity, many Democrats withdrew their support for the cap. In the end, de Blasio's camp just wanted to put an end to Uber's campaign, which Uber had promised to continue in case of a successful vote, even if this meant dropping the cap. Eventually, in the words of the New York Taxi Workers Alliance's Bhairavi Desai, de Blasio "just basically caved" (Flegenheimer 2015).

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[15]For more details, see appendix A.4.
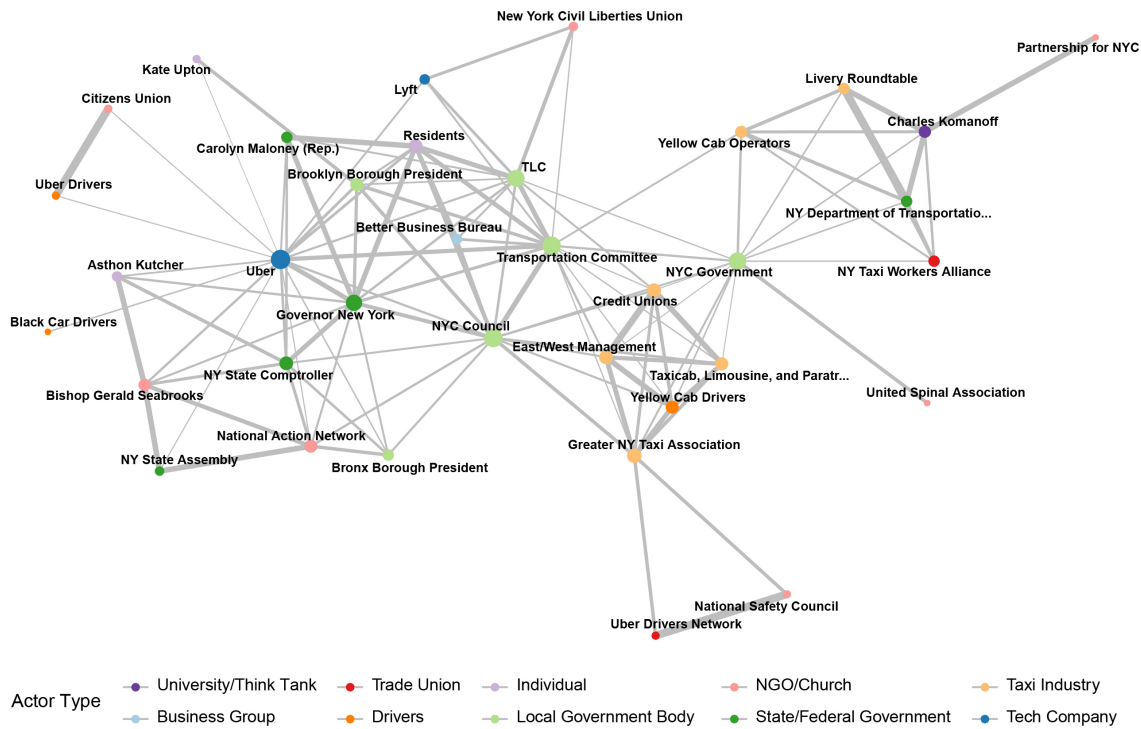
Figure 3: Normalized actor congruence network (2014-2015). Weekly duplicates were removed. Average activity normalization was applied. The size of the nodes represent degree centrality.

The cap was off the table, and any further talk about it was made dependent on the outcome of a traffic study, which the city was to conduct. When the study was finally released in January 2016, it found no evidence that Uber was responsible for the increase in congestion. Instead, population growth, more tourists, and an increase in deliveries and street construction were identified as the culprits. While the cap was arguably already dead, the study was "the funeral notice" (Dawsey and Tangel 2016). It was only in the summer of 2018 that the idea of a cap was brought back on the table. Why then? Tellingly, de Blasio resurrected the bill in the immediate aftermath of a number of highly publicized driver suicides. The suicides had drawn attention to the plight of taxi drivers in particular, many of which faced hardships after their earnings potential and the value of their medallions had plummeted as a result of the competition by Uber. In addition, congestion had continued to

be a major policy problem. Thus, with the public spotlight on the personal and public costs of for-hire vehicles, de Blasio could exploit Uber's political vulnerabilities and sound the bell for the second round of New York's 'car wars'.

It is important to note, however, that neither the situation of taxi drivers nor the issue of congestion were really news. The value of taxi medallions had dropped long before 2015, and congestion had already been the main issue in 2015. Moreover, it was far from clear whether a cap on Uber would be the right solution to New York's traffic problems. After all, the city's own study suggested otherwise. Even more importantly, with congestion pricing there was a tried and tested alternative with many supporters. And Uber itself was of course still a very skill- and resourceful opponent – if anything, it had become more experienced. How, then did de Blasio manage to beat Uber in a fight that he had lost just three years ago?

The most important difference to 2015, I argue, was that de Blasio had a powerful counternarrative that allowed him to turn Uber's exclusion narrative on its head (or feet). Figure 4 clearly shows that de Blasio now had the coalitional upper hand, and not only more but also a variety of supporters (again, coalitions can be understood as clusters of actors since these clusters represent shared policy beliefs). Uber used tricks from the same playbook as in the first regulatory battle, pushing the exclusion-discrimination-frame. And it was again successful in recruiting various civil rights groups to its cause. Uber was also part of a coalition that advocated for congestion pricing as a better way to reduce the city's congestion problems. Thus, while Uber might have lost some of its earlier charm (I come back to this in the next section), it actually retained many of its allies and even won new ones.
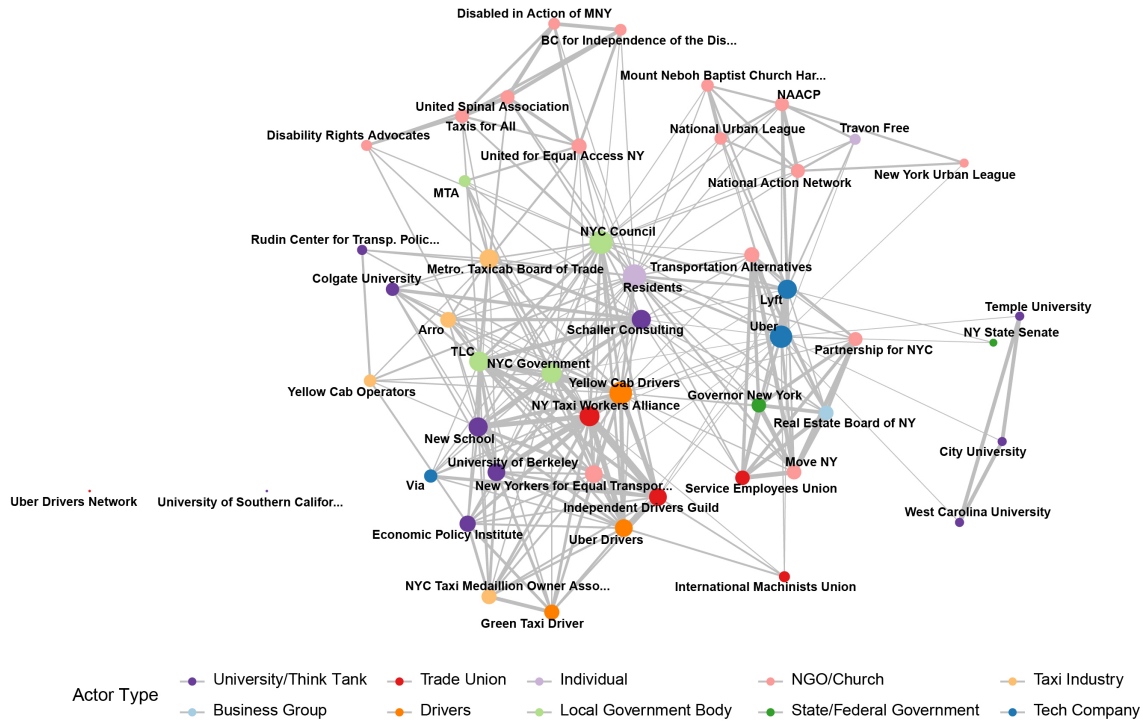
Figure 4: Normalized actor congruence network (2015-2018). Weekly duplicates were removed. Average activity normalization was applied. The size of the nodes represent degree centrality.

What changed was that de Blasio was now able to mobilize Uber's opponents and to stop the company from driving a wedge between the Democratic party.[16] De Blasio no longer tied the fate of the cap to an empirical claim about congestion that he could not prove and that – in and of itself – mobilized few. Instead, he linked the congestion frame to the workers'-rights frame in a way that made for a powerful story. De Blasio's story drew inspiration from two academic sources, which confirms that scientific information – especially if used as part of larger narratives – can play an important role in politics (Haas 1992; Jenkins-Smith

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[16]This is again corroborated by several community detection algorithms. See appendix A.4 for more details. One might also infer that Uber was no longer able to drive a wedge between Democrats from the fact that the actor congruence network became more polarized over time. This might be the result of the City Council no longer dividing its allegiance between Uber and de Blasio. See appendix A.5 for details.

et al. (2017), p. 192): Bruce Schaller's report *Empty Seats, Full Streets*, which argued that companies like Uber were fueling urban congestion because of their low utilization rates; and a report by New School and Berkeley scholars, which argued that low wages incentivize Uber to put too many cars on the streets.

De Blasio used these ideational building blocks to kill two birds with one narrative stone. In de Blasio's narrative, Uber became the villain for luring too many drivers on the street because it could afford not to pay them properly. This came at the expense of – often minority – drivers, who struggle to make ends meet, and New Yorkers generally, who suffer from slow traffic. The hero of the story is de Blasio himself, who saved the day by forcing these companies to use their drivers more efficiently. He did so by packaging two policies together: a cap on the issuance of new for-hire vehicle licenses and a minimum hourly pay rate.

De Blasio's rationale was that Uber accepts high idle times for drivers because it improves the quality of its service (as there are more drivers available at any given moment). But Uber can only do so because it does not bear the costs in the form of congestion and low hourly wages. A cap puts a hard limit on Uber's growth while also strengthening the bargaining position of drivers that already have a license. And a minimum pay rate, which is calculated based on projected per-minute and per-mile expenses (numerator) and utilization rates (denominator), incentivizes companies to use their drivers more efficiently in order to bring the utilization-rate close to 1 (i.e. 100%). This effectively serves as a dynamic cap on drivers as companies cannot afford to pay too many idle drivers, as low utilization-rates mean that they must pay their drivers more to meet the new wage floor requirement. Both policies promise to reduce congestion and to make Uber internalize the externalities of its business model. And they tell a powerful story in which Uber, and not taxis or de Blasio, profit at the expense of ordinary New Yorkers and marginalized groups.
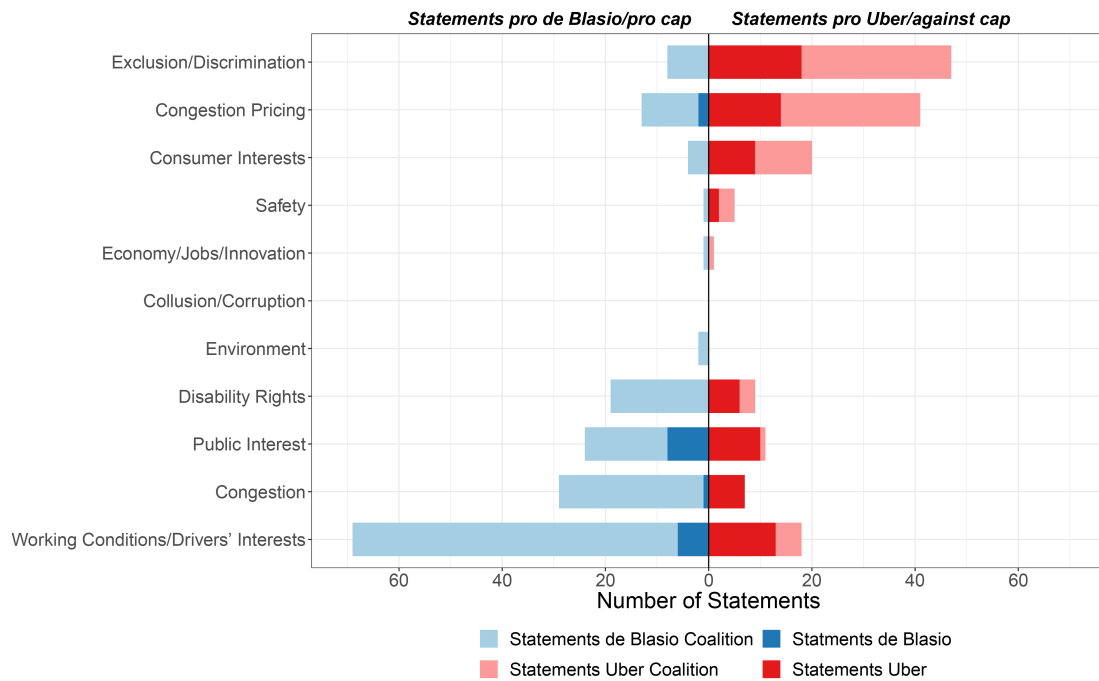
Figure 5: Most important frames 2015-2018 (aggregated from individual beliefs)

The problem of Uber was thus redefined from one of exclusion-collusion-innovation to one of exploitation-fairness-public-mindedness. De Blasio was no longer a frame taker but a frame maker. By arguing that the growth of Uber was *simultaneously* responsible for congestion and the dire working conditions of drivers, he managed to mobilize a variety of actors while also uniting the Democratic party, whose members now had good reasons to questions Uber's discrimination narrative. Figure 5 confirms that it was the inclusion of the widely supported workers' rights frame – and not the congestion frame alone – that was the biggest difference to 2015. In addition, the greater prominence of disability rights – although not pushed by the government – further helped de Blasio's cause by increasing the size and diversity of his coalition. It is also interesting to note that Uber's collusion frame disappeared, presumably because the diversity of de Blasio's coalition and the emphasis on working conditions made it difficult for Uber to accuse the Mayor of doing the taxi industry's bidding.

After winning the discursive battle, de Blasio also won the political battle. In August, City Council approved a one-year cap on for-hire vehicles (which exempted wheelchair accessible vehicles) by a 39-to-6-vote and the minimum pay rate by a 42-to-3-vote. This wage floor was later set by the TLC to $17.22, which substantially raised the average pay for drivers.[17]

2.6   Alternative Explanations

There are three main counterarguments against the one offered here. While I will show that they do not fully bear out empirically or, by themselves, explain the different fate of the two regulations, they do form part of the enabling and constraining context of the political battles between Uber and de Blasio. As Figure 1 reminds us, the power of ideas depends on the context in which they are used, and this context is shaped by the structural and institutional position of the actors using them as well as by their fit with other powerful ideas.

First, one could argue that Uber itself had lost a lot of its charm between 2015 and 2018. There is certainly something to the claim that Uber's initial shine has worn off as scandals hit the company and more and more people saw through the promises of the 'sharing economy' – the paragon of which Uber had once been. While the disenchantment of the sharing economy started before 2015, it is true that Uber suffered through a litany of scandals since 2015 (Isaac 2019). It is therefore worth asking to what extent the company's reputation has suffered. In the absence of survey data, media discourse seems the best proxy for measuring Uber's reputation.

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[17]The original 12-months cap was later extended by the TLC, whose chair and board members are appointed by the Mayor with the advice and consent of the city council. Soon after, Uber unsuccessfully sued the city over the regulations. The TLC is also in charge of enforcing the regulations, which makes it an interesting object of study for future analysis of the politics of enforcement and the regulatory 'afterlife' of de Blasio's legislation. It is also worth noting that both Uber and Lyft stopped onboarding new drivers soon after the minimum pay rate went into effect, which suggests that the new regulation had its desired effect.
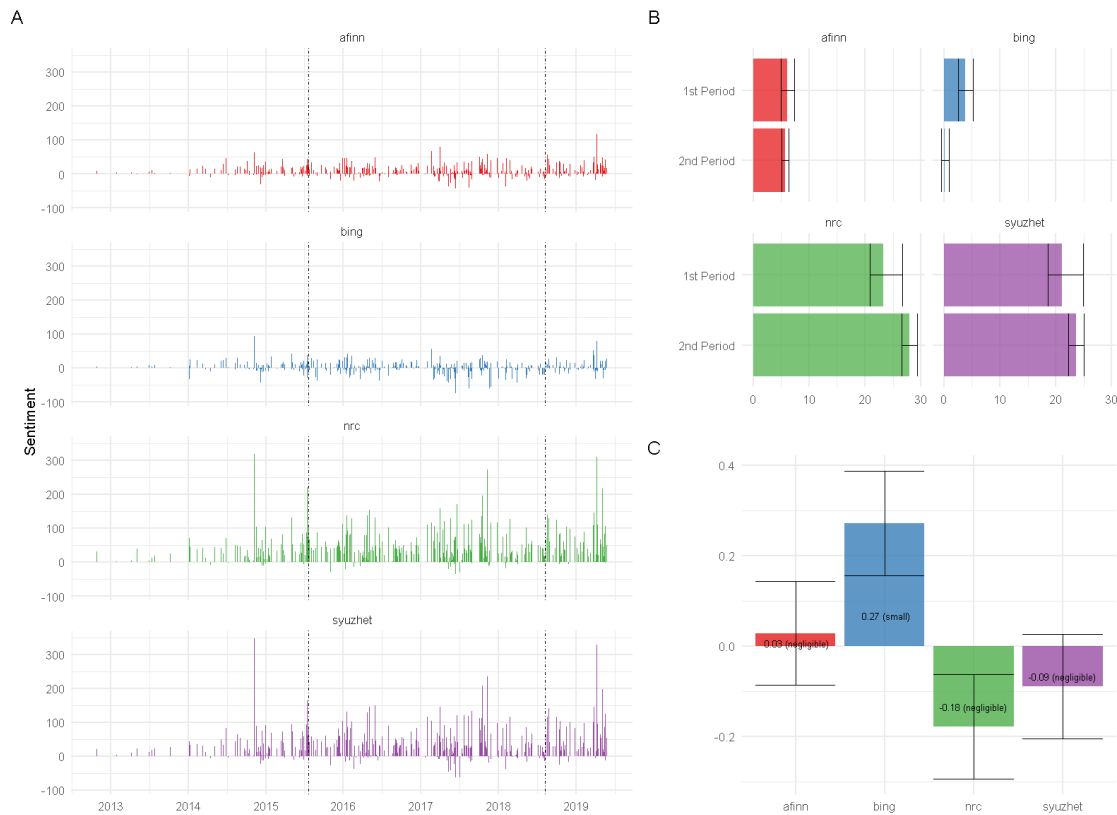
Figure 6: Sentiment analysis of news coverage on Uber. Subfigure A shows results for four different dictionaries (vertical lines represent the two regulatory attempts). Subfigure B shows mean sentiment values for the two different time periods with bootstrapped confidence intervals (R = 10000). Subfigure C shows the effect size of the difference between the two time periods using Cohen's d.

Figure 6 shows the sentiment score of 1773 newspaper articles on Uber between 2012 and 2019.[18] Neither of the four dictionaries used finds a strong decline in sentiment after 2015. In fact, only one dictionary finds a decrease at all, and the effect size of the difference is small. The other dictionaries find no or even the opposite effect. While this indicates that Uber's reputation may not have suffered as dramatically as one might think, sentiment analysis is a coarse measure of public mood, and it seems implausible that Uber's reputation

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[18]For more details, see appendix A.6.

has not taken a hit. But even if building a coalition against Uber was easier in 2018 because of the company's damaged reputation, this coalition still had to be built. Doing so required narrative entrepreneurship of the kind de Blasio lacked in 2015 when Uber already had many opponents, i.e. when it was already quite unpopular and potential allies were available.

Second, one could argue that New York's Democrats have moved to the left since 2015, which made it easier to regulate Uber in 2018. While this argument is intuitively plausible, it does not take into account that de Blasio already run on a very progressive platform in 2013; that the City Council was as overwhelmingly democratic in 2015 as it was in 2018; and that de Blasio had a close and very progressive ally in the then-Council Speaker Mark-Viverito. Partisanship thus seems an unlikely candidate for explaining the varied success of the two regulations, especially since Uber was legalized in Democratic upstate New York in the summer of 2017 and since there is no general correlation between partisanship and the extent to which Uber is regulated (Collier, Dubal, and Carter 2018, 925–26).

The recent resurgence of socialist ideas within the Democratic party might have brought the issue of workers' rights back to the fore, especially in the context of tech companies (e.g. the debate about working conditions in Amazon warehouses). This broader shift – as well as the attention the plight of drivers received in the aftermath of several taxi driver suicides – might have made it easier to mobilize around workers' rights.[19] But again, this opportunity had to be seized, and the issue of workers' rights had to be plausibly linked to congestion to actually mobilize Uber's diverse opponents.

Finally, one can argue that congestion was simply worse 2018 than it was in 2015. Again, this claim is not without merit, as congestion has indeed become worse after 2015 while the number of Uber cars has continued to increase. But there are three problems with

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[19]The high public visibility of platform companies could make it easier for workers and unions to mobilize the public around workers' rights. Perhaps somewhat paradoxically, this might help undermine the long dominance of consumer over worker issues in American politics.

this argument. First, in 2018 Uber could point to the city's own traffic study, which had found that Uber was not to blame for New York's congestion crisis. Second, traffic speed has actually decreased much more quickly before 2015 than before 2018 (Palagashvili 2018), so it is not obvious that congestion was a more immediate concern in 2018. Third, with congestion pricing, there was a widely supported alternative to the cap. Thus, even if New Yorkers were even more fed up with congestion in 2015 than in 2018, justifying the cap on congestion grounds was not necessarily easier given that now inconvenient evidence and a sound and widely supported alternative existed. That de Blasio still managed to get the bill passed is more the result of his ability to link the congestion issue to the issue of workers' rights than of greater structural pressure.

Thus, neither of the three alternative explanations can account for the different fate of the two regulations, especially for the fact that Uber won the first battle. They do, however, point to the political and ideational context in which Uber's and de Blasio's narrative coalition building took place – contexts in which practices of coalition-building, storytelling, and platform power need to be situated.

2.7   Conclusion

This article has argued that to understand the politics of platform capitalism, we need to understand the interplay of coalitions, narratives, and platform power. It did so in the spirit of analytic eclecticism, pragmatically utilizing and recombining concepts from different research traditions to tell a complex causal story about a concrete problem that real-world actors face. Based on a case study on the regulation of Uber in New York, it has developed and defended the claim that the size and diversity of coalitions explain the success or failure of regulatory attempts (Junk 2019); that the composition of coalitions is influenced by the clever use of narratives (McBeth, Jones, and Shanahan 2017); and that their simultaneous

power and vulnerability both help and harm platform companies like Uber (Culpepper and Thelen 2019). Not incidentally, both Tusk and de Blasio drew very similar conclusions from their respective victories, stressing the importance of "better narratives" (Tusk 2018, 109), of "broad coalitions" and of fact-based but morally appealing "arguments" (Blasio 2018).

There are two main implications of these findings for scholars of regulation and the politics of policymaking. First, they reinforce the observation that "rules and regulations are constantly contested" (Kjaer and Vetterlein 2018, 500), especially when novel technologies create affordances for regulatory arbitrage and entrepreneurship. As platform companies combine a disregard for existing regulations with the active mobilization of political support, regulatory agencies – like the TLC – increasingly find themselves at a loss as how to rein in these companies without scarifying their political independence, at least when regulations are not widely popular (such as safety regulations) but concern highly politicized regulations with distributional consequences (Gilbert et al. 2002). This makes it so essential to understand the politics of regulatory response.

Second, the findings confirm that the political coalitions underlying regulatory responses are not set in stone. Instead, they can be turned around even in highly unfavorable circumstances, such as when Uber won the regulatory battle in 2015 despite having an overwhelming Democratic majority against it. More specifically, and perhaps more surprisingly, ideas matter a great deal for the politics of regulatory response. 'Stories' in particular are a very powerful tools to justify policies – more so than 'technical accounts' like de Blasio's original claim that there is a causal link between Uber's growth and congestion (for this terminology, see Tilly 2006). They also seem to be more emotionally arousing and cognitively appealing than the sum of the frames they are composed of (McBeth, Jones, and Shanahan 2017; Shiller 2019). Lastly, stories can be used not only as coalition magnets (Béland and Cox 2016) that bring together different actors (Uber and civil rights activists). As this study shows, they can also be used as 'coalition wedges' that divide similar actors (such as New York's Democrats).

One limitation of this analysis is that while Uber contests regulations everywhere, it encounters very different institutional environments (Pelzer, Frenken, and Boon 2019; Thelen 2018; Uzunca, Rigtering, and Ozcan 2018). This study controlled for institutional differences to better tease out the role of coalitions, narratives, and platform power. Future studies should aim to better understand how institutions (e.g. welfare regimes, policy legacies, etc.) affect the interests of actors, the success of narratives, and the dynamics of platform power. Thelen Thelen (2018), for example, has demonstrated how institutional differences can create different regulatory 'flashpoints' around which the conflicts over Uber subsequently revolve. But as this study has shown, actors are not slaves of their institutional or structural circumstances. Through skillful framing and storytelling, they can influence the ways in which regulatory battles are framed and fought and therefore the ways in which actors perceive their interests and choose their coalitional alignments.

Platform companies move into – and upend – more and more areas of our lives, creating a new class divide between the demanding and the on-demand (Madrigal 2019). Policymakers not only need to know how they *should* regulate platform companies, but also how they *can* regulate them. Good policies require successful politics. And successful politics in the age of platform capitalism not only depends on political power in the traditional sense, but also on the ability of actors to weave various issues into narratives that can mobilize a broad variety of actors.

3 Regulating the European Data-Driven Economy. A Case Study on the General Data Protection[20]

Abstract: In recent years, data have become part and parcel of contemporary capitalism. This created tensions between the growing demand for personal data and the fundamental right to data protection. Against this background, the EU's adoption of the general data protection regulation (GDPR) poses a puzzle. Why did the EU adopt a regulation that strengthens data protection despite intensive lobbying by powerful business groups? We make two arguments to explain this outcome. First, we use process tracing to show how institutional legacies triggered and structured the policy-formulation process by strengthening the position of data protection advocates within the Commission. Second, we use discourse network analysis to show that the Snowden revelations fundamentally changed the discursive and coalitional dynamics during the decision-making stage, 'saving' the GDPR from being watered down. Our paper contributes to the literature on the political economy of data protection while also offering a comprehensive explanation of the GDPR.

3.1 Introduction

In recent years, data have become part and parcel of contemporary capitalism. In sectors from insurance to retailing, economic success increasingly depends on the possession of (personal) data and the technical and organizational ability to extract value from them (Haskel

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[20]This chapter was co-authored with Moritz Laurer. A published version can be found in Laurer and Seidl (2020).

and Westlake 2017).[21] Data are described as a 'raw material (. . .) to be extracted, refined, and used in a variety of ways' (Srnicek 2017, 40) and as a new 'kind of capital, on par with financial and human capital in creating new digital products and services' (MIT Technology Review and Oracle 2016, 2). While some hope that this process will boost innovation and productivity (Mayer-Schönberger and Cukier 2013), others fear that it will embolden surveillance capitalists to monitor and manipulate human experiences in increasingly comprehensive ways (Zuboff 2019).

This creates a potential conflict between companies' growing demand for personal data and the fundamental right of individuals to have them protected. On the one hand, data protection regulations may limit the ability of companies to innovate in fields like personal entertainment or medicine. They may thus be a competitive disadvantage in an increasingly data-driven world economy. On the other hand, data protection regulations protect individuals against companies whose business models they do not fully understand or have no reasonable alternative to. They may thus reduce information and power asymmetries between individuals and the small number of companies which dominate digital markets (Calo and Rosenblat 2017; Pasquale 2015).

It is against this background that, in 2016, the European Union adopted the General Data Protection Regulation (GDPR), after four years of tense negotiations. There is a general consensus that the GDPR maintains, clarifies, reinforces and adds to the 1995 Data Protection Directive, which it replaced (Burri and Schär 2016; Burton et al. 2016; Hildén 2019). It strengthens the enforcement of data protection rules, it introduces new rights for individuals, it imposes new obligations on companies, and it threatens companies with fines of up to four percent of global turnover.

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[21]While data have become more important across the board, we focus on the regulation of personal data.

Thus, despite the growing economic importance of personal data, and despite an unprecedented lobbying effort by tech companies, the EU has not undermined European data protection, nor has it one-sidedly catered to business interests. While the latter certainly managed to take some of the GDPR's edge off, the GDPR's overall *gestalt* is certainly not what business wanted. This seems puzzling not only because it goes against the grain of an ascending "big data paradigm" (Hildén 2019, 3) that powerfully links the collection and use of data to notions of competitiveness, productivity and progress. It is also puzzling given the EU's often-alleged deregulatory and business-friendly bias, and the 'cool reception' (Vandystadt 2012) the GDPR received from member states.

We put forward two arguments to explain this puzzle. First, we show how issue-specific institutions (such as the constitutionalization of data protection) triggered and structured the drafting of the GDPR. The political science literature on the GDPR has mostly focused on the 'noisy politics' after the release of the proposal. However, many elements of the GDPR were already present in the Commission's original 2012 proposal, which, at the time, was described as a 'bold attempt' (Kuner 2012, 14) to strengthen data protection in Europe. Drawing on a variety of sources from primary documents to expert interviews, we process trace the drafting of the GDPR from the early agenda-setting stage (1990s-2009) to the policy-formulation stage (2009-12). While others have studied why interest groups choose to lobby for or against the GDPR (Atikcan and Chalmers 2018) and which interest groups were successful in their lobbying efforts (Hildén 2019), we study how issue-specific institutions shaped the political context of these lobbying activities. Specifically, we show how such institutions strengthened the position of data protection advocates within the Commission and therefore help explain why business groups were not more successful in influencing the content of the proposal.

Second, we confirm the hypothesis that the Commission's proposal would have been considerably watered down during the decision-making stage (2012-16) had the Snowden

revelations not boosted the salience of data protection. While business interests were initially successful in amending and blocking the GDPR, the exploding public interest in data protection in the wake of the Snowden revelations made it much more difficult for business groups to lobby against data protection. We are not the first to make this argument (Kalyanpur and Newman 2019; Rossi 2016), but we are the first to systematically map the changes in the discursive and coalitional dynamics before and after the revelations, using discourse network analysis (Leifeld 2013). Our goal here is not to show how exactly salience changed the dynamics of the political conflict, but to systematically show that it did.

We proceed as follows. The next two sections give a short overview of the relevant literature and discuss our theoretical concepts. After introducing our methodological approach, we present our first argument, namely that issue-specific institutions – those that govern an issue area like data protection – were crucial for the timing and the content of the Commission's draft proposal. We then make our second argument, namely that the Snowden revelations indeed fundamentally changed the coalitional politics during the decision-making stage. We conclude with a brief sketch of the theoretical relevance of our findings and avenues for future research.

3.2   EU Policy-Making and Economic Interests

There is an influential strand of literature that argues that EU policy-making is biased towards deregulation – be it because interest heterogeneity and high consensus requirements make positive integration (regulation) much harder than negative integration (deregulation) (Scharpf 2010); because the EU's dominant mode of integration by law favours market-enforcing over market-restricting integration (Höpner and Schäfer 2012); or because neoliberal ideas have taken hold in Brussels (Schmidt and Thatcher 2014). A related strand of literature argues that business interests have an inherent advantage in EU policy-making as they not

only command more money but also more expertise (Dür and Bièvre 2007; Eising 2009). From this perspective, the adoption of the GDPR is puzzling, given that it is an example of positive and partly market-restricting integration that was strongly opposed by well-endowed and well-informed firms.

A more recent strand of literature, however, has qualified the view that business dominates EU policy-making. Dür and colleagues find 'no clear business dominance in the policy-making process of the contemporary EU' (Dür, Marshall, and Bernhagen 2019, 5), partly because the Commission's growing focus on product and process regulations increasingly pitches it against business interests (Dür, Marshall, and Bernhagen 2019, 6–7). Similarly, Klüver finds no 'systematic bias in favour of business interests. Even though economic power plays an important role, so do citizen support and information supply' (Klüver 2013, 216). However, she also finds interest group influence to be 'considerably larger during the policy-formulation than during the decision-making stage' (Klüver 2013, 210).

This, however, does not make the GDPR less puzzling. First, business groups were in fact close to watering down the Commission's proposal during the decision-marking stage (when they should have been less successful). Second, their influence during the policy-formulation stage was limited (when it should have been higher). It is therefore crucial to understand the conditions under which businesses are more – or less – successful in EU policy making. Here, we focus on two such conditions: the mediating role of issue-specific institutions and issue salience.

Issue-specific institutions are the formal and informal rules that govern a specific issue area like data protection. Their effects are more circumscribed but also more direct compared to those institutions that govern the EU's legislative process during the agenda-setting and decision-making stages (Parker and Alemanno 2015). Focusing on such issue-specific institutions thus allows us to specify the causal mechanisms by which they constrain or enable certain interest groups in EU policy-making. In particular, issue-specific institutions have

three important effects on the relative influence of business interests during the agenda-setting stage.

First, for both cognitive and normative reasons, the desire for legal consistency constrains the Commission's legislative leeway (Hartlapp, Metz, and Rauh 2014, 18–20; Pierson 1996). By defining the legal status quo, issue-specific institutions thus shape what is politically possible and plausible. Second, issue-specific institutions (dis-)empower certain actors within the Commission. For example, they influence which Directorate General (DG) becomes lead DG. The lead DG then enjoys informational and strategic advantages that allow it to strongly influence the content of a proposal, for example by controlling which positions are heard (Hartlapp, Metz, and Rauh 2014, 21).Third, entirely new actors can be created as a by-product of institutional reforms. These actors, as we will see with the Article 29 Working Party, can subsequently develop an identity of their own and exert considerable influence on policy initiatives.

Issue salience refers the importance of an issue "to the average voter, relative to all other political issues" (Culpepper 2010, 4). Increasing salience incentivizes policymakers to distance themselves from business interests. In the European Union, this is particularly true during the decision-making stage as both the European Parliament (EP) and the member states are directly accountable to their electorates (Dür and Mateo 2016). For example, business groups are more successful in the EP when issue salience is low (as well as when they were united and proposals are dealt with by 'mainstream' committees) (Rasmussen 2015). Business groups, and multinational corporations in particular, can therefore be expected to be more influential under conditions of low-salience, 'quiet politics'; conversely, 'business power goes down as political salience goes up' (Culpepper 2010, 177; Kalyanpur and Newman 2019).

3.3   The Politics of Data Protection in Europe

How can we explain the origins of European data protection legislation? Using an institution-alist framework, Newman Newman (2008b) argues that national data protection authorities (DPAs) were instrumental in bringing about the 1995 Data Protection Directive. DPAs are 'inside' data protection advocates that are, other than 'outside' advocates like civil rights groups, endowed with advisory, oversight, and regulatory powers (Bennett 2011). DPAs suc-cessfully used these institutionally mandated resources, expertise and networks to push for supranational legislation, despite reluctance and resistance by European institutions, member states and business groups (Newman 2008a).

While Newman provides a convincing account of the adoption and the timing of the 1995 directive, political science accounts of the GDPR itself are still few and far between. Most analysis focus on legal, normative, or practical implications. The few existing explanatory accounts highlight the role of technological change in creating a demand to update European data protection rules (Burri and Schär 2016, 480); of the lead committee and rapporteur in the EP (Hildén 2019; Moulonguet 2016); the importance of the right to privacy in EU law which was further upheld in a number of ECJ rulings during the decision-making phase (Burri and Schär 2016, 488); and the increased salience of data protection in the wake of the Snowden revelations, which saved the GDPR from being watered down by (mostly US) business lobbyists (Hildén 2019; Kalyanpur and Newman 2019; Rossi 2016). While we believe that these studies all point in the right directions, we want to investigate some of their claims more systematically, complementing and adding to their findings.

3.4   Methodological Approach and Data

Our research question – why the EU strengthened data protection despite intensive lobbying – can be broken down into two questions. Why did the agenda-setting and policy formulation

stage result in a proposal that strengthens data protection? And why was this proposal not watered down during the decision-making stage? To answer these questions, we rely on two different methodological approaches. First, we use process tracing to reconstruct the causal chain that led from the early agenda setting in the 1990s to the Commission's 2012 proposal (Bennett and Checkel 2015). Drawing on primary sources, media reports, secondary literature and expert interviews, we try to flesh out the causal mechanisms that triggered and structured this process. In doing, we follow the methodological guidelines of 'efficient process tracing' (Schimmelfennig 2015). Practically, this meant that we drew on the existing literature to specify putative causal mechanisms ex-ante (e.g. the importance of the legal framework as an institutional opportunity structure) and to focus our analysis on those actors that the literature identifies as particularly relevant (e.g. DPAs).

Second, we use discourse network analysis (Leifeld 2013) to map the structure and structural change of 'discourse coalitions' (Hajer 1993) between the release of the proposal (January 2012) and the adoption of the GDPR (April 2016). While previous studies have traced how central actors have changed their position on important aspects of the GDPR in the wake of the Snowden revelations, they have not systematically mapped the coalitional changes. Our analysis complements these findings by showing how the Snowden effect led to a sizeable shift in discourse coalitions, and how this discursive shift reflects and illuminates the underlying political shift.

In order to uncover these discourse coalitions, we analyzed statements by political actors about the GDPR or closely related issues like the Safe Harbour agreement in 164 newspaper articles.[22] If, for example, a Facebook spokesperson said the GDPR undermines innova-

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[22]We did not code statements made by 'observing' actors like academics or consultants, statements relating to the protection of personal data in police and security contexts, statements regarding only the public sectors; statements relating to other elements of the EU's digital agenda; or statements regarding technical details and timing.

tion, we coded the concept 'GDPR is bad for innovation' for the actor Facebook, and that Facebook agreed with this statement (actors can refer to the same concept but disagree with it). To reflect the relevance of both US and European actors and to ensure a politically and geographically representative sample we selected articles from the New York Times (31), Financial Times (48), Europolitics (71), and EURACTIV (14).[23] This resulted in 703 statements by 103 actors on 53 policy concepts.

The central idea is that actors (represented by nodes) are connected by edges and therefore form a discourse coalition when they both agree, or both disagree over a concept. For example, if Google also said that the GDPR makes it harder for companies to innovate, Google will be connected to Facebook in the network because they agree that the 'GDPR is bad for innovation'. The more concepts actors agree over, the higher the edge weight between them. The coding scheme was developed inductively, with the level of abstraction of concepts being relatively low (e.g. 'GDPR' is good for growth' and 'GDPR is good for innovation' were not merged into 'GDPR is good for the economy'). This ensured that actors were only connected if they really shared a policy concept, and it minimized interpretative leeway. The coding scheme was iteratively refined, and, when found exhaustive, the entire analysis was redone to ensure a consistent application. Moreover, several steps were taken to make sure that statements were not wrongly coded (Leifeld 2013, 177–78).

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[23]Articles were obtained from Factiva based on a search string containing data protection, Europe* and regulation*. EURACTIV articles were sampled from July 2015 onwards after Europolitics was discontinued. We chose European newspapers for two reasons: first, because they provide a good reflection of the content and coalitional composition of the EU policymaking discourse, which is what we are interested in (Ovádek, Lampach, and Dyevre 2020); second, any choice of specific national newspapers would have been arbitrary to a certain extent, and would have biased our results towards the peculiarities of specific national discourses.

3.5   Results & Discussion

Why did the Commission start to draft the GDPR in 2009? We argue that the constitution-alization of data protection in the 2009 Lisbon Treaty was the decisive event in both setting the stage for and raising the curtain on the GDPR. Therefore, before analyzing how this both triggered and structured the drafting of the GDPR, we will look at how data protection was constitutionalized in the first place.

3.5.1   The Early Agenda-Setting Stage (1990s-2009)

Three legal events that occurred before the policy-formulation stage decisively influenced the GDPR (cf. González Fuster 2014). First, the 1995 directive created a strong legal precedent for the GDPR. It made the creation of DPAs compulsory in all member states and formal-ized their cooperation in a new institution, the so-called Article 29 Working Party (WP29). The WP29 is supposed to ensure the uniform application of the directive and advise the Commission on 'any proposed amendment of this Directive' (Article 30). The DPAs in the WP29 have come to share a common perspective, similar to a collective actor, continuously trying to improve their cooperation and influence (Barnard-Wills, Pauner Chulvi, and Hert 2016). Thus, with the WP29, the 1995 directive 'officially installed a kind of 'privacy lobby group' at the heart of the European institutions' (Poullet and Gutwirth 2008, 571). The 1995 directive first supranationalized data protection in European secondary law, creating issue-specific institutions at the European level.

Second and third, data protection was soon also enshrined in primary European law: first in the 2000 Charter of Fundamental Rights (Article 7 on privacy and Article 8 on data protection), and then in the 2009 Lisbon Treaty, which made the Charter legally binding and constitutionalized data protection in Article 16 TFEU. Both events were strongly influenced

by the WP29, which used their network to get access, their expertise to legitimize, and their official legal authority to influence the constitutionalization of data protection.

In 1999, the WP29 issued an official recommendation 'on the inclusion of the fundamental right to data protection in the European catalogue of fundamental rights' and offered to 'help in the drawing-up of the charter' (WP29 1999, 3). Its chairman Stefano Rodotà was appointed member of the drafting convention of the Charter (WP29 2002, 23) and the WP29 prides itself on having made a 'major contribution' to anchor data protection in the charter (WP29 2002, 5), which is confirmed by other sources (Pfeifle 2017; Pizzetti 2006).

The WP29 also influenced the draft Constitution for Europe itself. An explanatory memorandum from the drafting convention makes explicit reference to the Charter and the intention to create a 'general article on the protection of personal data, which creates a single legal basis for data protection by both the institutions and the Member States' (Convention Europeenne 2003, 9). While the Constitution for Europe was rejected, the succeeding Lisbon Treaty created a strong legal basis for data protection legislation in Article 16 TFEU, which is very similar in wording to Article 50 of the Constitution. The WP29 thus played, in the words of its chairman, 'an important role [in] the unrelenting constitutionalization [sic!] of the right to personal data protection' (WP29 2004, 7). In doing so, it further consolidated the institutions that govern data protection in Europe (and to which the WP29 owes its very existence). These issue-specific institutions, in turn, would prove crucial for both the timing and the nature of the GDPR.

3.5.2 The Policy-Formulation Stage (2009-12)

Who initiated the data protection reform that led to the GDPR? We found no evidence of a particular member state pushing for reform, as intergovernmentalism would expect. Sweden, for example, held the Council presidency in 2009, but became one of the opponents of the GDPR after the Commission published its proposal. It is true that the European Coun-

cil's December 2009 Stockholm Program invited the Commission to evaluate the EU's data protection legislation (European Council 2010, 18–19). However, this program was drafted by the Commission itself (FRA 2009). Moreover, the Commission had already 'launched a review of the current legal framework, with a high-level conference in May 2009 (European Commission 2010, 3). This indicates that the Commission had started preparing data protection reform before and then added the relevant passages to the Stockholm Program with the tacit approval of the European Council.

We also found no evidence that a business coalition pushed for reform. While business coalitions have been found to exert significant influence on setting the agenda for the Commission, such as in the case of the European Round Table for Industrialists, there is no sign of such a coalition in the case of the GDPR (Cowles 1995). Instead, it was the Commission and the DPAs that were the main actors pushing for reform (Dix 2019).

Why did the Commission start working on the GDPR in 2009? It had already issued two evaluation reports in 2003 and 2007 in accordance with its mandate, explicitly formulated in Article 33 of the 1995 directive, to regularly evaluate the directive and propose amendments. In the first report, the Commission did not initiate reform, because member states did not support it and the implementation of the directive was not sufficiently advanced yet (European Commission 2003, 7–8). In the second report, it still did not advocate reform, but noted that the 'ratification of the Constitutional treaty may open new perspectives' by creating a 'specific and self-standing legal basis for the Union to legislate in this matter' (European Commission 2007, 8).

It was already clear before 2009 that technological advances, increasing cross-border data flows, and the lack of harmonization would increase the demand for reform. But it was only the Lisbon treaty that – in the Commissions own words – created a 'new legal basis' that allowed the EU to 'address the above challenges [. . .] in a single legal instrument' (European Commission 2010, 4). These 'new legal possibilities' were seized by the Directorate General

Justice and Consumers (DG JUST), which, under the auspices of Viviane Reding, become lead DG for the formulation of the GDPR (European Commission 2010, 4). This shows that it was not only and not mainly functional pressures, but an institutional opening that triggered the drafting of the GDPR, namely article 16 of the Lisbon Treaty.

Moreover, the content of the GDPR itself was strongly influenced by the fact that DG JUST became the lead DG – and not, say, DG Market, which had been in charge of a previous review of the directive (Hildén 2019, 94). DG JUST is a consumer and not a market-oriented DG, which made it harder for business groups to get their voices heard (cf. Hartlapp, Metz, and Rauh 2014). And DG JUST was led by the experienced and ambitious Commissioner Reding, who was able to defend her proposal against other directorate generals, which did have their quarrels with it (Malhère 2012). But while Reding's role in the political process leading to the GDPR can hardly be overstated (Dix 2019; Kuner 2019), it were issue-specific institutions that provided the opportunity structure for her political entrepreneurship. More-over, the fact that, in the words of Ms. Reding herself, lobbying during the policy formulation was 'fierce – absolutely fierce' but that 'the legislation was on the table' as Ms. Reding 'wanted to have it' (Warman 2012), speaks to the limited clout of business interests when they face a powerful, consumer-oriented Commissioner.[24]

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[24]One study shows that it were mainly retail and finance firms that lobbied for retaining the old directive, while other firms were in favor of a new regulation (Atikcan and Chalmers 2018). This is not necessarily surprising as many businesses indeed had an interest in a reform that promised har-monization, greater legal certainty and less administrative burdens (Vogel 2011). But just because businesses want regulation (i.e. more harmonization), it does not mean they want more regulation (i.e. stricter data protection). In fact, superficial agreements over terms often hide deeper dis-agreements over their meaning (Hildén 2019, 130–31).Others have argued that data protection was initially not very high on the agenda of many European firms. It was only later that US lobby efforts 'incentivized European business to join the watering down process' (Kalyanpur and Newman 2019, 454). In any case, the fact that the Commission's proposal clearly decommodifies personal data – and the fact that many business groups later vehemently opposed it – strongly suggest that their influence on the content of the proposal was limited (Hildén 2019, 152).

Perhaps most importantly, DG JUST provided the secretariat for the WP29 (WP29 2009, 1). This gave the latter an outsized influence in drafting the GDPR. In fact, the WP29's contribution to the first public consultation by the Commission, already contained key elements of the GDPR (WP29 2009). A systematic comparison between this paper and the final text of the GDPR reveals that many of the WP29's demands from 2009 not only made it into the Commission's 2012 proposal but even into the final text of the GDPR.[25] Table 2 clearly shows that we cannot understand the GDPR if we do not understand where many of its key paragraphs came from.

And to understand where they came from, we need to understand how the constitutionalization of data protection created a situation in which DG JUST was the logical choice as lead DG – and in which the WP29 could play an important role in drafting the GDPR. Crucially, the Lisbon Treaty strengthened the legal and political position of DG JUST and Fundamental Rights Commissioner Reding with respect to data protection. It helped establish data protection as a consumer rights issue and to emancipate it from a purely market based logic (Hartlapp, Metz, and Rauh 2014, 160–206). It also made political and legal sense to task the DG hosting the national DPAs with data protection reform (Dix 2019). Politically, it enabled the Commission to partner up with a powerful transnational actor while allowing the member states to stay involved. Legally, the 1995 directive gave the WP29 an official role in advising the Commission on any amendments to the directive, which is exactly what the GDPR is.

None of this, however, can be explained outside the contingencies of the EU's historical development. Thus, without taking a historical-institutionalist perspective we cannot explain why DG JUST and not, say, DG Market became lead DG (like in 1995), and therefore why the

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[25]It can be argued that the anticipated backing by the EP, which had signaled support for comprehensive data protection in response to the Stockholm Program, allowed the Commission to draft a more comprehensive proposal (Dix 2019).

Table 2: A comparison between the WP29 2009 position paper and the final text of the GDPR

WP29 Position Paper (2009)	GDPR 2016
Introduce a new 'Privacy by Design' principle (pp. 12-15)	Introduces a new 'Privacy by Default and by Design' principle (GDPR Art. 25)
Introduce a new 'accountability' principle (p. 20)	Introduces a new 'accountability' principle (Art. 5§2)
Increase data controllers' responsibilities; introduce data protection impact assessments; reinforce the role of data protection officers (p. 20)	Increases data controllers´ responsibilities; data protection impact assessments are introduced; reinforces the role of data protection officers (GDPR Art. 35-39)
Improve redress mechanisms and introduce class action lawsuits (p. 16)	Improves redress mechanisms and strengthens the role of public interest groups for the enforcement of rights (GDPR Chapter VIII, particularly Art. 80)
Improve transparency; introduce data breach notifications (for high risk breaches) (p. 16, 21)	Improves transparency; data breach notifications become obligatory (for high risk breaches) (GDPR Section 1 and Art. 34)
Strengthen consent requirements (p. 17)	Strengthens consent requirements (GDPR Art. 7)
Give clear institutional, functional and material independence to the DPAs, as the 1995 directive´s Art. 28 was unclear (pp. 21-22)	Strengthens functional (Art. 52§1), institutional (Art. 52§2,5) and material (Art. 52§3,4,6) independence of DPAs
Clarify DPA´s enforcement powers, as the 1995 directive's Art. 28 only contain 3 subparagraphs on enforcement (p. 22)	Contains 16 subparagraphs on investigative and corrective powers (Art. 58§1,2)
Extend legislative advisory powers. WP29 opinions should be addressable more actors (e.g. national parliaments) and treat more issues than 'administrative measures and regulations' (p.22)	Extends the scope of the DPA's opinions to more actors (e.g. national parliaments) and to 'any issue related to the protection of personal data' (Art. 58§3b)
Strengthen the WP29	Renames WP29 to 'European Data Protection Board' with broadened task description (Art. 68 & 70)
Ensure more harmonization in an 'unambiguous and unequivocal legal framework' (p. 9)	Directive becomes a regulation

Commission's proposal bears the hallmarks of the WP29 and not of data-driven businesses. Functional and economic pressures certainly mattered, but without reference to issue-specific institutions – in particular the 1995 directive and the constitutionalization of data protection – we can neither explain the timing nor the nature of the Commission's proposal. It were issue-specific institutions that provided the necessary normative demand and legal supply for an overhaul of European data protection, empowered the DPAs and strengthened data protection advocates within the Commission, and made it harder for business groups to get their voices heard.

3.5.3   The Decision-Making Stage (2012-16)

Under the Lisbon Treaty, data protection became subject to the ordinary legislative procedure, which gave the Council and the Parliament equal formal power in amending and negotiating the Commission's proposal. Analogous to DG JUST in the Commission, the responsible lead committee on Civil Liberties, Justice and Home Affairs (LIBE) was instrumental in making the EP's position more fundamental rights oriented. As the EPP's shadow rapporteur Axel Voss pointed out, LIBE is 'always coming from the fundamental rights side' while other committees would have been more 'economically orientated' (Moulonguet 2016, 12).

LIBE appointed Jan Philipp Albrecht, a German Green, former activist and trained IT lawyer, as a rapporteur. Albrecht's national, political and personal background as well as his technical expertise and political pragmatism played an important role in orienting the EP's position towards more data protection (Kayali 2015; Moulonguet 2016, 14–16). In the meantime, Viviane Reding continued to put her political weight behind the proposal, emphasizing that data protection is both a fundamental human right and crucial in creating a European digital single market (Reding 2013b). In fact, the European Commission viewed harmonization and the regulatory creation of consumer trust as key elements of its broader

digital agenda, which chiefly aims at digital market creation (European Commission 2010, 3–4, 2012, 2).

But despite Mr. Albrecht's rapporteurship and Ms. Reding's continuing support, the Commission's original proposal was on the brink of being substantially watered down in the spring of 2013 (Rossi 2016, 42–58). Many, including Mr. Albrecht and Ms. Reding, feared that the new regulation could end up weaker than the old directive (Nielsen 2013). This turn of events was the result of an 'unprecedented and extremely aggressive' intense lobbying effort on the part of (mainly) US businesses (Fontanella-Khan 2013; Kalyanpur and Newman 2019, 453–54; Rossi 2016, 42–45). In the EP alone, a record number 3999 amendment proposals were filled (LobbyPlag 2013).

Previous studies have shown how these lobbying efforts were initially successful in amending the Commission's proposal in ways that reflect business interests. Rossi looks at opinions issued by parliamentary committees (ITRE, IMCO, JURI), which were released between January and March 2013 (Rossi 2016, 47–56). He finds that, by and large, they aimed at weakening data protection in areas as diverse as consent requirements, the definition of legitimate interests to process data without explicit consent, data breach notification rules, fines, the definition of personal data, the right to data portability, or the right to be forgotten. Along the same lines, others find that business groups were initially successful in watering down the Commission's proposed regulations on fines and data breach notification rules (Kalyanpur and Newman 2019, 457–58).

The Commission's proposal also received a 'cool reception from member states' (Vandystadt 2012), some of which opposed it 'fiercely' (Rossi 2016, 56). LobbyPlag data tell a similar story, finding only 114 positive but 403 negative opinions on the GDPR in classified Council documents (LobbyPlag 2013). Germany, Ireland, Sweden and the UK were the biggest opponents to the GDPR.

Thus, in the spring of 2013, privacy advocates were justifiably afraid and business actors reasonably confident that Europe would not strengthen and might even weaken its data protection regime (Rossi 2016, 58–59). On June 6, Ms. Reding publicly remarked that the 'absolute red line' below which she was 'not prepared to go is the current level of protection as laid down in the 1995 Directive' (Reding 2013a). But then everything changed. On the very same day that Ms. Reding made her remarks, The Guardian published a story about mass surveillance based on documents leaked by Edward Snowden. This was the first of many stories that would soon transform the technical topic of data protection into a highly salient and hugely controversial issue (Kalyanpur and Newman 2019, 455; Rossi 2016, 42). The 'salience shock' (Kalyanpur and Newman 2019, 454) that followed these revelations fundamentally changed the public debate around data protection and tarnished the reputation of tech companies, which were perceived as 'enablers of state surveillance' (Rossi 2016, 61).

While 'salience is no silver bullet' and the political battle for the GDPR was far from over, the Snowden revelations led to a 'noticeable shift in the negotiating dynamic' (Kalyanpur and Newman 2019, 456). They made it much more difficult for US companies to make their voices heard in Brussels. 'While business groups dominated early discussions, a former Senior Department of Commerce official summarized, 'along comes Mr. Snowden and everything goes into a tailspin'. (. . .) The new consensus was that the Europeans would do whatever they could 'to stick it to United States and the American companies'' (Kalyanpur and Newman 2019, 462). The revelations also empowered data protection advocates, finally giving them 'a chance to react' (Kalyanpur and Newman 2019, 460).

As a result, positions in the EP shifted considerably (Rossi 2016, 62–65). In October 2013, the LIBE committee overwhelmingly adopts Mr. Albrecht's report, which endorsed the Commission's proposal and – with some exceptions – further strengthened it. In March 2014, the plenary passed Albrecht's report with near unanimity. This unity is remarkable given

the tension between the economic and the fundamental rights dimension of data protection (Moulonguet 2016, 9). It shows the even when industry lobbyists are united, their influence in the EP is limited when issue salience is high and a 'non-mainstream' committee like LIBE deals with the proposal (Rasmussen 2015).

In the European Council, negotiations remained more protracted, not least as a result of sustained lobbying pressure (Hildén 2019). But powerful actors, most notably Germany, started to call for stronger data protection, not least driven by domestic public pressure (Kauffmann 2013). In addition, three rulings by the ECJ – one affirming the right to be forgotten (May 2014) and the other two invalidating the data retention directive (April 2014) and the Safe Harbour Agreement (October 2015) – further strengthened the case for the GDPR: first, by exposing 'the deficiencies in the existing EU data protection framework' (Burri and Schär 2016, 488) and second, by establishing legal principles that limit the leeway for political actors (Dix 2019).

Against this background, the European Council reached a general approach on the GDPR in June 2015, and a trilateral agreement with the Commission and EP in December 2015. The GDPR, in a version that reflected a compromise between the Council and EP but nonetheless harmonizes and generally strengthens data protection in Europe, was officially adopted in April 2016 and became applicable in May 2018 (Burton et al. 2016; Hildén 2019).

The Snowden revelations thus fundamentally changed the political dynamics during decision-making stage and thereby 'saved' core elements of the Commission's original proposal, which were at the brink of being watered down by a concerted lobbying effort. 'Thank you, Mr. Snowden!', Ms. Reding proclaimed (Kauffmann 2013), knowing full well that the GDPR, at least in its current form, 'would be dead without Snowden' (Kuner 2019). But the existing accounts on which this analysis has drawn so far only give us a piecemeal picture of this 'Snowden effect'. They show how the Snowden revelations changed the position of

certain actors in certain political contexts on certain aspects of the GDPR. They do not give us a comprehensive picture of how coalitional alignments changed after Snowden.

Our second analysis fills this gap by showing how discourse coalitions – defined as actors sharing policy beliefs about the GDPR and assumed to reflect political coalitions – changed after Snowden. It is true that actors lobby behind the scenes and do not express all their beliefs publicly. But not only were these more covert activities already traced by other studies; many actors also do voice their beliefs publicly to influence other actors and the public at large. We should therefore expect the political shifts to be reflected in discursive shifts. To test this, we provide the missing bird's-eye view on the discursive-coalitional dynamics during the policy-making process. Figure 7 depicts two actor congruence networks. The first one (on the left) contains statements made between January 2012, when the Commission released its proposal, and June 2013, when Snowden revealed his first documents. The second one (on the right) contains statements from June 2013 to April 2016 when the GDPR was officially adopted.
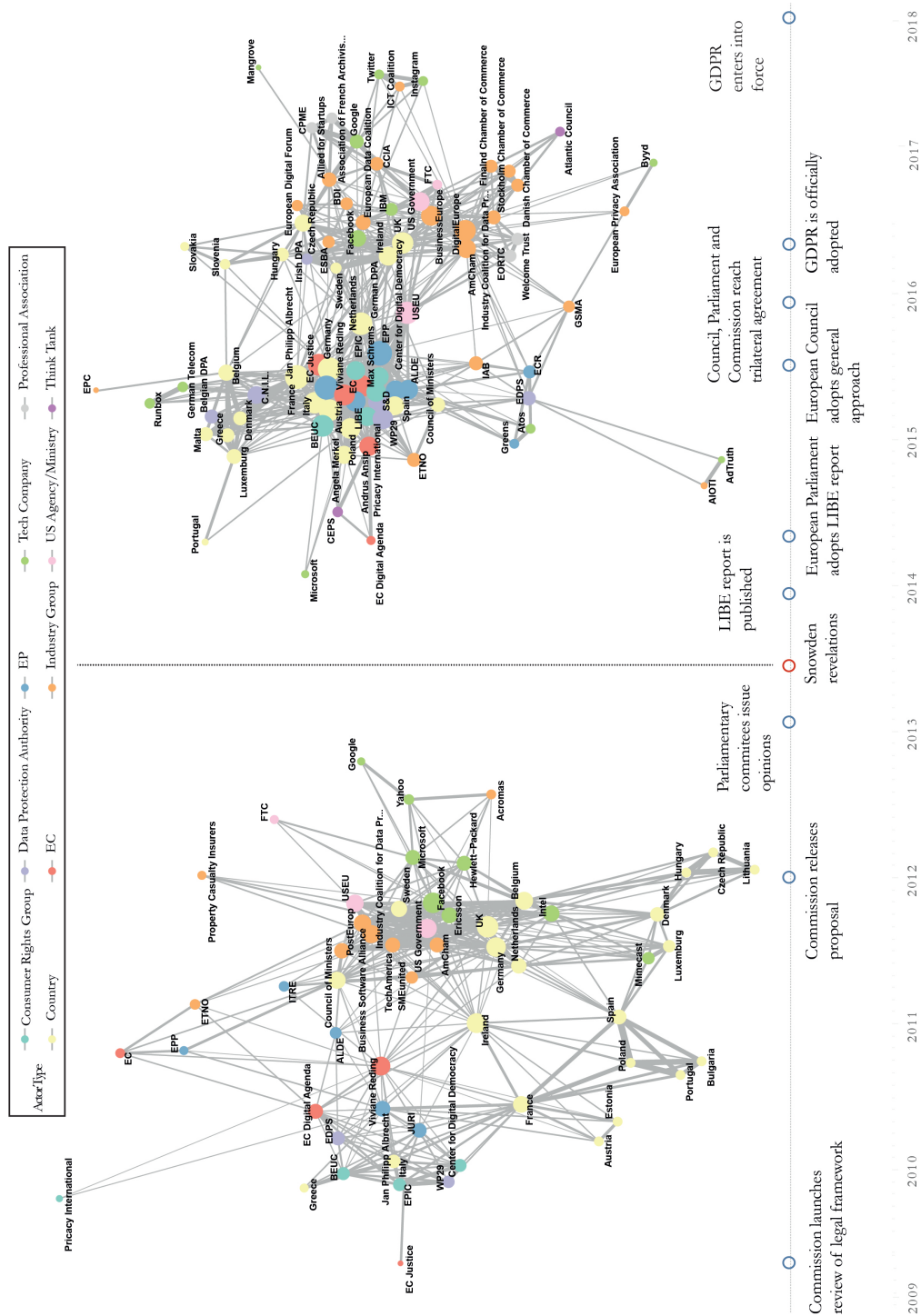
Figure 7: Timeline of the GDPR plus actor congruence networks for the period before (left) and after Snowden (right). Node-size represents degree centrality (square-rooted). Edge-size represents edge weight. Average activity normalization was applied and duplicates were removed by week to avoid overrepresentation of central actors. The 'pro-GDPR' coalition is on the left, the 'anti-GDPR' coalition on the right.

In the first network we can identify roughly two discourse coalitions. On the left, we have a smaller and somewhat less dense coalition of GDPR-supporters. As we would expect, it centers around Mr. Albrecht, who is supported by the WP29 and the European data protection supervisor (EDPS), consumer protection groups, and some member states. We also find the JURI committee (but no other parliamentary actors) and Commission actors in this pro-GDPR coalition. On the right, we see a larger and denser coalition that opposes the GDPR. At its core are tech companies like Facebook, industry groups, US government actors, and again some member states, most notably Germany and the UK. Equally important, at its periphery we find the European Council, the ITRE committee, and a group of member states. Ireland is somewhat in between the two coalitions, which reflects its attempt to take on a broker role during its Council presidency in the first half of 2013. Similarly, Ms. Reding, while clearly part of the pro-GDPR coalition, is also connected to the anti-GDPR coalition, which is the result of her attempts to allay the fears of small businesses and member states. These findings confirm that data protection advocates were indeed losing the battle. They had few allies and were up against a large coalition of powerful actors that included many member states and parts of the Parliament.

How did things change after the Snowden revelations? We again find roughly two coalitions, but this time the pro-GDPR coalition (again on the left) is stronger and denser. There is still a sizeable coalition against the GDPR, which is again mainly composed of tech companies, industry groups, US government actors, and some member states, most notably the UK and, this time, Ireland, where many tech firms have their global headquarters. However, many crucial actors are now firmly in the pro-GDPR coalition. This discourse coalition contains Mr. Albrecht and Ms. Reding, the Commission, inside and outside data protection advocates (Bennett 2011). Crucially, this time it also contains most parliamentary actors as well as many member states including Germany and France.

Again, this confirms that the Snowden revelations indeed led to a sizable discourse-coalitional shift that gave the GDPR supporters the upper hand. With the parliament, the Commission, and most member states against them, the UK and Ireland could no longer simply block the GDPR (due to the lower consensus requirement under the ordinary legislative procedure). The coalitional shifts together with the institutional structure of the EU made the few remaining institutional actors more willing to compromise and thus paved the way for the general agreement the European Council reached in mid-2015. As Ms. Reding herself put it, given the 'large majority emerging, we can forget the UK's opposition' (Iwaniuk and Vandystadt 2013). We thus find clear evidence of a 'Snowden effect' on the discursive-coalitional dynamics during the decision-making stage, and we also find that these discursive changes reflect and express the underlying political changes.[26]

So far, we have focused on the coalitional form, but ignored the content of the discourse. Figure 8 depicts the most common frames actors used both in favour of or in opposition to the GDPR for the periods before and after Snowden.[27] First, we find that more actors defend the GDPR on consumer protection grounds while fewer actors oppose it based on 'business-friendly' arguments, that is, arguments that criticize the GDPR for being overly restrictive or

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[26]These findings are confirmed by cluster analyses of the actor congruence networks. One approach is to use different community detection algorithms, which are based on the idea of grouping together actors that have a higher probability of being connected to each other than to members of other groups. These algorithms sometimes find more than two communities. But while they split the pro- and anti-GDPR coalitions into two or more sub-coalitions, they do not put actors that belong into either of these coalitions in the same community. And while different algorithms sometimes place actors with ties to both coalitions in different communities, they reliably place the core members of both the pro and the anti-GDPR coalition into their respective communities. The corresponding figures can be found in appendix B.3. Another approach is to assign actors to different communities based on theory and then compare the network density of these sub-networks with the density of the full network. Network density is based on the ratio of the number of edges and the number of possible edges. We would therefore expect the density to be higher for the coalitions than for the overall network (as members of coalitions should agree more with each other than with other actors). This is clearly the case for both time periods, as can be seen in appendix B.2.

[27]For details on these frames and how they were aggregated, see appendix B.1.

for hampering innovation. This is in line with our expectation that issue salience incentivizes actors to distance themselves from business interests.

Second, we find a stark increase in statements that defend the GDPR on geo-economic grounds, that is, with regard to the relevance of the GDPR for the politico-economic competition and rivalry between Europe and the United States (e.g. trade, protectionism, competition policy). Snowden, one could argue, has laid bare the dangers of being dependent on the United States in areas that are increasingly central economically and militarily. For many European actors, the GDPR thus became a way to assert European informational sovereignty in a world of weaponized and weaponizable interdependence (Farrell and Newman 2019).

On the one hand, our findings are thus compatible with other studies that provide more detailed, process-level evidence of how issue salience was indeed a reason for many actors to distance themselves from business interests (Kalyanpur and Newman 2019; Rossi 2016). On the other hand, our findings suggest that this was in fact only one causal mechanism by which the Snowden revelations were translated into coalitional change – with geo-economic conflict being the other.

3.6   Conclusion

We have made two arguments in this paper. First, we showed that issue-specific institutions both triggered and structured the political process leading to the GDPR. In particular, the 1995 data protection directive and the constitutionalization of data protection in the Lisbon Treaty have empowered Viviane Reding, DG JUST and the DPAs during the Commission's internal policy-formulation stage. The GDPR is thus an example of how institutional decisions made at one point in European history (the creation of DPAs or the constitutionalization of data protection) can have unintended consequences at later points (Newman 2008b; Pierson 1996). This seems particularly relevant for issues that have undergone dramatic changes

Statements made **in opposition to the GDPR** and **in favor of the GD**
Breakdown by Aggregated Frames
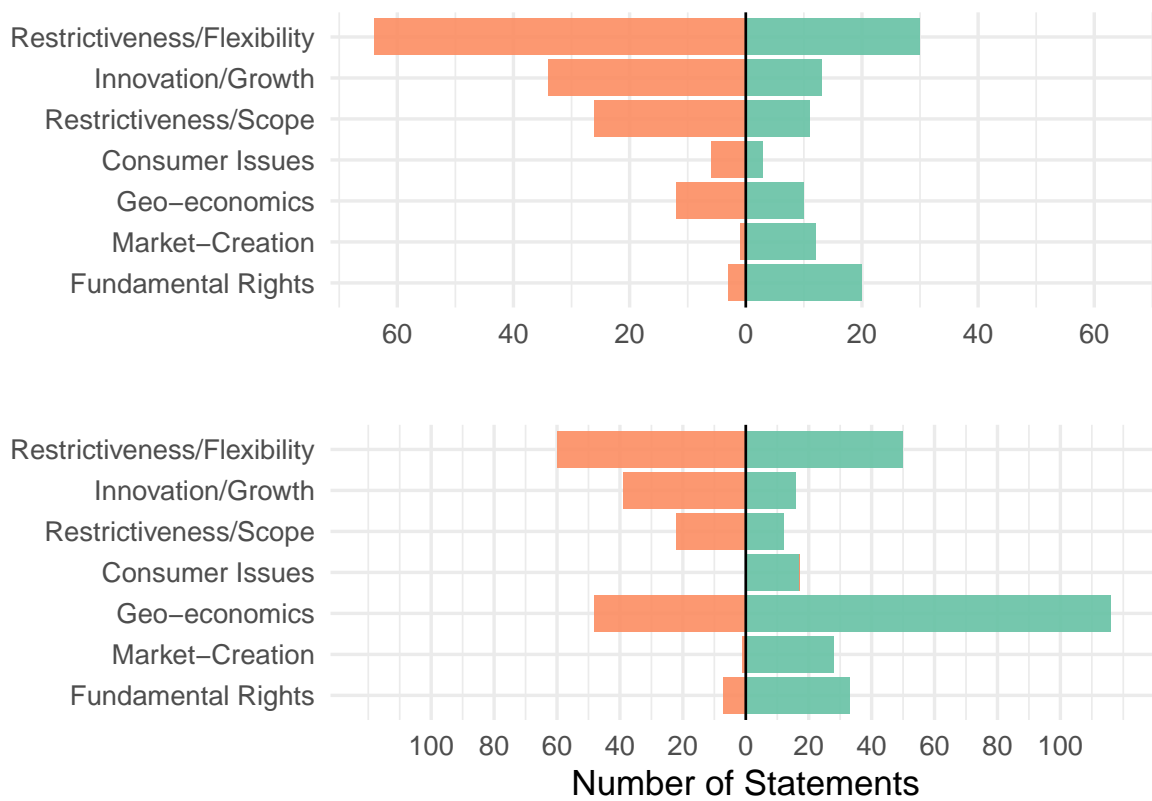
Figure 8: Aggregated concepts, before (top) and after (bottom) Snowden

since they were first institutionalized. Future research could thus focus on how issue-specific institutions, created many years ago, shape the EU's current digital agenda more broadly, or, conversely, how issue-specific institutions on the national level affect the implementation and enforcement of the GDPR, which – despite its harmonizing thrust – leaves member states 'significant leeway' (Mayer-Schönberger and Padova 2016, 318) in this regard.

Second, we showed that the GDPR was at the brink of being watered down by lobbyists only to be 'saved' by the Snowden revelations. This confirms the crucial role of issue salience for the coalitional dynamics of EU policymaking (Culpepper 2010) as well as the usefulness of discourse network analysis in making sense of the coalitional dynamics of EU policymaking. However, it also points to the importance of geo-economic conflicts for the politics of data protection. Future research should further investigate the links between geopolitical rivalry and economic interdependence in the regulation of digital markets (Farrell and Newman 2019).

What connects our two findings is the broader argument that the influence of business interests on policymaking depends on a variety of factors (Dür and Mateo 2016), and that chief among them are the specific institutions that already govern an issue, and its salience. Our study thus not only substantively contributes to our understanding of the GDPR, it also encourages scholars of EU policymaking to focus on issue-specific characteristics when trying to understand which interest groups gets what, when and how. Different issue-specific characteristics, our study has shown, can influence a policymaking process at different moments in time. Conversely, internet governance scholars should pay particular attention to existing institutions and salience when trying to understand the politics of data protection. The Cambridge Analytica scandal, for example, played a similar salience-boosting role for California's recent Consumer Privacy Act as the Snowden revelations did for the GDPR (Confessore 2018). This reminds us that understanding the GDPR can help us understand

how polities across the globe regulate personal data in an increasingly data-driven world economy.

4 Talkin' bout Digitalization. A Comparative Analysis of National Discourses on the Digital Future of Work[28]

Abstract: New forms of work intermediation - the gig economy - and the growing use of advanced digital technologies - the new knowledge economy - are changing the nature of work. The digitalization of work, however, is shaped by how countries respond to it. Following a discursive-institutionalist approach, we argue that to understand how countries respond to digitalization we need to understand how they perceive and conceive of it in the first place. Using various methods of quantitative text analysis on a novel corpus of translated newspaper and policy documents from eight European countries as well as qualitative evidence from interviews and secondary sources, we show that there are clear country effects in how digitalization is framed and fought over; that formal and informal institutions are crucial to understand these differences; but that actors can also use their discursive agency to defend or attack these institutions.

4.1 Introduction

From manufacturing goods to building relationships, from daily business to everyday life, from credit scores to social scores: digital technologies are rapidly transforming the way we live our lives and run our economies. But digitalization is no force of nature. It does not just

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[28]This chapter was co-authored with Matteo Marenco.

sweep over the world, leveling everything in its path. Rather, it is molded and channeled by the uneven landscape of history and politics. Take the ride-hailing platform Uber as an example.

Uber has aggressively rolled out its app in dozens of countries, probing the bounds of existing labor and taxi regulations (Seidl 2020). Different countries, however, have "responded in wildly different ways to [Uber] – from welcome embrace and accommodating regulatory adjustments to outright rejection and legal bans" (Thelen 2018, 938). And not only that. The advent of Uber also provoked very different discursive "flashpoints" (Thelen 2018, 939) around which political struggles later revolved (e.g. taxation, competition, employment rights). These flashpoints, while resulting from institutional differences (e.g. different welfare systems), shaped the terms of public discourse on Uber. They led to the mobilization of different actors and the formation of different coalitions (e.g. taxpayers and regulators vs. Uber, Uber and consumers vs. drivers), which help explain the different regulatory responses (Thelen 2018).

This teaches us two lessons: first, we need to understand that platform companies like Uber are not only regulated differently; they are also talked and thought about differently (e.g., as a taxation vs. a labor law problem). Second, to understand political responses to digitalization, we need to understand how formal and informal institutions influence the terms on which political struggles are fought and framed. For country-specific characteristics "do not simply channel the same conflict in distinctive ways" but often "translate seemingly common trends into wholly different problems in divergent national contexts" (Thelen 2018, 939).

An institutional theory of digitalization, therefore, not only needs to account for "diverse responses to common challenges" (Steinmo and Thelen 1992, 6) but also for how seemingly common challenges are "refracted into *divergent* struggles over particular national practices" (Locke and Thelen 1995, 338). This refraction, we contend, happens in discourse, that is,

when actors voice their concerns about digitalization and express what they think are its defining features and central challenges (Kjær and Pedersen 2001; Schmidt 2008; Wueest 2013). It is in such discursive conflicts that global trends are translated into local problems – problems which subsequently influence the scope and nature of political solutions (Hay and Rosamond 2002).

To be clear, our argument is not that discourse is all that matters. To the contrary, discourse itself is molded by the institutional, as well as socio-economic, background against which it unfolds. But digitalization also provides actors with an opportunity to challenge the very status quo that constrains and shapes their agency (Bell 2012). In this article, we put forward a discursive-institutionalist analysis of the varying ways in which digitalization is 'talked about' in eight European countries. We use various text-as-data approaches (Grimmer and Stewart 2013) on a novel dataset of text corpora to show how actors talk about digitalization (sentiment analysis) and what they talk about (keyword extraction, topic modeling). In addition, we use more qualitative evidence from interviews and fieldwork as well as secondary sources to contextualize these findings and show what actually happens 'on the ground'. Our datasets consists of two types of corpora: articles in quality newspapers to analyze 'communicative discourse' between political actors and the public; and policy documents such as government white papers or manifestos by trade unions and business groups to analyze 'coordinative discourses' among policy actors (Schmidt 2008).

While digitalization is a multi-faceted process, we limit our analysis to one of its most important dimensions: the digital transformation of work (Neufeind, O'Reilly, and Ranft 2018). This refers to both the emergence of new forms of online and offline work intermediation through digital platforms ('gig economy') (de Stefano 2016; Prassl 2018); and the growing use of advanced digital technologies like artificial intelligence to further rationalize the production process ('new knowledge economy') (Brynjolfsson and McAfee 2014; Schwab 2016). The former poses the problem of how to adapt labor regulations and social security

systems to novel – and often highly precarious – forms of work; the latter raises the question of how to prepare workers for – and compensate them in – a world in which machines can perform more and more tasks.

Our results suggest that digitalization is indeed talked and thought about in very different ways in different countries, and that these differences reflect underlying politico-economic differences (Wueest 2013). In particular we show that while socioeconomic factors matter, institutions are the primary source of national differences, or "country effects" (Lloyd and Payne 2019) in how digitalization is discussed. Based on our findings, we develop a typology of digitalization discourses that captures how collaborative (vs conflictual) as well as how opportunity-focused (vs threat-focused) national discourses are. In addition, we show that while institutions are crucial, actors can also use digitalization to challenge or reinvent these institutions.

Our paper makes three contributions. First, we provide a comprehensive mapping of digitalization discourses in a diverse set of eight European countries, showing that digitalization is far from being the same problem everywhere. Second, we theorize and empirically demonstrate how formal and informal institutions mediate the digital transformation of societies and economies by shaping how digitalization is framed and fought over. Third, we show how novel text-as-data methods can be used to answer discursive-institutionalist questions, even and perhaps especially when they are comparative in nature.

We proceed as follows. We will first present our research questions and elaborate on our argument. We then outline our theoretical framework. Next, we explain our dataset and methodological approach, and discuss our empirical results. We conclude with a brief summary of our results and a discussion of the contributions and shortcomings of our paper.

4.2   Research Questions & Argument

Technological change is often portrayed as an unstoppable, tsunami-like force that simply rushes over societies. Economic history, however, is full of examples of 'successful' resistance to or differential adaption of new technologies (Frey 2019). In fact, whether new technologies are outrightly banned or eagerly introduced – or anything in between – "depends on who stands to gain from them and the societal distribution of political power" (Frey 2019, xii). Technological change, in other words, is a profoundly political and politically contested process whose outcome depends not just on the technologies themselves but on how countries react to them (Kranzberg 1986). And these reactions can differ quite dramatically.

But how to explain this variation? While much work on digitalization is rather devoid of a comparative perspective, an emerging 'varieties-of-digitalization' literature has started to pay attention to 'country effects' in the way that digitalization is viewed and responded to (Lloyd and Payne 2019; Thelen 2018). In this paper, we build on this literature – as well as existing country case studies – to draw attention to three things: first, to the systematic differences in the way that digitalization is thought and talked about in different countries; second, to the importance of formal and informal institutions in structuring the way digitalization is understood; and third, the limited although important role of discursive agency in challenging and changing existing institutions. Our framework is thus best described as a 'weakly constructivist' form of discursive institutionalism that focuses on "interpretive agents *within* institutional settings" (Bell 2012, 717).

We use this framework to answer three research questions. First, are there relevant and theoretically meaningful differences in the way countries talk about digitalization? Finding descriptive differences in discursive tone or content is the minimal condition for a discursive-institutionalist account of country effects. Put differently, mapping discursive diversity is a precondition for explaining it.

Second, to the extent that there are such 'country effects', how do we explain them? We limit ourselves to a simple distinction here: are responses to digitalization the result of relatively straightforward socioeconomic factors such as sectorial composition or position in the global economy? Or are they shaped by formal and informal institutions such as labor market regulations or the organization of – and relationship between – unions and employers?

Third, to what extent do different discourse merely reflect politico-economic differences – economic or institutional – and to what extent do they leave room for discursive agency? In other words, is discourse mainly a locus of continuity where structurally or institutionally powerful actors express their interests? Or is it a locus of change in which actors can challenge existing ways of thinking about and doing things? The example of Uber has shown that different discursive flashpoints organize debates around platform work and thus shape the coalitions in favor of specific regulatory responses. But do these discursive flashpoints merely reflect underlying institutional differences, or is there room for genuine discursive agency?

Our discursive-institutionalist conjecture is that discourses on digitalization i) differ systematically across countries (the descriptive part) because ii) institutional differences give different meaning and relevance to it (the institutional part); and iii) because actors can use discourse to build new coalitions or drive a wedge between existing ones, thereby challenging and changing existing institutions (the agency part).

These arguments reflect the two sides of the structure-agency debate in institutional theory. On the one hand, institutions are said to structure the ways in which novel problems are perceived, conceived, and ultimately assimilated. On the other hand, such accounts are criticized for being overly deterministic and for downplaying the opportunities that novel problems present to actors that are interested in changing (or shoring up) institutional arrangements. For us, as the next section fleshes out, these two arguments can be reconciled in a weakly constructivist discursive-institutionalist framework which uses discourse analysis in two ways: as a methodological window into how institutions become effective in political

practice, namely by shaping how novel problems are framed and fought over; and as a theoretical device to build more "rounded accounts of agency within institutional settings" (Bell 2012, 718) that take seriously the possibility of discretionary spaces.

4.3   Theoretical Framework

Discursive institutionalists such as Vivien Schmidt (2008) have criticized historical institutionalists for downplaying the ability of actors to reassess, reinterpret, and ultimately reform existing institutions. Institutions are not as "sticky" and actors not has "unthinking" as they are made out to be (Schmidt 2008, 313–14). Rather, actors can use their "foreground discursive abilities (. . .) to think, speak, and act outside their institutions even as they are inside them, to deliberate about institutional rules even as they use them, and to persuade one another to change those institutions or to maintain them" (Schmidt 2008, 314).

Similarly, historical institutionalists themselves have highlighted the role of actors in changing institutions by exploiting the inevitable incompleteness and ambiguity of institutions (Streeck and Thelen 2005, 14). What an institution "really means" is never quite clear but is negotiated in a continuous "interpretative struggle" over its meaning, scope, and legitimacy (Streeck and Thelen 2005, 14–15). Actors can thus, in principle, challenge and change the institutions in and under which they operate.

But how far does this ability go? How much is agency constrained by institutional structure? For Schmidt, institutions "frame" discourse by defining the "contexts within which repertoires of more or less acceptable (and expectable) ideas and discursive interactions develop" (Schmidt 2008, 314). While theoretically sound, such an account also seems overly voluntaristic in practice as it discounts – or at least eschews an analysis of – the very stickiness and 'patterning' effects that inspired institutionalist analyses in the first place (Bell 2012; Crouch 2005).

It is difficult to change institutions, because they create lock-in effects, increasing returns, and other path-dependent dynamics that sustain the coalitions that support them (Hall 2016). In addition, ideas themselves can be path-dependent in that they shape how novel problems are viewed and encourage reforms that fit imagined national models (Cox 2004; Kjær and Pedersen 2001). Thus, to challenge and change existing institutions, actors need to subvert, rearrange, or circumvent the entrenched support coalitions that underpin them.

The spread of digital technologies and business models creates an opening for such institutional contestation. Because it upends existing ways of doing things, it induces uncertainty and thus provides actors with a window of opportunity to call existing institutions into question. Discourse – be it the "communicative discourse" between policymakers and the public or the "coordinative discourse" among policymakers themselves (Schmidt 2008, 310) – is where actors have to make their interpretations count. It is in discourse where actors have to translate the 'common challenge' of digitalization into concrete local problems that make sense in light of national models (Cox 2004; Kjær and Pedersen 2001); and it is in discourse where actors can either solidify the coalitions that underpin existing institutional arrangements, or drive a wedge between them (Seidl 2020).

However, actors' general understanding of and attitude towards digitalization does not come out of nowhere. What actors 'make of' digitalization is shaped by their "background ideational abilities" (Schmidt 2008, 314). Those operate either through a logic of rational calculation (often emphasized by rational-choice institutionalists) where 'hard' socioeconomic factors such a country's sectorial composition shape actors' interests; or through a logic of path-dependence (often emphasized by historical institutionalists) or a logic of norm appropriateness (often emphasized by sociological institutionalists) where formal rules as well as informal practices and beliefs influence actors' interests and identities. We argue that it is such formal and informal institutions that chiefly shape actors' view of digitalization.

By taking seriously both the effect of (institutional) context on actors' background ideational abilities and the discursive agency they have as a result of the foreground ideational abilities, our approach avoids both overly deterministic and overly voluntaristic conceptions of institutional stability and change. As such, it allows us to make sense of two things at the same time: i) how the common trend of workplace digitalization is not in fact "translated into common pressures in all national economies but (...) refracted into divergent struggles over particular national practices" (Locke and Thelen 1995, 338); and ii) how actors can use the interpretative struggles over digitalization to challenge and change these national practices.

4.4   Empirical Strategy & Data

Testing the twin arguments of institutional structuring and discursive agency requires combining two empirical strategies. First, we need ways to systematically assesses whether and how discourses on digitalization differ across countries. Second, we need ways to connect these findings to the actual political strategies of social actors – their efforts in defending and defecting from existing institutions, and in keeping together or breaking apart the coalitions that sustain these institutions. The first task is accomplished using methods of quantitative text analysis; the second one through triangulating these findings with case studies based on fieldwork and secondary sources.

For the quantitative text analysis, we compiled two novel text corpora for eight European countries: France, Germany, Ireland, Italy, Poland, Spain, Sweden, and the United Kingdom. The rationale for our case selection was to investigate discursive diversity among countries that share some basic commonalities. Each of our eight countries, with the partial exception of Poland, is an advanced capitalist democracy, and each was, for the period under study, a medium-sized to large member of the European Union. Despite these similarities, the countries under study also differ in important respects, both with regard to the structure

of their economy and with regard to their institutional makeup. This constrained diversity provides us with the appropriate setting to study how structural and institutional diversity is reflected in discourse.

The first corpus we collected consists of 6235 newspaper articles that directly relate to the digitalization of work and were published between 2013 and 2019. Articles were collected from major national newspapers, either directly or via Factiva. We prioritized quality over quantity (cf. Nicholls and Culpepper 2020), selecting only articles that contained an explicit reference to the gig economy, workplace automation and robotization (including artificial intelligence), or the fourth industrial revolution or Industry 4.0 in their headline or lead paragraph (for details, see appendix C.1). This corpus represents what Schmidt (2008) calls the communicative discourse between policymakers and the public and is broadly reflective of the overall public discourse on digitalization in a country.

The second corpus consists of 2337 (sometimes split) documents published between 2012 and 2019 by major social partners, namely unions, governments or ministries, and employer organizations. Documents were collected from the web, based on relevant search strings and available lists of the main stakeholders in each country (e.g. the national member organizations of the European Trade Union Confederation). Longer documents (over 40.000 characters) were split chapter-wise or similarly to have more and more meaningful units of analysis (for details, see appendix C.3.1). This second corpus represents what Schmidt (2008) calls the coordinative discourse among policymakers and is broadly reflective of the elite discourse on digitalization.

Substantively, both corpora cover the digitalization of work, which we understand as a two-pronged process. The first prong refers to new platform business models that enable and control novel interactions between buyers and sellers of labor; the second prong refers to the ways in which digital general purpose technologies increasingly affect the ways in which business organize production in both the service and the industrial sector ('Industry 4.0').

We thus distinguish between new forms of online and offline work intermediation through digital platforms – what is often referred to as the 'gig economy' (de Stefano 2016; Prassl 2018); and the growing use of advanced digital technologies that promise to transform the production process more generally – what is variously referred to as the second machine age, the fourth industrial revolution, or the (new) knowledge economy (Brynjolfsson and McAfee 2014; Schwab 2016).

These two dimensions of digitalization come with different challenges. The former intensifies existing trends of workplace casualization (de Stefano 2016). It poses the problem of how to adapt labor regulations and social security systems to minimize the costs while maximizing the benefits of new, digitally intermediated forms of work. The latter intensifies existing trends of industrial and service-sector automation and routine-biased technological change (Frey 2019). This raises the question of how to make sure that workers have the necessary skills to remain in the labor market or are provided with alternative sources of income.

Both corpora were automatically translated into English, using Google's Translate API. Other studies have shown that this works as well as gold-standard translations for both dictionary-based and unsupervised methods of text analysis (Proksch et al. 2019; Vries, Schoonvelde, and Schumacher 2018). Building on these studies, we use the translated corpora as input for various methods of automated text analysis. First, we are interested in how digitalization is talked about in a given country. For that purpose, we use sentiment analysis to identify the relative number of positive versus negative terms in different documents. We combine a dictionary-based approach with natural language processing to identify and account for negators (e.g. not, neither), amplifiers (e.g. very, quite) and deamplifiers (somewhat, hardly) (for details, see Appendix C.3.1).

Second, we are interested in what is said in a given country. To investigate this, we use various keyword extraction techniques as well as structural topic modeling.[29] Keyword extraction techniques make it possible to identify words or n-grams that capture essential content. We use four of such techniques: the RAKE algorithm, the textrank algorithm and sentence-based as well as skipgram-based co-occurrence metrics (for details, see appendix C.3.2).

Topic modeling allows us to identify common themes in our corpus. Topics are modeled as probability distributions over words and documents as probability distributions over topics (Blei 2012). Put differently, topics are understood as combinations of words (or n-grams) and documents as mixtures of topics. Structural topic modeling extends this basic topic model by allowing observed covariates to influence the proportion of a document devoted to a topic (the topic prevalence), which allows us to estimate the conditional expectation of a topic occurring given that a document is from a certain country or part of the communicative discourse. We chose a topic model with k = 60 topics, some of which we subsequently combined into "frame packages" (Nicholls and Culpepper 2020, 11). Appendix C.3.4 provides a detailed discussion of our choice of k, preprocessing steps, interpretation, and validation, as well as a complete list of topics with terms, labels, and assigned frame package.

We also rely on qualitative evidence obtained from interviews and fieldwork in some of the countries in our sample (France, Spain, Italy, Germany), as well as on journalistic or academic sources. The purpose of these more qualitative studies is two-fold: first, to let the quantitative discourse analysis 'come to live', i.e. to show how discursive differences relate to what actually happens 'on the ground'; and second, to zero in on the relative importance of institutional structure and discursive agency which we can only superficially analyze quantitatively.

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[29]We also use a version of word vectors. For details and results, see appendix C.3.3.

4.5 Results & Discussion

Do discourses on the digital future of work differ in tone and content across countries, and if so, how do we explain these differences? Here, we first look at the tone of discourse and tentatively derive a typology of digitalization discourses. We then flesh out this typology by looking at the content of discourse. In both cases, we combine quantitative evidence – from the sentiment analysis in the case of discursive tone and from keyword extraction methods and topic models in the case of content – with qualitative evidence from secondary sources and interviews.

4.5.1 The Tone of Discourse

The relative number of positive versus negative words is a good proxy for a country's view of digitalization: is it perceived as something bad, threatening, destructive? Or as something good, promising, useful? Figure 9 plots discursive sentiment across different countries, for different dictionaries as well as separately for coordinative and communicative discourses (with values averaged across dictionaries). A first finding is that Sweden has by far the most positive discourse. Importantly, this cannot be explained by the country's economic position alone. The UK or Ireland also have service-dominated economies with many companies close to the digital frontier. But they perceive digitalization more negatively. We argue that what explains these differences is not the structure of Sweden's economy but the nature of its institutions.

Specifically, Sweden has an institutionalized tradition of proactively and inclusively adapting to technological change. This makes digitalization a lot less scary (Katzenstein, 1985). Sweden's embracing view of digitalization is epitomized by the opening quote of a recent report by its digitalization commission: *Tempora mutantur nos et mutamur in illis* – the times change, and we change with them. "In Sweden", as the Swedish minister for
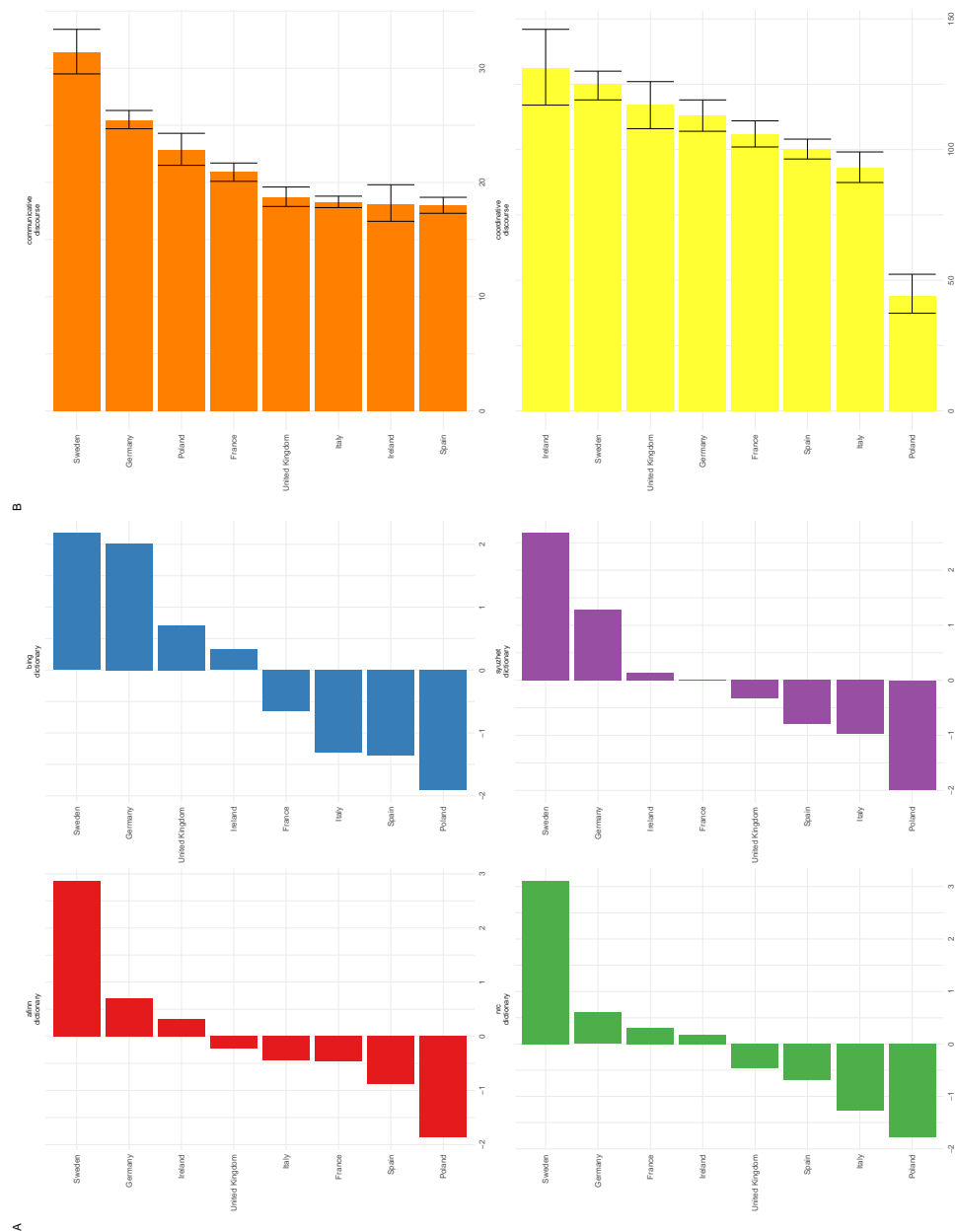
Figure 9: Discursive sentiment across countries. Subfigure A shows normalized average sentiment scores in different countries for different dictionaries. Results from coordinative and communicative discourses were normalized first and then summed up in order to give them equal weight (since coordinative discourses are generally much more positive). Subfigure B shows averaged normalized average sentiment scores (averaged across dictionaries) in different countries for the communicative and coordinative discourse with 95 % bootstrapped confidence intervals (R = 10000)

employment and integration, Ylva Johansson, put it, "if you ask a union leader, 'Are you afraid of new technology?' they will answer, 'No, I'm afraid of old technology. (. . .) The jobs disappear, and then we train people for new jobs. We won't protect jobs. But we will protect workers" (Goodman, 2017). Institutionally, this is reflected, among other things, in the country's job security councils, which are jointly run by employers and trade unions and which give intensive support and retraining to people when they are laid off. As we will further see below, Sweden's ability to collaboratively negotiate technological change fundamentally changes the country view of and reaction to digitalization.

The UK and Ireland lack such a system of institutionalized cooperation between winners and losers of technological change. This results in a particularly negative communicative discourse and a more polarized coordinative discourse among social partners. The Irish government, for example, is very sanguine about digitalization, having long espoused an active policy of catering to tech companies and casting Ireland as a digital frontrunner (Brazys and Regan 2017). The Irish public, however, is more worried about digitalization's potential downsides and inequities. Similarly, the British government frames digitalization very positively, but its unilateral celebration of digitalization as a vindication of and boost to the British way does not dovetail with a more skeptical public. Unions are likewise irritated by the government's unilateral approach. The government, for example, did not involve unions in drafting the UK's digital industrial strategy, and it one-sidedly stressed the benefits of the flexible 'British way' in its response to the Taylor Review of Modern Working Practices (UK Government 2018). This response struck many as rather tone-deaf at a time when digitalization threatened to exacerbate the downsides of the flexible British labor market. Again, it is institutions – in this case a lightly regulated labor market and a unilateral (as opposed to corporatist) style of policymaking – that explain discursive differences.

Importantly, however, we also see that digitalization can create openings for actors to challenge the institutional status quo. Using an aggressive style of campaigning that

highlighted the conflicts and inequities in the British labor market, the Independent Workers Union of Great Britain (IWGB) successfully raised awareness for the working conditions not just of gig workers but of precarious workers in general. As the IWGB's vice-president Mags Dewhurst puts it, "this isn't just about the gig economy. All business is going more and more digital, leaner and leaner. (...) Next, it will be banking and retail. These bad practices have to be stopped now" (Roberts, Stewart, and Airoldi 2016). Thus, the IWGB has used the spotlight that digital platforms have put on the inequities of the British labor market to challenge this labor market more broadly, for example by pointing to the wide-spread non-enforcement of labor rights, which is not limited to platform companies (Roberts, Stewart, and Airoldi 2016).

It is, however, not all about institutions. Italy, Poland and Spain have the most negative discourse on digitalization, and it is plausible to assume that this has to do with their relatively large distance to the digital frontier. Public discourse reflects wide-spread fears that digitalization will expose and exacerbate existing problems of sluggish productivity growth, poor policymaking, and informal employment. On the other hand, Italy and Spain have more positive coordinative discourses, reflecting a plethora of initiatives – such as the Italian National Plan for Industry 4.0 or the Spanish Connected Industry 4.0 agenda – to use digitalization to end the countries' economic malaise and catch up with its more advanced peers. Poland, meanwhile, stands out by having a particularly negative coordinative discourse. Unlike in countries with established tradition of social and policy dialogue, there is a conspicuous lack of forward-looking plans and institutionalized cooperation in Poland (see below).

In sum, the tone of public discourse clearly differs across countries. As the above discussion has hinted at and as the analysis of discursive content will flesh out, discourses differ along two dimensions. The first dimension relates to how collaborative policymaking is. Specifically, corporatist countries seem to be better at mitigating fears of technological dis-

ruption. This is because the losers of technological change can plausibly assume that they will either be compensated in the digital future or prepared for what it brings (cf. Katzenstein 1985; Ornston 2012). The stakes are higher in countries with a more conflictual style of policymaking, where each side has to fear that the other gets its way and one ends up getting the short end of the stick. The second dimension has to do with whether previous experiences with technological change and a country's politico-economic makeup incline countries to perceive digitalization as an opportunity or as a threat. Is a country likely to benefit from digitalization? Can it be an opportunity to overcome existing problems or will it make them worse? While the first dimension reflects purely institutional differences, the second dimension has both economic and institutional elements (e.g. the distance to the digital frontier, the nature of the labor market).

Table 3 brings these two dimensions together, distinguishing between four ideal typical discourses. If the policymaking style is collaborative and digitalization is viewed as an opportunity, a proactive discourse dominates in which digitalization is embraced and the emphasis is on investments that help workers and companies survive and thrive in a digital economy. If the policymaking style is at least somewhat collaborative but digitalization is viewed as a threat, the focus is on how to passively compensate individuals and business that stand to lose from digitalization. If the policymaking style is conflictual and digitalization is viewed as an opportunity, the discourse will be unilateral in the sense of different actors emphasizing their own and often conflicting interpretations of how digitalization can benefit society. If the policymaking style is conflictual and digitalization is viewed as a threat, a Luddite discourse will emerge in which actors try to stop or reverse digitalization to the extent that it hurts them. The following paragraphs will add empirical flesh to these conceptual bones by zeroing in on the content of discourse, and by showing how actors can use their discursive agency to shift discourses from one quadrant to another.

Table 3: Typology of Digitalization Discourses

		Policymaking Style	
		Collaborative	Conflictual
Digitalization Perception	Opportunity	**Proactive Discourse**	**Unilateral Discourse**
	Threat	**Compensatory Discourse**	**Luddite Discourse**

4.5.2 The Content of Discourse

Not only do digitalization discourses differ in tone, they also differ in content. Figures 10 depicts the most important keywords identified by three keyword extraction algorithms.[30] It lists the unigrams and bigrams that we can think of as most 'essential' to the respective national discourses. They capture the issues around which national discourses revolve. Figure 11 depicts the estimated effect of the country covariate on the prevalence of different topics (or aggregation of topics). It depicts the conditional expectation of a bundled set of topics or 'frame package' to occur in a document given that this document is from a given country. It thus helps us answer the question which topics are important in some countries relative to others.

So far, we have encountered Sweden as a country with a proactive discourse on digitalization. But while some aspects of digitalization play into Sweden's hands, others challenge core pillars of its social model. On the one hand, the country's corporatist institutions and "ideology of social partnership" give it an ability "to live with change" instead of resisting (Katzenstein 1985, 32, 211; Ornston 2012). This "asymmetric embrace of markets" (Pontusson 2011, 107) credibly ensures flexible-yet-inclusive adjustments, which, as we have seen, manifests itself in a remarkably positive discourse on digitalization. On the other hand,

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[30]For details on these methods, and for similar results using the textrank algorithm, see appendix C.3.2.

platform companies like Uber challenge the country's tax-based welfare state and collective bargaining tradition by systematically avoiding taxes and labor market regulations.

Quantitatively, we see this reflected in the strong emphasis on taxation issues. In fact, tax evasion in the gig economy is a far more important topic in Sweden than in any other country, and mainly so among social partners. Qualitatively, we see this mirrored in the fact that the "prime concern" of Unionen, Sweden's biggest trade union, is not the employment status of gig workers but that labor platforms follow Swedish taxation rules and collective agreements (Söderqvist 2017; cf. Thelen 2018). In what is strong evidence for ideational path-dependence, Unionen has developed a "Nordic approach to regulating labour platforms" that wants to make "collective agreements easier to integrate and more compatible with the platform firms' software, in essence developing digitalized versions of existing collective agreements" (Söderqvist 2018, 301). In short, rather than banning digital business models, Unionen wants to make it easier for digital platforms "to be good platforms" (Soederqvist, 2017). Thus, despite the challenges it poses, even Swedish unions see digitalization more as an opportunity – as something that requires a particular response but can ultimately strengthen the Swedish model as long as one is "proactive in the implementation of the new technology" (Wallin 2017).[31]

In Germany, the newest wave of digitalization has brought "deep and transformational changes" (Diessner, Durazzi, and Hope 2020, 10) to the country's dominant manufacturing sector, which has sparked an intense debate about its future. This debate, however, was and is not about abandoning manufacturing but about defending it through focusing on the "digital transformation of products and production within the traditional industrial core"

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[31]This positive, proactive attitude is echoed in Sweden's corporatist Scandinavian neighbors. In Norway, both unions and employers view automation as fundamental to maintaining the country's labor market and welfare model (Lloyd and Payne 2019, 217) while the Danish union 3F signed one of the first collective agreements with a digital platform: the cleaning service platform Hilfr.
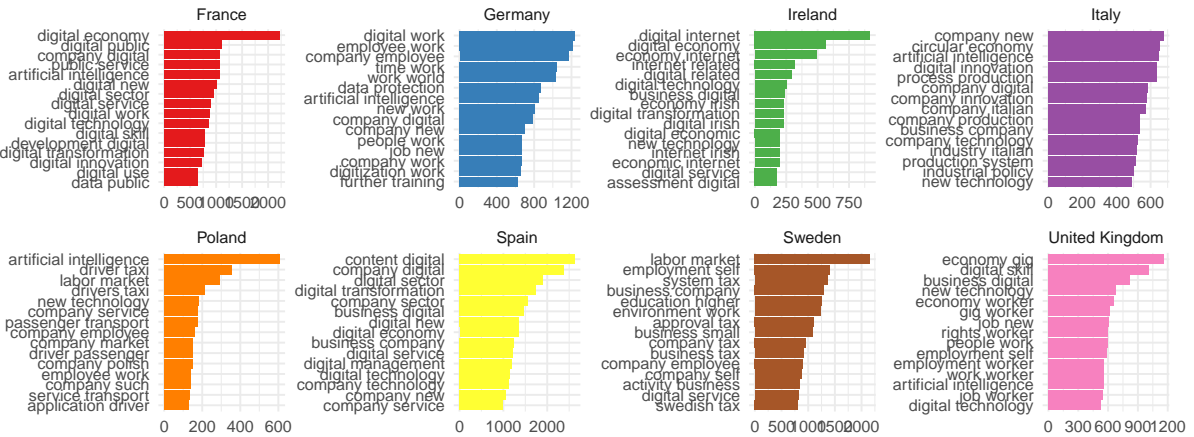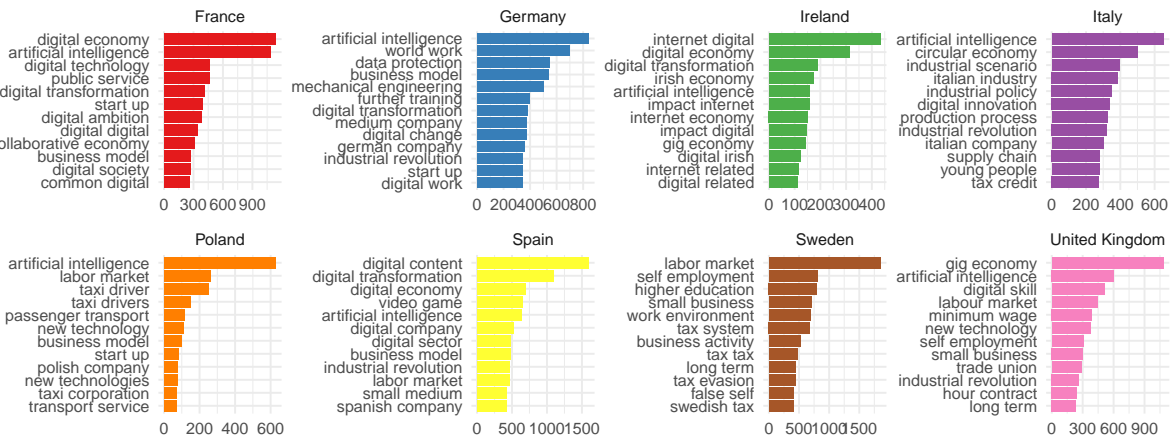
Figure 10: Keywords across countries. Subfigure A depicts the words or phrases with the highest RAKE score across countries. Subfigure B depicts bigrams that occurred most often within a skipgram of size 3. Subfigure C depicts the bigrams that occurred most often within a sentence across countries

(Thelen 2019, 295). We see this discursive shift reflected in the centrality of digital manufacturing in the German discourse, which comprises topics such industry 4.0, smart factories, or cloud computing. What explains this "ongoing active adaption" (Thelen 2019, 302) to more knowledge-intensive types of manufacturing is the sectorial organization of German producer groups and the dominance of its manufacturing sector therein. This dominance put digital manufacturing high on the agenda and led to a push for higher investments in education and R&D to support this adaption (Thelen 2019, 300–304).

It is striking to see that across social groups, the challenges posed by digitalization have not been met with protective defensiveness but with a rather proactive willingness to meet them head-on. Central political actors have used their discursive agency to frame digitalization not as something that should be cushioned by compensatory policies but as something that can and should be actively shaped. The SPD-led labor ministry, for example, started a big debate on the future of 'good work' with its influential white paper 'Work 4.0', which served as a discursive focal point. Rather than being overtaken by events, the ministry actively initiated a debate on what 'good work' could look like in the digital age. Moreover, it systematically involved social partners in coming up with answers. This helped shift the debate into issues that different actors could live with or find common ground on, such as flexible working time, training, or data protection. We see this reflected in the keywords on data protection, work time, and further training as well as in the importance of the skills and education frame package.[32]

Contrary to their conservative reputation, German unions, too, have "opted to go on the offensive and adopt a strategy aimed at securing active participation in shaping change, as opposed to rejecting it and then fighting over the consequences" (Haipeter 2020, 242).

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[32]We also this reflected in a topic that is specifically on work councils, collective agreements, data protection, and flexible working hours.

They have also concentrated on the above-mentioned issues. This allowed them to have a say in shaping digitalization rather than just slowing it down or compensating its losers. They have chiefly done so through work councils and workplace-level agreements, which is quite remarkable given that work councils were not always so proactive about technological change (Haipeter 2020, 247). Germany's corporatist institutions thus channel the German debate in ways that are related to but cannot be derived from the particular challenges the country's manufacturing-heavy and export-oriented growth model faces. At the same time, political actors use the corporatist institutional environment to push issues onto the agenda that allow them to have a say in how digital technologies are used, while often doing so in ways that break with institutional path-dependencies.

Institutions also shape the terms on which digitalization is discussed in the UK, where there is a wide-spread perception – further bolstered by combative unions – that digital platforms threaten to put an additional strain on already highly flexible labor markets. We can see this in the many references to gig work, self-employment, zero-hour contracts, or minimum wages. We also see it in the importance of topics about the legal and economic status of platform workers, which, *nota bene*, is particularly prevalent in communicative discourses. In a climate dominated by fears of a further erosion of worker's rights and the unequal effects of automation on the labor market, even the conservative government had to concede that certain minimum standard needed to be upheld. But it also emphasized the importance of defending "the UK's position as one of the best places in the world to do business" (UK Government 2018) by continuing the business-friendly tradition of the 'British way'. This has led to a fairly conflictual discourse in which concerns over the regulation of labor platforms (e.g. over the regulation of Uber in London) are layered on top of a wider conflict over the nature and merits of this 'British way'.

Tellingly, topics that are about the threat of automation – either as destroying jobs or increasing inequality – are by far the most prominent in the UK and Ireland. At the same

time, topics that are about investments in knowledge-based capital, mainly skills but also universities, research, and digital infrastructures, are much less important. These topics figure more prominently in corporatist Sweden and Germany (as well as in coordinative discourses generally). In Germany, in addition to the unions' efforts to put further training center stage, education has been a central concern for the ministry for labor and employment. In fact, the ministry has even toyed with rebranding itself as the ministry for labor and qualification and introducing a right to lifelong learning (anonymous interviewee). In Sweden, Unionen sees digitalization as an important opportunity to mobilize people around the issue of skill formation: "For a trade union movement that has spent decades trying to convince legislators to invest in lifelong learning, the challenge of digitalization has finally pushed the issue higher up the agenda" (Söderqvist 2018, 298). Such supply-side investments also found "ready allies" (Thelen 2019, 305) among Sweden's most influential business groups (cf. Ornston 2012).

This underscores the point that corporatist institutions create more future-oriented discourses by allowing actors to collaboratively focus on positive-sum responses to digitalization while mitigating fears of automation (Hicks and Kenworthy 1998). In the UK and Ireland, such corporatist institutions are much weaker. Especially in Ireland, but also in the UK, there is a debate about digital industrial policy, i.e. government measures to support the competitiveness of domestic companies in the digital age. But this debate is precisely not about collaborative investments in knowledge-based capital but about how the government can support domestic businesses through venture funds, taxation, or other developmental tools (for Ireland, see Brazys and Regan 2017).

Unsurprisingly, public initiatives are a major topic in France as well, where the state traditionally plays an important role in steering economic transformations (cf. Trumbull 2004). The national plan on Artificial Intelligence by the Hollande administration is one example of this, Macron's presidency's ambition to transform France into a 'start-up nation' another. France also has an intense debate on gig work. The 2016 *Loi Travail* introduced
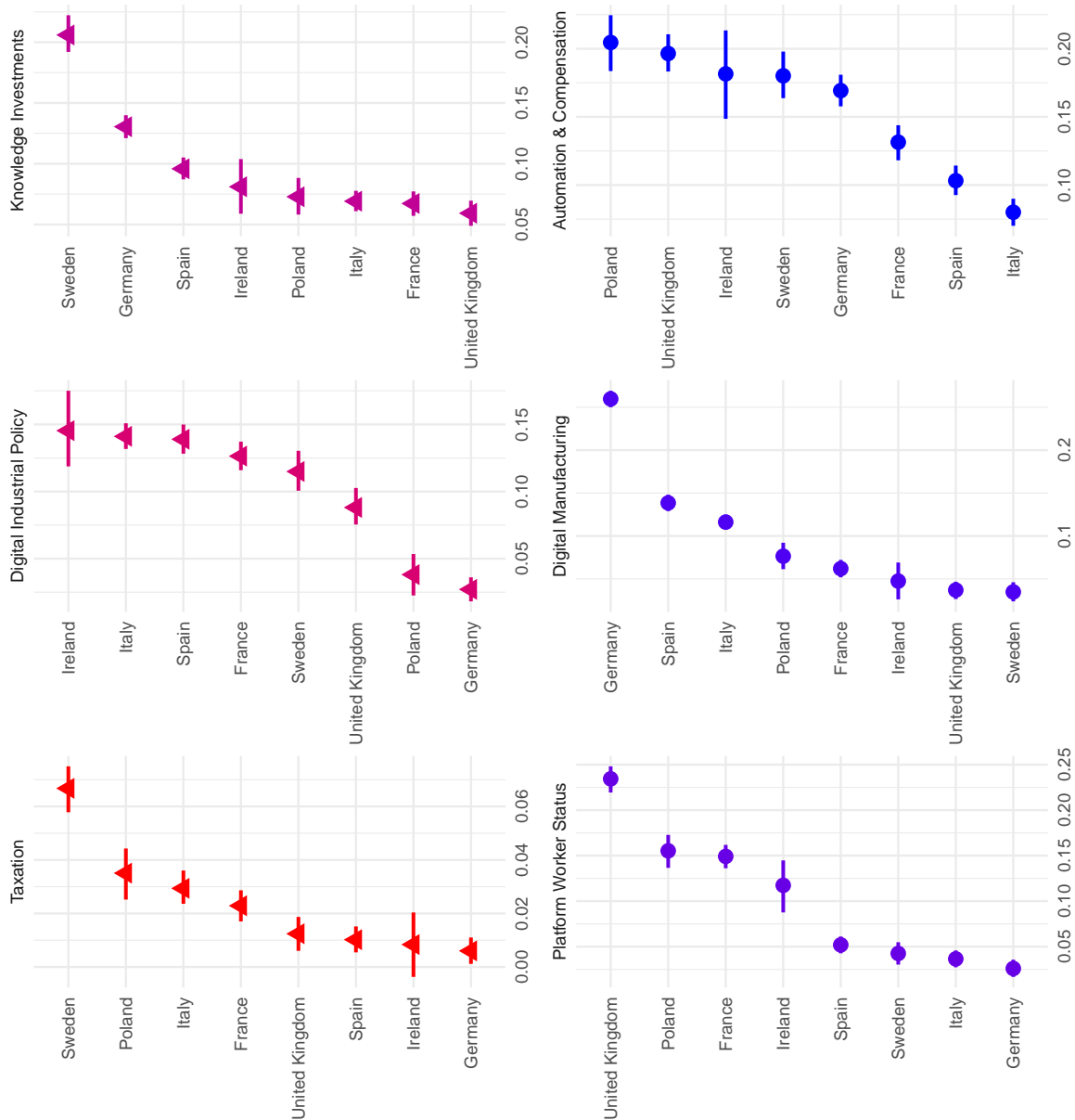
Figure 11: Estimated effect of country variable on the prevalence of topic clusters. Color gradients indicate the ratio of the estimated effect of the discourse type variable, with red colors representing a higher conditional expectation to find the respective topic packages in coordinative (as opposed to communicative) discourses, and blue colors representing the opposite. Triangles indicate that the effect of the coordinate discourse was stronger than the effect of the communicative discourse, i.e. that the ratio of the two was greater than 1

specific legislation aimed at protecting platform workers. There is, however, also a lot of conflict over what the gig economy is. The very term 'collaborative economy', which is mainly used by the government, is itself contested as it one-sidedly highlights the positive dimension of gig work. This linguistic difference mirrors broader conflicts over digitalization. Unions, platform activists, and the National Digital Council, for example, have criticized the *Loi Travail* for relying on the social responsibility of digital platforms instead of on labor law. We also see this conflict reflected in the intense debates about the status of platform workers. Thus, not unlike in the UK, the government's ambition to make France a model digital nation clashes with broader concerns about the distributional inequities of the digital economy.

The discourse in Poland is even more contentious, due to highly combative struggles between Uber and taxi groups which have come to dominate the country's debate on gig work. Different actors – even within the government – hold widely different views on Uber, with some viewing it as an innovative company and arguing for liberalization while others depicting it as a law-breaker and questioning not only its legality but also its legitimacy (Serafin 2019). Due to the lack of a cohesive strategy by social partners and unions in particular, these conflicts have often taken a Luddite turn culminating in physical attacks on Uber cars and drivers. The other big issue is the impact of artificial intelligence – the by far most important keyword – on the Polish economy. On the one hand, Poland is a potential digital challenger with a relatively large ICT talent pool, relatively high-quality digital infrastructure, and relatively mild legacy technology lock-ins (McKinsey 2018). On the other hand, Poland strongly relies on sectors at risk of being further automated, from resource extraction to transport to ancillary industries (Skóra 2018). Despite a number of initiatives to speed up the adoption of new technologies, there is no inclusive plan for how to respond to digitalization, with unions focusing on more tangible bread-and-butter issues (Skóra 2018, 465) and many employers not knowing how to incorporate digital technologies into their

business model or production processes (Prokop 2018). As we have seen, this institutional inability to pull together manifests itself in a much more negative coordinative discourse among social partners, and in the prevalence of threatening and contentious keywords and topics.

Similar to Poland, the Spanish discourse is also one of ambivalence about the effects of the digital transformation, which is seen as both a threat to a country long plagued by economic difficulties and inequalities and as an "opportunity for change" (Accenture and Mobile World Capital Barcelona 2017, 7). Importantly, however, Spanish social partners have taken on a much more active role in trying to make sure that the latter view becomes reality. Quantitatively, this is reflected in the important role that topics around government support for digitalization play in the Spanish discourse. Qualitatively, it shows itself in a plethora of initiatives, from the Digital Agenda for Spain (2013), to Agenda for Strengthening the Industrial Sector in Spain (2014), to the Connected Industry 4.0 Initiative (2015) to the National AI Strategy (2019). Employers have been supportive of such policy initiatives while stressing the need for enhanced labor market flexibility to harness the potential of digitalization as well as identifying skill shortages as the major obstacle to a successful digital transformation (Confederación Española de Organizaciones Empresariales 2018). Conversely, unions explicitly recognize the potential benefits of digital technologies but warn against their implications for an already strongly segmented labor market (Comisiones Obreras de Industria 2016).

While these statements point to a generally positive but somewhat unilateral discourse, Spanish unions in particular have also pushed for more social dialogue around digitalization. For example, the Connected Industry 4.0 resulted from a state-led open consultation process in which unions took part actively while also criticizing it as too 'soft' and not going far enough. Moreover, COO and UGT – the industrial union federations – and the Alliance for the Competitiveness of the Spanish Industry signed the Declaration of social partners in

2016, urging the development of a state pact for industry. Likewise, social partners have promoted the 'Manifesto for the Leadership of Digital Transformation in the Spanish Economy through Talent Development', containing proposals on training and education to succeed in the digital transformation. These deliberate attempts to seek social partner collaboration and government support indicate a push to move the discourse from a more unilateral into a proactive discourse.

Similar to the Spanish discourse, the Italian discourse focuses a lot on the various ways in which Italian companies can compete or be more competitive in a global digital economy. The 2016 'Calenda Plan' on Industry 4.0, which foresaw significant financial incentives for firms that decided to invest in digital technologies, is one example. We also see this reflected in the importance of digital industrial policy topics in Italian discourse. Similar to Germany, there is also a large debate on Italian companies can adapt to the digital transformation of manufacturing. Unlike in Germany, however, there is no systematic social partner dialogue about how this transformation can be shaped in a proactive and inclusive manner, isolated initiatives like the CGIL's Progetto Lavoro 4.0 notwithstanding. Reflecting this lack of a corporatist tradition, the focus is on how the government can help Italian companies survive digitalization.[33]

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[33]One thing that our analysis does not pick up on, and this is true for both Italy and Spain, is the contested debates on the status of gig workers. While in both Italy and Spain much regulation came from court rulings, political actors have actively pushed the issue of platform work on the agenda. In Spain, Podemos has presented digital platforms as predatory capitalists that flourish at the expense of 'left-behind' workers. The current government, formed by the Socialist Party and Unidas Podemos alliance, aims at legislating on the matter and Minister of Labor Yolanda Díaz, labor, has started a dialogue with the riders' collective RidersxDerechos. In Italy, the Five Star Movement has been the most active political formation on gig work regulation. When serving as Minister of Economic Development, Labour and Social Policies, Luigi di Maio called food-delivery riders a 'symbol of an abandoned generation left with no protection'. After attempts to regulate platform work via social concertation, in November 2019, the so-called 'Riders decree' classified riders as self-employed who nonetheless have access to protections typical of dependent work.

4.6   Conclusion

There has been much debate as to how platform work and the spread of advanced digital technologies will change the nature of work. In this paper, we have taken a step back and looked at these debates themselves. We have argued and empirically shown that discourses on the digital future of work are quite different across countries, both in sentiment and content. We have shown that institutional differences channel these debates into more collaborative or more conflictual directions, and that broader politico-economic differences further shape whether digitalization is perceived more as a threat or more as an opportunity. Discourses vary – in an ideal-typical fashion – according to these two dimensions, with different countries falling closer to different ideal types. Swedish discourse, for example, falls close to the proactive type (collaborative and opportunity-centered) while the Polish discourse falls closer to the Luddite type (conflictual and threat-centered).

How digitalization is construed in discourse, in turn, shapes which political responses are seen as cognitively plausible and normatively desirable. After all, different problem definitions create different policy imperatives – things that need to be done in response to digitalization – and therefore narrow or broaden the policy solution space (cf. Hay and Rosamond 2002). For example, if platform work is viewed primarily as an issue of tax avoidance, what is to be done about it will fundamentally be different than if it is viewed as an issue of worker exploitation (cf. Thelen 2018).

We have also shown that discourses are more than institutional reflexes. Actors can deliberately push debates into a more proactive direction, such as when German unions departed from their institutional path and took on a more active role in shaping technological by shifting the discourse to issues in which they had a good chance of having a say in, such as data protection or flexible working times; or when Spanish social partners started to push for more corporatist responses to digitalization.

By taking such a discursive and comparative perspective on digitalization, we have advanced the literature on digitalization in three main ways. First, we have demonstrated empirically that digitalization discourses differ systematically. Mapping such discursive differences helps us better understand how institutions shape the way novel problems are assimilated, but also how actors can use their discursive agency to depart from institutional paths. Second, we have taken up the criticism of paired comparisons (Locke and Thelen 1995) and given it a discursive-institutionalist spin. We have argued that different responses to digitalization cannot be understood as different responses to the same problem. Rather, we stressed the importance of discursive problem construction and shown how institutions shape the process by which a global process is translated into a series of local problems, which are what countries subsequently 'respond to'. Third, we have demonstrated how novel methods of quantitative text analysis can be used and combined in a comparative framework to capture sentiment and content of national discourses. This opens up new avenues for comparative research, be it with the intention to generalize findings across contexts or, conversely, to use comparative findings as a starting point for more detailed case studies of how discursive features translate into concrete policy decisions.

Despite these contributions, our study also suffers from two main shortcomings, which future research should remedy. First, it remains agnostic when and under what conditions actors are able to escape their institutional constraints and move discourses in a new direction. Understanding these conditions requires both individual case studies that inquire into the motivations of such discursive entrepreneurs, and more explanatory analyses of the institutional or discursive determinants of such agency. Second, while our study is a successful proof of concept and therefore broader in its focus, this comes at the price of thinner descriptions and somewhat sweeping explanations of discursive differences and changes. In certain respects, therefore, a more detailed look at, say, the employment status of gig workers or the contestation of delivery platforms would have yielded richer results. These shortcomings

notwithstanding, our study has shed new light on old questions about the role of ideas and discourse in comparative political economy and opened up what we see as promising avenues for comparative political research.

5   Investing in the Digital Future. The Comparative Political Economy of Digital Investment Policies

Abstract: Investments in education and retraining, or research and development have become essential in increasingly knowledge-intensive and rapidly digitalizing economies. Private actors, however, often underprovide such knowledge-based capital due to various market failures. Moreover, there is considerable variation in the extent to which governments invest in the digital future due to intertemporal tradeoffs associated with such digital investment policies. In trying to account for this variation, the existing literature has mainly focused on partisan and structural factors, while undertheorizing institutional and ignoring ideational ones. It has also largely looked at investments in individually-held human capital while neglecting collectively-held innovational capital. In this paper, I remedy these shortcomings by creating a digital investment index that covers both human and innovational capital investments, as well as by systematically theorizing and testing the explanatory role of institutional and ideational factors in addition to partisan and structural ones. Using within-between mixed-effects models on a novel time-series-cross-sectional dataset, I find that corporatist institutions, being a small state, a positive view of public debt and public investments, and deindustrialization increase digital investments, while (institutionalized) austerity and adverse economic conditions decrease them.

5.1   Introduction

Over the last few decades, the success of individuals, firms, and societies has increasingly come to depend on how much 'knowledge-based capital' (OECD 2013) or 'intangible assets' (Haskel and Westlake 2017) they possess or command. Such knowledge-based capital has only become more important as the rise of artificial intelligence has accelerated and compounded the automation effects of the introduction of (personal) computers (Brynjolfsson and McAfee 2014; Frey 2019, 339; Schwab 2016).

We can distinguish between two types of knowledge-based capital: human capital – the knowledge (e.g. skills, expertise) that individuals acquire over the life-course; and innovational capital – the knowledge that groups of individuals hold collectively (e.g. the scientific stock of knowledge, organizational know-how) (cf. Kraft 2017, 19–20). Because it allows individuals to (inter-)act more efficiently and creatively, knowledge-based capital is widely seen as essential for surviving and thriving in rapidly digitalizing economies.

From this perspective, investments in knowledge-based capital should be a politico-economic no-brainer. However, several market failures - in particular the inability of private actors to fully appropriate the potential payoffs - lead to systematic underinvestments in knowledge-based capital (Coyle 2020; European Commission 2017). It is for this reason that governments are assigned a crucial role in providing such investments by spending public resources on education, training, and scientific research and development (Fournier 2016; Iversen and Soskice 2019; Mazzucato 2019).

However, it is not just markets that often fail to make the socially optimal amount of investments. Governments often fail too. The reason is that investment policies involve intertemporal and distributive tradeoffs, which makes them politically costly. Importantly, however, there *are* large differences in the extent to which governments are capable or willing to invest in knowledge-based capital This paper sets out to explain this variation.

Political scientists have already made important inroads into explaining the politics of investment policies (e.g., Boix 1997; Busemeyer 2009; Jensen 2011; Beramendi et al. 2015; Garritzmann and Seng 2016). However, not only does this literature not agree on what actually drives investment policies. It also has not exhausted all available theoretical insights and methodological tools. Moreover, it suffers from a "persistent 'education bias'" (Kraft 2017, 14), i.e. it overwhelmingly looks at ('social') investment in human capital formation instead of investment in innovational or physical capital.

In this paper, I attempt to remedy these shortcomings by making three contributions to the literature. *First*, I look at investments in both human and innovational knowledge-based capital. Specifically, I create a 'digital investment index' consisting of three elements: 1) public education spending to measure investments in individually-held skills; 2) public spending on research and development to measure investment in collectively-held knowledge; and 3) public investment in active labor market policies that may enhance both actors human capital and societies collective innovational capital.

Why *digital* investment index? Because digital technologies are complements to the knowledge-based human and innovational capital that the index captures. Digitalization, in other words, puts a premium on the ability of actors, organizations and countries to access, acquire, and apply knowledge while rendering other activities redundant, less demanding, or less autonomous. This has already been true during the third industrial revolution, but it is even more true as the fourth industrial revolution puts additional pressure on low-knowledge and an additional premium on high-knowledge activities (Frey 2019; OECD 2017).

Why digital *investment* index? Because the index captures policies that increase the capital of individuals or groups and therefore their capacity for future consumption. This distinguishes them from policies that do not have this capital-inducing effect and only affect the ability for present consumption (Beramendi et al. 2015, 8; Kraft 2017, 15). The implication of this is that even when they are growth-enhancing or realize a "collective gain" (Hicks

and Kenworthy 1998, 1632), investments require the conflictual (re-)allocation of resources from present to future consumption and often from some groups to others. This creates politically costly inter-temporal and redistributive tradeoffs - tradeoffs which some countries are much better at overcoming than others (Jacobs 2016; Jacques 2020b).

Second, the literature has long focused mainly on structural and partisan factors in explaining temporal and geographic differences in investment policies. Structural accounts argue that spending patterns are the result of large-scale economic or demographic transformations that are largely outside of political control. Partisan accounts, on the contrary, stress the importance of politics and explain differences in investment spending with different priorities of governing parties. While both explanatory traditions have acknowledged the role of institutions in moderating (or superseding) the effects of structural or partisan variables (e.g., Jensen 2011; Garritzmann and Seng 2016), they have not sufficiently theorized institutional factors *in their own right* (for an exception, see Jacques 2020b). How do institutions mitigate the tradeoffs involved in investment policymaking? Moreover, ideational factors, the more informal interpretative lenses through which actors perceive and make sense of the world, have not been taken into account at all.

With the goal of complementing and refining existing accounts, I therefore include and theorize two additional factors: i) the level of social partner involvement in economic decision-making, as corporatist institutions can be expected to alleviate intertemporal and distributive trade-offs and thereby increase investments in the future (Ornston 2012, 2013; Lindvall 2017; Jacques 2020b); and ii) the nature of state identities and politico-economic cultures, as different conceptions of public debt and deficits (Dyson 2014), of the role of the state in the economy (Mazzucato 2013), and of technological change (Frey 2019) can be expected to influence the ways in which digitalization is viewed and responded to.

Third, in addition to broadening the empirical and theoretical scope, I also make two methodological contributions. First, I take up and further develop recent suggestions for

using mixed models to analyze time-series-cross-sectional data where annual observations are nested in governments which are in turn nested in countries (Garritzmann and Seng 2019). Extending this idea, I use within-between mixed-effects models (Bartels 2015; Bell and Jones 2015; Bell, Fairbrother, and Jones 2019) to not only do justice to the nested nature of the data but also to disentangle the within and between effects of different variables on digital investment policies – something that gets lost in standard country-fixed effects approaches which control out the between-country effects of variables despite their substantive importance. Second, I use multilingual textual data to test my ideational explanations, showing how novel text-as-data methods can be integrated into traditional comparative political economy research designs.

I find strong support for my claim that corporatist institutions, by fostering a collaborative style of policy-making, are a central yet so far largely overlooked factor in explaining cross-country variation in investment policies. Moreover, corporatist institutions seem to moderate the relationship between deindustrialization and digital investments in that the impact of deindustrialization on investments varies across levels of corporatism as well as over countries more generally. Structural factors such as deficits, or other institutional factors like debt rules also matter, while partisan factors do not - or no longer - play an explanatory role. Moreover, I find that the tone of public discourse has a weakly significant impact on investment spending: countries that have a more positive, optimistic public debate on public debt and deficits, public investments, and technological change seem to invest more in digital goods.

The paper proceeds as follows: I will first make the case for why digitalization creates a demand for digital investment policies and why both private and public actors struggle to provide the socially optimally amount of investments. I then show that countries nonetheless substantively differ in the extent to which they pursue digital investment policies. After discussing different explanations for why this is the case, I sketch out and substantiate my

own argument, which focuses on institutional and ideational factors. Next, I discuss my empirical strategy and the data I compiled. I then present and discuss my findings. I conclude by briefly summarizing key take-aways, discussing some limitations, and pointing to avenues for future research.

5.2 Digitalization and the Need for Digital Investment Policies

"Technology", as Kranzberg's first law of technology famously states, "is neither good nor bad; nor is it neutral" (Kranzberg 1986, 545). This is to say two things. First, disruption - the rapid change of requirements for success on the individual-, firm-, and national level - has been a central feature of technological change throughout history (Mokyr, Vickers, and Ziebarth 2015). In other words, new technologies have a tendency to shake things up, i.e. they change the balance of power between different groups. Along these lines, Charles Boix has recently argued that different technological regimes – those of Manchester, Detroit, and Silicon Valley capitalism – produce different labor complementarities and therefore distinct distributional conflicts and political challenges (Boix 2019).

Second, the effects of technological change are not preordained by the technologies themselves. Technological change, in other words, is neither good nor bad because its effects depend on how societies react to it; and, here, as Kranzberg's fourth law of technology states, "nontechnical factors take precedence" (Kranzberg 1986, 550). Throughout history, for example, the adoption of new technologies depended "on who [stood] to gain from them and the societal distribution of political power" (Frey 2019, XII). Technological change, therefore, is and has always been, a profoundly political and politically contested process.

Digital technologies - be it those of the fourth industrial revolution which currently gathers steam, or those of the third industrial revolution which slowly runs out of it - have a tendency to make "highly skilled labor the main complement of capital in the production

process" (Boix 2019, 23) while rendering technological change increasingly labor-replacing (Acemoglu and Autor 2011; Frey 2019). In an economy increasingly "designed by geniuses to be operated by other geniuses" (Frey 2019, 16), the premium on knowledge – both the knowledge held by individuals and the knowledge held between them – increases dramatically (OECD 2013; Haskel and Westlake 2017).

This has implications on the individual, firm, and country level. Individuals may find their skills obsolete, businesses their market position upended, and countries their competitive advantage deteriorating. At the same time, digitalization also promises to massively increase social welfare by making economies and societies vastly more efficient. In the long run, therefore, the best way to unlock the 'collective gains' (Hicks and Kenworthy 1998) inherent in technological change is not to halt it by increasing the relative price of capital vis a vis labor (the 'Luddite option'); or to passively compensate its losers and thereby shore up the legitimacy of technological change (the 'welfarist option'); rather, it is to invest in complementary skills and resources that allow actors to fully make use of novel technologies.

These investments, however, will be underprovided by markets, be it because private actors cannot exclude others from the fruits of their investment (public goods), because public benefits exceed private benefits (externalities), or because actors have myopic preferences or insufficient knowledge about the payoff of investments (uncertainty, non-rational choices, information asymmetries) (Romer 1994; Coyle 2020). Governments – as the only actors with the necessary resources and interests – are thus often called upon to invest in the public goods of advanced capitalism (Iversen and Soskice 2019, 157).

This is particularly true for investments in knowledge-based capital - from education and retraining to basic research and innovating funding - for which the overall benefits for society are considerably higher than the private benefits (European Commission 2017, 29). R&D investments, for example, have been shown to increase long-term growth and labor productivity (Fournier 2016; European Commission 2017) and to "crowd-in and galvanize

other forms of investment" (Mazzucato 2019, 3). And (co-)clustered skills are seen as central to the economic success of countries or regions (Iversen and Soskice 2019).

Such 'soft' investments in knowledge-based capital – as opposed to 'hard' investments in physical infrastructures – have of course already been essential in "creating conditions required for the prosperity and sustainability of a 'post-industrial' or 'knowledge society'" (Streeck and Mertens 2011, 2; cf. Fournier 2016, 13). But as artificial intelligence has sped up the 'race between technology and education' (Goldin and Katz 2008) and made R&D capabilities both more useful and more necessary, investments in knowledge-based capital have become even more essential in the emerging digital or 'new' knowledge economy.

Importantly, however, it is not only markets that often fail to make the necessary investments in knowledge-based capital; governments can fail too. Not only is there a persistent investment gap across all advanced capitalist democracies (compared to what would be socially optimal), the size of this gap also varies across countries (Borunsky et al. 2020). In fact, if we look at normalized public investment spending as a percentage of GDP, we find marked differences between countries. Figure 12 plots this digital investment index – the dependent variable of this study – for various countries over time. Scores are averaged across decades and then normalized, which is why some countries have negative scores. We see that despite a shared emphasis by all countries on the "urgency for governments to be proactive" in shaping the digital transformation (OECD 2017, 22), some countries are much more proactive. We also see that some countries continued to increase their digital investments over time while others failed to do so. Finally, we see that while richer countries tend to invest more, this relationship is by no means straightforward, with many countries investing much more or much less than their similarly rich peers. This raises the puzzle of how to explain this diachronic but particularly also synchronic variation in digital investment policies.
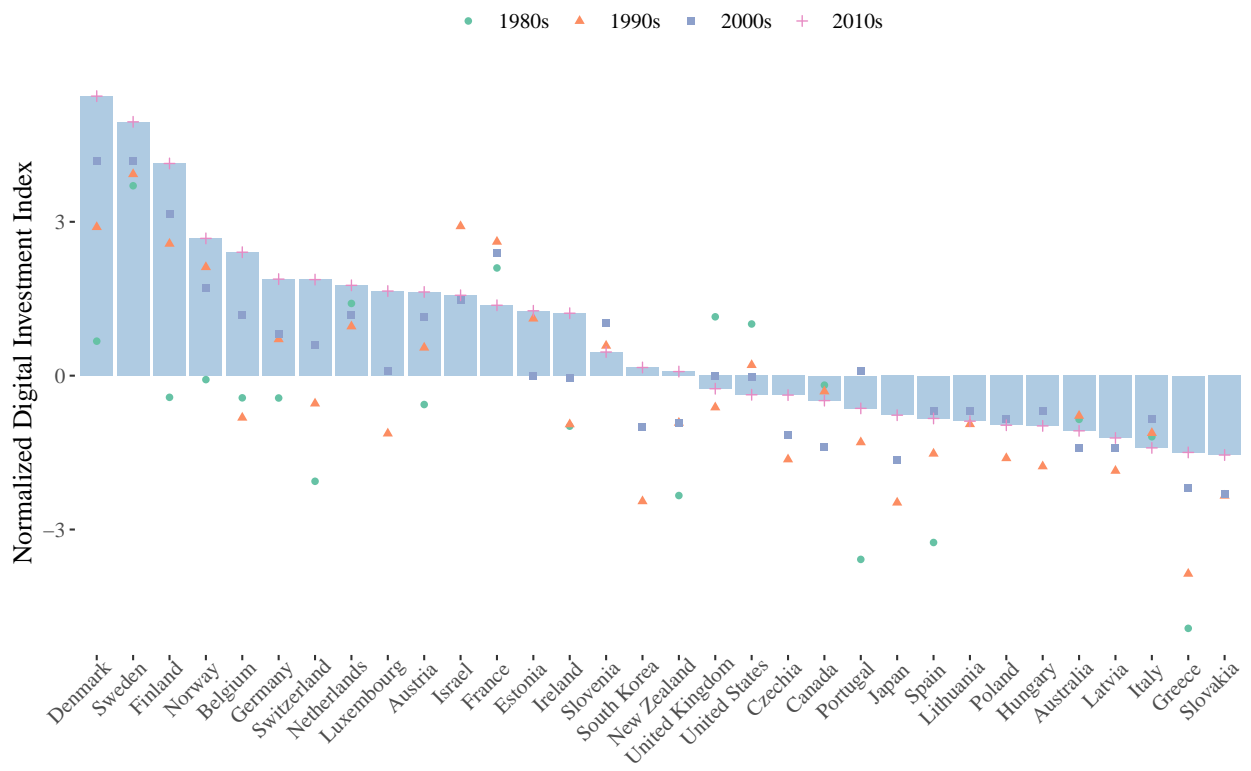
Figure 12: Normalized Digital Investment Index (1980s-2010s). Individual components are first normalized and then summed up for each decade (with ALMP spending weigthed down by 50 per cent). Values are averaged across multiple imputations.

5.3   The Politics of Digital Investment Policies

Why do some countries invest more in their country's knowledge-based capital than others? The literature on the politics of investment policies – though mainly focused on educational investments – has made important inroads into answering this question. Chiefly, this literature has focused on partisan, structural, and institutional accounts, as well as their interplay. Partisan accounts emphasize the role of political parties in shaping public investment. Structural accounts focus on largely exogenous forces such as deindustrialization, the secular increase in public debt, or the exigencies of the political business cycle. Institutional accounts, finally, stress the conditioning role of institutions, which can both facilitate investments and entrench certain investment policy paths. Here, I will build on these accounts, but complement them with an institutional explanation that focuses on corporatist institutions. In addition, I will explore the importance of ideational factors such as state identities and politico-economic cultures in shaping countries responses to the disruptive challenges posed by digitalization.

5.3.1   Existing Literature

Starting with Boix (1997), the modern literature on the politics of investment policies has focused on the role of the partisan composition of government in explaining countries' supply-side policies.[34] Boix argued that because of their growth-enhancing effects, governments are relatively unconstrained in their ability to make supply-side investments, even in a globalized economy. But because such investments disproportionately benefit their voters, social democratic parties should favor higher levels of public investment, even at the price of higher taxes. Thus, Boix advances the two main claims of partisan accounts: that parties have

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[34]Supply-side policies are investments in the level and quality of the factors of production: capital and labor.

an independent effect on investment policies; and that parties on the left and the right will have different effects (Busemeyer 2009, 108–09). Note that both of these claims focus on the distributive, not the intertemporal tradeoffs of investment policies.

The more recent literature has advanced the partisan argument in several ways. First, distinguishing between party families has been proposed as a more fine-grained distinction than the left-right dichotomy as there are important differences between conservative, christian-democrat and liberal parties as well as between social democratic and other leftist parties (Garritzmann and Seng 2016, 514). However, even that might not be sufficient as parties within the same party family often have different position while parties in different families have similar positions. Therefore, instead of relying on indirect assumptions about the party positions, it has been proposed to directly measure these positions using party manifestos (Garritzmann and Seng 2016, 516–17).

Second, it has been argued that the relationship between parties, voters, and policies is more complicated than parties being mere transmission belts for the distributive interests of their constituencies. Instead, parties actively use policies to appeal to and forge coalitions with new voter groups; and in doing so, they often shape – via policy feedback effects – the preferences and size of these voter groups (Busemeyer 2009; Beramendi et al. 2015). Busemeyer, for example, argues that for social democrats, the "expansion of public tertiary education can become a means of reforging this cross-class alliance between the lower and the middle classes" (Busemeyer 2009, 111). This can then result in a self-reinforcing circle in which those that benefited from investments come to support them (Busemeyer 2009; Garritzmann 2016).

More generally and already with a more structural tilt, Beramendi et al. (2015) propose a model of 'constrained partisanship' to explain spending patterns in advanced capitalist democracies. According to this model, political actors have some leeway to build investment coalitions of voter groups that are in favor of such future-oriented policies. This leeway,

however, is limited by both institutional and electoral constraints, which are themselves in important ways shaped by past policies; in particular, by "levels of state capacity", the "relative weight of different social groups", and "the political predispositions and preferences" of these groups (Beramendi et al. 2015, 17).

While the model of constrained partisanship emphasizes both constraints and the possibility of partisan 'coalitioneering', structural approaches zero in on these constraints, leaving little room for partisan agency. Jensen (2011), for example, finds that it is not the partisan composition of government that explains public investments in education, but the level of deindustrialization. A related strand of literature argues that under conditions of fiscal austerity, expanding or even maintaining existing investment-oriented policies becomes increasingly difficult. Investments require the conflictual (re-)allocation of fiscal resources from present to future consumption (and often from existing to new policies). For vote-seeking politicians, the choice for investments becomes harder as the overall amount of discretionary spending shrinks (Streeck and Mertens 2011). As long as governments want or need to pursue fiscal austerity, 'soft' investments in the future will decline, unless the amount of discretionary spending is increased through higher taxes (Streeck and Mertens 2011, 23).

This proposition finds empirical support. Breunig and Busemeyer (2012) find that public investments, which are discretionary spending, are hit harder by fiscal austerity than entitlement spending because politicians have lower electoral incentives and face higher political obstacles in cutting back investments. And Ronchi (2018) finds that in the aftermath of the euro crisis, the expansion of social investment policies slowed down considerably and almost stagnated, while the conflict between social investment and social consumption policies became starker.

Jacques (2020a) shows that governments choose the path of least resistance when implementing austerity measures. Because the benefits of investments are diffuse and become visible mostly in the future, they are least protected from fiscal consolidation. Likewise, Bamba,

Combes, and Minea (2020) find that fiscal consolidation leads to a significantly stronger contraction of government investment than of government consumption, particularly when debt is high and growth is low. Lastly, building on the political business cycle literature, Gupta, Liu, and Mulas-Granados (2016) show that the growth rate of public investments follows an inverted U-shape that is largely unaffected by ideological differences between parties: it grows after elections, peaks some 28 months before elections, and declines fast as elections approach.

The argument of these structural accounts is not that parties do not matter, but that their differences do not really make a difference. In other words, parties in government make policies, but these policies result not from political differences but from those parties responding to the electoral incentives created by structural conditions.

Institutional accounts, by contrast, argue that the relationship between political agency and structural constraints is moderated by the institutional features of the polity. Breunig and Busemeyer (2012), for example, also find that the effect of austerity on cutback in discretionary spending is conditional on the electoral system. In majoritarian systems, where constituencies are more concentrated, politicians have more incentives to shield discretionary spending from cutbacks, whereas in proportional systems, politicians are more likely to protect entitlement spending to avoid alienating the broad beneficiaries of these programs. And for Jensen, too, the impact of deindustrialization is conditional on a country's variety of capitalism (Hall and Soskice 2001). In coordinated market economies, where skills are more specific, deindustrialization is a greater threat to workers. And since expanding education is a promising avenue for reskilling, demand for it demand for it will be higher. And Gupta, Liu, and Mulas-Granados (2016) provide tentative evidence that institutions such as fiscal rules help attenuate the impact of elections on investment.

Moreover, institutional factors may have superseded partisan factors over time. Garritzmann and Seng (2016) find no partisan effect on education spending since 1995. But this

does not mean that parties never mattered; it just means that they stop doing so as investment policy areas mature. In fact, Garritzmann (2016) shows that the partisan composition of government played a large role for the emergence of different regimes of student finance, but that over time parties became increasingly irrelevant and institutional path-dependencies started to carry more and more of the explanatory weight.

Lastly, a recent strand of literature has argued that the inter-temporal trade-offs inherent in investment policies (Jacobs 2016) are moderated by institutional as well as policy-specific factors. Jacques (2020a) and Kraft (2017) show that the inter-temporal trade-off for certain investment policies (human capital investments) is less stark than for others (innovational and physical capital investments) as their benefits are more immediate, concrete, and concentrated. More importantly still, the starkness of the inter-temporal trade-off also depends on the institutional features of a polity. Building on Lindvall (2017) theory of reform capacity and Jacobs (2016) conceptualization of intertemporal policy-making, Jacques argues that "power-sharing institutions [e.g., proportional electoral systems or corporatist interested group mediation] can help to break political uncertainty about future investment by 'locking in' commitments" and thereby strengthen "governments' capacity to overcome intertemporal trade-offs" (Jacques 2020b).

5.3.2   Argument

In this paper, I directly engage and build on these arguments. But I also add two additional twists. First, I theorize the role of corporatist institutions in fostering digital investment policies more systematically, connecting and comparing the 'power-sharing argument'(Lindvall 2017) about the role of corporatist institutions in facilitating credible commitments with the 'creative-corporatism argument' (Ornston 2013) about their role in fostering a collaborative style of policy-making. Second, I theorize the role of ideational factors – in particular state identities and broader politico-economic ideas about the role of the state in the economy,

public debt and deficits, and the nature of technological change – in shaping how governments perceive digitalization and their role in shaping it. In doing so, I do not deny that structural - and to a lesser extent: partisan – factors can matter a great deal. But I do argue that their effects are often complemented, moderated and sometimes superseded by institutions and perhaps ideas.

5.3.2.1   Corporatism and Digital Investment Policies

In making the case for partisan explanations, Boix explicitly argued against the view that corporatist institutions matter for the ability of governments to invest in the supply-side of the economy. Governments can do so "without the consent of organized labor" (Boix 1997, 819). But even if we agree that supply-side investments allow policymakers to sidestep distributive tradeoffs, they still face intertemporal ones. In other words, even if government parties appreciate the collective gain inherent in investment policies, they are still disincentivized from implementing them because they imply "welfare trade-offs at the expense of the present and in favor of the future" (Jacobs 2016, 434).

On the one hand, governments never know if future governments will commit to the same investment policies or divert resources to their own (short-term) political ends. This is what Jacobs calls the "fragility of political commitments" problem (Jacobs 2016, 440). It implies that governments will only invest in the long run at short-run expense if they can be confident that their investments will not be reverted or salvaged by future governing parties. On the other hand, governments can never be certain that voters will adequately factor in the future benefits of investments. This is what calls the "information about long-term consequences" problem (Jacobs 2016, 439–40). It implies that politicians will bias their policies towards the short-run to the extent that the salience of information about the short run is high and the quality of information about the long run is low.

However, the problems associated with uncertain "political property rights" (Moe 1990, 124) and incomplete markets for future-oriented policies are not insurmountable. In particular, institutions that disperse and fragment power have been argued to support investment policies by incentivizing politicians to maintain commitments (Jacobs 2016, 445; Lindvall 2017) and by diffusing the blame for short-run costs (Jacobs 2016, 444).[35] Likewise, institutions that "promote cooperation among economic actors" can support investment policies by credibly compensating those that stand to lose in the short run, but also by involving them in the long-run benefits (Hicks and Kenworthy 1998). Such 'cooperative institutions' can thus contribute not just to redistribution but also to the realization of "collective gain (. . .) that otherwise will not be forthcoming" (Hicks and Kenworthy 1998, 1634).[36]

Power-sharing and cooperation-inducing institutions therefore necessitate and facilitate political bargaining between winners and losers of investment policies, mitigating their intertemporal and distributive problems and thus allowing for the realization of collective gains. Neocorporatism, understood as the "institutionalized and privileged integration of organized interests in the preparation and/or implementation of public policies" (Christiansen 2020, 161), is perhaps the prime example of such a power-sharing and cooperation-inducing institutional arrangement. We can thus expect corporatist institutions to aid "compromises that

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[35]Jacobs hypothesizes that "incumbent parties that enjoy stable, built-in electoral advantages should be more willing to invest because they are both less vulnerable to short-run voter dissatisfaction and more likely to be in office when the investment's benefits visibly emerge" (Jacobs 2016, 445). This hypothesis is confirmed by two recent studies. Kraft finds that parties with high office and vote aspirations more strongly prioritize investments "because they anticipate government responsibility in the future and can use investments' dispersed growth effects to appeal broadly to a large, heterogeneous pool of voters" (Kraft 2018). Jacques finds that parties that are likely to win elections are more likely to propose policies whose benefits only accrue over the long run (Jacques 2020b).

[36]Hicks and Kenworthy (1998) distinguish between two types of cooperative institutions: neocorporatist institutions and institutionalized firm-level cooperation. They show that such institutions not only enhance redistributive outcomes, but also measures of 'collective gain' such as investment levels, growth, trade performance and inflation.

are more socially acceptable (that do not provoke an adverse response from social actors) and more sustainable (that reduce the risk of policy reversals by future governments)" (Lindvall 2017, 133).

This argument about the importance of commitment and compensation echoes Katzenstein's account of the success of small corporatist states in adapting to technological and economic change (Katzenstein 1985, 2003). Katzenstein had argued that the secret behind the small corporatist states' success is their ability to proactively adapt to (as opposed to resist) a changed techno-economic landscape while compensating those that stand to lose from this flexible adjustment. This ability – to compensate enough to maintain a political consensus but not so much as to impair economic efficiency (Katzenstein 1985, 30) – is grounded in formal corporatist institutions and an informal "ideology of social partnership" (Katzenstein 1985, 32). This ideology – born out perceived vulnerability to economic and political crises – "acted like a glue for the corporatist politics of the small European states" (Katzenstein 2003, 11).[37]

This argument was recently taken up by Ornston, who documents the continued success story of small corporatist states in today's knowledge economy (Ornston 2012). Far from inhibiting the redistribution of resources into high-tech industries (Alesina and Giavazzi 2006), or only being conducive to incremental innovation in low- and medium-technology industries (Hall and Soskice 2001), corporatist institutions have enabled sizable investments in human and innovational capital and "supported unprecedented movement into new, high-technology industries" (Ornston 2013, 706). Smallness is an important variable here to the extent that

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[37]Similarly, Mokyr notes that "a spirit of public consciousness and willingness to abstain from free-riding behavior in collective actions supports a higher supply of public goods and investment in infrastructure than is otherwise possible" (Mokyr 2017, 13).

it fosters a shared sense of vulnerability and lowers barriers to collective action (cf. Alesina and Spolaore 2003).[38]

Ornston distinguishes this creative corporatism – the prime examples for which are Finland and Denmark – from 'conservative' and 'competitive' corporatism. Conservative corporatism "relies on patient capital, social protection, and state aid to protect and upgrade established actors and activities" (Ornston 2013, 706); competitive corporatism relies on social pacts and social partner involvement to facilitate and shore up market-oriented reforms meant to ensure (price) competitiveness and accelerate the movement of capital and labor into industries with the highest growth potential (Rhodes 1998; Ornston 2012, 18–20). Creative corporatism, in contrast, relies on repurposing or converting corporatist institutions into vehicles for the "construction of new supply-side resources" (Ornston 2013, 710). In financial markets, this means less emphasis on patient capital and more on the cooperative provision of early-stage finance, for example by using employer or labor-managed pension funds to provide venture capital. In labor markets, it means less reliance on employment protection and more collaboration in human capital formation. And in industrial policy, it means less emphasis on state aid and more on private-public and inter-firm cooperation in research (Ornston 2013, 710).

Corporatist countries – especially when they are small and share a sense of vulnerability towards economic disruption – continue to excel at flexibly adjusting to disruptive changes. As Hemerijck and Schludi note, countries that successfully respond to external challenges benefit from a sense of " 'shared ownership' of policy problems [and a] general capacity to adapt" (Hemerijck and Schludi 2001, 227). It is this ability "to live with change" (Katzenstein 1985, 211) instead of resisting it, to equitably adjust to it instead of bitterly fight over it

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[38]As Katzenstein remarks: "Traveling around small states is not time-consuming. And if you give a party in the capital, you can easily invite all the important political players. This makes a difference to both politics and policy" (Katzenstein 2003, 11).

that has allowed small corporatist states to once again make the necessary investments to weather the storms of the "second machine age" (Brynjolfsson and McAfee 2014). Corporatist institutions not only lock in commitments through power-sharing arrangements; they also instill a "culture of compromise" that couples "narrowly conceived group interests with shared interpretations of the collective good" (Katzenstein 1985, 32). Together, these mechanisms – credible commitments and a collaborative policy-making style – support responses to novel challenges that are more politically sustainable and socially inclusive – and can therefore be more future-oriented. Corporatist countries should therefore invest more in knowledge-based capital, and corporatist institutions should make countries react more proactively to economic change.

5.3.2.2   Identities and Digital Investment Policies

Often overlooked, Katzenstein's argument is as much ideational as it is institutional.[39] Here, I want to spin this argument further by more systematically theorizing the role of state identities and politico-economic cultures in mediating the causal chain between challenges and responses. Ideas matter because they help actors understand their interests and coalitional options in a world of uncertainty (Blyth 2003). "To the extent that economic reality is uncertain - which in real life is nearly always - cognitive elements affect decision making" (Gourevitch 1986, 63). Political actors therefore "experiment into an open horizon, often driven by myopic conceptions of group interests, without anyone's being able to predict today whether the path pursued will actually pay off in the longer run either for (1) the political actors and their constituencies advancing the reforms right now and/or for (2)

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[39]In fact, Katzenstein himself notes that "the impermeability of the field of political economy to considerations of identity persists to date" (Katzenstein 2003, 11).

the macroeconomic performance of the polities (or regions) in which these reforms prevail" (Beramendi et al. 2015, 60).

Investment policies are therefore a matter of 'puzzling' as much as of 'powering' (Heclo 1974, 305), of "conflicting identities" as much as of "conflicting interests" (Ziegler 1997, viii). In this context, three questions are of particular importance. First, how is the state's role in the economy understood? Second, how is the relationship between public debt or deficits and public investments construed? And third, is technological change seen a threat or an opportunity?

The first question shapes how public investments are viewed. Are they seen as essential and essentially positive in an economy in which markets regularly fail to provide important goods? Can governments legitimately act as investors or even entrepreneurs in their own right (Mazzucato 2013)? Or are they seen as circumspect, as a symptom of an overreaching government incapable of making the right investments and discontent with limiting itself to administering markets? Mazzucato herself points to the central importance – and self-fulfilling nature – of the 'discursive battles' (Mazzucato 2013, 3) around the proper understanding of government. In the US, for example, the discursive war on the very notion of government has not only produced a large-scale shift in how government is portrayed and talked about (George 2013); but it has also changed the confidence of, resources allocated to, and therefore effectiveness of the governments, which reinforces the discursive shift (Hacker and Pierson 2016).

The second question concerns how public debt and public deficits are viewed. Notions of public spending are profoundly intertwined with "contending representations of state virtue" (Dyson 2014, 263), which are themselves anchored in different ideologies of debt and economic cultures. Dyson distinguishes between two ideologies of debt, one that "represents debt as shameful and potentially poisonous to virtue", and one that values debt for its "productive use" (Dyson 2014, 268). In combination with different economic cultures – the culture of

elite magnificence, stability culture, consumer culture, social welfare culture, and welfare protection culture – these ideologies give rise to five different representations of state virtue: the dignified state, the ascetic state, the permissive state, the protective state, and the inclusive state (Dyson 2014, 269–83). While the dignified state mostly belongs to the past, the latter four of these representations of state virtue offer a useful typology of modern state identities.

- The ascetic state is based on a negative view of debt and an economic culture that centers around fiscal stability and prudence. It views debt as inherently suspicious and prioritizes stable finances over investments as the best way to provide justice. Ascetic states are unlikely to pursue digital investment policies. This is increasingly true even for states that run fiscal surpluses as preceding fiscal consolidations have entrenched a new fiscal regime that makes higher spending increasingly difficult (Haffert and Mertens 2015)

- The permissive state is a state that boosts consumer culture by incentivizing high levels of private debt, even if this comes at the expense of neglecting public goods, including digital goods. "Longer-term investment in public infrastructure and in building inclusive forms of social capital took second place to more immediate individual consumer gratification. It was inimical to belief in the virtues of the entrepreneurial state supporting bold and high-risk innovation" (Dyson 2014, 278).

- The protective state also has a sanguine view of public debt but views it not as a means to promote public welfare but as tool of political patronage and clientelism. This, together with the resulting distrust in the state, makes such protective states unlikely to invest in the future.

- The inclusive state grows out of a social welfare culture that "public expenditure as essential to the promotion of social peace and solidarity and to strengthening long-term-growth"; in particular, debt financing is seen as positive due to its "developmental role

for the state in supporting fundamental innovations that [are] high cost and uncertain and whose fruits lay fax in the future" (Dyson 2014, 279). Inclusive states can be expected to invest most in knowledge-intensive capital.

The third question relates to how technological change is viewed. Already in Shonfield (1965) we find the notion that states' reactions to technological and economic change depend on the "broad stance that a variety of national actors take to the economy, which in turn is based on culturally specific orientations deeply rooted in national history" (Hall 1997, 185). Dobbin and Ziegler echo this view when they point to the importance of historically rooted 'industrial cultures' (Dobbin 1994) and the professional identities of administrative and technical elites (Ziegler 1997) in assimilating novel problems to old ways of thinking, and therefore in shaping political responses to technological and economic change. The Swedish "policy style" (Richardson 2013), for example, has been characterized as one of 'principled pragmatism' (Heclo and Madsen 1987) and applied, 'secular rationalism' (Tomasson 1970, 291–92). Perhaps unsurprisingly, then, the Swedish reactions to recent technological upheavals has been relatively forward-looking, with an emphasis on manageable opportunities rather than threats (Goodman 2017; Marenco and Seidl 2020).

How countries answer these three questions may thus depend on their identities and broader politico-economic culture. These ideational forces can be expected to influence how states think about digitalization, and consequently their role in shaping it. What Dyson said about public debt also applies to public investments and technological change: their "relationship [with] political rule remains pre-eminently a realm of subjective knowledge, conveyed by storytelling. Stories perform vital functions. They offer a compass in navigating radical economic and political uncertainty, as well as a sanctuary for retreat in the face of sheer complexity and passionate contestation. Stories also have a moral function. They distribute praise and blame [but] also serve as distorting prisms through which responsibility is evaded" (Dyson 2014, 7). These stories, as Vivien Schmidt has argued, are told in discourse,

where visions of what is empirically and morally right are articulated and state identities and politico-economic cultures are reflected and shaped (Schmidt 2008).

5.4   Empirical Strategy & Data

To test my argument – and to test it against existing explanations – I compiled a dataset for 32 advanced capitalist democracies from 1995 to 2018, and for 21 of these countries even from 1980 to 2018. Longer time-series are only available for some countries, but the available data are well suited to answer the question at hand: how did countries respond to the rise of the knowledge economy, which emerged in the 1980s and took off in the 1990s?

The dependent variable of this study is the digital investment index plotted in Figure 12. It measures investments in knowledge-based human and innovational capital that is complementary of, rather than substituted by, digital technologies. It is composed of three sub-indicators: spending on education to measure investments in human capital, spending on relevant R&D categories to measure investments in innovational capital, and spending on active labor market policies (ALMP) to measure investments in both human (retraining) and innovational capital (start-up incentives).[40] These spending variables are measured as a share of GDP (Streeck and Mertens 2011, 6–7).[41] The indicators were normalized and then added up. ALMP spending was weighted down by 50% as it comprises the smallest spending category in absolute terms (for more details, see Appendix D.1.1). The idea behind the index is simply to capture the ability and willingness of governments to invest in knowledge-based

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[40]Ideally, the index would include public investments in digital physical infrastructures such as fiber optics. However, such investments are mostly made by private actors and governments influence investments more through regulatory rather than investment policies.

[41]For Ireland, I used modified gross national income data from the Irish Central Bank after 1995, which are less sensitive to profit shifting by multinationals, which has bloated Ireland's GDP in recent years.

capital that is complementary to digital technologies; or, to put it differently, to invest in their digital futures.

The first explanatory variable – the partisan composition of government – was operationalized in two different ways, reflecting disagreements in the literature. Indirectly, as the proportion of cabinet shares held by social-democratic parties; and directly, as the average issue emphasis on investment issues of all cabinet parties, weighted by their respective seat shares (Garritzmann and Seng 2016). The latter category is operationalized as the relative combined emphasis parties place on public investments in research and development, infrastructure, and education and on an active, involved role of the state in the economy (for details, see Appendix D.1.2).

The second explanatory variable – corporatism – is constructed based on Jahn's index of corporatism, which takes into account the organizational *structure* of collective actors, the *functional* relationship between collective actors and the state, and the *scope* or coverage of collective bargaining (Jahn 2016). This definition operationalizes corporatism as a politico-economic *gestalt*, understanding it as both a tool for economic coordination and the integration of organized interests in policymaking (Christiansen 2020, 161). However, while the paper uses the encompassing definition of corporatism, the appendix replicates the analysis with a narrower operationalization that only takes into account corporatism's functional, more political aspects (for details, see Appendix D.1.3). Corporatism is compared to and contrasted with an institutional constraints variable which measures the feasibility of policy change, i.e. "the extent to which a change in the preferences of any one political actor may lead to a change in government policy" (Henisz 2002, 363). It was first used to demonstrate that political environments that constrain the feasibility of policy change are an important determinant of investment in infrastructure (Henisz 2002).

The third explanatory variable – state identity and politico-economic culture – is based on automated analyses of newspaper discourses in the respective countries. Newspaper arti-

cles were collected from Factiva and Nexis Uni based on three different sets of search terms: public investment, public debt and public deficits, and technological change. This resulted in 90311 newspaper articles that for the majority of countries cover the years since 2000s well but become somewhat patchier if we go further back in time. For most countries, the main newspaper from the (center-)right and (center-)left were chosen (e.g. the Wall Street Journal, the Washington Post, and the New York Times for the United States). For some countries, original language newspapers were not available so I resorted to English-language newspapers like the Baltic Times. In combination with country-identifiers, those provide similar coverage as national newspapers, e.g. by including quotes from national politicians, reporting on national debates, etc.[42]

The articles were, if necessary, automatically translated into English using the Google-Translate API. This has been shown to produce results largely equivalent to human translations for various methods of automated text analysis (Balahur and Turchi 2014; Vries, Schoonvelde, and Schumacher 2018; Courtney et al. 2020). I then use two methods to analyze the single-language corpus. First, I used dictionary-based (and NLP-assisted) sentiment analysis to see how positive public discourse on these three topics is, that is, how many words that standard dictionaries assign a positive sentiment are used relative to words with a negative sentiment.[43] Second, I used topic modeling to detect the prevalence in a country of frames or "frame packages" of theoretical interest (Nicholls and Culpepper 2020, 11). Specifically, I combined the estimated prevalence of topics in the discourse on public investments and public debt and deficits that refer to the ascetic state (e.g. deficits, credit rating) and subtracted this from the prevalence of topics that referred to the inclusive state

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[42]For the exact search terms and parameters as well as for more details on the newspaper selection, see Appendix D.1.4.

[43]Natural language processing was used to identify negators (e.g. not dangerous), deamplifiers (e.g., somewhat dangerous) and amplifiers (e.g., extremely dangerous).

(e.g. education, infrastructure). This combined measure captures a countries dominant state identity or economic culture on a spectrum from the ascetic to the inclusive state (for details, see appendix D.1.4.2).

The remaining variables – control variables that often test for structural explanations – were measured as follows: Trade Openness is measured as the average of exports and imports as a share of GDP (Busemeyer 2009). Deindustrialization is measured as 100 minus the combined share of people working in agriculture and manufacturing (Jensen 2011). The share of elderly people is measured as the population over the age of 65 as a share of the overall population. Small stateness is a dummy variable indicating whether or not a country's population is smaller than 6 million. Budget deficit are measured using cyclically adjusted budget deficits to control out the effect of economic conditions on budgets, with positive values indicating a surplus. The debt rule variables is collected from the corresponding IMF dataset and is a dummy variable with 1 indicating that a debt rules exist *and* that there is no investment exception.

Missing data were handled with multiple imputation whereby several complete, rectangular datasets were created with missing observations estimated from all available data. This was done using the Amelia algorithm, which explicitly takes into account the time-series-cross-sectional nature of the data (Honaker and King 2010; Honaker, King, and Blackwell 2019). After running the model on each imputed datasets, results were combined using Rubin's rules whereby coefficient estimates as well as goodness-of-fit statistics are averaged across multiple imputations while standard errors were combined in a way that both averages uncertainty across models and accounts for disagreement in the estimated values across the models. Multiple imputation thus avoids the inefficiencies and potential biases associated with dropping missing values but also reflects the uncertainty that comes from using imputed missing values. Appendix D.2 provides more details on the imputation process as well as diagnostics that help evaluate the validity of the imputations.

Empirically, I use mixed-effects models, and in particular so-called within-between models (Bell and Jones 2015; Bell, Jones, and Fairbrother 2018; Bell, Fairbrother, and Jones 2019). This has three main advantages over standard time-series-cross-section regressions on annual observational data that use country fixed-effects. First, it more accurately models the nested structure of the data (Garritzmann and Seng 2019). Governments do not change annually. Using country-years as the unit of analyses therefore artificially inflates the number of observations, which leads to anti-conservative estimates. An alternative would be to use cabinet terms as the unit of analysis (Garritzmann and Seng 2016; Schmitt 2016). This approach, however, 'sacrifices' information as many variables do indeed vary annually but have to be aggregated to the cabinet-term level. By treating annual observations as nested in government terms which are in turn nested in countries, mixed-effects models allow for the "simultaneous estimation of the effects of variables with different time intervals – that is, variables that vary annually, over several years, or not at all within countries" (Garritzmann and Seng 2019, 8).

Second, using mixed-effects models allows for the separation of within and between effects (as well as for the inclusion of time-constant variables). The common approach to modeling clustered time-series-cross-section data is to use cluster (e.g. country) fixed-effects. This neutralizes the statistical problems associated with pooling clustered data at the price of controlling out all between-cluster variation. However, the between-effects of variables are often as theoretically interesting as their within-effects – and can be different from them. For example, not only may we care about the effects of varying levels of inequality between countries as much as about the effects of changes in the levels of inequality within a country over time; but these effects may also go in different directions (Bartels 2015). Moreover, fixed-effects models make it impossible to estimate the effects of time-invariant variables as all the degrees of freedom at the higher level have been consumed by the cluster dummies (Bell and Jones 2015, 139).

Standard random-effects models, meanwhile, partition the unexplained residual variance into a higher-level variance between entities and a lower-level variance within these entities, assuming that higher-level entities come from a single (normal) distribution which is estimated from the data. They do not, however, separate the within effect from the between effect but rather estimate a weighted average of the two, which has little substantive meaning (Bell, Fairbrother, and Jones 2019, 1057). However, by including group-mean centered lower-level predictors (country-averaged annual observations in this case), one can recognize the possibility of and explicitly model differences between within and between effects (Bell and Jones 2015, 141; Bell, Jones, and Fairbrother 2018). For random intercept models, this produces the same results for the within effects as a fixed-effects model (Bell and Jones 2015, 145), but retains the theoretically interesting between effect.[44]

Third, within-between mixed models have additional statistical advantages. By partially pooling information across countries, they strike a balance between fixed-effects models, in

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[44]The within-between model thus offers a substantive solution to a central objection to random-effects model, namely that they assume that lower-level (here occasion-level) covariates are uncorrelated with the random effects term such that $cov(x_{tgc}, u_{0gc}) = 0$ (Bartels 2015; Bell and Jones 2015). Not only do simulations show that "even in the presence of rather extreme violations of this assumption, the random-effects estimator can still be preferable to (or at least no worse than) the fixed-effects estimator" (Clark and Linzer 2015, 407). It also the case that the within-between specification prevents biased lower-level coefficients due to omitted variables at the higher level. This is because "there can be no correlation between level 1 variables included in the model and the level 2 random effects – such biases are absorbed into the between effect" (Bell, Fairbrother, and Jones 2019, 1059). This is also why the Hausmann test, a positive result of which is commonly taken as a reason to prefer a fixed- over a random-effect specification, is insufficient to decide between the two (Clark and Linzer 2015, 403). In fact, "a negative result in a Hausmann test tells us only that the between effect is not significantly biasing an estimate of the within effect"; the explicit modeling of the difference between those effects thus "makes the Hausmann test, as a test of FE against RE, redundant" (Bell and Jones 2015, 138). There can of course still be bias in the between effects and the effects of higher-level variables due to unmeasured higher-level characteristics. But this is a problem mainly if we want to know the direct causal effect of a higher-level variable. If we instead interpret these coefficients as "proxies for a range of unmeasured social processes" (Bell, Fairbrother, and Jones 2019, 1059) the coefficient estimates can still be valuable provided their interpretation is theoretically sound.

which nothing can be known about any higher-level entity (i.e. country) from knowledge about all or any of the others; and completely pooled models in which it is assumed that there are no differences between higher-level entity and so knowing one means knowing all (Bell et al. 2019, p. 1061). Instead, higher-level entities are treated as distinct but not completely different. In effect, the estimates for the random intercepts are shrunk towards their mean, with the most extreme (and least reliable) estimates being shrunk the most (Clark and Linzer 2015, 402). This allows us to estimate more reliable residuals for higher-level entities, estimate coefficients for higher-level variables, and estimate how much variance there is at different levels (Bell and Jones 2015, 144; Bell, Fairbrother, and Jones 2019, 1061). Furthermore, mixed-effect models allow for modeling heterogeneity in the effect of lower-level variables via random slopes and cross-level interactions. This can be used to assess whether the effect of a lower-level variable X depends on a higher-level variable Z, or even whether the within-cluster effect of X depends on between-cluster variation in X (Bartels 2015).

Against this background, I estimate a number of increasingly complex models. The first model is a three-level random intercept model without separate within and between effects:

$$y_{tgc} = \beta_0 + \beta_1 x_{tgc} + \beta_2 w_{gc} + \beta_3 z_c + \nu_{00c} + u_{0gc} + \epsilon_{tgc}$$

Variables are measured at multiple occasions (t), for multiple governments (g), in multiple countries (c). y_{tgc} is the dependent variable, the digital investment index; x_{tgc} is a vector of annually observed (i.e. level-one) variables; w_{gc} is a vector of government-term (i.e. level-two) variables; and z_c is a vector of country-specific (i.e. level-three) variables. This is the fixed part of the mixed-effects model. The random part consists of a country-level error term (ν_{00c}), a government-level error term (u_{0gc}) and an occasion-level error term (ϵ_{tgc}). The residuals thus capture unexplained variability at three nested levels. They are assumed to be normally distributed such that

$$\nu_{00c} \sim N(0, \sigma_{\nu}^2)$$

$$u_{0gc} \sim N(0, \sigma_{u}^2)$$

$$\epsilon_{tgc} \sim N(0, \sigma_{\epsilon}^2)$$

The second model separates out the within and between effects but assumes homogeneous effects of the level-one independent variables across higher-level entities.

$$y_{tgc} = \beta_0 + \beta_{1W}(x_{tgc} - \bar{x}_c) + \beta_{2B}\bar{x}_c + \beta_3 w_{gc} + \beta_4 z_c + \nu_{00c} + u_{0gc} + \epsilon_{tgc}$$

Here β_{1W} represents the average within effect of level-one independent variables, while β_{2B} represents the between effect level-one independent variables. β_3 represents the effect of country-specific and therefore time-invariant variables and therefore also captures a between effect (higher-level variables cannot have a within effect since they do not vary over time). The separation of within and between effect is accomplished by group-mean centering the level-one independent variables $x_{tgc} - \bar{x}_c$. This is similar to what fixed-effects regressions do, but allows us to additionally model the between effect by including the group mean of the level-one covariates $\bar{x}_c$.

The third model is equivalent to model 2 but does not assume homogeneous effects across higher-level entities. It attaches a random effect not only to the intercept but also to the within slope that allows for heterogeneity in the effect of the level-one independent variables. Including random slopes is not only substantively interesting. Simulations have shown that a failure to include random slopes when the homogeneity-of-effects-across-units assumption is violated can lead to anti-conservative estimates of the within effects as standard errors are underestimated (Bell et al. 2019). Moreover, including cross-level interactions between lower

and higher-level variables similarly leads to anti-conservative estimates if random slopes on the lower-level components of those interactions are not included (Heisig & Schaeffer 2019).

$$y_{tgc} = \beta_0 + \beta_{1W}(x_{tgc} - \bar{x}_c) + \beta_{2B}\bar{x}_c + \beta_3 w_{gc} + \beta_4 z_c + \nu_{00c} + \nu_{10c}(x_{tc} - \bar{x}_c) + u_{0gc} + \epsilon_{tgc}$$

While an even more complex structure is possible, group-mean centering was done only at the country level as it is the within and between country effects that are of theoretical interest (the inclusion of government terms primarily serves methodological purposes). Consequently, random slopes are attached only to the within-country slope of (selected) level-one independent variables.

There are a few model assumptions that require discussion. First, time-series-cross sectional data are often temporally correlated. In order to avoid anti-conservative estimates of the error terms due to autocorrelation, I include a lagged dependent variable on the right-hand side of the equation, which has been shown to produce the good estimates even in the presence of minor residual autocorrelation (Keele and Kelly 2006; cf. Beck and Katz 2011). This, however, is not a mere technical fix but is based on the theoretical assumption that spending in one year affects spending in the year after. This is because radical changes in spending are unlikely for political as well as for administrative reasons. Current spending constrains future spending. Second, in fixed-effects regressions of time-series-cross-sectional data, heteroskedasticity (unequal error variance across countries) and contemporaneous error correlation (due to common shocks, etc.) are often a problem as they bias estimates (Beck and Katz 1995). However, because they already partition the error into within- and between-country error components, this should be less of a problem for within-between models. Bartels (2015) shows that this is indeed the case and the estimates from within-between models are quite similar to those from fixed-effects models with panel-corrected standard errors. Third,

even though mixed models assume that higher-level entities are drawn from a Normal distribution, Beck and Katz (2007) show that they handle even highly non-normal distributions very well. Fourth, although Stegmueller (2013) has influentially argued that maximum-likelihood estimators produce severely overconfident estimates when there are fewer than 15-20 higher-level entities (and has recommended using a Bayesian approach instead), recent follow-up work has identified flaws in Stegmueller's simulation study (Elff et al. 2020). The authors find that maximum-likelihood estimators generally provide unbiased coefficient estimates in linear multilevel models even with few higher-level entities. Moreover, restricted maximum-likelihood estimators, together with using a heavier-tailed t distribution with limited degrees of freedom instead of the standard normal distribution, provide much-improved estimators of variance parameters (over standard maximum-likelihood estimates), especially for very small cluster sizes (5-10 higher level entities). Finally, if variables have a unit-root, coefficient estimates can be spurious. While an Augmented Dickey-Fuller test for the country-averaged digital investment index rejects the null hypothesis of a unit root (p-value = 0.02), visual inspection reveals an upward trend in the data. And while I included a time trend in the regression to capture this trend component, I cannot fully exclude the possibility of non-stationarity – not least because it is unclear how well standard tests for stationarity perform for time-series-cross sectional data with relatively low numbers of annual observations. Transforming variables to their first differences could be a technical fix to eliminate potential non-stationarity. However, this would come at a theoretical cost as we lose the ability to estimate meaningful between-effects (which are all about levels, not change). There are also theoretical considerations following from the structure of time-series-cross-sectional data (Beck and Katz 2011, 342–44). In particular, stationarity is constrained because of natural bounds. For example, the share of conservative parties in government is constrained between 0-100, and spending variables as a share of GDP can realistically only go so high, which also bounds their variances. This also implies that political economy data that show an increas-

ing trend cannot continue this trend indefinitely. That is, data that are non-stationary in a certain time-period may not be so be over a longer (or shorter) period. It might nonetheless be advisable to use autoregressive distributed lag models to deal with non-stationary data (Beck and Katz 2011; Philips 2018).

5.5 Findings

Moving to the substantive findings, Table 4 shows the results of several model specifications. All continuous variables are normalized to both aid model convergence and ensure better interpretability of coefficients. One advantage of mixed-effects models is that they provide us with the basic partition of the variability in the data between different levels. For this purpose, we can estimate a three-level random intercept model without explanatory variables. This empty model shows that the bulk of the variance (around 66%) stems from the country level. This interclass correlation coefficient (ICC) can be interpreted as the fraction of the total variability that is due to the country level. In other words, there is much more variance between countries than there is between governments or within countries. This is perhaps unsurprising given the relatively short time-series and path-dependencies within countries. But it also makes it all the more necessary to explicitly model between effects and group-level variables. In a way, much of what we need to explain is why different countries invest so differently in the digital future, rather than why they – or different governments within these countries – invest more or less over time.

The next step is to include explanatory variables. Model 1 does so by modeling the relationship between the digital investment index and the explanatory variables in three-level mixed effects model without separate within and between effects. A first finding is that the composition of government does not seem to have any effect on investment spending. This is true regardless of whether we measure government composition as the share of social

	Empty	Model 1	Model 2	Model 3
(Intercept)	−0.018	−6.815	−14.161°	**−28.372****
	(0.152)	(5.792)	(7.595)	(8.760)
Lagged Dependent Variable		**0.769****	**0.758****	**0.562****
		(0.028)	(0.029)	(0.039)
Social Democratic Party		−0.009	−0.010	−0.010
		(0.012)	(0.012)	(0.013)
Corporatism		**0.055***		
		(0.024)		
Corporatism (within)			0.016	0.017
			(0.012)	(0.013)
Corporatism (between)			**0.112****	**0.226****
			(0.041)	(0.069)
Institutional Constraints		0.018	0.019	0.023
		(0.023)	(0.023)	(0.029)
Adjusted Deficit		**−0.049****	**−0.053*****	**−0.072*****
		(0.015)	(0.016)	(0.016)
Deindustrialization		**0.075***		
		(0.029)		
Deindustrialization (within)			0.015	0.005
			(0.032)	(0.042)
Deindustrialization (between)			**0.108****	**0.211*****
			(0.035)	(0.059)
Sentiment (between)		0.045	0.060	0.123°
		(0.036)	(0.042)	(0.074)
Sentiment (within)		−0.016	−0.016	−0.017
		(0.016)	(0.017)	(0.016)
State Identity			0.002	−0.029
			(0.042)	(0.069)
Trade Openness		−0.041	−0.045	**−0.130****
		(0.027)	(0.027)	(0.043)
Unemployment		0.004	0.017	0.034°
		(0.016)	(0.018)	(0.020)
Share 65+		0.013	0.012	0.032
		(0.025)	(0.025)	(0.039)
Small State		**0.160***	**0.159***	**0.251****
		(0.064)	(0.068)	(0.097)
Debt Rule		**−0.095****	**−0.095****	**−0.084***
		(0.036)	(0.036)	(0.038)
EU Member		0.072°	0.073°	0.103°
		(0.038)	(0.039)	(0.058)
Corporatism*Deindustrialization				**0.080****
				(0.026)
AIC	1424.374	744.613	758.526	700.905
N (Government)	439	439	439	439
N (Country)	32	32	32	32
N (Total)	1157	1157	1157	1157
Variance Government Level	0.258	0.000	0.000	0.004
Variance Country Level	0.679	0.026	0.027	0.086
Residual Variance	0.084	0.094	0.093	0.079
Variance Random Slope				0.014
Covariance Random Slope/Intercept				−0.007

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; °$p < 0.1$

Table 4: Mixed-Effect Models

democratic parties in government, or as the relative emphasis that government parties put on investment (see Appendix D.2.3 for this specification). This is consistent with the recent literature, which argues that if we accurately model partisan factors (with governments not years as the units of observation), and if we look at the more recent, institutionally denser past, we should not find (strong) partisan effects on investment spending (Garritzmann and Seng 2016, 2019).

Structural accounts fare much better. First, lower cyclically adjusted budget deficits are associated with lower digital investment spending. Most likely, this means that if governments reduce their deficits, they cut investment spending first, which is in line with the findings on the detrimental effects of austerity on investment spending (Ronchi 2018; Jacques 2020a).[45]. This could also be an indication for a change in fiscal regime in the sense that governments that reduce their deficits and even run budget surpluses do not increase their investment spending (cf. Haffert and Mertens 2015). However, the negative effect of having a positive budget balance on investments is a within effect, i.e. it is not the case that countries that on average run higher surpluses (or lower deficits) invest less in knowledge-based capital (the between effect is positive but not significant). At the same time, the existence of hard debt rules (that make no exception for investments) is negatively associated with investment spending, which indicates that investment spending suffers from a institutional commitment to balanced budgets. Meanwhile, being an EU member has a weakly significant positive effect on investment spending, which suggests that despite recent austerity measures, the EU's explicit commitment to making Europe the 'most competitive and dynamic knowledge-based economy' may make member states more inclined to invest in knowledge-based capital.

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[45]It is also confirmed by the finding that higher levels of public debt have a similar highly significant negative effect (see appendix D.2.3).

Moving on to the central argument of this paper, the corporatism index in model 1 shows a strong and significant association with digital investments. Model 2 further separates within and between effects, which were lumped together in the model 1. This reveals that while there is no significant within effect, there is a strong and highly significant between effect of corporatism. In other words, countries that are one standard deviation more corporatist have almost a quarter of a standard deviation more digital investments, while becoming more corporatist does not have this effect. This also holds if we only include the functional dimension of corporatism and thus focus more on the role of social partners in policymaking (see D.2.3).

This is strong evidence in support of my argument about the importance of corporatist institutions. Moreover, it seem to be corporatist institutions in particular, not just institutional constraints, that positively affect investment spending. The institutional constraints variable, which measures the feasibility of policy change (Henisz 2002, 363), remains insignificant even when we separate within and between effects. This suggests that it is not mainly their ability to ensure credible commitments through power-sharing, but their collaborative style of policymaking that makes corporatist countries better at investing in the future. Digital investments, in other words, are made in countries in which social actors have an "ideology of social partnership" (Katzenstein 1985, 32) or a sense of " 'shared ownership' of policy problems" (Hemerijck and Schludi 2001, 227) that allow them to overcome intertemporal trade-offs and tap into the positive-sum potential of investment policies. This argument about the importance of 'being in it together' is further supported by the fact that small states have higher levels of investment than larger ones.

We can illustrate this both theoretically and empirically. First, we can use game-theoretical modeling to underscore Katzenstein's point that there is not tradeoff between the necessary involvement of all social partners in the policymaking process and the ability to adjust to external change (Tommasi, Scartascini, and Stein 2014). In fact, having more

potential veto players "means not only more veto players today, but also in the future; this affects the likelihood that any current veto player is also a veto player in the future, and this might lead to different choices than if there was no tomorrow. [M]ore veto players at one point in time might [also] make deviations from cooperative equilibria less appealing and lead to more cooperative policymaking, which allows for efficient adjustments but prevents opportunistic adjustments" (Tommasi, Scartascini, and Stein 2014, 224).

Second, we can look at empirical cases of creative corporatism at work. Here, the Danish reforms of the last decades are a case in point. Before the 1990s, Denmark was characterized as 'a small state in big trouble' (Schwartz 1994). Shortly after, it experienced an economic 'miracle' (Schwartz 2001), having massively expanded investments in knowledge-based capital and successfully moved into knowledge-intensive markets (Ornston 2012, 92–125). Crucial to this success story was Denmark's ability to repurpose its corporatist institutions to foster supply-side investments. Denmark's "history of constructive collaboration (. . .) enabled policymakers to move beyond distributive bargaining to tackle sensitive issues such as financing, skill formation, and research" (Ornston 2012, 198). For example, the tripartite Zeuthen Commission "linked social benefit reform to active labor market expenditure and greater collaboration in training"; it thus created a "focal point (. . .) for subsequent bargaining", which helped to mobilize a "broad consensus for investments in human capital" (Ornston 2012, 103).

This is not to say that creative-corporatist countries are free of conflicts, even in small states. There are diverging interests not just between but also within governments, employers, and unions (Schwartz 1994; Katzenstein 2003, 18; Culpepper 2007). However, the defining feature of corporatism is not the absence of interests and power, but a hybrid style of bargaining that is neither pure power nor pure persuasion (Mansbridge 1992). In fact, the "shift from distributional to supply side issues" (Thelen 2014, 65) involved making deals - but these deals were negotiated in a collaborative mindset where actors knew that they *could*

and *had to* cooperate with other actors. This forces actors to seek common ground, and common ground is best found where positive-sum, collective gains can be realized. Danish social partners reached a compromise that involved a "trade-off in which organized labor conceded cuts in the duration of unemployment support and stricter eligibility rules in return for the government's commitment to skill formation – institutionalizing a 'right and obligation' to training" (Thelen 2014, 146). In other words, trade unions and Social Democrats agreed to liberalizing reforms "in return for large investments in active labor market training programs. Without this compensation mechanism, the reform would not have been possible" (Lindvall 2017, 27). Corporatism thus made compromise necessary, but this compromise took an investive, future-oriented form whose benefits both parties had the time horizon and trust to appreciate the benefits of.[46]

Moving from corporatist institutions to more ideational attitudes, we find that countries with a more positive discourse on public debt and deficits, public investment and technological change tend to have higher levels of investment. The effect is averaged across all three discourses but positive in each of them. This effect is not insubstantial but significant only at the 0.1 level. Nonetheless, it is interesting that even when controlling for all kinds of structural, partisan, and institutional variables, countries that have a more positive view of public debt and deficits and public investment in particular tend to also have higher

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[46]We observe a similar mechanism in companies themselves. Finzel and Abraham (1996), p. 785, for example, have shown that not involving labor in the adoption of new technologies forces unions into a defensive posture where they try to "minimize the harm of a new technology" rather than adopt "future-oriented strategies" that combine the introduction of new technologies with investments in skills and retraining. Similarly, Henisz shows that not just government investments but investments in general are higher when political institutions limit the feasibility of policy change because they express and signal "the ability of a nation to credibly commit to a given policy environment" (Henisz 2002, 356). More recently, van Overbeke (2020) has shown that certain cooperative institutions - such as the regular involvement of social partners in socio-economic policy making - have a significant positive effect on robotization rates. Thus, far from stifling innovation in the second machine age, the institutions underlying 'negotiated' varieties of capitalism can support the adoption of novel technologies.

investments in knowledge-based capital. Given that the underlying data are relatively coarse - they cover public discourse on relatively broad topics instead of debates among organized political actors on a more narrowly defined topics - this is a promising finding.

I do not find support for the argument that more references to topics that indicate an inclusive vs. an ascetic state identity are associated with more investments. While there is a significant and - as we would expect - positive relationship between having more inclusive-state references in a simple model, this relationship does not survive the inclusion of structural and institutional variables. Thus, while my ideational argument only finds partial support, even these initial findings support the claim that broader public conceptions of state virtue and the role of the state in the economy could be an important element of public policy decisions and should be studied with more fine-grained data (on this point, see also Nicholls and Culpepper 2020).

Another important finding relates to the way in which corporatism moderates the effect of deindustrialization on investment spending. Similar to Jensen (2011), I find a sizable and highly significant effect of deindustrialization on investment spending. This, however, is mainly a between effect, that is, countries that are more deindustrialized spend more on digital investments. The within effect, meanwhile is not significantly different from zero. Importantly, however, as suggested by Jensen himself and as argued in the theoretical discussion of the adaptive benefits of corporatist institutions, the within effect of deindustrialization might depend on institutional variables and might differ across countries. This is exactly what we find when we include an interaction effect between the between effect of corporatism and the within effect of deindustrialization as well as random slopes for the within effect of deindustrialization.

Model 3 shows that this between effect is positive and significant. Figure 13 shows that controlling for overall levels of deindustrialization as well as other factors, an increase in deindustrialization leads to lower spending in countries with low levels of corporatism, and to

higher levels of spending in countries with high levels of corporatism. This further supports Ornston's (2012) argument that corporatist countries can reinvent their corporatist institutions to foster supply-side investment in the face of technological and economic change, while less corporatist countries might resort to more compensatory measures (although I don't have direct evidence of this). We can also see this heterogeneity in responses to deindustrialization from the fact that the slope standard deviation is $\sqrt{0.01} = 0.12$. Given that the average slope is 0.005, this implies that the effect of deindustrialization not only has a different sign in some countries but is substantially different from the effect in other countries. For example, in a country with the top 2.5% of the country-dependent effect, a one-unit increase in deindustrialization would lead to around a ~0.24 $(0.005 + 2*0.12)$ standard deviation increase in digital investments, while in a country with a low effect, it would lead to around a ~0.24 standard deviation decrease. Figure 14 plots the random slopes for the different countries, illustrating that while for some countries, deindustrialization does seem to have much of an effect, for some, such as Denmark or Switzerland, it led to a relative increase in investment spending, while in other such as France or the UK, it led to a decrease all else being equal.

Overall, then, I find the strongest support for institutional factors and the weakest support for partisan factors. This is not to say that partisan factors did not play a role in earlier periods or do so in more specific circumstances. But in general, institutional factors seem to matter a great deal more. Effect sizes for institutional factors are also considerable. A one standard deviation increase in the average corporatism score leads to more than a fifth of a standard deviation increase in digital investment spending, while the existence of a hard debt rule reduces investments by around a tenth of a standard deviation. Some of the structural variables also find strong support, but they are often highly complementary to or even moderated by institutional variables. The negative effect of deficits, debt, or having debt rules confirms other findings on the negative effect of austerity on investment spending (e.g. Jacques 2020a). And the fact that deindustrialization is conditioned by corporatism
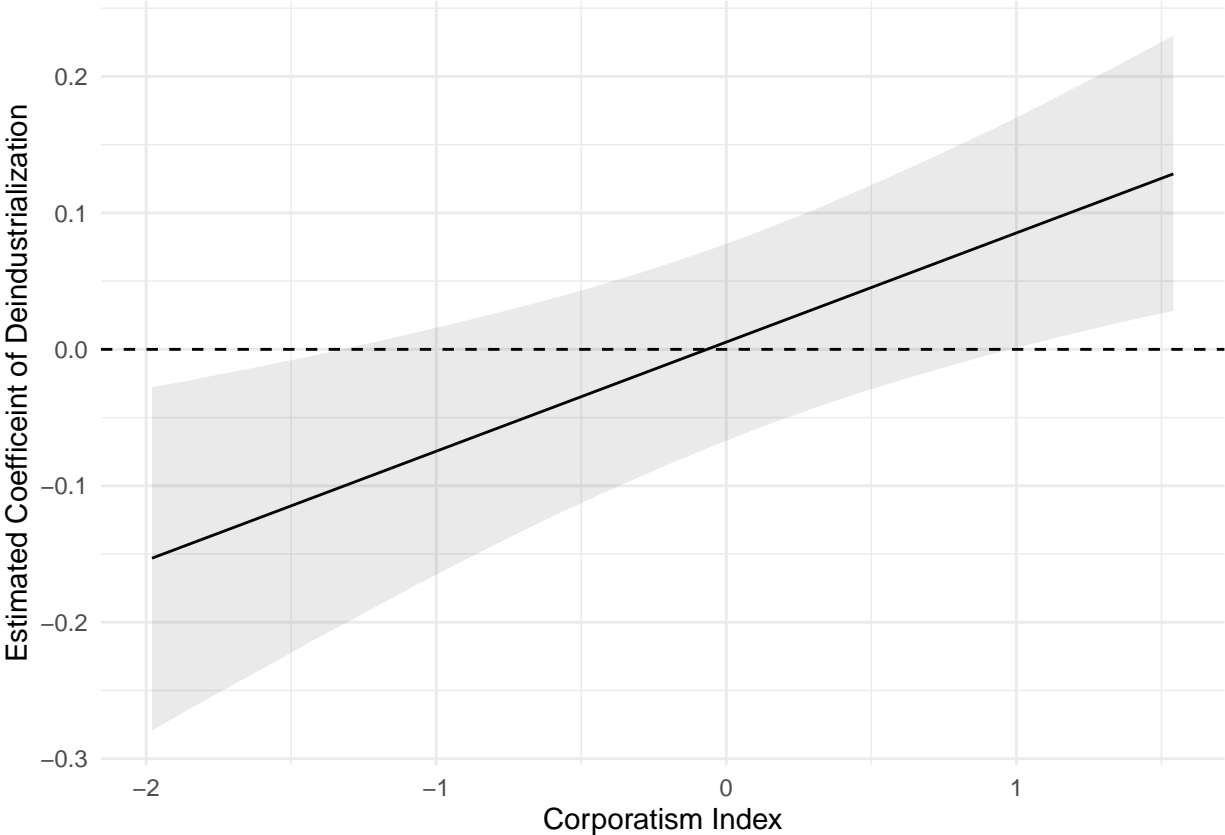
Figure 13: Effect of deindustrialization on digital investment spending conditional on level of corporatism. Averaged across imputations
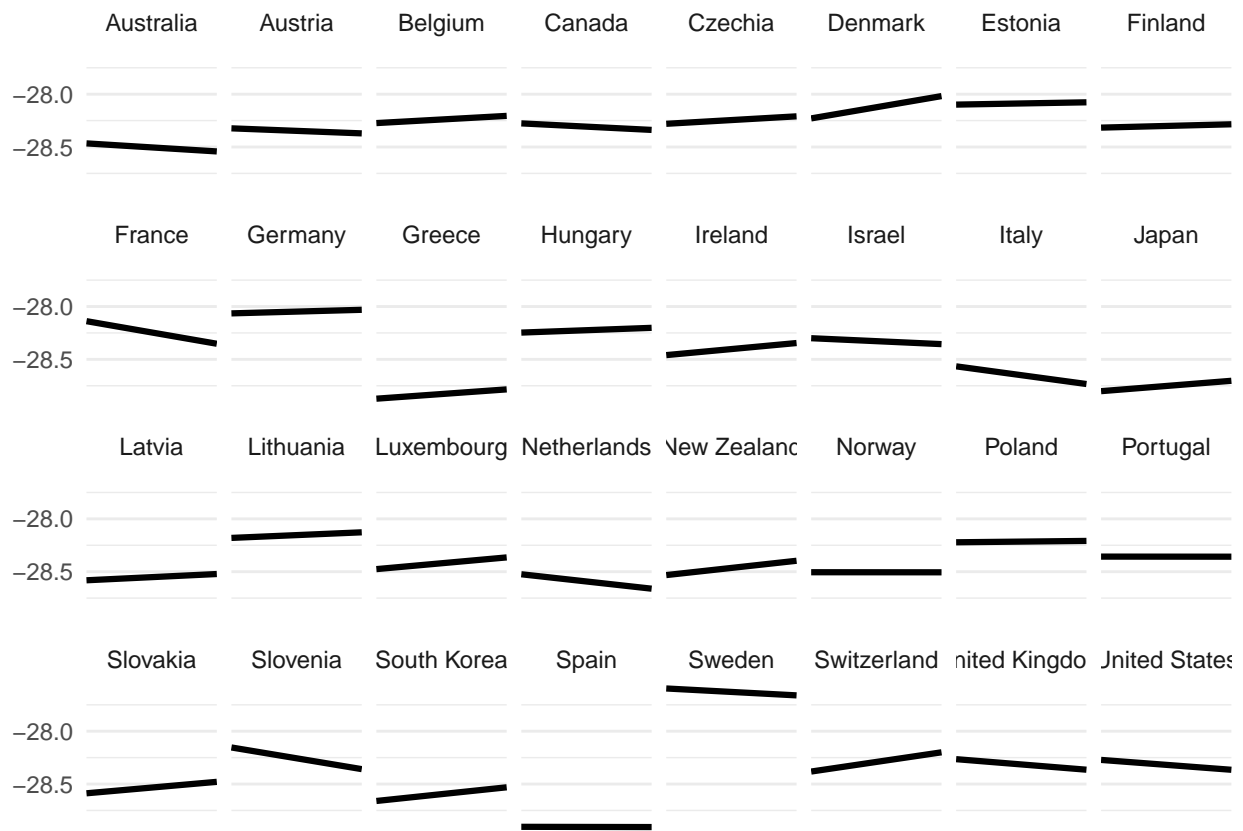
Figure 14: Random slopes for deindustrialization across countries. Averaged across imputations

is further indication that we should not treat structural and institutional variables in isolation from each other. Figure 15 summarizes the findings, distinguishing between structural, partisan, institutional, and ideational variables.

The main results are robust to different model specifications, as appendix D.2.3 shows. They hold whether or not I include a lagged dependent variable, include GDP per capita as a control (which I did not do because of potential multicollinearity issues, see appendix D.2.2.1), use a different specification of the dependent variable, use a different measure of the partisan variable or the corporatism variable, use employment instead of unemployment levels, or use different and more 'conservative' selections of time-series and/or cross-sectional units. Model diagnostics further show that the residuals are homoscedastic and approximately normally distributed (see Appendix D.2.2.2).
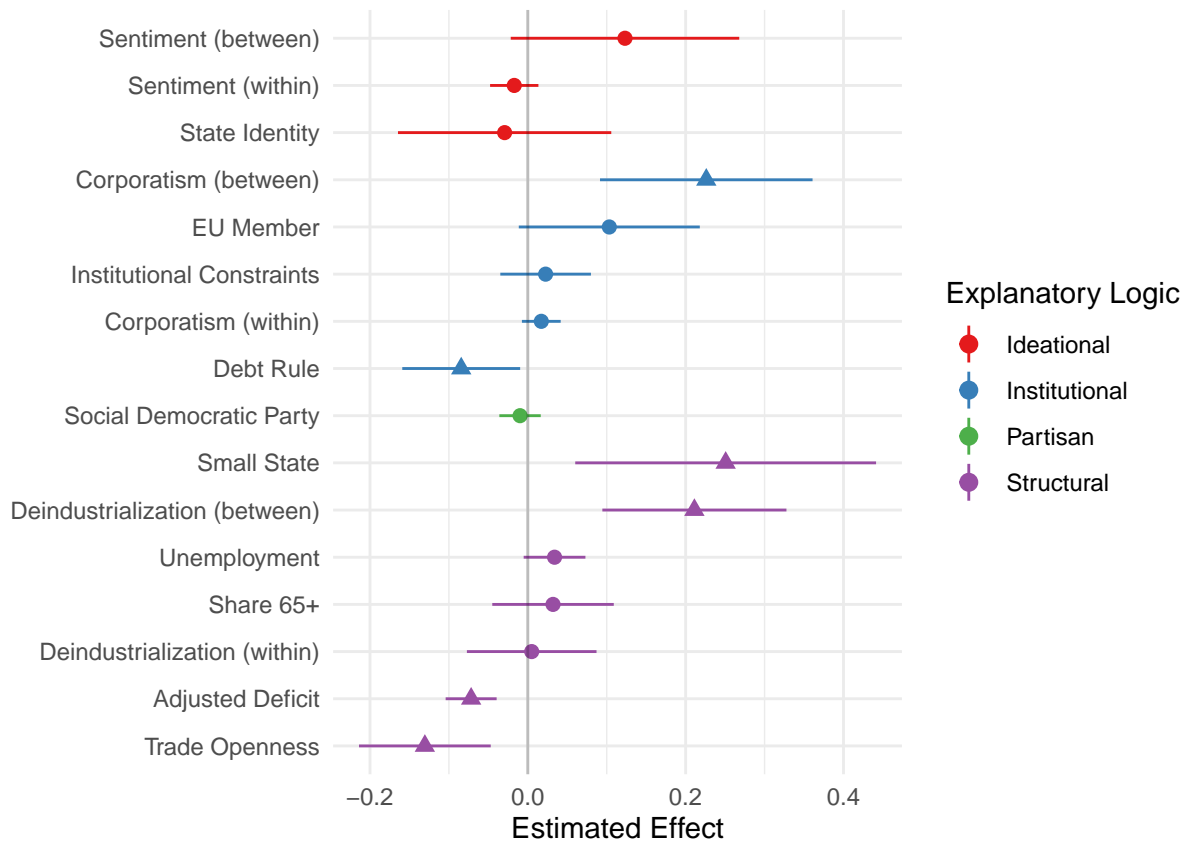
Figure 15: Coefficient estimates by explanatory logic. Based on model 3. Triangles indicate significance at the 95% level

5.6   Conclusion

Why do some governments invest more in the digital future than others? In this paper, I have looked at the determinants of digital investment policies - understood as investments in knowledge-based capital through public spending on education, R&D and active labor market policies. The public provision of knowledge-based capital - be it in the form of individually-held human capital or collectively-held innovational capital - is crucial since it is often underprovided by private actors due to various kinds of market failures. But it is not just markets that often make fewer investments than would be socially optimal, governments often do so too. This is because while digital investments are beneficial in the long run, they involve intertemporal tradeoffs that make them politically costly in the short run.

This raises the question why some countries are better at mitigating these intertemporal tradeoffs than others. Building on but also going beyond the existing literature, I have argued that corporatist institutions are a crucial part of the answer. By facilitating negotiations between winners and losers of change and by nourishing a collaborative style of policymaking, corporatist institutions help avoid the snares of future-oriented policymaking and thus unlock the 'collective gain' (Hicks and Kenworthy 1998) contained in investment policies. The paper thus finds strong support for the argument that corporatism, rather than being an obstacle to adaptation and change, can be harnessed for the "construction of new supply-side resources" (Ornston 2013, 710). The argument that collaboration and a certain kind of closeness can help overcome intertemporal tradeoffs is further supported by the fact that being a small state leads to more digital investments (cf. Katzenstein 1985, 2003; Ornston 2012). This is an important finding in a world in which the ability to proactively adapt to and invest in the future becomes increasingly essential.

I also find that when governments cut back their deficits, investment spending goes down. Similarly, the existence of debt rules leads to considerably lower levels of investment.

This lends support to the argument that (institutionalized) austerity comes at the expense of investments. However, if countries have a more positive discourse on public debt, deficits, and investments - indicating that they are less concerned about using public debt to finance investments - they may invest more in knowledge-based capital. This lends tentative support to the argument about the importance of state identities and debt cultures in shaping countries' spending patterns (Dyson 2014) and to the argument that the way that public investment is thought and talked about influences the way states behave in the economy (Mazzucato 2013). However, these results are not replicated when I look at the content instead of the tone of discourse and therefore have to be taken with a grain of salt. Nonetheless, this paper is one of the first to show that ideational variables can be productively used in a quantitative setting, and thus opens up interesting avenues for future research on the ideational sources of politico-economic diversity.

Meanwhile, the partisan composition of government, at least in the way it was operationalized here, did not affect digital investment spending. This is further evidence in support of the argument that partisan factors matter less in institutionally dense settings where institutional and ideational path-dependencies shape the political and interpretative leeway of governments of all stripes. This implies that partisan scholars should either more carefully theorize what exactly it is about parties that would make a difference in investment spending, or look more closely at how partisan factors interact with institutional ones. For example, the argument developed here, that corporatist traditions can fundamentally change the very nature of the policymaking process itself, could be an interesting starting point for exploring the behavior of partisan actors across such different institutional and even cultural settings.

Methodologically, this paper has demonstrated the potential of using within-between mixed-effects models for time-series-cross-sectional data. Not only allow they scholars to accurately model the nested structure of many comparative political economy datasets. They also allow, among other things, for modeling the between (and not just the within effects) of

variables, the influence of time-invariant or cluster-level variables, and the heterogeneity of effects across higher-level entities. They thus provide a viable and in some important ways superior alternative to standard fixed effects models with annual observations (Garritzmann and Seng 2019; Bell and Jones 2015).

Despite these theoretical, empirical, and methodological contributions, this paper suffers from two shortcoming in particular. First, the paper does not pay sufficient attention to how variables that change over time interact with country-specific characteristics that are slow-changing or even time-invariant. The fact that the effect of deindustrialization seems to depend on the level of corporatism is an important indicator that the transformative changes brought about by digitalization are not having the same effects everywhere. Future studies should therefore look more systematically at heterogeneity in the effects of such transformations across countries and at the country-level characteristics that cause this heterogeneity.

Second, and perhaps even more importantly, it remains rather agnostic about how exactly corporatist institutions - as well as public discourses - are translated into political outcomes. While theory and evidence from other studies provide some guidance here, it remains unclear what exactly it may be about a more positive discourse on public debt, deficits, and investments that leads states to play a more active role in the economy. And it remains unclear how a collaborative style of policymaking and a sense of common ownership of policy problems actually become effective 'on the ground'. Future studies should therefore look at discursive as well as differences in policymaking style much more closely, examining the mechanisms by which some political actors are able to overcome the intertemporal obstacles that stand in the way of future-oriented investments.

6 The Solutionist Ethic and the Spirit of Digital Capitalism[47]

Abstract: Why do tech elites believe they are the world's greatest do-gooders and why does it matter what they say and (claim to) think? In this paper, we use the concept of the capitalist spirit to shed light on the ways in which normative beliefs inform and justify the business models of tech companies. We first reconstruct, systematize and operationalize the concept of spirit of capitalism. We then argue that solutionist ideas have become central to the (self-)image of today's tech companies. Solutionism refers to the idea that the use of technologies is the royal road to fixing social problems, and that one can therefore get rich while making the world a better place. We use a classification algorithm trained on hand-coded documents to empirically trace the relative importance of solutionist vis-à-vis other normative beliefs in three novel text corpora. We find that solutionist ideas are indeed central to the worldview of tech elites, and that they are also gaining ground in the broader tech milieu, although not yet in capitalist discourse at large. Finally, we theorize and illustrate the motivating, legitimizing, and orienting role of the capitalist spirit. In doing so, we contribute - conceptually, theoretically, and empirically - to the budding debates on the moral embeddedness of economic action and on the nature and trajectory of digital capitalism.

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[47]This chapter was co-authored with Oliver Nachtwey.

6.1   Introduction

The technology industry has been on a reputational roller coaster in recent years. After a long period of almost unadulterated techno-optimism, digital capitalism found itself in a legitimation crisis. The tech giants, long heralded as agents of capitalist rejuvenation and societal progress, were now seen as the BAADD guys: "*b*ig, *a*nti-competitive, *a*ddictive and *d*estructive to *d*emocracy" (The Economist 2018). Academics and policymakers alike were calling for more regulation, while calling the tech giants out on their harmful, extractive, and monopolistic business practices. Pushback also came from within. Tech companies have experienced a wave of worker protests over ethically controversial projects (Shane and Wakabayashi 2018). And even Mark Zuckerberg himself is said to have questioned his "personal techno-optimism" when he realized "that people could abuse the thing that he built" (Thompson and Vogelstein 2018).

This 'techlash' – and the intellectual, social, and political movements it bolstered – have by no means disappeared. Recently, however, they have partly run out of steam as the COVID-19 pandemic exposed societies' dependence on the services provided by tech companies, boosted the market valuation of these companies to unprecedented heights, and allowed them to increasingly cast themselves as co-providers of public welfare. Apple and Google, for example, have teamed up 'to harness the power of technology' to help countries combat the pandemic more effectively. And Facebook wants to help use humanity's 'new superpower' to fight the pandemic: 'the ability to gather and share data for good'. This teaches us two things. First, the idea that digital technologies are essential to solving humanity's biggest problem is alive and well. And second, tech companies are increasingly willing to collaborate with governments in the provision of public welfare while governments increasingly rely on the infrastructure and information controlled by these companies (Magalhaes and Couldry 2020; Morozov 2020).

This is the backdrop against which this paper takes a closer look at the ideas and values animating digital capitalists – and their role in justifying and orienting their business models, including their more recent move into the provision of public welfare. Where did these ideas and values come from in the first place? Does their (self-)image as the 'good capitalists' and society's best shot at tackling its biggest problems make a difference in how tech companies are treated by the public, policymakers, and their employees? Do the beliefs that come along with it affect their business decisions or do they merely cover for their profit-making? How widespread are these beliefs? And lastly, what is their significance for understanding the past, present, and future of digital capitalism?

In this paper, we provide answers to these questions. Using both quantitative and qualitative methods, we identify a set of influential beliefs that inform the way in which tech elites see themselves – and in which they are seen by others. At the heart of these beliefs is the idea that all good things go together: that one can make money while making the world a better place. This strange "mix of commerce and cause" (Slee 2016, 9) is based on the assumption that the use of digital technologies – by inventive and cunning entrepreneurs – is the royal road to fixing social problems. Following Evgeny Morozov (2013), we call this idea 'solutionist', as it implies that there is a techno-entrepreneurial solution to every social problem. Much like the early protestants believed that economic success is a sign of chosenness, the solutionist entrepreneurs are convinced that if they are doing good, they will also do well; and conversely, that if they are doing well, they must also be doing good.

While this solutionist ethic was forged in the cultural crucible of Silicon Valley, it has assumed a broader significance. Not just because Californian companies play an essential role in the ongoing digital transformation of contemporary societies and economies. But also "because the avatars of [digital] capitalism have persuaded so many people that their way is the way of the future" (Sennett 2006, 12). This notwithstanding, the solutionist ethic left its strongest mark to the spirit of digital capitalism, which we define as those normative beliefs

that legitimate, motivate, and orient the actions of today's tech elites (founders, venture capitalists, senior managers, etc.).

To be sure, when the solutionist beliefs of tech elites collided with their ability to make profits, many – although not all – put profits over principles. The story of tech elites is thus no exception to the long list of 'cautionary tales' about the difficulties 'enlightened capitalists' face in a world of ruthless and relentless competition (O'Toole 2019). But this does not mean that solutionist beliefs are inconsequential. Even if capitalists put profit over principles, solutionist beliefs can still justify digital business models both internally (towards employees) and externally (towards policymakers and the public); and they can tip the balance in favor of one course of action when there is no single obvious profit-maximizing strategy.

Nor are solutionist beliefs disingenuous: many tech elites really belief that they really are making the world a better place. It is easy to satirize these beliefs as (self-)deceptions, as HBO's *Silicon Valley* has done so brilliantly. But as countless interviews, inside-stories, and anecdotes illustrate, many in tech really do belief in the liberating potential of technology. Ironically, Google's Astro Teller left a meeting with *Silicon Valley's* producers in a huff, angrily telling them that "We don't do stupid things here [at GoogleX]. We do things that actually are going to change the world, whether you choose to make fun of that or not" (Marantz 2016). This is not the reaction of an insincere person. Solutionism might be bullshit, but most of its proponents are not, in Harry G. Frankfurt's sense, bullshitting.

This paper makes several contributions. Conceptually, we reconstruct the concept of the capitalist spirit, and further develop and operationalize it. Theoretically, we contribute to the budding debate on the moral and ideational embeddedness of economic action (Abend 2014; Beckert 2016, 2019; Diaz-Bone and Salais 2011; Fourcade and Healy 2007; Granovetter 2017; Kazmi, Leca, and Naccache 2016). We also complement recent survey-based work on the values and political behavior of technology entrepreneurs with a more text-based

approach (Broockman, Ferenstein, and Malhotra 2019). Empirically, we measure the spirit of (digital) capitalism and trace its evolution over time and across sectors. Specifically, we use a supervised classification method (Hopkins and King 2010; Jerzak, King, and Strezhnev 2019) on several large and novel text corpora to identify different normative ideas. In addition, we use secondary sources such as inside stories or biographies, interviews, and other academic work to demonstrate how these beliefs became, in Max Weber's words, 'effective forces in history', that is, how they came to justify and orient the actions of digital capitalists.

The paper proceeds as follows. We first give an overview of the intellectual history of the spirit of capitalism and elaborate on the definition given above (2). After describing the solutionist ethic at the heart of the spirit of digital capitalism (3), we introduce our data sources and explicate and validate our methodological approach (4). We then present our findings and discuss them in light of more qualitative evidence and theoretical reasoning on the legitimizing, motivating, and orienting role of the capitalist spirit. In doing so, we also distinguish our 'newest spirit' from what Boltanski and Chiapello (2007) have called the new spirit of capitalism (5). We conclude by discussing the broader theoretical and political relevance of our argument (6).

6.2   The Spirit of Capitalism – Revisited

The concept of the capitalist spirit undoubtedly belongs to the most colorful and controversial concepts in the history of sociological thought. It was first introduced by Werner Sombart (1902) in *Der moderne Kapitalismus*. For Sombart, every economic epoch was defined as much by its predominant economic attitudes – its spirit – as by its institutional form (Sombart 1902). Arguing that the capitalist spirit was defined by a combination of acquisitiveness and economic rationalism, Sombart laid the conceptual groundwork for an inquiry into the ideational elements underlying capitalist action (Sombart 1902, 391).

Max Weber built on this groundwork when he borrowed Sombart's concept in his famous study *The Protestant Ethic and the Spirit of Capitalism* (Weber 2007). What Weber had in mind, however, was less a cognitive attitude than a "peculiar ethic" (Weber 2007, 17). Weber's capitalist spirit is not "mere business astuteness", but an "ethos" the violation of which "is treated not as foolishness but as forgetfulness of duty" (Weber 2007, 17).[48] Weber's account, however, remains genealogical. The spirit of capitalism fades away after it has performed its midwifely function. Today' capitalism no longer needs to motivate its subjects ethically, but "educates and selects [them] through a process of economic survival of the fittest" (Weber 2007, 20). Resting on "mechanical foundations" (Weber 2007, 124), capitalism no longer needs the helping hand of its spirit.

Almost a century later, the concept of the capitalist spirit was picked up by Luc Boltanski and Ève Chiapello in their book *The New Spirit of Capitalism* (Boltanski and Chiapello 2007; Du Gay and Morgan 2013). Building on Weber's idea that "people need powerful moral reasons for rallying to capitalism", they define the spirit of capitalism as an "ideology that justifies engagement in capitalism" (Boltanski and Chiapello 2007, 8–9). While a "minimal argument in terms of compulsory submission to economic laws" might be "a motive for staying in a job" it isn't one "for getting involved in it" (Boltanski and Chiapello 2007, 8). To really mobilize people – and to defend itself against its critics – capitalism needs "to draw upon resources external to it, beliefs which, at a given moment in time, possess considerable powers of persuasion" (Boltanski and Chiapello 2007, 20).

Here, Boltanski and Chiapello build on the economics of convention (Diaz-Bone and Salais 2011) and its argument that "modern economies comprise multiple principles of evaluation" (Stark 2009, 11). Such principles – or orders of worth, or polities (*cités*)– are like moral

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[48]Weber consistently uses the concept of the capitalist spirit in quotation marks and limits his use of this "somewhat pretentious phrase" (Weber 2007, 13) to value-rational aspects of economic action (Weber 2001, 50).

grammars that define "the good, the just, and the fair—but according to different criteria of judgment" (Stark 2009, 12). Table 5 systematizes the somewhat scattered references to the eight polities identified by the literature (Boltanski and Thévenot 1999, 2006; Boltanski and Chiapello 2007; Thévenot, Moody, and Lafaye 2000). While all polities provide "justifications in terms of the common good" (Du Gay and Morgan 2013, 13), they provide actors with different criteria for doing so. Each polity features a concept of what is valuable or worthy (e.g. efficiency in the industrial polity, recognition by others in the opinion polity) a criterion of evaluation (e.g. technical performance or productivity, fame or followers); a mode of investment or sacrifice (e.g. disenchantment, the forgoing of privacy); a distinct ideal type (e.g. the manager, the celebrity); a type of insanity or pathology (e.g. squander, anonymity); an evaluation test (e.g. a formal test procedure, publicity); and a specific underlying anthropology and cosmology (e.g. the idea that the world can be mastered through calculation and planning, the idea of humans as craving for recognition).

Boltanski and Chiapello's now argue that at different stages of capitalist development, the spirit of capitalism draws on and combines different orders of worth, tapping into the moral resources they provide (Boltanski and Chiapello 2007, 16–19). The first version of the spirit of capitalism – corresponding to the high capitalism of the 19th and early 20th century – is dominated by bourgeois values of thrift, responsibility, and faith in progress, embodied by the market, the domestic and the industrial polity respectively. During the heyday of the managerial capitalism of the 20th century, the industrial polity – with its emphasis on rational organization and bureaucratic planning – massively grows at the expense of the domestic polity, which had glorified the company patriarch and not the manager. Finally, with the rise of the knowledge economy in the 1970s, the capitalist spirit increasingly draws on the newly formed project polity and its values of agility, flexibility, and collaboration.

Our own definition of the capitalist spirit is based on this conceptual history. We follow Weber's argument against Sombart and restrict the concept of the capitalist spirit to norma-

tive beliefs. And we follow Boltanski and Chiapello's argument against Weber and maintain the continuing importance and changing nature of these beliefs over time. What Sombart and Weber have only implied, and even Boltanski and Chiapello have not systematically articulated, however, are the legitimizing, motivating, and orienting roles of the capitalist spirit.[49] Spelling them out allows us to systematize the concept of the capitalist spirit and connect it to more recent debates on the moral and ideational embeddedness of capitalist action.

6.2.1   Legitimation

For Sombart, the capitalist spirit was crucial in lending "general acceptance" (Sombart 1902, 379) to acquisitive and rationalistic attitudes that, while essential for capitalism, were long frowned-upon if not stigmatized. Similarly, Weber believed that it was precisely to assert itself in a "world of hostile forces" (Weber 2007, 20–21), that capitalism had to tap into the legitimatory power of religious beliefs. Weber also knew that entrepreneurs were rarely received "peacefully"; instead, a "flood of mistrust, sometimes of hatred, above all of moral indignation, regularly opposed itself to the first innovator" (Weber 2007, 31). Weber thus uses

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[49]Boltanski and Chiapello (2007), p. 16 as well as much of the subsequent literature (e.g. Kazmi, Leca, and Naccache 2016) have focused on the ability of the capitalist spirit to i) generate excitement or enthusiasm among those working for and within capitalism, to ii) credibly provide them with a sense of economic security, and to iii) demonstrate how capitalism contributes to the common good and how inequalities can be justified in terms of differential contributions to the common good. This conceptual trias of excitement-security-fairness lies somewhat orthogonally to our conceptual trias of legitimation-motivation-orientation. One could subsume fairness under legitimation and excitement and security under motivation, but not only does this not cover the orientational dimension; it also makes unnecessarily strong assumptions about the content of, say, the motivational dimension. For example, one could think of normative beliefs instilling a sense of professional duty that does not easily fit with either the notion of excitement or the notion of security. Our conceptual trias is thus not only more encompassing, it is also more versatile. Moreover, we systematically reconstruct our three dimensions from the works of Sombart, Weber, and Boltanski and Chiapello, showing that they have been central to the debates on the capitalist spirit all along.

the concept of the capitalist spirit in the context of a theory of justifiable actions, in which normative ideas – religious or otherwise –subjectively motivate but also intersubjectively legitimate economic actions (Campbell 2018, 12).

The idea that capitalism is always subject to criticism is also central to Boltanski and Chiapello's work. Social critics decry capitalism for producing poverty, inequality, exploitation and egoism; artistic critics denounce capitalism as the source of alienation, oppression, disenchantment, and loss of authenticity (Boltanski and Chiapello 2007, 38). The spirit of capitalism allows capitalism to selectively appropriate – and thereby diffuse – these criticisms. The new spirit of capitalism, for example, incorporated the artistic critique of managerial capitalism as overly hierarchical and bureaucratic by singing the praise of flat hierarchies, de-centralization, flexibility, and self-reliance. These elements were, of course, highly congenial to the demands of a postindustrial economy. The appropriation of the artistic critique therefore eased the transformation of capitalism to a more flexible but less secure form, while simultaneously stealing its critics' thunder.

More recently, business scholars have emphasized the importance of actively curating a company's public image as essential to successfully managing the 'non-market environment' (Bach and Blake 2016). We argue that the spirit of capitalism amplifies the effectiveness of such legitimacy-seeking strategies by shaping the 'moral background' (Abend 2014) of the public and political debates on capitalism. The moral background "provides the theories and tools that people and organizations employ to ascertain goodness in the realm of morality" (Abend 2014, 30). By drawing on the theories and tools embodied in the current manifestation of the capitalist spirit, capitalists can 'juice up' the persuasiveness of their legitimacy-seeking activities and thereby ensure favorable regulatory and reputational outcomes (Bach and Blake 2016; Dror 2015).

6.2.2 Motivation

Both Sombart and Weber are clear about the central role of the capitalist spirit in creating and sustaining the "dominant motives" (Sombart 1902, XXI) and "psychological sanctions" (Weber 2007, 145) underlying capitalist action. And Boltanski and Chiapello emphasize capitalism's reliance on an enthusiastic workforce, especially for positions of leadership. By incorporating morally appealing ideas, capitalism can "maintain its powers of attraction", i.e. its ability to attract and motivate (elite) workers (Boltanski and Chiapello 2007, 20).

What the theorists of the capitalist spirit have put their fingers on is capitalism's perennial 'motivation problem' (Olma 2016) or "deficit of motivation" (Kazmi, Leca, and Naccache 2016, 744). How can capitalists motivate workers to not only join their companies, but to give their blood, sweat and tears for them. Companies can, of course, use the stick of organizational sanctions and the carrot of economic rewards. But there are limits to such coercive and economic methods of ensuring compliance (Etzioni 1975; cf. Habermas 1988, 75). As Bewley writes:

> "Workers have so many opportunities to take advantage of employers that it is not wise to depend on coercion and financial incentives alone as motivators. Employers want workers to operate autonomously, show initiative, use their imagination, and take on extra tasks not required by management; workers who are scared or dejected do not do these things" (Bewley 1999, 431).

Companies, especially those at the technological frontier, are thus incentivized to employ methods of normative compliance; methods that are meant – and were shown – to instill identification with the company based on shared values and symbolic rewards (Etzioni 1975; Judge and Kammeyer-Mueller 2012, 349). Since the capitalist spirit periodically incorporates widely held normative ideas (often by co-opting them from capitalism's critics), drawing on

these ideas can help companies convince their employees that their values are aligned and thereby ensure their commitment.

6.2.3   Orientation

Max Weber famously wrote that ideas can, like "switchmen" (Weber 1946, 280) change the tracks on which (capitalist) actors pursue their economic interests. Capitalists want to maximize profits, but they rarely know how to go about it, especially when they operate radically innovative sectors. Acting under the shadow of economic uncertainty, they cannot know in advance which investment decision will pay off and which innovations will take off. It is therefore often beliefs – such as heuristics from the past or fictional expectations about the future – that guide the hand of even the most rational business men (Beckert 2016; Granovetter 2017). The moral ideas embodied in the capitalist spirit can thus provide capitalists with plausible and appealing strategies and goals in the face of uncertainty (Schröder 2013).

6.3   The Ethic of Solutionism

As its predecessors, the spirit of digital capitalism draws on several orders of worth at the same time. Its core element, however, is the strong appeal to what we call the polity of solutionism. Evgeny Morozov defines solutionism as an ideology that recasts "all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized – if only the right algorithms are in place" (Morozov 2013, 5). Building on this definition, and on a qualitative analysis of documents by and about digital elites, we conceive the solutionist polity as an order of worth in which value or worthiness derives from solving social problems with technological means (see also Table 5).[50]

Order of Justification	Market	Industry	Inspiration	Domestic	Opinion	Civic	Project	Green	Solutionist
Central Value	Free Competition	(Technical) Efficiency	Originality	Traditional/ Local Authority	Recognition	Public Good	Activity (Agility)	Sustainability	Solving key social problems
Evaluation Criteria	Value, Price	Technical performance, productivity, planning	Creativity, Non-conformity, Authenticity, Epiphany	Local esteem, personal recognition	Renown, fame	Rule governed, self-management, representation, solidarity	Successful self-management, number of mental projects and contacts	Sufficiency, environmental friendliness	Upgrading and Enabling Humans/Humanity
Mode of investment (sacrifice)	Opportunism	Disenchantment	Not fitting in	Responsibility for and attachment to inferiors/the local	Forgoing privacy	Forgoing one's own interests	Forgoing of stability	Avoiding Externalities	Risk-Taking (Failure)
Insanity	Regulation	Spontaneity, Squander	Conformity	Presumption	Anonymity	Corruption	Immobility, inactivity	Unconditional Growth	Lone inventor, mission-less capitalist, Luddite
Ideal Type	Businessman, merchant	Engineer, professional expert	Creative Genius, Misfit	(Company) Patriarch	Celebrity	Public Servant, virtuous politician	Entrepreneurial self	Environmentalist	Philanthro-Entrepreneur
Test	Competitiveness	Procedure test	Original thoughts, invention, creations	Trustworthiness	Publicity	Equal rights and duties (contrat social)	Finding new projects	Healthy Environment	Disruption
Anthropology/ Cosmology	Humans follow their enlightened self-interest, markets create win-win situations (invisible hand)	Nature and Society can be mastered through calculation and planning	Aesthetic of the Genius and Conformity of the masses	Natural harmony as a result of natural hierarchy	Humans craving for recognition	Humans as political equals	Humans as entrepreneurial selves in a connected world	Humans need a harmonious, stable relationship with both their environment	Humans have flaws but also potential, technology creates win-win situations

Table 5: Overview of Polities

This implies a view of the world in which all relevant social problems can, in principle, be solved technologically; in which there is a technological hammer for every social nail.[51] Social problems are not the result of asymmetries in power or wealth that call for a political solution. Rather, they are the result of inefficiencies and deficiencies that can be eliminated with the right technology (Slee 2016). This gives solutionism its characteristic techno-libertarian bend (cf. Barbrook and Cameron 1996). The solution to people's financial difficulties, for example, is not a higher minimum wages or stronger unions, but smart algorithms – offered by companies like Even – that help people manage their budgets more efficiently.

While digital technologies have massively amplified the reach and appeal of solutionist ideas (Morozov 2013, 15–16), solutionism is not a product of the digital era but has deeper roots: in the culture of engineering and its belief that there is a 'technological fix' to all societal problems (Johnston 2017) as well as in the "New Communalist ethos of tool use" (Turner 2006: 238) and their faith "that experimentation and the proper deployment of the right technologies could save the world" (Turner 2006: 244). These techno-optimist tendencies are amplified by the culture of coding, which nurtures an "almost aesthetic (...) dislike for inefficiency" (Thompson 2019, 21); and a hubristic control illusion that understands social problems in the same way as coding problems by extrapolating from the programmer's intuition that one "can program any procedure [one] thoroughly understand[s]" (Weizenbaum 1976, 103–4). Such "computational thinking" (Bridle 2018, 4) is perfectly epitomized by Mark Zuckerberg's belief that the 'first principle' of engineering is to 'think of every problem as

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[50]Others have used different concepts to describe similar ideas. For example, Meredith Broussard (2018), p. 14 coins the term "technochauvinism" to describe the "belief that tech is always the solution"; and James Bridle (2018), p. 4 uses the term "computational thinking" to describe the belief "that any given problem can be solved by the application of computation".

[51]Bill Gates uses the same metaphor: "Any problem I will look at how technical innovation can help solve that problem. It's the one thing I know and the one thing I'm good at. That's my hammer. And a lot of problems look like nails, because I've got a hammer" (Schlosser 2019).

a system and every system can be better. No matter how good or bad it is, you can make every system better'.

But despite the importance of technology, the solutionist is more than just an engineer or coder. She is, in Schumpeter's sense, not an inventor but an innovator – someone who commercializes an invention. An invention that cannot be commercialized is a bad invention. Larry Page realized this when he was still a boy. Reading a biography of Nicola Tesla, who was a brilliant inventor but a terrible innovator, he concluded:

> "You don't want to be Tesla. He was one of the greatest inventors, but it's a sad, sad story. He couldn't commercialize anything, he could barely fund his own research. You'd want to be more like Edison. If you invent something, that doesn't necessarily help anybody. You've got to actually get it into the world; you've got to produce, make money doing it so you can fund it" (Serwer 2008).

Therefore, to really make a difference, the solutionist needs to be an entrepreneur as much as a technologist. But the solutionist is not just an entrepreneur; she is a philanthro-entrepreneur. In the solutionist worldview, making money and making the world a better place are not contradictory but can and should go hand in hand. Silicon Valley, as Tom Slee put it, "may have its share of the world's richest people, but it has always seen itself and presented itself as being about more than money: it's also about building a better future" (Slee 2016, 9). The solutionist not only abhors the lone inventor, who has her way with technology but has no business model. She also rejects those who, like bankers on Wall Street, lack purpose and are only in for the money.

But purpose alone – without technology and a viable business model – is equally flawed. Hence the rejection of traditional politics as the best way to address social ills – a rejection that echoes the New Communalists turn "toward social and economic spheres as sites [of] social change (Turner 2006, 244). Solutionism shares this sentiment with philanthrocapitalism – the idea and practice of applying a business logic to philanthropy in order to make it

more efficient, impacted-oriented and financially profitable (McGoey 2012). Many tech elites in fact use their technological and business acumen to make charity bigger, bolder and more data-driven (Stanley 2015). But while both solutionists and philanthrocapitalists portray public and private interests as mutually compatible, they do so from opposite sides.

Philanthrocapitalism is about the "idea that charity is good business" and can therefore be profitable (McGoey 2012, 187). Solutionism, on the other hand, is about the idea that business itself can be philanthropic. In the solutionist worldview, there is a natural alignment between business opportunities and social problems. We live, as Silicon Valley guru Peter Diamandis, puts it, in "a world where the biggest problems on the planet are the biggest market opportunities" (Rowan 2013). Philanthropy is thus neither a separate stage of life nor a more or less profitable side business. Whereas traditional philanthropist in the wake of Carnegie had espoused the idea that "after-the-fact benevolence justifies anything-goes capitalism; that callousness and injustice in the cutthroat [marketplace] are excused by later philanthropy" (Giridharadas 2018, 164), the solutionist has a different take. Doing good is not an atonement for doing well, but simply the other side of the same coin. „It's been a yin and yang equation", as Tom Werner puts it: "We're changing the world on one side and building a great company on the other side" (Hull 2014).

While capitalists have always justified their profit-seeking activities with reference to some abstract notion of the common good, usually some version of Smith's invisible hand, solutionists believe that businesses can contribute to the common good much more directly. In this "new, postmodernized version of Adam Smith's invisible hand" (Žižek 2006), companies with the grandest purpose will miraculously also be the companies with the biggest profit. Underlying this idea – that all good things go together – is an "almost religious faith" (Giridharadas 2018, 41) in the harmony of human interests and the ability of technologies to create win-win situations.

"What's amazing about tech (. . .) is that there are so many opportunities to have your cake and eat it, too (. . .) There's a stereotype that you have to choose in life between doing good and making money. I think for a lot of people that's a real choice (. . .) But for technology, there are a significant number of opportunities – Google search being the most massive example of all time – where we simultaneously are doing something lucrative and really good for the world. [A] lot of times you can get in situations where they're all aligned, where the bigger the reach of the good you're doing, the more money you'll make" (Justin Rosenstein in Giridharadas 2018, 41).

This notion is based on a worldview that understands individuals and societies as simultaneously flawed and full of potential. There is a tension between what is possible – given the laws of physics – and what is realized. Erasing this tension is the source of the solutionist impetus. This idea finds its expression in the techno-utopist "rhetoric of potentiality" (Dickel and Schrape 2017, 47). The world is full of bugs but can be fixed with the right technology. It is the calling of every solutionist to do just that: upgrade humanity by becoming a social engineer in the true sense of the word. For now, the focus is on giving humans access to information and to connect them with each other; for through "the power of technology, age-old obstacles to human interaction, like geography, language and limited information, are falling and a new wave of human creativity and potential is rising" (Schmidt and Cohen 2013, 4). But the end-game is much grander: solving humanity's oldest problems – old age, sickness, death – by upgrading humans themselves.

Animated by the normative power of the possible, solutionists have little respect for the status quo – and the institutions that maintain it. Hence the veneration for pioneers and disruptors. If the status quo is flawed, and the new is full of potential, the pioneers and disruptors are but the harbingers of a better future. Breaking the law thus becomes civil disobedience in the name of a better world. "You can't change the world without a certain

amount of healthy willingness to break the rules" (Sebastian Thrun in CBS News 2014). And if change is a good thing, more change is even better. "If you change the lives of one hundred million people, you are not successful. You are only successful if you change the lives of 1 billion people" (Sebastian Thrun in Schulz 2014). The lot of the disruptor is of course a risky one and requires audacity and the willingness to fail, since "failure and invention are inseparable twins" (Bezos 2015). But for those hungry and foolish enough, the rewards will be big – not in the hereafter, as for the protestants, but in the here and now. Daring to dare thus becomes something of an ethical commandment.

6.4 Data & Methodological Approach

To test our arguments, we collected three novel text corpora and devised a coding scheme for hand-coding documents into the different polities. We then used these hand-labeled documents to estimate the proportion of documents in each category in the larger corpora.[52]

6.4.1 Data

Each corpus serves a distinct analytical purpose. The first corpus consists of public statements of digital elites in which they talk about themselves or their worldview (e.g. interviews, speeches). Digital elites are here narrowly defined as members of the 2015 Forbes 400 who played crucial roles (e.g. founder, CEO, major investor) in tech companies founded after 1996, and therefore made most of their money in the last 20 years or so (it thus excludes 'first-generation' digital elites like Bill Gates and Steve Jobs). The purpose of this sampling procedure – which resulted in 2326 paragraphs – was to identify the spirit of digital capital-

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[52]For a similar approach with respect to elites distinction, see Friedman and Reeves (2020).

ism where we would most expect it: in the professed beliefs of the most recent generation of digital elites – individuals like Larry Page, Mark Zuckerberg or Elon Musk.[53]

The second corpus consists of articles published in Wired between the magazine's founding in 1994 and 2018, which we scraped from the web and split into paragraphs. After removing very short paragraphs, we ended up with a total of ~1.5 Million paragraphs. Wired is widely known as the house organ of the tech community. It is thus the perfect medium to understand the intellectual proclivities, fads, and currents of the wider tech milieu.

The third corpus consists of articles published in the Harvard Business Review (HBR) between 1980 and 2018, which we also scraped from the web and split into paragraphs. Again, after removing very short paragraphs, this resulted in a total of 209.582 paragraphs. The purpose of this corpus is to check to what extent the spirit of digital capitalism has already diffused into the mainstream of management literature and popular capitalist self-reflection, which HBR represents more than any other outlet (Schulz and Nicolai 2015).

6.4.2   Methodological Approach

The coding scheme is the result of a reflexive process of theory-building and empirical validation, where theoretically derived – or, in the case of the solutionist polity: qualitatively developed – polities were specified and disambiguated in multiple rounds of coding. This iterative procedure was meant to balance theoretical ambition and empirical reliability and feasibility. In practice, Table 5 served as the basis for the coding process, while a more comprehensive coding scheme further clarified remaining ambiguities. Our unit of analysis were paragraphs, as they are often natural units of meaning; they often make, as it were, a point, and are short enough to be relatively unambiguous and long enough to be informative.

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[53]While some digital elites publicly express themselves more frequently than others, we have at least one and no more than 5 documents for each of the 30 digital elites identified on the Forbes 400. For more details on the sampling procedure, as well as on the other corpora, see appendix E.1.

Paragraphs were assigned to a polity when they contained a clear and affirmative reference to one of the normative principles laid out in Table 5. If paragraphs were purely descriptive or did not unambiguously refer to one polity, they were assigned to a residual category. Here are two examples of paragraphs that were coded as solution and market respectively:

> "We are investing in driverless technology (. . .), why? Well a million people a year die in cars, and how many more millions get injured, it's just needless right, and how much time, how much worse is our lives because we're sitting there with a steering wheel in our hands being stressed out and frustrated with traffic remember, (. . .) when you can give people their time back, and when you run these cars more efficiently and there's no more traffic, this is magic."

> "No. We are thinking in terms of purely commercial, business relations. Neither 'friendship' nor 'international cooperation' can be an excuse for not making a profit. These new ventures are very important strategically for us."

Since our dataset contains several hundred thousand paragraphs, we used a supervised learning approach to estimate category proportions for the corpora based on a set of hand-coded paragraphs. This involves three steps (Grimmer and Stewart 2013, 275). First, we hand-coded 1518 documents from all three datasets. After extensive coder training, we achieved good reliability scores on various metrics (Krippendorff's alpha = 0.7).[54] Moreover, most disagreements between coders were the result of one coder opting for the residual category. This suggests that the polities themselves are quite distinct but that coders sometimes have difficulties assessing whether or not a statement is unambiguous or clear enough to qualify for a certain polity. If we remove documents with such disagreements, the reliability scores become very good (Krippendorff's alpha = 0.87).

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[54]For more details, see appendix E.2

Second, based on the labeled training set we infer category proportions in the unlabeled test set using a method of automated nonparametric content analysis called readme (Hopkins and King 2010; Jerzak, King, and Strezhnev 2019). Most supervised learning techniques are optimized to classify individual documents and follow a parametric 'classify and count' logic; readme, by contrast, 'directly' estimates the proportion of documents in each category, which has been shown to produce less model dependent and biased results (classifiers can produce biased estimates of proportions even if they correctly classify a high number of documents) (Hopkins and King 2010, 234). readme makes the crucial assumption "that the labeled conditional feature matrix is an unbiased estimator of the unlabeled conditional feature matrix" (Jerzak, King, and Strezhnev 2019, 6), that is, that the hand-labeled documents contain word profiles – or examples of language use – sufficiently similar to those in the test set (Hopkins and King 2010, 237). Given that the hand-labeled documents are a random subset of the unlabeled documents and thus cover a similar (and relatively short) time period, we are confident to meet this assumption.

The third step is to validate the model output, and based on the results, to estimate the category proportions for (time-slices of) the various corpora. Since we are not classifying individual documents, traditional validation metrics like accuracy or recall are not available. To validate our results, we thus produced 20 random 50/50 splits of the 1203 correctly coded paragraphs and run readme on each of these training set/test set splits. Since we knew the 'true' proportion of each category in the test sets, we can compare them to the category proportions estimated by readme. For our analysis, we use the R package readme2 , which improves on the original ReadMe package in two ways: first, it uses pre-trained dictionaries of word vectors to improve the choice of optimal features from a large space of potential document summaries in a way that maximizes textual discrimination between categories; and it uses matching techniques to remove documents from the labeled set that

are so different from those in the unlabeled set that they are unlikely to result from the same data-generating process (which may happen due to semantic change) (Jerzak et al., 2019).

Figure 16 shows that readme2 produces roughly accurate predictions for the various categories. While the residual category is considerably underestimated, especially if we remove unmatched word stems, this seems acceptable since readme 'spreads' the unused percentages relatively evenly across the other categories. This also makes sense given that the residual category contains paragraphs that make references to multiple polities. In short, while we cannot interpret small differences, we have good estimates of the prevalence of different types of normative justification and we can trace larger shifts in their relative importance.[55]

While intercoder reliability statistics and validation metrics demonstrate that humans can reliably distinguish between different polities and that the algorithm can reliably replicate these codings, this says nothing about the substantive validity of the coding scheme itself. While we acknowledge that the typology developed by Boltanski et al. is by no means the only way to classify normative orders, it strikes us as useful, sufficiently generalizable, and well established. It is useful because it identifies theoretically sophisticated and conceptually distinct (although not exhaustive) normative principles. It is general enough to have been successfully applied over time and across different geographical contexts.[56] And it is prominent enough to allow us to compare our results to a large body of both qualitative and quantitative work, which helps us both validate our findings and situate them in a larger literature.

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[55]In the paper, we present the results of readme with matching. However, as appendix E.3 shows, the results are quite similar if we do not use matching, and our substantive interpretations remain the same.

[56]This, however, does not mean that the spirit of (digital) capitalism itself does not differ not only across time but also across geography. To the contrary, processes of selective translation and appropriation may well refract the capitalist spirit into a variety of national or regional spirits that resemble but are distinct from the American version (cf. Kalbermatter, Nachtwey, and Truffer 2020).
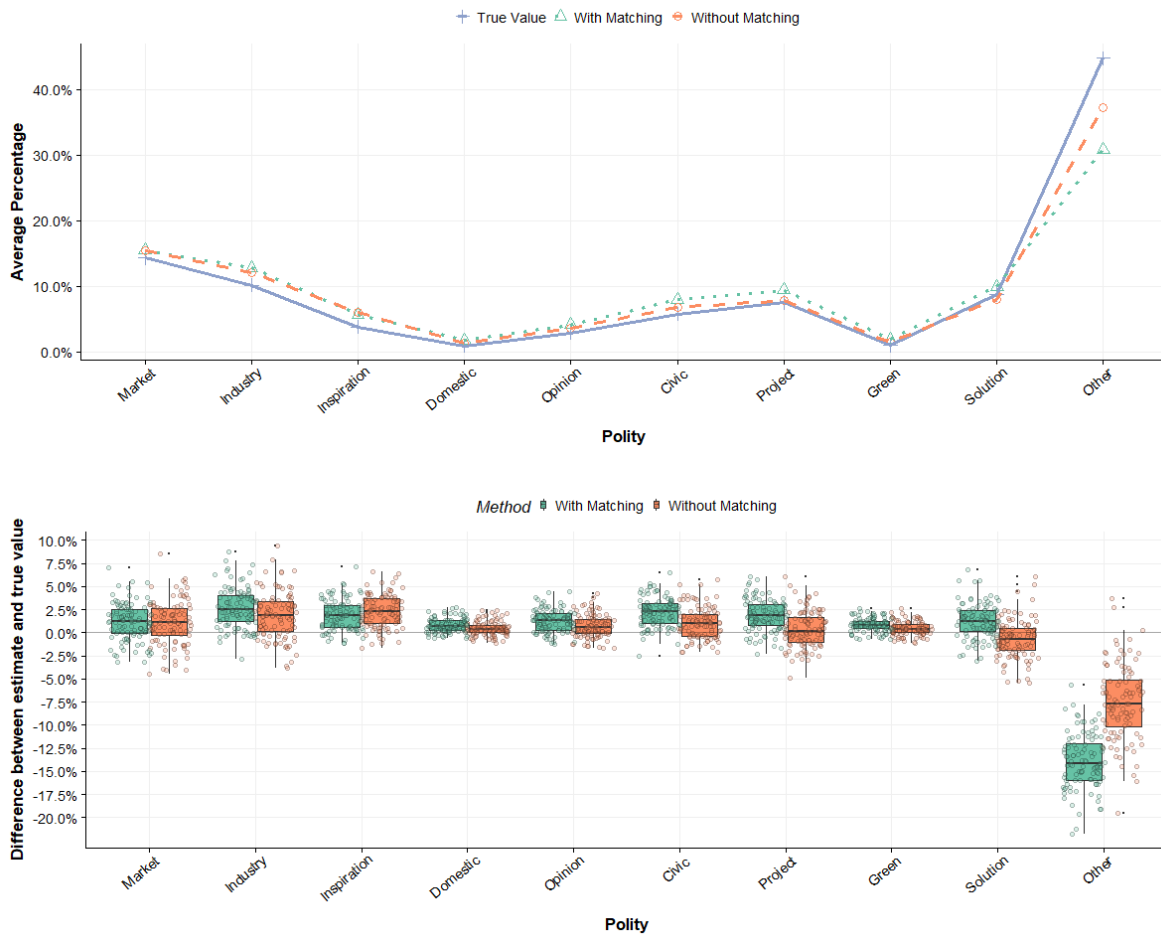
Figure 16: Estimated and true category proportions (individual dots refer to the results of different runs)

6.5   Results and Discussion

Which are the values digital elites refer to in their speeches and interviews? In other words, what is the normative self-image they have or want to project? We find a belief in the world-improving power of technological entrepreneurship is indeed central to the belief system of digital elites, closely followed by the faith in the blessings of the market and the value of efficiency (Figure 17). Meanwhile, the traditional authority of the domestic polity, the vain desires of the opinion polity, and ecological values of sustainability are less important. This confirms our argument that solutionist ideas are indeed central to the way digital elites talk about their values and ambitions.

It also complements and chimes with recent survey-based evidence according to which technology entrepreneurs have a distinct mix of culturally progressive, cosmopolitan, and even socially redistributive attitudes but strongly oppose government regulation across the board and are skeptical on government run services (Broockman, Ferenstein, and Malhotra 2019). Digital elites, on average, are not the detached or even callous libertarians they are often made out to be. They care about social problems and even concede that government might have a role in redistributing market outcomes. But because they belief in the invisible hand of the market as well as in the helping hand of solutionist businesses, they are fiercely opposed to government regulation of product or labor markets.

Having said this, one might argue that for all their lofty rhetoric, digital capitalist are still capitalists: so why should we care about their solutionist sermons? Are they not just cheap talk, rhetorical veneers on the stony reality of capitalist profit-seeking? We think that one should care, for three reasons that we elaborate on below. First, solutionist ideas have come to define not just how tech elites see themselves but also how they are seen by policymakers and the public. They can thus secure the legitimacy of companies, which is a matter of [both] survival [and] reputation" (Kazmi, Leca, and Naccache 2016, 753). In that
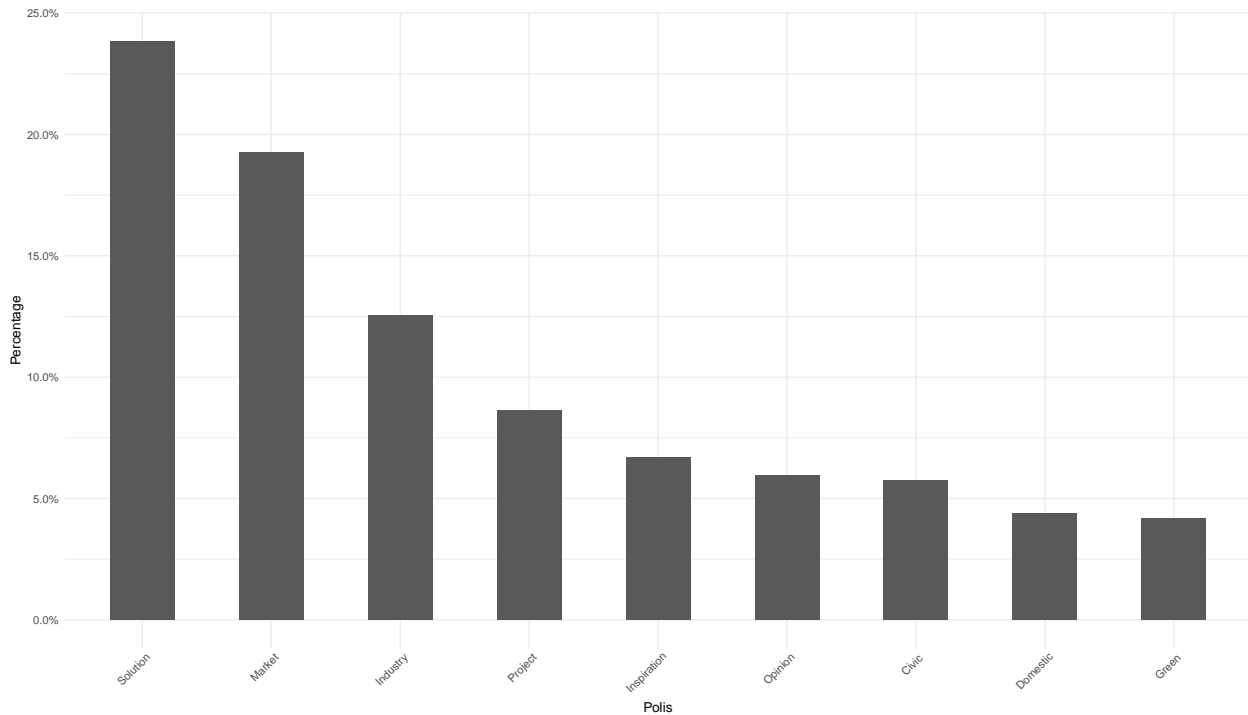
Figure 17: References to different polities in statements by digital elites.

sense, even if they are veneers, they can stabilize what they were meant to cover. Second, their solutionist credentials helped tech companies convince their workers that their values and those of the company are aligned (cf. Kazmi, Leca, and Naccache 2016, 751–52). If tech workers believe that the authority of tech elites is legitimate – because both want to use technologies to make the world a better place – compliance costs will decline and motivation increase.[57] Conversely, if these companies violate solutionist principles, worker engagement will turn into resistance. In that sense, talk is not always cheap. Third, even if what tech elites publicly profess is not what they privately feel, solutionist ideas might still guide their

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[57]Weber himself believed that legitimate rulers, i.e. rulers that can justify their rule on rational, traditional, or charismatic grounds, can exercise their authority more effectively than if they had to rely on brute coercion. There is every reason to believe that this is also true for capitalist organizations.

profit-seeking activities by pointing them towards certain problems and away from others. In that sense, even the loftiest rhetoric may be consequential. We discuss these points in turn.

6.5.1 Legitimation

Perhaps the most surprising thing about the recent techlash is how late it came. Given their central role in contemporary economies and societies, how could tech companies get away with so little regulatory oversight and political scrutiny for so long (Zuboff 2019, 100)? Our answer harks back to the triangular relationship between capitalism, its spirit, and its critics. We argue that solutionism – no unlike the discourse on corporate social responsibility – provided a powerful counterargument to critics of capitalism who bemoaned a loss of meaning and social purpose and decried the moral parochialism and emptiness of shareholder-value capitalism (Chiapello 2013; Kazmi, Leca, and Naccache 2016, 749). In other words, at a time when capitalism was increasingly criticized for producing private but not public wealth and for creating rather than solving social problems, solutionism lend legitimacy to those that promised to harness the power of entrepreneurship and technology for the common good.

The rise of solutionism can thus be seen as the latest installment in the capitalist cycle of growing criticism, selective appropriation of critique, and legitimatory recuperation (Chiapello 2013). Solutionism allowed capitalism to credibly refute the charge of selfishness and lack of concern for the common good while also providing a powerful rationale for limiting regulatory oversight and political scrutiny. Who, after all, is the government to stop tech companies from tackling many of the problems the government itself is not even able to solve anymore? Even Bill de Blasio, certainly no friend of big-tech, acknowledged that Silicon Valley's "technology-religion pushed away the notions that [tech companies] should be regulated, very effectively" (Blasio 2019).

The spirit of digital capitalism thus stole capitalism's critics' thunder while also providing powerful justifications for business models that rely on the assumption that "lawlessness is

the necessary context for 'technological innovation'" (Zuboff 2019, 104). Larry Page, for example, has argued that "[o]ld institutions like the law and so aren't keeping up with the rate of change that we've caused through technology" and only hamper Google's ability to "build really great things" (Zuboff 2019, 105). And it was as late as 2013 that Eric Schmidt and Jared Cohen wrote that the digital world, "the world's largest ungoverned space", was "not truly bound by terrestrial laws" (Schmidt and Cohen 2013, 3). By shaping the moral background of debates about technology and entrepreneurship, solutionism thus made the claims of companies like Uber – that their disdain for regulations would help solve 'grand societal challenges' – much more plausible (cf. Abend 2014; Zuboff 2019, 101–27).

6.5.2 Motivation

Solutionist ideas not only justified digital business models vis a vis policymakers and the public, but also internally vis a vis employees. While many have mocked Google's famous former motto 'Don't be evil', fewer have appreciated its significance (Foroohar 2019). For it not only provided means to align the company's values with those of its workers and thus ensure the latter's engagement and loyalty. It also significantly limited Google's operational leeway. As is evident from the accounts of many others as well as our own interviews with tech workers in both California and Europe, 'Don't be evil' is more than a branding ploy. Many Googlers really belief – or at least believed – in the company's mission (Foroohar 2019). But these beliefs put limitations on what Google can and cannot do. A recent inside-story, for example, recounts that to "a remarkable extent, Google's workers really do take 'Don't Be Evil' to heart. C-suite meetings have been known to grind to a halt if someone asks, 'Wait, is this evil?'" (Tiku 2019).

Ignoring these limitations, which Google has repeatedly done, comes at the cost of worker disengagement and even resistance – the price Google has to pay for the motivational power of its solutionist rhetoric. This is exactly what happened during the recent wave of

tech worker resistance. For example, a contract between Google and the Pentagon about the use of Artificial Intelligence to improve the targeting of drone strikes has proven deeply controversial among employees and has "touched off an existential crisis" at the company (Shane and Wakabayashi 2018). Incidents like this lay bare some of the political differences tech entrepreneurs and tech workers – differences that the solutionist rhetoric had long masked (Weigel and Tarnoff 2019). As on Googler put it:

> "We stood up because (. . .) we believe a strong ethical framework that values human life and safety is inseparable from positive technological progress (. . .) Before the [protests against Project Maven], a lot of Googlers had never considered the fact that their values might not be aligned with the values of leadership. (. . .) Ultimately, the Project Maven campaign wasn't just about whether Google should build this one tool for the military. It was about using our power as workers to ensure that technology is built for social benefit and not just for profit." (Tarnoff 2018).

One of the reasons for the success of tech workers – Project Maven was eventually canceled – was that tech workers could hold the tech companies "hostage to [their] own public image" (Tiku 2019). And this public image matters if companies want to recruit the best and brightest tech workers. Tech workers care about the "mission of the company and what the companies are trying to achieve" and "employees", as one recruiter put it, "are wising up to the fact that you can have a mission statement on your website, but when you're looking at how the company creates new products or makes decisions, the correlation between the two is not so tightly aligned" (Bowles 2018). Across elite universities, there is "a growing sentiment that Silicon Valley's most lucrative positions aren't worth the ethical quandaries" (Goldberg 2020). Facebook, in particular, had an increasingly difficult time recruiting talent "as the social stigma of working for Facebook began outweighing the financial benefits" (Bowles 2018). In short, the spirit of digital capitalism can supply powerful non-economic

incentives, but it comes at the price of normative and economically costly commitments that capitalists can only ignore at their peril.

6.5.3   Orientation

When Mark Zuckerberg was urged to sell Facebook to Yahoo! in 2006, he refused, arguing that he shared the "really deep belief that when companies are executing well on their vision they can have a much bigger effect on the world than people think, not just as a business but as a steward of humanity" (Friend 2015). Here, the idea that Facebook could be a 'steward of humanity' helped Zuckerberg make a decision laden with much uncertainty; Zuckerberg would have arguably decided differently were he only in for the money. But solutionist ideas not only affect what entrepreneurs do with their companies, but also how they allocate resources within them – or how venture capitalists and financial actors allocate resources to them.

Venture capitalist John Doerr, for example, puts his money in missionaries, not mercenaries because he beliefs that those that not only care about success but also about significance are the best entrepreneurs (Taylor 2016). And Google spends billions tackling huge problems with radical solutions not just because this "sends a corporate signal, both internally and externally, that [it] still nurtures the idealism" on which it was founded" (Thompson 2017); but also because it believes that solving humanity's great problems is the surest way to make Google even richer. Google's technological imaginaries, in other words, create an imagined future that focuses the company's present activities while instilling investors and the public with fictional expectations that boost the companies economic reputation and market value (Beckert 2016). These orientational processes can undoubtedly be a very self-serving process, as Fred Turner recounts:

> "About ten years back, I spent a lot of time inside Google. What I saw there was
> an interesting loop. It started with, 'Don't be evil.' So then the question became,

'Okay, what's good?' Well, information is good. Information empowers people.
So providing information is good. Okay, great. Who provides information? Oh,
right: Google provides information. So you end up in this loop where what's
good for people is what's good for Google, and vice versa" (Turner 2017).

What is easily missed here is that the belief that information is good nudged Google
to focus on those products – of all possible products – that would put Google in a position
to 'organize the worlds' information'. That was what being good meant, after all. Thus,
among all possible products in an entirely novel market, Google focused its investments in
'information-organizing' products such as maps, books, or news. That they eventually proved
highly profitable is easy to say with the benefit of hindsight, but was often much less clear at
the time. Google Maps, for example, was launched years before the smartphone revolution,
which only really made it into the profitable product it is today. By providing actors with
beliefs about what is right and wrong, the spirit of capitalism can thus mitigate economic
uncertainty by pushing capitalists towards certain potentially profitable directions and away
from others, guiding their hand when economic rationality does not dictate any single course
of action.[58]

6.5.4   Solutionism Beyond the Tech Elites

However, even if we accept that solutionists ideas have taken hold in the hearts and minds
of digital elites, and that this has consequences for how they can and do conduct their
business, we still don't know whether these beliefs have spread beyond this exclusive circle.

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[58]This orientational function can also help capitalist coordinate their behavior. Much like fictional
expectations, they can "help economic actors work in concert in the face of uncertainty: if they
share a conviction that the future will develop in a specific way and that other actors will thus
behave in foreseeable ways, they may use these expectations to coordinate their decisions. [They
thus] contribute to the dynamics of capitalism, since the correspondence of expectations, or 'frame
alignment', anchors decisions for investment and innovation" (Beckert 2016, 11).

How, one might ask, do they fare in the wider digital milieu. Figure 18 depicts the evolving importance of different orders of worth in Wired, widely considered "the mouthpiece of the digital revolution" (Wolf 2003, 52). While solutionist ideas are somewhat less important in the wider tech milieu than for the digital elites themselves, they do play a considerable role, especially after the dot.com-bust and the financial crisis. In line with what we would expect, the recent techlash has stopped and perhaps even slightly reversed the ascent of solutionist ideas. Meanwhile, the market, industrial, civic, and inspiration polity also figure prominently, while the values of the projective polity are surprisingly marginal. This is somewhat surprising given that the discourse on digitalization has often been associated with the 'Post-Fordist' values of flexibility and decentralization.
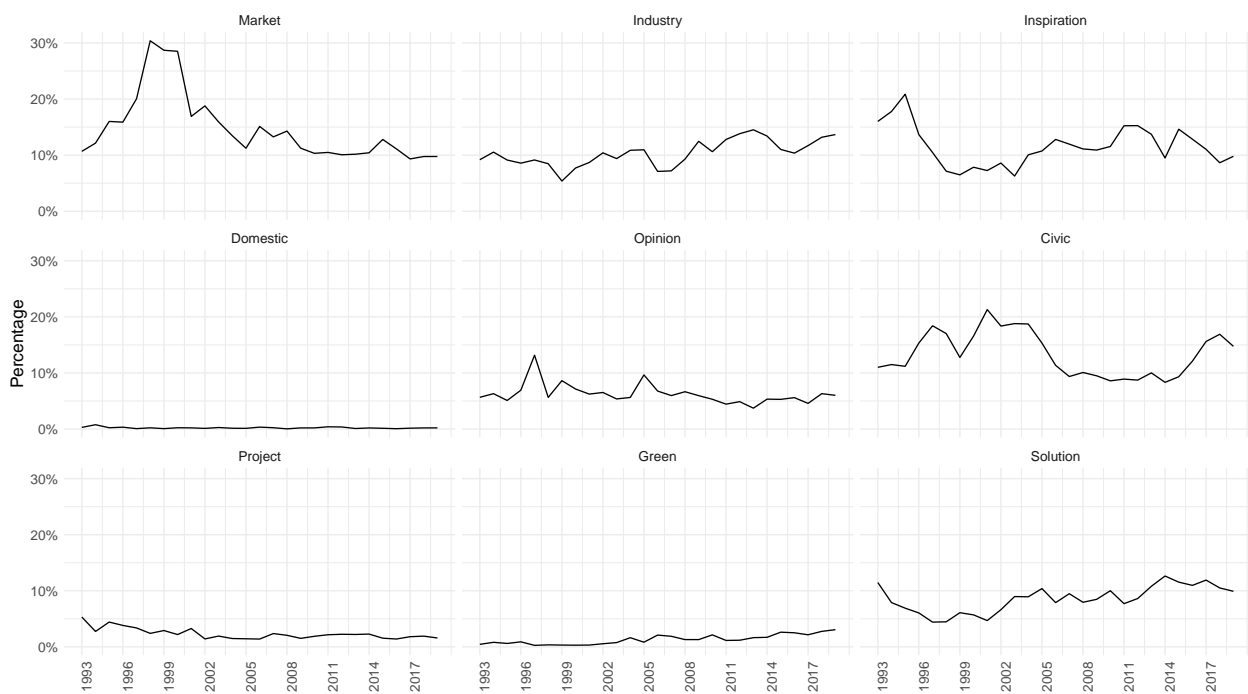
Figure 18: References to different polities in Wired paragraphs (1993-2019)

Eran Fisher, for example, argues that whereas Fordist technology discourse extolled the ability of technology to mitigate the exploitative aspects of capitalism (instability, insecurity, inequality), Post-Fordist technology discourse promised to overcome "the alienating com-

ponents of capitalism" while downplaying "its exploitative components" (Fisher 2010, 235). According to Fisher, the new, post-Fordist spirit of capitalism is "inextricably linked with network technology discourse" (Fisher 2010, 243) and its promise of flat hierarchies and a more authentic but also more flexible capitalism. Gary Yeritsian has similarly argued that the new spirit of capitalism – with its emphasis on engagement, sharing, and horizontality – has diffused from the office space of the cadres into the social factory of the Web 2.0, promising digital laborers in symbolic rewards what they lack in material compensation (Yeritsian 2018).

Thus, while Fisher and Yeritsian explicate the role of new (network) technologies in amplifying the appeal and reach of Boltanski and Chiapello's new spirit of capitalism, they largely agree with its characterization: the new spirit of capitalism is a "spirit of networks" (Fisher 2010, 243) that makes "the network a normative model" (Boltanski and Chiapello 2007, xxii) and serves as the "ethical foundation of the network enterprise" (Castells 2010, 214).[59] And indeed, in the eyes of a highly influential group of cultural entrepreneurs around Steward Brand and Kevin Kelly, digital technologies – and the internet in particular – were the symbol of a new social and economic order (Turner 2006, 202). Drawing on a long history of cybernetic and countercultural ideas, this group argued that the digital entrepreneurs of the late 20th century

> "would do what the New Communalists had failed to accomplish: they would tear
> down hierarchies, undermine the sorts of corporations and governments that had
> spawned them, and, in the hierarchies' place, create a peer-to-peer, collaborative
> society, interlinked by invisible currents of energy and information" (Turner 2006,
> 209).

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[59]Manuel Castells (2010), p. 214 also uses the term "spirit of informationalism".

By joining "the cultural legitimacy of the counterculture to the technological and economic legitimacy of the computer industry" (Turner 2006, 219), these cybercultural apostles not only legitimized a hands-off approach to internet regulation. They also articulated a broader vision of a society – often called the Californian ideology (Barbrook and Cameron 1996) – in which digital technologies would "marry the competitive demands of business with the desire for personal satisfaction and democratic participation", achieving "productive coordination without top-down control" (Taylor 1994). The internet promised an escape from the iron cage of Fordism; it "became both a metaphor for [a post-Fordist society] and a means to bring it into being" (Turner 2006, 219).

Our results only partly corroborate these findings. While we do not find very many references to the projective polity, we do see the valuation of non-conformity, authenticity and anti-regulationism reflected in the prominent role of the inspiration and market polity – especially in the 1990s. But a central implication of our argument is that despite the close connection between the internet and Post-Fordist values, the spirit of digital capitalism is distinct from the network-centered, post-Fordist spirit of capitalism. To be sure, the projective polity has not been abandoned, as is evident from both Figure 17 and Figure 18. Just like its predecessors, the spirit of digital capitalism is a compromise between different polities. But its defining feature is not the appeal to values of the projective polity, but to those of the solutionist polity.

Crucially, it was the changing nature of capitalism itself that undermined the justificatory power of the projective polity and ushered in solutionism. The projective polity was congenial to a type of capitalism that put networks over hierarchies, project-based collaboration over formalized division of labor, and flexibility over security. Historically, it offered a plausible defense against the artistic critics of Fordist capitalism, and an appealing justification for its neoliberal, post-Fordist successor. Its hero, the entrepreneurial self, navigates a networked world of changing projects while constantly trying to learn and innovate (Bröckling 2016).

The solutionist polity, by contrast, is less a reaction to the artistic critique of the alienating aspects of capitalism than to the social critique of capitalism's lack of solidarity and concern for the common good. It is congenial to a type of capitalism – epitomized by Wall Street – that is rampant with individualism and seemingly devoid of a social contract. The solutionist hero, the philanthro-entrepreneur, uses his business acumen and tech-savviness to optimize the world – not just himself. It is therefore unsurprising that solutionist ideas seemed to have gained prominence after the globalization protests of early 2000s and the financial crisis.[60]

At a time when the promissory legitimacy of neoliberalism – its ability to plausibly promise a better future – has exhausted itself (Beckert 2019), solutionism took up (part of) the slack. The spirit of digital capitalism no longer justifies an economic order that is *primarily* plagued by rigid Fordist hierarchies, but one that is beset by post-Fordist selfishness, precarity, and lack of civic-mindedness. Digital technologies are once again heralded as a panacea for capitalism's ills. But this time they do not promise to "flatten organizations, globalize society, decentralize control, and help harmonize people" (Nicholas Negroponte quoted in Turner 2006, 1). Rather, they claim to solve society's problems root and branch, from traffic deaths to death itself. These differences are related to differences in the underlying technologies. While miniaturization and networking were the central technological developments during the heyday of the projective polity, today's technological landscape is dominated by Artificial Intelligence and platform infrastructures.[61] Due to the centripetal,

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[60]As we can in Figure 18, solutionist ideas seem to have gained in prominence after the bursting of the dot.com bubble, which drove out the more mercenary "carpetbaggers" and left behind the more idealistic "true believers" (Tacy 2011) Moreover, the 'PayPal Mafia' around Peter Thiel and Elon Musk, many of them ardent solutionists, played an outsized role in funding and shaping many startups in the early 2000s, as venture capital retrenched and they filled the void (Mcnamee 2019, 48).

[61]It is not coincidental that using Artificial Intelligence to solve complex problems has been guiding vision of people working in this field since the very beginning (Heaven 2020).

centralizing tendencies, the later lend themselves to solutionist applications more than personal computers or the internet.

The anti-statist and technophile tendencies of the Californian counterculture have thus found a new home in the solutionist worldview. And while they find their most fierce adherents in the elites of today's platform capitalism, they also made their way into the wider digital milieu.[62] But did solutionist ideas also make headways outside of tech elites and the wider tech community? Figure 19 depicts references to the different orders of worth in the Harvard Business Review – perhaps the central venue for capitalist self-reflection. Unsurprisingly, we find that the values of the industrial and market polity play a prominent role in a magazine that is centrally concerned with the efficiency of organizations and the functioning of markets. What is remarkable, however, is that project polity becomes a lot more important in the 1990s while the civic and industrial polities lose ground. This strongly confirms Boltanski and Chiapello's argument that the values of the flexibility and agility have started to partly replace the values of the technical efficiency and planning, which had their heyday in the age of Fordism. Starting in the late 1980s, we find this shift to post-Fordist values reflected in capitalist discourse.

The solutionist polity, however, remains marginal for now. Although we cannot be certain, it might have slightly grown in recent years, at about the same time when business scholars have rekindled a debate on the purpose of business. With much force, they have

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[62]Weber made clear that the spread of attitudes associated with the spirit of capitalism required "long and arduous process of education" (Weber 2007, 25), with the protestant religious communities being the main agents and loci of socialization. In the case of the spirit of digital capitalism, the annual Burning Man event might play a similar role – one in which the solutionist beliefs of tech elites and workers alike are reinforced in ritualistic practices and Durkheimian experiences of collective effervescence (cf. Beckert 2016, 79). "As once, 100 years ago, churches translated Max Weber's protestant ethic into a lived experience for congregations of industrial workers, so today Burning Man transforms the ideals and social structures of bohemian art worlds, their very particular ways of being ›creative‹, into psychological, social and material resources for the workers of a new, supremely fluid world of post-industrial information work" (Turner 2009, 75–76).
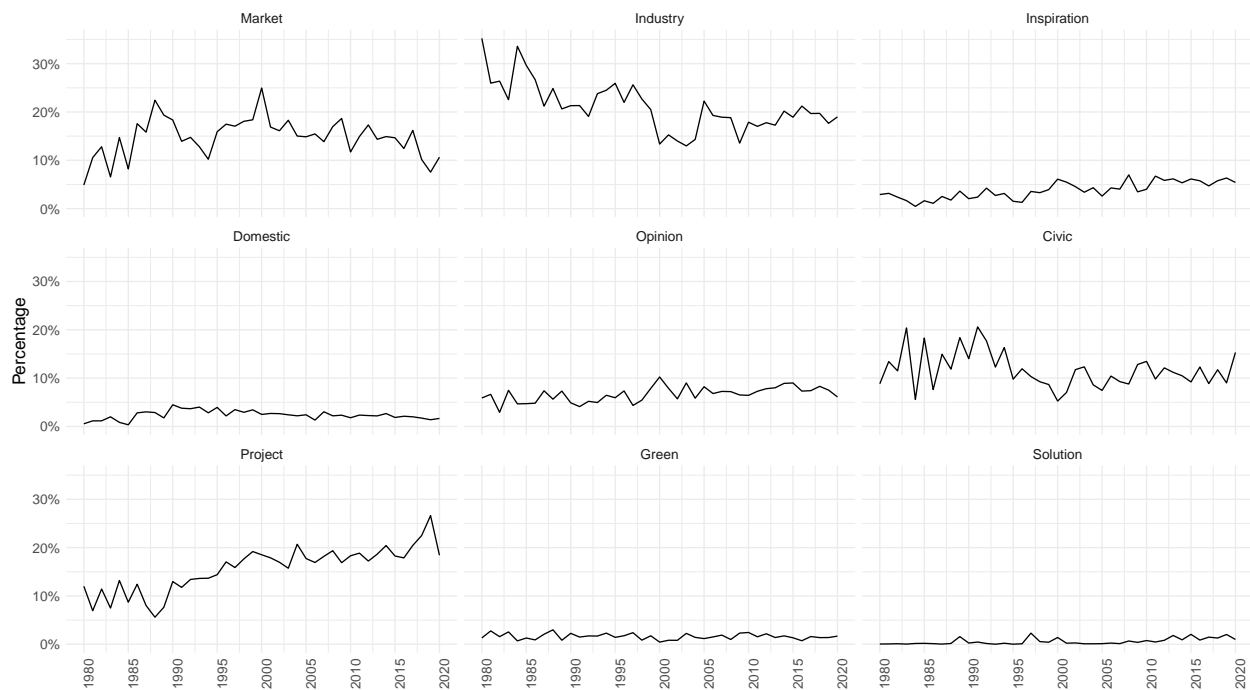
Figure 19: References to different polities in HBR articles (1980s-2020)

argued that businesses should abandon their narrow fixation on maximizing shareholder value and instead focus on creating "shared value" (Porter and Kramer 2011) and "shareholder welfare" (Hart and Zingales 2017) by "producing profitable solutions to problems of people and planet" (Mayer 2018, 12). Even the Business Roundtable has recently moved away from the idea that the sole purpose of business is to increase shareholder value; instead, it encouraged companies to also invest in their employees, protect the environment and deal fairly with their suppliers (Gelles and Yaffe-Bellany 2019). It remains to be seen to what extent ideas such as these serve as a bridgehead that allow solutionist values to enter the more mainstream debates on the values on which capitalist businesses should be build. For now, the new spirit of capitalism is still the dominant configuration of normative principles that justify capitalist action. But in the cultural crucible of Silicon Valley, a new spirit has been forged that already dominates the most important sector of our times, and, with the digitalization of economies and societies at large, is destined to become a central normative

force legitimizing, motivating and orienting entrepreneurs and workers from all walks of capitalist life.

6.6   Conclusion

In this article, we have revisited and revised the concept of the capitalist spirit. Using both qualitative and quantitative evidence, we have shown how a new capitalist spirit has formed in the beating heart of contemporary capitalism: the tech sector. We have shown that an ethic of solutionism – originating from a belief that there is a profitable technological solution to every social problem – is wide-spread among tech elites and the wider tech milieu. And we have shown that this ethic has legitimized tech companies before the public and policymakers, helped them motivate their employees, and oriented their business decisions in the face of uncertainty.

We have thus contributed – conceptually, theoretically, and empirically – to the budding debate on the moral and ideational embeddedness of capitalism. In particular, we have shown how the normative orders of justification embodied in the spirit of capitalism shape the moral background against which capitalism is justified (Abend 2014); how we can 'measure' and trace the normative logics that underlie and undergird capitalist action (Boltanski and Chiapello 2007; Granovetter 2017) and through which different moral views of the market society are expressed (Fourcade and Healy 2007); and how imagined futures – and the economic dynamism and promissory legitimacy they supply – are informed by and rooted in particular normative principles, such as those of solutionism (Beckert 2016, 2019).

In addition to uncovering the 'newest' spirit of capitalism, we have also reproduced Boltanski and Chiapello's finding that a new spirit of capitalism – one that centers around post-Fordist notions of flexibility and project-based activity – has emerged in the 1980s and still dominates capitalist discourse. However, given the dominance of solutionist ideas in

the tech sector, and given the economic and cultural dominance of the tech sector itself, it is likely that the solutionist ethic will gradually develop the "moral and normative force" (Sennett 2006, 10) to justify capitalism at large. As what some call the fourth industrial revolution unfolds, this fourth, solutionist spirit of capitalism might well come to shape how all companies justify their business models, attract and appeal to their employees, and decide on a course of action when no single one is obvious.

While solutionism provided a powerful normative defense of capitalism at a time when capitalists were increasingly criticized for producing, rather than solving social problems, its proponents have recently themselves come under criticism for producing all sorts of social problems, from creating addiction to spreading misinformation. It would be unwise, however, to write solutionism off, for two reasons.

First, tech companies have developed a kind of second-order solutionism where they promise technological solutions to problems that their own technologies have created. Co-opting the criticism that they have hijacked people's minds with their addictive and distracting technologies, tech companies have developed technological fixes to these primary technological and business defects, such as apps that help users understand their habits and nudge them towards more healthy ones. In the case of Facebook's *Time Well Spent* Initiative, they even co-opted the slogan of their most prominent critics at the *Center for Humane Technology*. This proactive and soft appropriation of "tech-humanist" ideas "may provide Silicon Valley with a way to protect that power from a growing public backlash – and even deepen it by uncovering new opportunities for profit-making" (Tarnoff 2018).

Second, tech companies have aggressively used solutionist rhetoric to legitimize their move into new sectors like education or health care. Even before the COVID-19 pandemic, Google and Apple have promised to use their technological prowess to 'transform health care', 'improve outcomes' and 'save lives'. As the corona crisis has painfully exposed the dependence of modern societies on the services provided by tech companies, these companies have

accelerated this move into semi-public sectors. They portray themselves and increasingly are, alongside governments, "the very sustainers of our welfare" (Magalhaes and Couldry 2020). The corona crisis has thus re- and supercharged tech companies' solutionist credentials, which in turn have smoothed their transition into being co-providers of public welfare. The danger behind all that, and another reason why understanding the solutionist ethics of contemporary tech elites matters, is that recent events might "entrench the solutionist toolkit as the default option for addressing all our existential problems – from inequality to climate change" (Morozov 2020).

7   Conclusion

Peter Gourevitch once remarked that for "social scientists who enjoy comparisons, happiness is finding a force or event which affects a number of societies at the same time. Like test-tube solutions that respond differently to the same reagent, these societies reveal their characters in divergent responses to the same stimulus" (Gourevitch 1977, 281). The rise of digital capitalism is such a reagent. Its commodifying-cum-disruptive double dynamic confronts societies with a range of challenges to which they can – and do – respond in different ways. These responses reveal much about the structural, institutional, and ideational characteristics of these countries – and how these different factors interact in the coalitional politics of digital policymaking. But they also change the nature of digitalization itself, leading to the formation of different varieties of digital capitalism. This variance in policy responses and policy effects creates an El Dorado for social scientists trying to understand why and how capitalist societies differ, but also why and how digital capitalism varies.

The papers that make up this dissertation have documented these "differential responses to common challenges" (Vogel 1996, 260). They have shown how "common (. . .) forces" have "compelled [countries, regions, or cities] in a specific direction", how "different ideas and institutions have pushed them to respond in different ways", and how they in turn "have varied to the extent that they have regulated in different ways" (Vogel 1996, 261). More specifically, they have vindicated the two main arguments of this dissertation: that the course and character of digital capitalism depend on the politics of digital policymaking, and that ideas are essential to this politics. In concluding, I would like to connect some of the papers' central findings to the theoretical and methodological arguments laid out in the introduction, make explicit the scholarly contributions of the papers, and point to limitations as well as avenues for future research.

A first important finding that runs through the papers is the *contested nature* of digital capitalism. Not only do platform companies systematically challenge existing (decommodifying) regulations through practices of regulatory arbitrage and entrepreneurship, which leads to a contentious politics of regulatory response (chapter 2 and 4). They also push market logics deeper into the social fabric, which creates protective responses from society, such as in the case of the GDPR where new, decommodifying data protection regulations were adopted in a highly contested political process (chapter 3). Moreover, digital capitalism creates winner and losers of technological change, which requires governments to conflictually (re-)allocate resources from some groups to others, and from present to future consumption (chapter 4 and 5). Thus, a recurring theme throughout the papers is that digital capitalism does not just sweep over society, but is challenged and, depending on how these challenges play out politically, channeled into distinctive trajectories.

A second common denominator is the *uncertain nature* of digital capitalism. Digitalization creates a host of novel problems from how to balance data protection and economic dynamism (chapter 3) to how to safeguard the interests of workers in a rapidly changing economy (chapter 2, 4, and 5). What these problems have in common is that political responses fundamentally depend on actors' perceptions. Do actors think that there is a trade-off between innovation and privacy, or do they think that data protection regulations are actually a competitive advantage? Do they think that digital work is liberating and inherently positive, or do they think it is exploitative and corrosive of regulatory standards? Digital companies are well aware of this uncertainty and have invested much ideational energy into managing their non-market environment and framing themselves as forces for good (chapter 2 and 6).

A third shared observation regards the *coalitional nature* of digital policymaking. All politics is coalitional to an extent. But the novel and uncertain nature of digital capitalism renders coalitions more fluid and malleable than in areas where actors are more confident about the world and their interests and coalitions have congealed into relatively stable social

blocs. While coalitions are by no means random but are shaped by structures and institutions, they can and do change over time as actors forge new coalitions, drive a wedge between existing ones, shift discourses into different directions, or benefits from external events (chapters 2, 3, and 4). In important ways, then, political responses to digitalization are shaped by which actors' interpretation of digitalization become dominant and subsequently shape other actors coalitional alignments.

This brings us to a fourth recurring theme: the *situated nature* of ideational explanations. Ideas don't become 'effective forces in history' by themselves, but through interested actors that use them as weapons in discursive battles, or by becoming entrenched in formal and informal institutions and thereby informing actors' view of the world and of their role in it. Chapter 2 shows how actors can use ideas as coalitional magnets to unite coalitions of strange bedfellows, or as coalitional wedges to drive a wedge between existing coalitions. Chapter 3 shows how certain ideas of privacy and data protection became entrenched in European law and thus created actors with an interest in promoting data protection. Chapter 4 and 5 observe how an "ideology of social partnership" (Katzenstein 1985, 32) - embedded in corporatist institutions - influences what actors make of distributive and intertemporal trade-offs, and how they view the digitalization of work. One implication here is that corporatism is more than a set of formal rules, but includes an *ensemble* of shared views, dispositions and practices that produce a more collaborative style of policymaking. Chapter 6, lastly, shows how ideas can ally themselves with economically and culturally powerful entrepreneurs and thereby orient their actors but also justify them internally (vis a vis workers) and externally (vis a vis policymakers and the public).

A final thread that runs through the papers is the *variegated nature* of methods available to study ideas and their interaction with other explanatory factors. Chapter 2 uses discourse network analysis to substantiate its main arguments about the coalitional effects of ideas, but it also qualitatively shores up this argument by a close analysis of the policymaking

process. In addition, it uses text-as-data methods to mitigate concerns about an alternative explanation. Chapter 3 also uses discourse network analysis to show how salience and geo-economic concerns saved the commission's proposal from being watered down. But it also uses process tracing to show how the constitutionalization of certain ideas about data protection led to this proposal in the first place. Chapter 4 and 5 show how text-as-data methods can be used to measure ideas in a comparative setting, either as a dependent variable in their own right or as one of many independent variables. Lastly, chapter 6 shows how supervised learning can be used to map the importance of different normative ideas in large text corpora, and how we can again bring these findings to life with more theoretical reasoning and qualitative evidence.

Overall, then, the five papers assembled here make three main contributions. First, each of the papers makes important contributions to emerging discussion on the comparative political economy and economic sociology of digital capitalism by theorizing and investigating the (ideational) politics of digital policymaking. Put differently, they not only chart novel empirical terrain, but also theoretically 'clear' it and empirically fortify the thus 'cultivated' plots of land. Second, the papers theoretically, conceptually, and empirically advance the discussion on the role of ideas in political and social life. Specifically, they make the case for why ideas matter, conceptualize how they matter, and harness a number of recent methodological tools to measure them. Third, they show how we can creatively use and combine different theoretical concepts and methodological tools in a way that both aligns ontology and methodology (Hall 2003) and does justice to the complex interplay of structural, institutional, and ideational factors (cf. Parsons 2007).

Despite these substantive, theoretical, and methodological contributions, this dissertation also suffers from a number of shortcomings which provide pointers for where future research should be going. First, what is crucial for ideational analysis is not just the quality but also the scale of textual data, with more specific or focused data tending to provide more

fine-grained and perhaps interesting results (cf. Nicholls and Culpepper 2020). Future studies could harness the comparative tools used in chapter 4 and 5 and apply them to a more in-depth analysis of particular policy episodes. One example could be how debates around 5G network technology play out in different countries, focusing, for example, on the relative importance of economic and geopolitical factors. Another example would be to look at how the interpretation of the GDPR by national data protection authorities influences how they enforce the GDPR. Such analyses promise a thicker description of ideational dynamics, which has advantages that may well outweigh those of a lower resolution.

Second, while the papers already took on this challenge, future studies should be even more systematic in linking ideational theories and methodological tools. Can we really understand topics as frames? Are there more systematic ways to aggregate individual topics or policy beliefs into frames or narratives, for example by using the tools of network analysis on the output of text-as-data methods (Walter and Ophir 2019)? Can we combine measures of content with measures of tone, for example to detect narratives with different emotional thrusts? Can we methodologically distinguish between normative and cognitive appeals? Can we measure not just ideas but the differential power of ideas (Carstensen and Schmidt 2016)? And can we more specifically model the temporal nature of textual data and discourses, for example by looking at promises (Müller 2020) or imagined futures (Beckert 2016)?

Third, to be fully convincing, ideational explanations need to be triangulated with as much evidence as possible, and defended against alternative explanations. The papers that make up this dissertation to this to varying degrees, but future studies should think more carefully about how large-n quantitative approaches and small-n qualitative case studies can be combined not just to illustrate or make plausible an argument, but to really show the influence of ideas on every step of the causal path. This implies incorporating ideational explanations into 'nested analysis' designs (Lieberman 2005) where the veracity of findings is iteratively validated by oscillating between the macro and micro level. One could, for

example, look at the prevalence of certain ideas in discourse at large to then show their effectiveness in survey experiments (Barnes and Hicks 2018). Or one could establish the motivation of key actors in qualitative interviews to then trace the history of these motivating ideas through time. The point here is that it might sometimes be better to provide a lot of mutually supporting evidence for a single argument, rather than a reasonable amount of evidence for a few arguments.

Fourth, while the papers here have mostly focused on how we can explain the politics of digital policymaking, future studies should look more systematically at the afterlife as well as the effects of these political responses. One the one hand, it is important to understand what happens after a particular regulation is in place given the intention behind this legislation. Future studies, for example, should look at how the GDPR is actually enforced in member states, and which political factors explain patterns of (non-)enforcement. On the other hand, it is worth asking what the actual effects of different responses are. For example, does regulatory drift improve the lot of workers or does it lead to an across-the-board increase in precarious work? Or is there any discernible relation between the stringency of data protection regulation and the rate of innovation?

These shortcomings notwithstanding, the papers assembled here have made important inroads into understanding the political nature and variegated trajectories of digital capitalism. And they have contributed to our understanding of how ideas are effective not just at the start of technological change - when a brilliant idea leads to a novel invention - but shape technological change throughout its life-course - from guiding and glorifying the hand of innovators that bring these ideas to the market to shaping how political actors perceive these innovations and subsequently react to them. Even as technology transforms it once again, capitalism remains the "most fateful force in our modern life" (Weber 2007, xxxi). Its fate, however, is not cast in stone but lies in the hands of political actors who steer it through

a thicket of existing but changing structures, established yet not immutable institutions, and sometimes viscous, sometimes fluid ideas - constrained, but not without choice.

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Appendices

A   Appendix: The Politics of Platform Capitalism

A.1   Source Selection

The newspapers were selected to ensure that a broad range of actors were represented in the sample, and that the discourse networks were not biased in favor of more prominent actors. The seven selected newspapers cater to different audiences, with the New York Times and the Wall Street Journal on end of the spectrum and the more sensationalist New York Post and New York Daily News on the other. They also have different political leanings, from the leftist New York Daily News to the center-left New York Times to the center-right Wall Street Journal and New York Observer to the conservative New York Post.

First, articles that mentioned Uber and New York were downloaded via Factiva. In a second step, articles were removed that did not contain information about the regulation of Uber in New York were removed using different combinations of strings. For example, articles were removed if they mainly talked about Uber in Europe, about Uber's financial situation, etc. The remaining articles were then exported to the Discourse Network Analyzer Software and removed manually if they were still irrelevant (which was only the case for a few articles). This resulted in the sample shown in Table 6

Table 6: Selected articles by newspaper

Newspaper	Number of Articles
New York Times	36
Wall Street Journal	31
New York Daily News	29

Table 6: Selected articles by newspaper

Observation	Speed
New York Post	18
Associated Press	15
New York Business Journal	12
New York Observer	10
Overall	**151**

A.2 Coding Scheme and Policy Concepts

As stated in the article, the coding scheme was first developed inductively, then refined, and finally reapplied more deductively. In a first step, policy concepts were coded at a relatively low level of abstraction, that is, very close to the actual statements of actors. If, for example, an Uber spokesperson that a cap on Uber would really hurt minorities and people in the outer boroughs two policy beliefs were coded: 'Regulation hurts minorities' and 'Regulation hurts people in the outer boroughs'. And if a Lyft manager said that de Blasio's regulation would make it harder for people in the outer boroughs to get a ride, this was coded as 'Regulation makes it harder for people in the outer boroughs to get a ride'.

After the coding scheme started to become exhaustive, that is, after no new policy concepts appeared in the articles, the existing policy concepts were pruned and merged at a slightly higher level of abstraction. For example, the concepts 'Regulation hurts people in the outer boroughs' and 'Regulation makes it harder for people in the outer boroughs to get a ride' were merged into the new concept 'Regulation is bad for people in the outer boroughs'. In a last step, all documents (including those already coded) were coded again using the final coding scheme.

It is important to note, however, that even the final coding scheme remained relatively far down on the ladder of abstraction. For example, the concepts 'Regulation is bad for people in the outer boroughs' and the similar concept 'Uber is good for people in the outer boroughs' were not merged. This relatively low level of abstraction was meant to make sure that coding was straightforward and that actors were only connected if they really shared similar policy beliefs.

No intercoder-reliability test was applied (which is difficult given that the unit of analysis are not documents but political claims scattered across these documents). However, all documents were again re-read and if necessary re-coded to ensure a consistent application. This also made sure that no statements were missed or miscoded – something which I also checked in other ways. For example, if actors expressed different views on the same policy concept at different moments in time, I checked whether this represented genuine belief change or a coding mistake. This procedure is in line with the standard procedure for discourse network analysis (Leifeld 2013).

The included documents were allowed to range from September 2013 (when de Blasio was elected) to December 2018 (when the TLC set the minimum pay rate for Uber drivers). However, there were no relevant documents before 2014. The sample also includes documents from January to August of 2019, in case the extension of the one-year cap in the summer of 2019 would trigger another political controversy (which it did not). Moreover, within the selected time span, statements that concerned state-level or TLC regulations were coded but excluded from the final analysis, as they were not really about de Blasio's cap. Furthermore, weekly duplicates were removed from the actors congruence networks. This was meant to make sure that that statements by prominent actors which were reported in different newspaper were not overrepresented. This resulted in the first actors congruence network showing 180 Statements, 36 actors, and 36 concepts, and the second network showing 286 Statements, 49 actors, and 34 concepts.

The frames shown in Figure 2 and Figure 5 of the paper are aggregated thematically grouped versions of the actual policy concepts that underlie the discourse network analysis. Table 7 and Table 8 provide an exhaustive list of all policy concepts for the first and second period respectively. They also show these policy concepts were aggregated, and how many statements were made in favor of the regulation or in opposition to it.

Table 7: (Aggregated) Policy Concepts First Period

(Aggregated) Concepts	Pro Uber	Pro de Blasio
Exclusion/Discrimination	**35**	**1**
Uber is good for marginalized groups	14	1
Uber is good against destination discrimination	12	0
Regulation hurts marginalized groups	6	0
Regulation increases destination discrimination	3	0
Collusion/Corruption	**15**	**1**
Taxi industry bought city off	15	1
Working Conditions/Drivers' Interests	**11**	**12**
Uber is good for diver (income)	5	5
Traditional Taxis should be protected	2	5
Regulation hurts drivers	2	2
Regulation takes away flexibility from drivers	2	0
Consumer Interests	**25**	**16**
Uber is good for consumers	9	3
Regulation hurts consumers	4	0
Surge pricing is good/okay	9	12
Uber protects user privacy	2	1
Uber is good for young people	1	0

Table 7: (Aggregated) Policy Concepts First Period *(continued)*

(Aggregated) Concepts	Pro Uber	Pro de Blasio
Congestion	**5**	**18**
Uber does not cause congestion	3	15
Regulation reduces congestion	2	3
Economy/Jobs/Innovation	**29**	**1**
Regulation is bad for the economy/kills jobs	18	0
Regulation stifles competition/innovation	7	1
Uber creates jobs	4	0
Public Interest	**7**	**22**
Uber has no regard for the public interest	3	11
Regulation is in the public interest	1	6
Regulation helps MTA	2	1
Uber avoids taxes	0	3
Uber is part of the solution not the problem	1	1
Disability Rights	**0**	**7**
Regulation hurts the disabled	0	3
Uber is good for the disabled	0	4
Environment	**0**	**4**
Regulation is good for the environment	0	2
Uber is good for the environment	0	2
Safety	**2**	**6**
Regulation increases safety	0	2
Uber is good for safety	2	4
General Regulation/Other	**15**	**26**

Table 7: (Aggregated) Policy Concepts First Period *(continued)*

(Aggregated) Concepts	Pro Uber	Pro de Blasio
Regulation only after all evidence is in	9	8
There is a level playing field	0	10
Uber should not have to share their trip data	4	5
Uber can operate if it complies with regulations	2	0
Uber does not engage in illegal behavior	0	3
Total	**288**	**228**

Table 8: (Aggregated) Policy Concepts Second Period

(Aggregated) Concepts	Pro Uber	Pro de Blasio
Exclusion/Discrimination	**47**	**8**
Uber is good for marginalized groups	4	1
Uber is good against destination discrimination	5	1
Regulation hurts marginalized groups	14	3
Regulation increases destination discrimination	24	3
Collusion/Corruption	**0**	**0**
Working Conditions/Drivers' Interests	**18**	**69**
Uber is good for diver (income)	4	35
Regulation hurts drivers	8	29
Drivers should be able to collectively bargain	5	1
Traditional Taxis should be protected	0	6
Regulation takes away flexibility from drivers	1	0
Consumer Interests	**20**	**4**
Uber is good for consumers	6	0
Regulation hurts consumers	13	3
Surge pricing is good/okay	1	1
Congestion	**7**	**29**
Uber does not cause congestion	0	20
Regulation reduces congestion	7	9
Congestion Pricing	**41**	**13**
Congestion Pricing reduces congestion	17	3
Congestion Pricing is good for MTA	14	0

Table 8: (Aggregated) Policy Concepts Second Period *(continued)*

(Aggregated) Concepts	Pro Uber	Pro de Blasio
Congestion Pricing is fair	10	10
Economy/Jobs/Innovation	**1**	**1**
Regulation is bad for the economy/kills jobs	0	1
Regulation stifles competition/innovation	1	0
Public Interest	**11**	**24**
Uber has no regard for the public interest	3	6
Regulation is in the public interest	0	4
Regulation helps MTA	7	8
Uber avoids taxes	1	2
Uber is good for MTA	0	4
Disability Rights	**9**	**19**
Regulation hurts the disabled	5	9
Uber is good for the disabled	4	10
Environment	**0**	**2**
Regulation is good for the environment	0	2
Safety	**5**	**1**
Uber is good for safety	5	1
General Regulation/Other	**5**	**18**
Regulation only after all evidence is in	4	3
There is a level playing field	0	12
Uber can operate if it complies with regulations	1	0
Uber should allow tips	0	3
Total	**328**	**378**

A.3   Actor Conflict Network

Table 9 and Table 10 show the degree centrality of the most 'controversial' actors in the actor conflict networks for both time periods. As stated in the paper, in both networks, Uber has the highest degree centrality (average normalization was applied). In actor conflict networks, actors are connected not if they agree but if they disagree over policy concepts. Thus, actors with the highest degree centrality are those that have most disagreements with other actors, and thus have most discourse opponents. The fact that Uber has the highest score not just in the second but also in the first periods confirms the argument that Uber already had many opponents in 2015. But, as argued in the paper, just because they disagreed with Uber, it did not mean that they agreed with de Blasio, who failed to address many of their concerns and mobilize them for his coalition.

Table 9: Degree centrality in actor conflict network for the first period

Actor	Degree Centrality Conflict Network
Uber	17
NYC Government	12
Transportation Committee	12
TLC	11
Lyft	9
Better Business Bureau	7
NYC Council	5

Table 10: Degree centrality in actor conflict network for the second period

Actor	Degree Centrality Conflict Network
Uber	28
Schaller Consulting	19
Lyft	19
NYC Council	14
Residents	12
NYC Government	11
Transportation Alternatives	10
Metropolitan Taxicab Board of Trade	11

A.4 Community Detection Algorithms

Figure 20 and Figure21 show the results of eight common community detection algorithms applied to the actors congruence network for the first period – Figure 22 and Figure 23 to the same for the second period. The clusters they identify confirm the analysis presented in the paper. They always place de Blasio and Uber in different clusters, and these clusters also roughly include the sets of actors we would expect them to include. It is true that they identify more than two clusters (the number of clusters k was not forced to 2), but the additional clusters are either composed of relatively isolated nodes or they are the result of the community detection algorithm subdividing Uber's and de Blasio's support coalitions into two. For example, most algorithms separate the actors below and above de Blasio for the first time period. This makes substantive sense, as these actors supported de Blasio for different reasons (congestion and taxi regulations). The fact that they sometimes place

the City Council and its transportation committee in de Blasio's and sometimes in Uber's coalition also makes sense, as Uber managed to drive a wedge between them but did not completely sway them to their side. The fact that they were torn between the two coalitions is reflected in their changing cluster memberships. A very similar story holds for the second period. Again, the algorithms reliable put members of different coalitions into different clusters but they subdivide the coalitions differently. The results strongly support the visual observations and the argument of the paper.

Figure 20: Community detection algorithms for first period (part one)

A.5   Polarization

Figure 24 plots the polarization of the actors congruence network over time (this is based on a genetic algorithm implemented in the rDNA R package). It shows that the discourse became increasingly polarized, arguably because Uber was no longer able to drive a wedge

Figure 21: Community detection algorithms for first period (part two)

between the Democratic Party and actors like the City Council, which was previously in between the two coalitions, was now firmly in de Blasio's camp.

A.6 Sentiment Analysis

The dataset for the sentiment analysis is made up of 1773 newspaper articles published between October 2012 and May 2019. The articles were collected via Factiva from three major newspaper sources, which are arguably broadly representative of the overall American public discourse on Uber: The New York Times, The Wall Street Journal, and The Washington Post. For the sentiment analysis, four different dictionaries were used: the AFINN dictionary developed by Finn Årup Nielsen (Nielsen 2011); the Bing sentiment lexicon developed Minqing Hu and Bing Liu (Hu and Liu 2004); the NRC Word-Emotion Association Lexicon developed by Mohammad and Turney (Mohammad and Turney 2010);and the syuzhet dictionary (and accompanying R package) developed by Matthew Jockers and the Nebraska
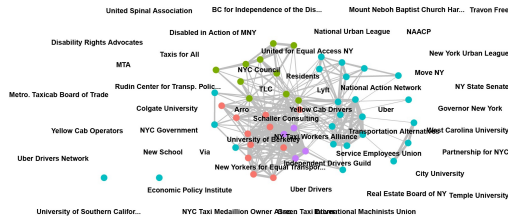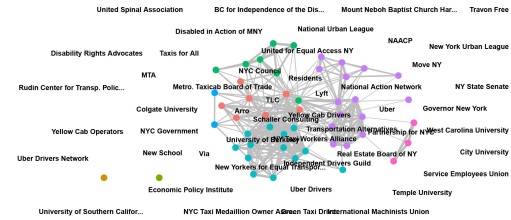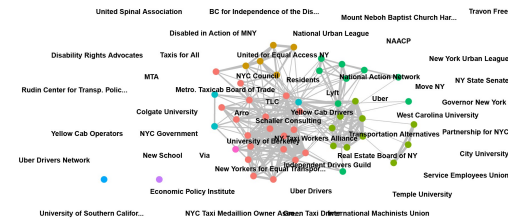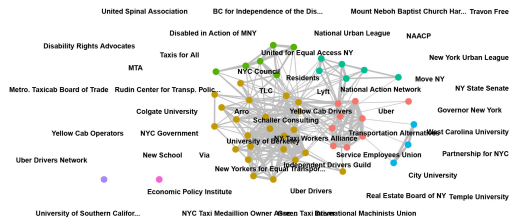
Figure 22: Community detection algorithms for second period (part one)

Literary Lab (Jockers 2017). I combined this dictionary-based approach with natural language processing to identify and take into account common negators (e.g. not), amplifiers (e.g. very), and deamplifiers (e.g. somewhat). While the four dictionaries produce no conclusive results, they do pick up on real-world events like when an Uber driver killed several people in early 2016 or the scandals that led to Travis Kalanick's resignation in mid 2017.
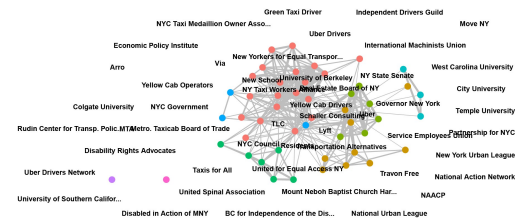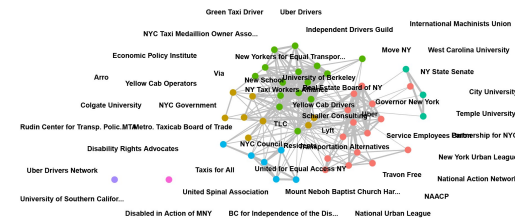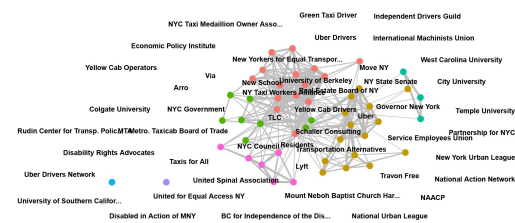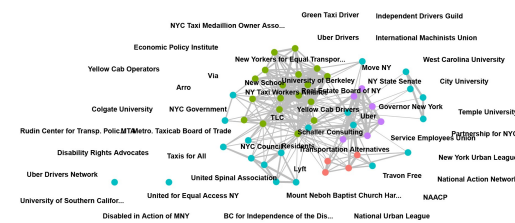
Figure 23: Community detection algorithms for second period (part two)
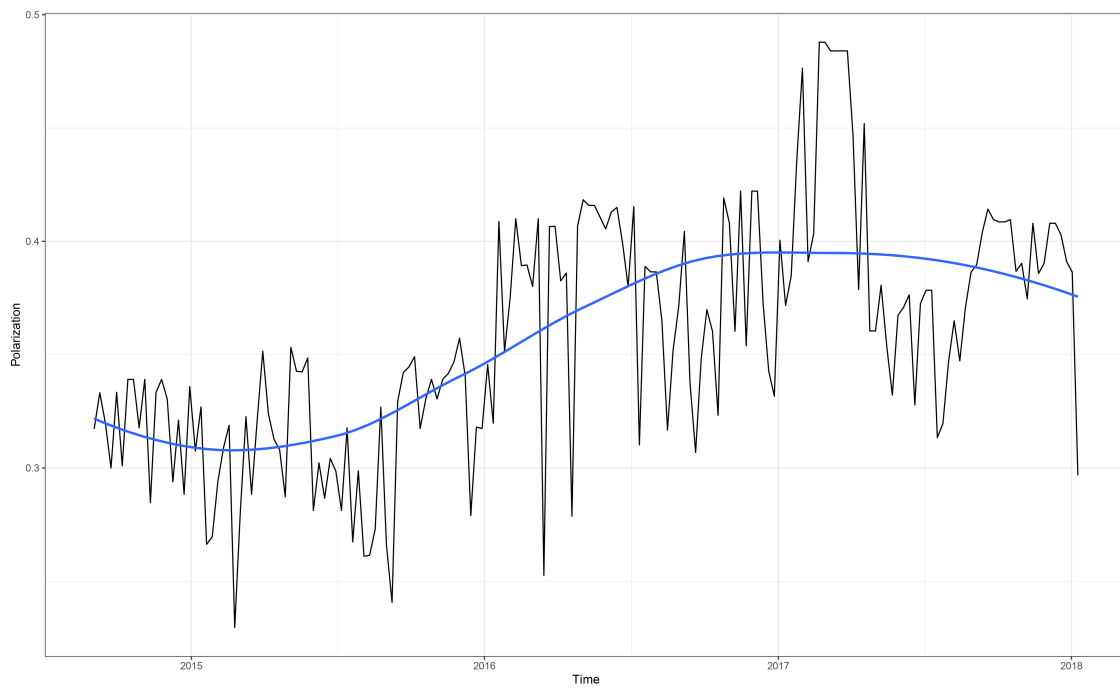
Figure 24: Network Polarization over time

B   Appendix: Regulating the European Data-Driven Economy

B.1   Concepts

11 depicts the most commonly used concept categories, aggregated from the policy beliefs which were used in the analysis and which are shown in Table 2 (for the first period) and Table 3 (second period). Figure 2 (in the paper) shows how many statements were made in favor or against the GDPR in seven different concept categories: i) whether the GDPR is too restrictive, inflexible, punitive; ii) whether it is good or bad for growth, innovation; iii) whether it is too broad in scope, too broadly defined, or applies to too many areas/organizations; iv) whether it is good or bad for consumers; v) its geo-economic dimension, especially with regards to the transatlantic relationship; vi) whether it can help create/foster the European digital single market; vii) and whether it protects fundamental rights.

Whether statements were counted as being 'pro GDPR' or 'against GDPR' depended on their substantive meaning. For example, statements that agreed with the concept 'GDPR is good for innovation' were counted as 'pro GDPR' because they are very likely made in support of the GDPR. Likewise, statements that disagreed with the concept 'GDPR protects fundamental rights' were counted as 'against GDPR' because it is very implausible that they were made in support of the GDPR. For example, during the first period there were 20 statements that agreed with (and only few statements that disagreed with) one of the three concepts that make up the fundamental rights frame, namely that the 'GDPR protects fundamental rights', that 'consent requirements are crucial' and that 'individuals should not be fully commodified'. Table 2 and Table 3 show the concepts used in the discourse network analysis and how they were aggregated for the first and second time period.

It is important to note that these aggregations – or the assignments of a 'pro' or 'anti' GDPR sentiment to statements – in no way affected the actors congruence networks in the paper. These were solely based on the underlying concepts and the patterns of joint agreement and disagreement.

Table 11: All concepts with aggregation (in bold) for the first time period with number of statements for or against the GDPR

(Aggregated) Concepts	Pro GDPR	Anti GDPR
Innovation/Growth	**13**	**34**
GDPR is good for growth	2	20
GDPR is good for innovation	2	4
GDPR reduces costs for business	5	10
Data Protection and economic concerns can be reconciled	4	0
Fundamental Rights	**20**	**3**
GDPR protects fundamental rights	13	1
Consent Requirements are crucial	6	2
Individuals should not be fully commodified	1	0
Market-Creation	**12**	**1**
Harmonization is good	5	0
GDPR increases trust	4	0
GDPR helps create a digital singe market	1	1
GDPR increases legal certainty	1	0
GDPR increases transparency	1	0
Consumer Issues	**3**	**6**
GDPR is good for consumers	0	6
GDPR gives people back control	2	0
GDPR puts individuals first (not companies)	1	0
Restrictiveness/Flexibility	**30**	**64**
GDPR is flexible enough and not too restrictive	1	12
GDPR should be a directive (not a regulation)	9	8

Table 11: All concepts with aggregation (in bold) for the first time period with number of statements for or against the GDPR *(continued)*

(Aggregated) Concepts	Pro GDPR	Anti GDPR
Right to be forgotten is too restrictive	8	12
Data protection officer should be mandatory	0	5
High Fines are appropriate	3	8
Legitimate interest should be narrowly interpreted	2	1
Data portability is good and unproblematic	2	0
Harmonization should be on higher (not lower) standards	1	4
One-stop-shop approach is sufficient	0	2
Privacy-by-design is good	2	0
Self-Regulation is not enough	1	2
GDPR should adopt risk-based approach	0	4
Data breach notification rules are appropriate	1	6
Restrictiveness/Scope	**11**	**26**
GDPR is balanced and does not apply to broadly	1	5
GDPR should specifically protect small and medium enterprises	4	13
Personal Data should be defined broadly	2	2
GDPR should regulate profiling/targeted advertising	3	2
GDPR should exempt public sector	0	4
GDPR should apply to cloud computing	1	0
Geo-economics	**10**	**12**
GDPR is a trade barrier	2	7
European data protection is stronger	2	1

Table 11: All concepts with aggregation (in bold) for the first time period with number of statements for or against the GDPR *(continued)*

(Aggregated) Concepts	Pro GDPR	Anti GDPR
Strong data protection can be a competitive advantage	2	0
Safe Harbour is sufficient	2	2
GDPR should apply to everyone doing business in the EU	2	2
Other	**7**	**3**
GDPR responds to public demand/frustration	4	0
GDPR is a necessary update for the digital age	3	0
GDPR should be clear and simple	0	1
GDPR is clear enough	0	2
Total	**212**	**298**

Table 12: All concepts with aggregation (in bold) for the second time period with number of statements for or against the GDPR

(Aggregated) Concepts	Pro GDPR	Anti GDPR
Innovation/Growth	**16**	**39**
GDPR is good for growth	1	11
GDPR is good for innovation	5	13
GDPR reduces costs for business	10	13
Data Protection and economic concerns can be reconciled	0	2
Fundamental Rights	**33**	**7**
GDPR protects fundamental rights	18	2
Consent Requirements are crucial	9	3
Juridical Redress is crucial	4	2
Individuals should not be fully commodified	1	0
GDPR is a necessity not a luxury	1	0
Market-Creation	**28**	**1**
Harmonization is good	6	0
GDPR increases trust	7	0
GDPR helps create a digital singe market	8	1
GDPR increases legal certainty	7	0
Consumer Issues	**17**	**0**
GDPR gives people back control	6	0
GDPR forces companies to be more transparent about the data they hold	11	0
Restrictiveness/Flexibility	**50**	**60**
GDPR is flexible enough and not too restrictive	4	6

Table 12: All concepts with aggregation (in bold) for the second time period with number of statements for or against the GDPR *(continued)*

(Aggregated) Concepts	Pro GDPR	Anti GDPR
GDPR should be a directive (not a regulation)	3	6
Right to be forgotten is too restrictive	7	14
Data protection officer should be mandatory	1	0
High Fines are appropriate	1	5
Legitimate interest should be narrowly interpreted	4	2
Data portability is good and unproblematic	1	1
Harmonization should be on higher (not lower) standards	3	0
One-stop-shop approach is sufficient	20	16
Privacy-by-design is good	3	0
GDPR should adopt risk-based approach	0	4
Parental Consent requirement is appropriate	0	6
Restrictiveness/Scope	**12**	**22**
GDPR is balanced and does not apply to broadly	1	2
GDPR should specifically protect small and medium enterprises	0	7
Personal Data should be defined broadly	5	2
GDPR should regulate profiling/targeted advertising	5	5
GDPR should exempt public sector	0	6
GDPR should apply to cloud computing	1	0
Geo-economics	**116**	**48**
GDPR is a trade barrier	2	6
GDPR is not protectionism	7	8

Table 12: All concepts with aggregation (in bold) for the second time period with number of statements for or against the GDPR *(continued)*

(Aggregated) Concepts	Pro GDPR	Anti GDPR
European data protection is stronger	7	4
European Data should be stored in Europe	2	0
Data protection should be part of trade talks	10	2
Strong data protection can be a competitive advantage	10	2
Safe Harbour is sufficient	45	10
Safe Harbour plus is sufficient	5	7
GDPR should apply to everyone doing business in the EU	16	9
GDPR levels playing field between European and American companies	9	0
There should be an international agreement on data protection	3	0
Other	**2**	**1**
GDPR responds to public demand/frustration	1	0
GDPR is clear enough	1	1
Total	**545**	**356**

Since the concept "Safe Harbour not sufficient" was the most prominent concept in the second time period even though it does not explicitly concern the GDPR (remember that concepts were also coded when they were closely linked to the GDPR), we plotted the actor congruence network without this concept. As Figure 4 and Figure 5 show, the results are largely the same, only the EPP (and some other parliamentary actors) move somewhat more to the periphery of the network.

Figure 25: Actor congruence network for the second period without the concept 'Safe Harbour not sufficient'

B.2 Comparing density between manually assigned coalitions

If we manually assign nodes/actors to coalitions based on our theoretical/qualitative expectations, we can compare their density. Network density is based on the ratio of the number of edges and the number of possible edges. We would therefore expect the density to be higher for the coalitions than for the overall network (as members of coalitions should agree more with each other than with other actors. With the partial exception of the anti-GDPR coalition in the second time period, these expectations can be clearly confirmed. And even for said coalition, the density score is still clearly higher than for the overall network. Table 4 shows the results for both time periods and the two figures visualize the coalitional assignment.

Table 13: Table comparing density scores

Period	Full Network	Pro-GDPR coalition	Anti-GDPR coalition	Other/no clear affiliation
Density 1st period	0.22	0.51	0.49	0.29
Density 2nd period	0.19	0.56	0.30	0.07

B.3 Community Detection Algorithms

Figures 6 to 9 plot the actor congruence networks for the two time periods based on the results of various common community detection algorithms. While these clustering algorithms produce slightly different results, their overall findings are quite similar. They reliably put pro- and anti-GDPR advocates in different clusters, but often split the pro- and anti-GDPR coalitions into various sub-clusters. For example, for the first period, the core GDPR advo-
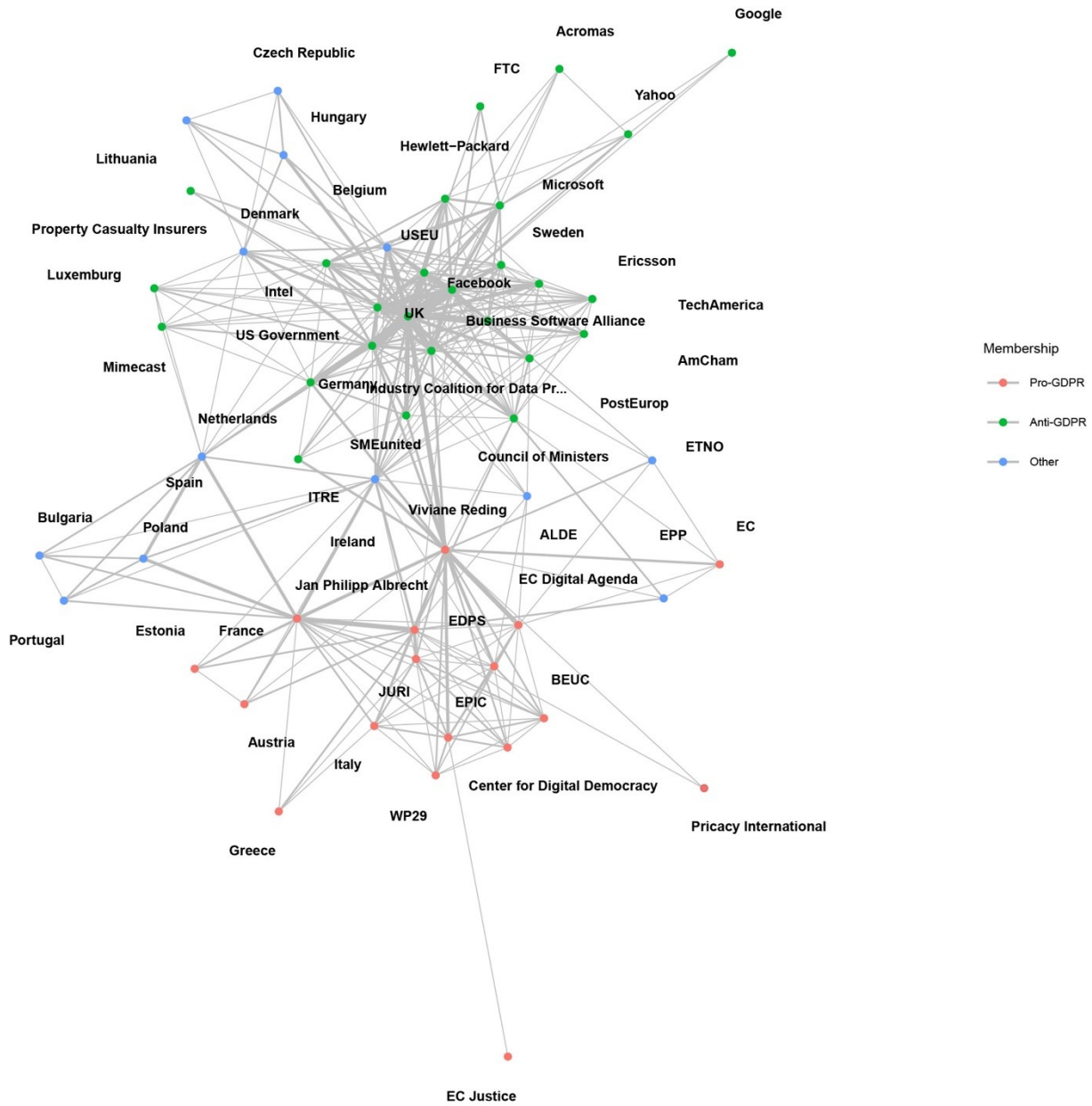
Figure 26: Actor congruence network with manually assigned coalitions for the first time period

Figure 27: Actor congruence network with manually assigned coalitions for the second time period

cates and the countries supporting the GDPR are in separate coalitions but remain distinct from opponents of the GDPR. Overall, the more visual findings reported in the paper are supported by the results of various community detection algorithms.
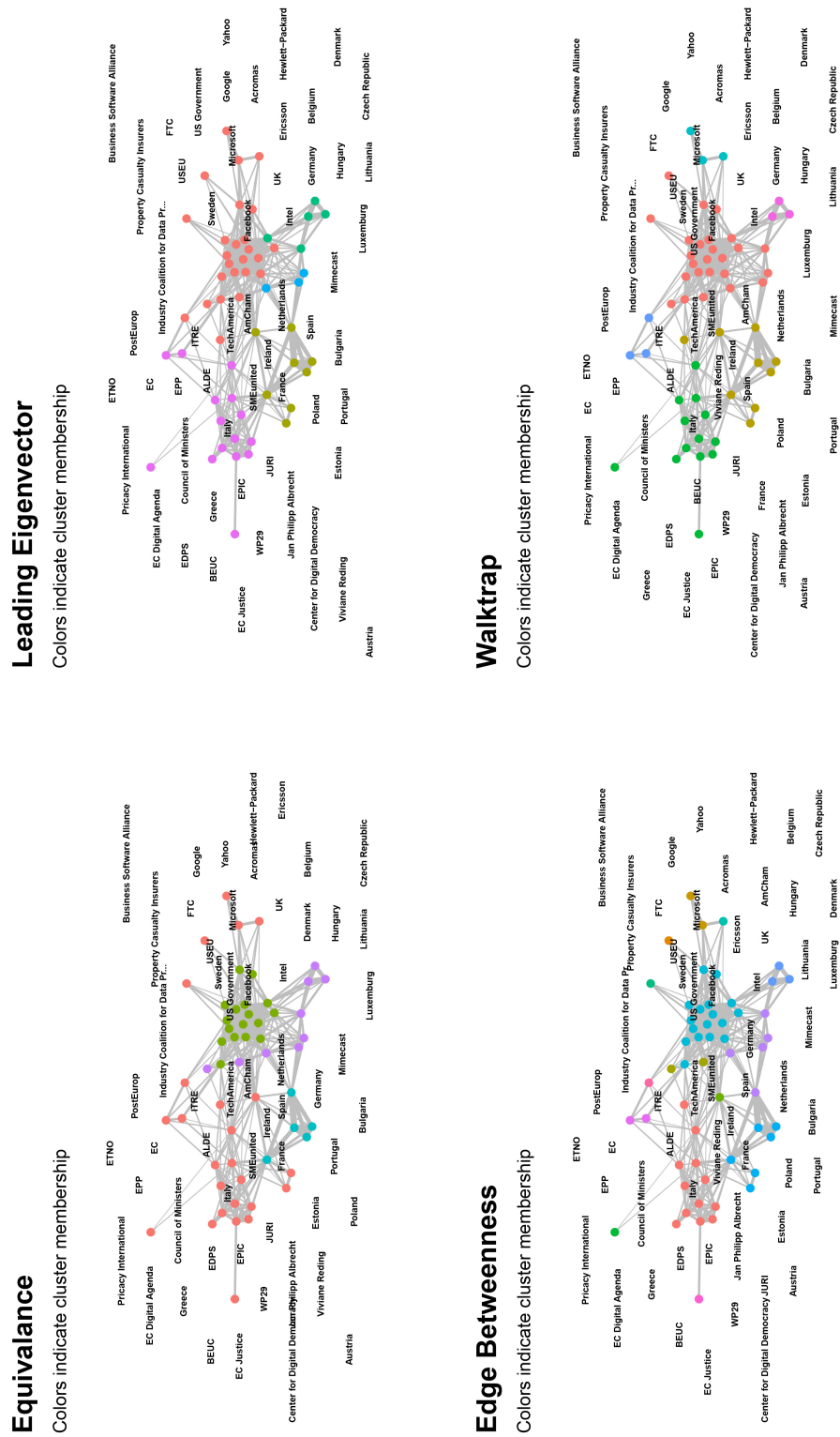
Figure 28: Clustering algorithms for the first period
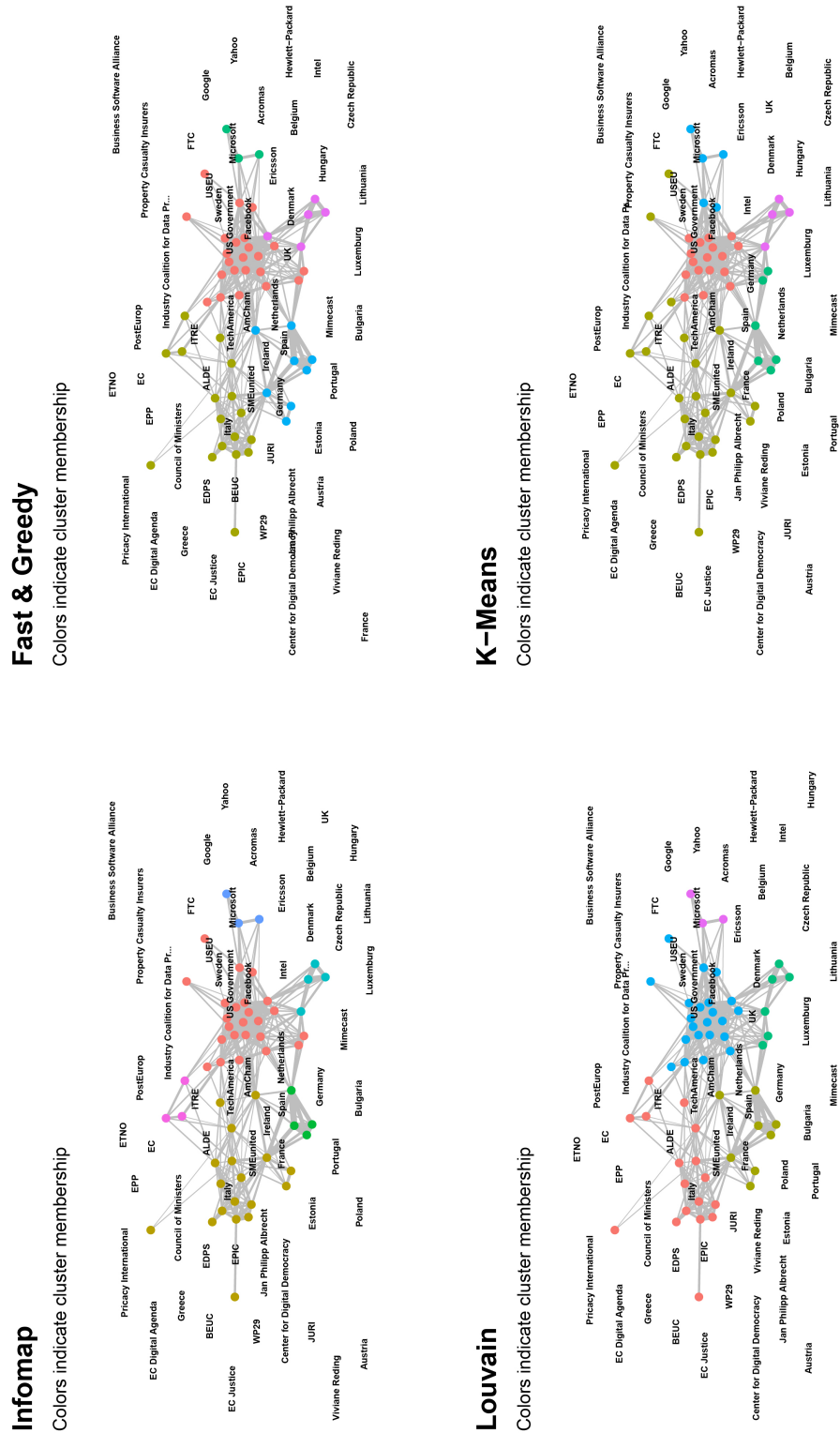
Figure 29: Clustering algorithms for the first period
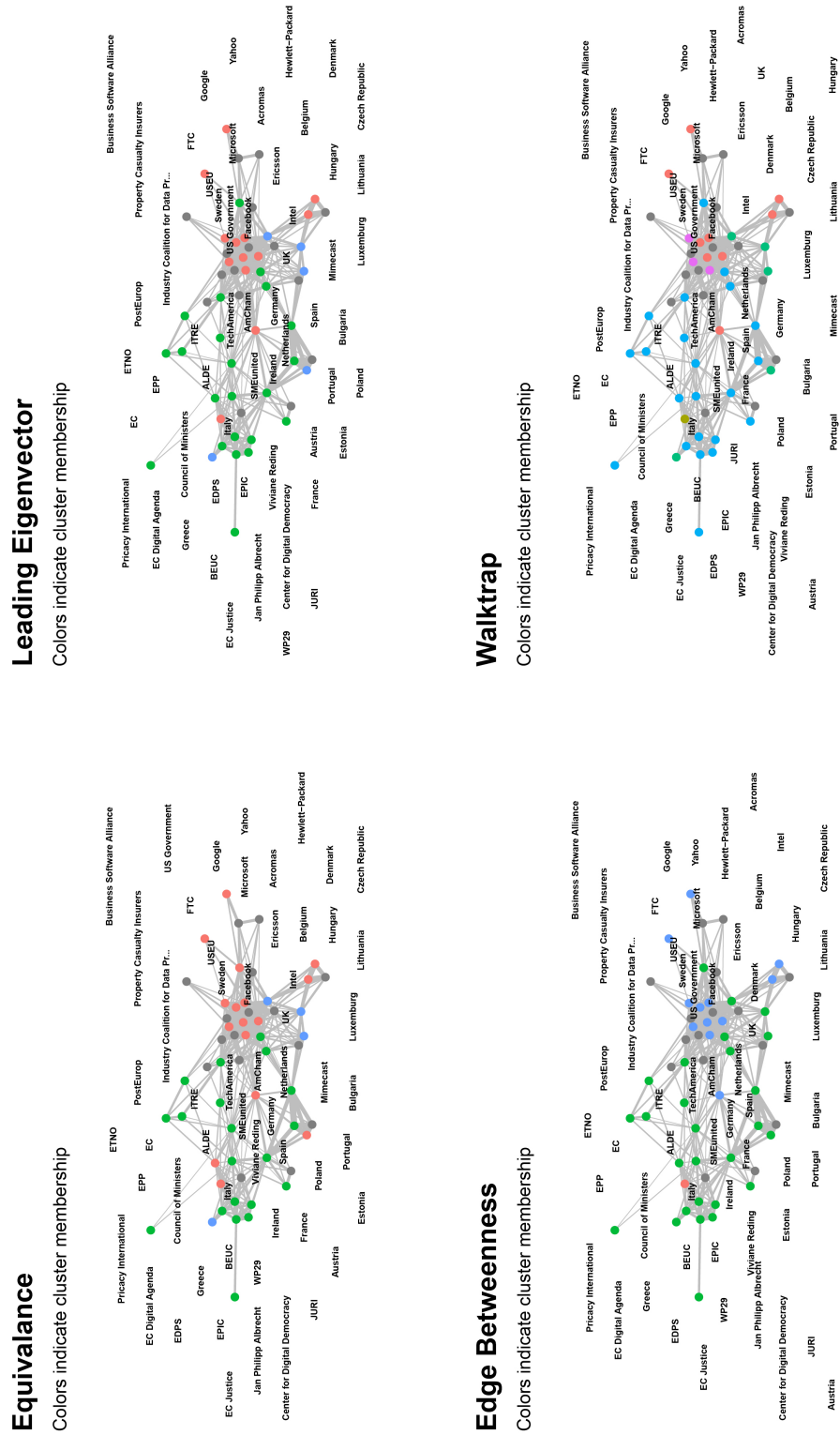
Figure 30: Clustering algorithms for the second period
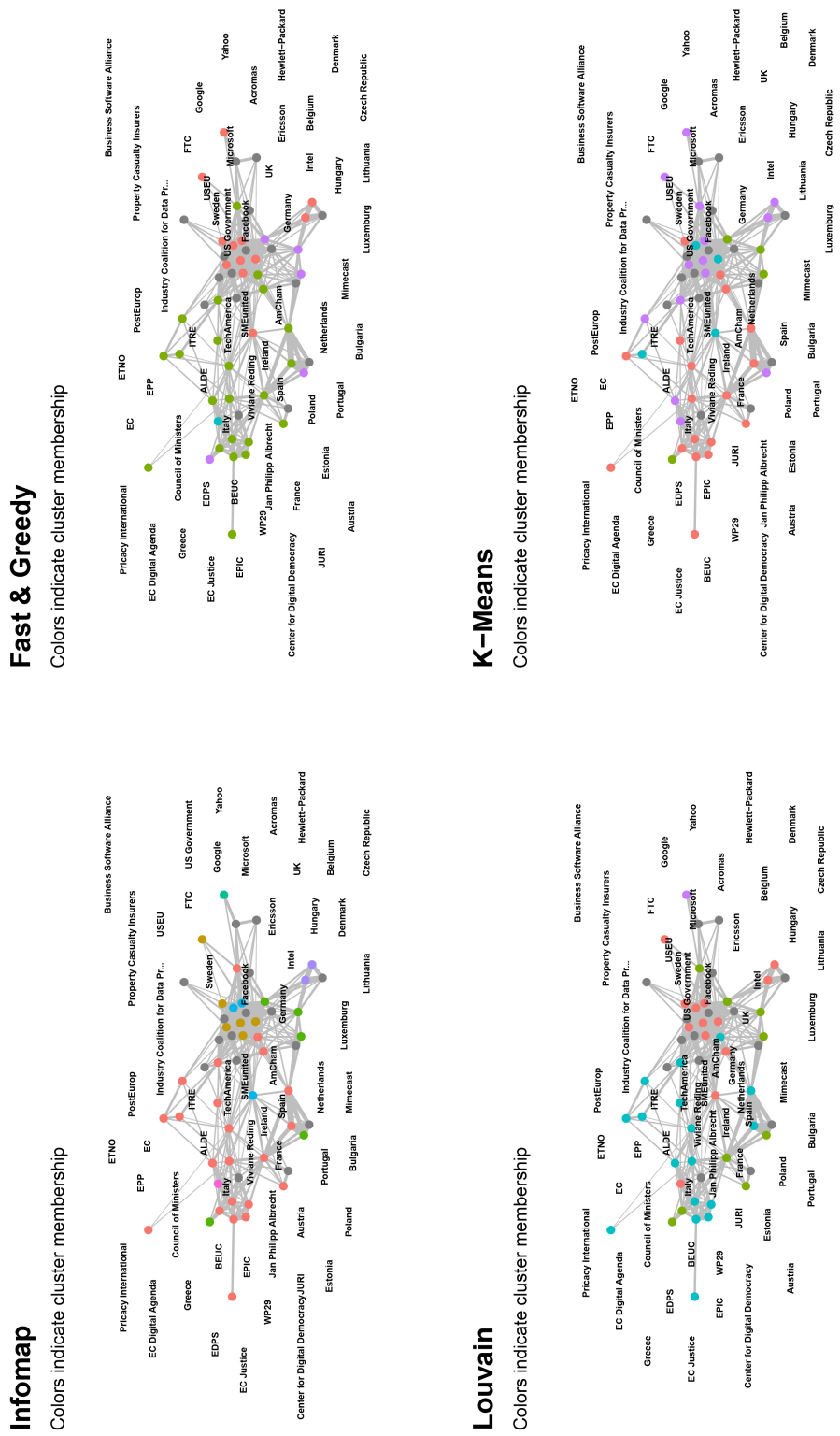
Figure 31: Clustering algorithms for the second period
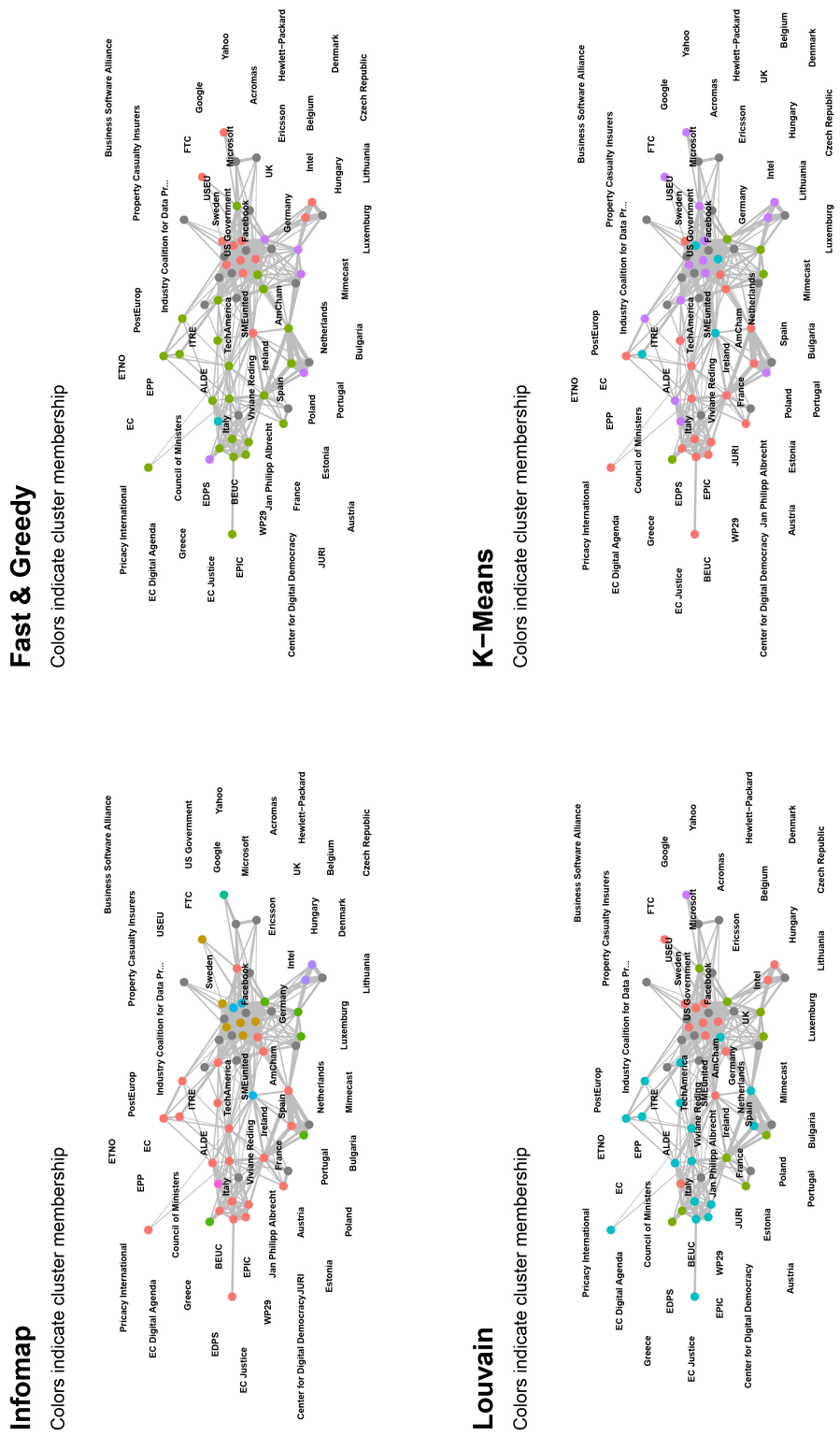
Figure 32: Clustering algorithms for the second period

C   Appendix: Talkin' about Digitalization

C.1   Communicative Discourse

The communicative discourse consists of 6235 newspaper articles collected from 40 newspapers via Factiva (see Table 14 for an overview). To be part of our sample, articles had to contain at least one reference to the

gig economy **OR** (automation/robotization/artificial intelligence) **AND** (job **OR** jobs **OR** work) **OR** fourth industrial revolution **OR** industry 4.0

To make it more likely that articles were really about these topics and did not just contain a single mention somewhere in an otherwise unrelated text, these search strings had to appear in the headline or the lead paragraph of articles. The choice of search strings was meant to ensure that the discourse on the digital future of work is represented in its entirety. In countries where gig economy is uncommon and did not yield many results, we included equivalent language-specific terms such as ubérisation in France. For each country, we tried different combinations of search strings and manually checked whether they work, i.e.: do they result in a number of articles comparable, given the country's size, to other countries? Do they return articles that cover what we are interested in?

Another potential problem is that the term industry 4.0 is relatively specific (but not exclusive) to some countries (Germany, Italy). We therefore also included the term fourth industrial revolution (in addition to robotization and automation), which should ensure that a higher proportion of industry reference really is due to the fact that these countries talk more about industrial issues – and not due to the fact that there is a terminological bias in our sample.

A final problem is that the term gig economy is used more broadly in the UK (and Ireland), and not just referring to digital labor platforms. We do want to capture when gig work and

digital gig work are discussed together, but we do not want articles that just talk about gig work in ways that articles in other countries would talk about precarious work. To remedy this, we removed articles that did not contain at least one reference to specifically digital aspects of the gig economy (such as Uber, digital platform, etc.).

We also skimmed over all articles and manually removed those that were still not really related to our topic of interest. In a last step, we removed very long (>30000 characters) and very short (<200 characters) articles. All in all, our goals was to make the articles included in our sample as relevant as possible. This means much less noise in our data than had we simply tried to maximize the number of articles based on relatively general search strings.

Table 14: Newspaper Corpus Overview

Newspaper	Newspaper Leaning	Number of Articles
France		
L'Humanité	(center-)left	93
Les Echos	(center-)right	389
Le Figaro	(center-)right	119
La Croix	(center-)right	30
Le Monde	center-left	138
L'Opinion	centrist	85
Capital Finance	centrist	12
Germany		
Süddeutsche Zeitung	(center-)left	233
Der Tagesspiegel	(center-)left	135
Deutschlandfunk	(center-)left	76
DIE ZEIT	(center-)left	45

Table 14: Newspaper Corpus Overview *(continued)*

Newspaper	Newspaper Leaning	Number of Articles
taz - die tageszeitung	(center-)left	33
Die Welt	(center-)right	239
Handelsblatt	centrist	466
Ireland		
The Irish Times	(center-)left	103
Irish Independent	(center-)right	42
The Irish Examiner	centrist	24
Italy		
La Repubblica	(center-)left	264
Il Sole 24 Ore	(center-)right	400
Corriere della Sera	centrist	656
La Stampa	centrist	103
Poland		
Rzeczpospolita	(center-)right	290
Gazeta Wyborcza & Wyborcza.pl	centrist	109
Gazeta.pl	centrist	44
Dziennik Gazeta Prawna	centrist	24
Wyborcza.biz	centrist	18
Spain		
El País	(center-)left	330
El Periódico	(center-)left	93
La Vanguardia	(center-)right	194

Table 14: Newspaper Corpus Overview *(continued)*

Newspaper	Newspaper Leaning	Number of Articles
ABC	(center-)right	93
El Mundo	centrist	81
Sweden		
Aftonbladet	(center-)left	23
Svenska Dagbladet	(center-)right	100
Dagens Nyheter	centrist	190
Business Post	centrist	80
United Kingdom		
Guardian/Observer	(center-)left	264
Telegraph/Sunday Telegraph	(center-)right	245
Financial Times	centrist	191
Independent/Independent on Sunday	centrist	181

C.2   Coordinative Discourse

Our coordinative discourse consists of 2337 documents. To enter our corpus, documents had to directly deal with either digitalization of production processes (automation, robotization, Industry 4.0) or new, digitally-enabled forms of work (platform economy, gig work). While the bulk of documents are standalone, some of them are the result of splitting apart longer documents with several sub-chapters.

Documents were manually collected from the websites of policy actors. We focused on the major social partners, namely governments, employer organizations, and trade unions. The government category includes relevant ministries such as those charged with innovation, work,

technology, or social policy. Generally, we selected employer organizations that are part of Business Europe. But since our goal is to obtain documents from the most representative policy actors in a country, we also used – when available – qualitative data from DIRESOC Project, whose country reports provide important information about the importance of specific social partners. When an organization did not belong to Business Europe, but was mentioned by DIRESOC country reports, we included it. We also gave centrality to representativeness when selecting trade unions.

We chose unions that are part of the European Trade Union Confederation (ETUC). Following the same logic as in the case of employer organizations, we triangulated this criterium with DIRESOC country reports. In addition, if actors were considered relevant based on country-specific knowledge but were not part of our sample so far, we still included them as in the case of the German IGMetall or the British IWGB. Due to linguistic barriers, we asked to native speakers to collect policy documents on Poland and Sweden. We asked them to follow the guidelines described above.

C.3   Details on Methods

C.3.1   Sentiment Analysis

In the paper, we use a dictionary-based approach to sentiment analysis but complement this approach with natural language process in order to allow us to account for negators, amplifiers and deamplifiers. We used standard negators, amplifiers and deamplifiers obtained from the lexicon package.

We performed our analysis with four different dictionaries:

– the AFINN dictionary developed by (Nielsen 2011);

– the Bing sentiment lexicon developed by Hu and Liu (2004);

– the NRC Word-Emotion Association Lexicon developed by Mohammad and Turney (2010); and

– the syuzhet dictionary (and accompanying R package) developed by Matthew Jockers and the Nebraska Literary Lab (Jockers 2017).

While these dictionaries are widely used and relatively general in purpose, we used them all in order to make sure that our results are not driven by the particularities of any one of these dictionaries. In case of the NRC dictionary, we did not use their emotion-based dictionaries (such as those for anger, fear, or hope) but only those for positive and negative terms. The afinn and syuzhet dictionaries have a higher resolution than bing and nrc by scoring words not just as negative (-1) and positive (+1) but allowing more gradation. We transformed these higher-resolution scales to a binary positive-negative score for both technical reasons and to provide more robust estimates. After all, whether a word is positive or negative is a much more straightforward question than whether a positive word is quite (+3), very (+4) or extremely (+5) positive, especially across different contexts and for machine-translated documents.

The strong similarities across dictionaries make us confident that the differences we measure are real differences, particularly at the bottom and top of the distribution, on which we focus in the paper (note that we don't discuss the rather small differences between Germany, France and Spain).

C.3.2 Keyword Extraction Techniques

C.3.2.1 RAKE

The RAKE – or rapid automatic keyword extraction – algorithm starts from the idea that keywords usually contain several informative words bur rarely punctuation or stopwords (Rose et al. 2010). It thus first tokenizes a given text, using spaces and punctuation to break

it at word delimiters. It then creates sequences of contagious words, so called candidate keywords. For example, the short text "robots and artificial intelligence will change the nature of work and our work life balance" will be tokenized as follows:

["robots", "and", "artificial", "intelligence", "will", "change", "the", "nature", "of", "work", "and", "our", "work", "life", "balance"]

Reading from left to right, the algorithm then creates candidate keywords every time a common stopword is encountered, like this

["robots", "artificial intelligence", "change", "nature", "work", "work life balance"]

Next, a score is created using the following formula:

$$wordscore = \frac{degree(word)}{frequency(word)}$$

Frequency refers to the number of times a word appears in the list of candidate keywords.

$frequency(robots) = 1,$

$frequency(artificial) = 1,$

$frequency(intelligence) = 1,$

$frequency(change) = 1,$

$frequency(nature) = 1,$

$frequency(work) = 2,$

$frequency(life) = 1,$

$frequency(balance) = 1$

Degree refers to how frequently a word co-occurs with other candidate keywords in a given text. This is equivalent to the number of times a word occurs in the candidate keywords that contain this word (a higher word degree can therefore also indicate that it appears in longer candidate keywords):

$frequency(robots) = 1,$

$frequency(artificial) = 2,$

$frequency(intelligence) = 2,$

$frequency(change) = 1,$

$frequency(nature) = 1,$

$frequency(work) = 4,$

$frequency(life) = 3,$

$frequency(balance) = 3$

As we saw, the word score is proportional to the degree of word and inversely proportional to its frequency. RAKE thus favor words that occur not too frequently but often in combination with other keywords, especially long ones. To calculate the candidate keyword score, we add the word scores of its constituent parts and take a the highest-scoring percent (e.g. the highest-scoring 33%) as our keywords to be extracted. For our example, this would look as follows:

$score(robots) = 1/1 = 1,$

$score(artificial\ intelligence) = (word_score(artificial) = 2/1 = 2 + word_score(intelligence) = 2/1 = 2) = 4$

$score(change) = 1/1 = 1,$

$score(nature) = 1/1 = 1,$

$score(work) = 4/2 = 2,$

$score(work\ life\ balance) = (word_score(work) = 4/2 = 2 + word_score(life) = 3/1 = 3 + word_score(balance) = 3/1 = 3) = 8$

This means that "work life balance" and "artificial intelligence" were selected as our most central keywords. Rake was implemented using the UDPipe R package (Straka and Straková, 2017).

C.3.2.2   Co-occurrences

We also constructed bigrams based on their number of co-occurrences, either within a skip-gram of size four or within a sentence. In the former case (reported in the paper), we counted bigrams when words followed one another directly or when we skipped up to three words in between. In the latter case (reported here), we counted bigrams when they occurred within the same sentence. The results are largely similar to those based on skipgrams, although produce somewhat more sensible results since the sentence restrictions is less sensible as the skipgram-context restrictions (as the latter is narrower).

C.3.2.3   Textrank

Due to space constraints, we did not include Textrank-based keywords in the paper. However, as Figure C.3.2.3 shows, the words with the highest PageRank score support our general findings. Textrank is a graph-based ranking model that identifies keywords by constructing a word network based on whether two words follow one another (or co-occur in a window of N words) (Mihalcea and Tarau 2004). If they do, an edge is created between them, the weight of which depends on how often they follow each other in a given text. Next, the PageRank algorithm is applied to this network to rank words in their order of importance (this is what is reported in Figure C.3.2.3). Relevant words that follow one another can then be combined to obtain keywords. Textrank was implemented using the R textrank (Wijffels 2019).

C.3.3   Word Vectors

In addition to the analysis presented in the paper, we also use word vectors to identify semantic similarities among words and to assess whether they systematically differ across countries for key terms of interest. Word vectors are based on the idea that words that appear near each other have similar meanings. Or, in John Rupert Firth famous phrase, we
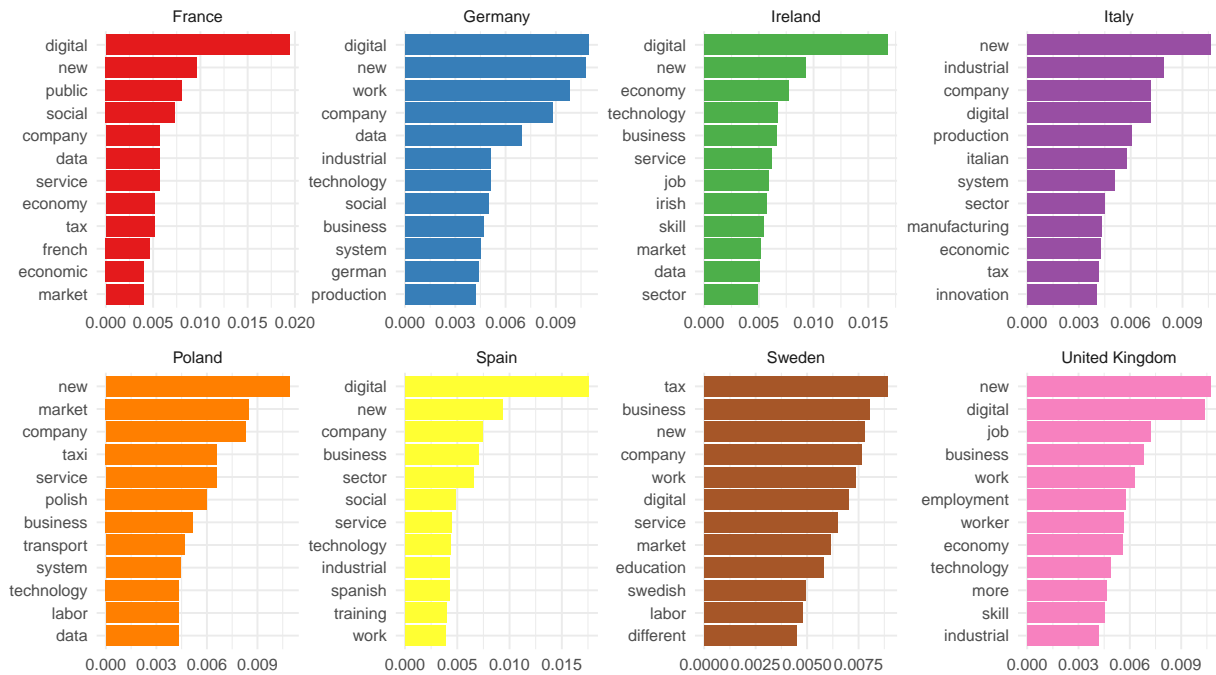
Figure 33: Keywords with the highest PageRank score

'know a word by the company it keeps' (Spirling and Rodriguez 2019). Words are mapped to a multidimensional vector that represents its 'meaning', with the different dimensions representing different semantic or syntactic connotations of a word. Somewhat unorthodoxly, we used simple word counts and matrix factorization to calculate word vectors (Moody 2017). We used a moving slide window to create skipgrams of length eight and then calculated the pointwise mutual information (PMI) metric for all word pairs (see, Silge 2017). This gives us information about which words occur together (within a moving window of size 8) more often than expected based on how often they occur on their own. PMI is simply the logarithm of the normalized skipgram probability which in turn is the result of dividing the frequency of two words co-occurring in a skipgram by the frequencies of their individual occurrence. This is a well-understood metric for how frequently two words occur jointly rather than independently (Moody 2017). We then cast a sparse matrix where each row represents word 1 and each column word 2 and each value is the PMI calculated above. From there, we reduce

the dimensionality of that matrix using singular value decomposition, specifying the number of principal components to 300 – a value common in the word embeddings literature. Using a tidy approach, we now have a tibble of word vectors which we can use to find synonyms (or analogues, etc.).

Here, we first provide additional examples for this synonym task which demonstrate that our approach reliably finds highly plausible synonyms. As Table 15 shows, our approach works surprisingly well given that it is much less complex and computationally demanding than using neural networks, and given the relatively small size of the data. We can then do the same for terms that are of more theoretical interest. Table 16 depicts a number of such words. Basically, what we do here is to zoom in on words of interest by looking at nearby vectors in a vector space, that is, by looking at synonyms. We see, for example, that in Italy and Germany terms like '4.0' or factory are closely associated with future and work, reflecting the importance for both countries of getting digital manufacturing right. In line with what we found in the paper, in German discourse the future is viewed in more positive terms, with work-life-balance issues taking up a prominent place (time, family, unpaid). The French discourse, to give a second illustrative example, reflects the political commitment to making France a digital frontrunner, and the concomitant entrepreneurial role ascribed to the state in general and the National Digital Council (Conseil National du Numérique) in particular. Accordingly, words like project, program and plan are associated with the future, and words like ambition, national, or public are associated with digital. A final example are the UK and Ireland where work is closely associated with insecurity, reflecting the often-precarious nature of these countries' labor markets.

Table 15: Synonyms for capital, gates, google, and public

country	capital	gates	google	public
France	capital, venture, funds, fund, investment, ventures, partners, private, equity, angels, risk, seed, fcpr, stage, scr	gates, musk, elon, bill, stephen, hawking, boss, ne, pas, tesla, bezos, ou, late, etats, spacex	google, apple, facebook, amazon, search, microsoft, 2012, maps, engine, twitter, gmail, hotel, youtube, beat, 2010	public, innovation, procurement, private, services, data, service, action, digital, economy, support, policies, social, purchasing, participation
Germany	capital, venture, investment, fund, wealth, investors, start, ups, money, profits, short, investments, taxes, income, invested	gates, founder, boss, bill, tesla, microsoft, day, musk, elon, fair, cyberattacks, thousands, shareholders, hanover, march	google, facebook, apple, amazon, microsoft, giants, valley, alphabet, search, corporations, alexa, silicon, uber, pichai, ibm	public, administration, service, transport, services, scientific, insurance, private, defense, wlan, million, social, financial, sector, debate
Ireland	capital, allowances, venture, relief, accelerated, tax, credit, assets, investors, funding, efficient, start, expenditure, ventures, investment	gates, bill, founder, musk, elon, microsoft, apple, david, william, attendees, german, steve, stephen, japanese, phrase	google, facebook, amazon, translate, search, twitter, linkedin, ebay, youtube, recognition, marketplaces, siri, card, offline, marshall	public, sector, services, consultation, private, healthcare, service, administration, bodies, community, security, office, 1.1, costs, national
Italy	capital, human, investments, venture, equity, investment, foreign, funds, tangible, fixed, assets, intangible, loans, banks, depreciation	gates, bill, elon, musk, founder, stephen, hawking, robots, tesla, robot, techno, physicist, fear, income, including	google, facebook, amazon, microsoft, giants, intelligence, artificial, apple, bezos, glass, silicon, valley, jeff, ceo, cars	public, private, administration, investment, financial, national, research, funds, intervention, finance, policies, support, debt, social, investments

Table 15: Synonyms for capital, gates, google, and public *(continued)*

country	capital	gates	google	public
Poland	capital, funds, german, foreign, venture, investors, deloitte, investment, fund, human, vc, startup, financed, ventures, investor	gates, bill, stephen, elon, musk, fears, hawking, previously, shared, race, expressed, warned, late, contact, famous	google, duplex, assistant, pichai, facebook, sundar, giant, tesla, amazon, apple, ai, conversation, alphabet, wave, presentation	public, administration, sector, private, entities, entity, information, consultations, disclosure, procurement, official, inter, isp, governmental, website
Spain	capital, venture, barcelona, ventures, madrid, human, club, corporate, 250k, 1m, seed, 500k, 2m, fund, 5m	gates, founder, bill, microsoft, rowe, philanthropist, ii, iii, farming, richard, robots, price, page, firm, vertical	google, amazon, microsoft, apple, facebook, samsung, huawei, artificial, alphabet, tecnologia, twitter, hp, intel, intelligence, netflix	public, private, administration, administrations, bodies, services, system, participation, institutions, collaboration, information, investment, agencies, entities, policies
Sweden	capital, venture, human, financing, almi, inland, loan, invest, guarantees, gains, subtotal, sme, productivity, private, investments	gates, founder, bill, musk, elon, steven, recently, tesla, silicon, valley, hawking, ingvar, stephen, physicist, henry	google, microsoft, facebook, amazon, ibm, ericsson, google's, apple, behshad, behzadi, news, giants, search, volvo, investing	public, sector, private, procurement, business, service, authorities, publications, actors, activities, transport, administration, customers, publicly, services

Table 15: Synonyms for capital, gates, google, and public *(continued)*

country	capital	gates	google	public
United Kingdom	capital, venture, labour, funds, investment, equity, tech, investors, fund, markets, firm, deals, wealth, closed, trading	gates, bill, elon, musk, stephen, hawking, founder, mark, zuckerberg, warned, billionaires, www.independent.co.uk, tax, ceo, pizza	google, facebook, google's, deepmind, microsoft, search, google's, siri, amazon, apple, alphabet, schmidt, deep, owned, bought	public, sector, local, services, private, policy, libraries, radio, content, investment, finances, england, health, report, test

Table 16: Word vector similarities for different keywords across countries

country	digital	future	work
France	digital, economy, ambition, innovation, technology, companies, public, council, society, literacy, france, national, french, appendices, sectors	future, industry, project, factory, tomorrow, program, education, european, world, labor, industrial, investments, impact, launched, plan	digital, time, economy, life, employees, workplace, employment, skills, information, mission, home, workers, labor, autonomy, technologies
Germany	digital, industry, digitization, 4.0, change, world, data, transformation, employees, capitalism, platforms, technology, future, virtual, business	future, 4.0, industry, factory, digital, world, people, digitization, change, development, machines, social, german, market, germany	digital, world, employees, family, future, 4.0, time, life, industry, intensity, people, digitization, unpaid, hours, forms
Ireland	digital, transformation, economy, internet, ai, market, technologies, single, related, business, workers, technology, innovation, infrastructure, ecosystem	future, expert, study, legal, market, systems, technologies, ability, world, 1, current, ibec, europe, trends, 27	insecure, digital, life, contracts, hours, smarter, development, one's, plan, scope, appendix, flexible, forms, insight, placements

Table 16: Word vector similarities for different keywords across countries *(continued)*

country	digital	future	work
Italy	digital, innovation, 4.0, industry, hubs, transformation, hub, technological, technologies, economy, dih, platforms, industrial, business, manufacturing	future, automation, factory, robots, revolution, interventions, people, 4.0, frey, osborne, 1, oxford, industry, press, articoli	digital, people, organization, workers, employment, production, hours, 4.0, training, labor, paper, forms, tasks, agile, world
Poland	digital, transformation, competences, innovation, economy, competence, technologies, solutions, priority, kazimierz, talents, industrial, identified, business, i.e	future, foundation, report, professions, platform, job, industry, labor, en, act, automation, field, jobs, 4.0, offers	intelligence, employees, people, artificial, automation, services, repetitive, data, routine, physical, employee, performing, actions, poland, labor
Spain	digital, industry, transformation, spain, digitization, 4.0, business, economy, companies, technologies, sector, ametic, plan, society, technology	future, author, lab, accelerator, revolution, market, bic, seedrocket, current, challenges, ventures, industrial, robots, initland, life	workers, life, hours, health, organization, jobs, people, environment, home, time, hygiene, labor, psychosocial, assessment, business
Sweden	digital, agenda, platforms, competence, services, digitization, skills, service, market, regional, economy, commission, 2015, agendas, development	future, society, commission, digitalisation, digitization, challenges, report, intelligence, space, employment, skills, artificial, world, researcher, competence	environment, digital, labor, performed, tasks, economy, market, time, tax, employment, responsibility, 24, business, platforms, workplace
United Kingdom	digital, skills, businesses, uk, technology, business, connectivity, firms, dcms, smes, infrastructure, world, future, voice, plans	future, digital, automation, http, skills, jobs, shaping, report, 5g, world, economy, infrastructure, digitalisation, tech, intelligence	people, jobs, insecure, hours, world, economy, time, life, job, balance, future, technology, employment, activities, gig

C.3.4   Topic Modelling

C.3.4.1   Preprocessing

For pre-processing, we used annotated part-of-speech tags to select nouns, adjectives, and verbs. We discarded punctuation and stopwords as well as semantically less meaningful parts of speech like determiners or names entities like dates. This seems justifiable, given that we are not interested in linguistic style or subtle word use but rather in the broad thematic contours of discourse. We also discarded location-specific information like capital cities or languages to avoid linguistically (as opposed to substantively induced) country-effects.

We also constructed a list of frequent n-grams such as artificial intelligence, machine learning, virtual reality, big data, tax evasion, further training etc. This list, which contains 82 n-grams, was manually compiled based on the most frequent collocations identified in the text (with log-frequency biased mutual dependency used as the ordering metric). We see no reason not to include such information as there are obvious theoretical reasons to prefer such n-grams to their separate constitutive unigrams.

We lowercased but did not stem our document feature matrix as the difference between singular and plural forms can be meaningful while the difference between uppercased and lowercased words is most likely not – at least in the types of policy and newspaper documents we are looking at. For example, it can make a difference whether a text speaks of robots in the plural – as in the abstract threat that robots pose ('the robots will take our jobs') – and a robot in the singular, which is more likely to be described as something useful or positive ('the robot does x').

We also removed remaining word trash such as html tags, common untranslated words (e.g. della), as well as country-specific information using the named entity information. This latter removal is meant to ensure that differences in topic prevalence are, as much as possible, the result of substantive differences and not of local vernaculars or parochial word usage.

Lastly, we removed words that appeared in more than 50% of documents as such words do not contain much information (e.g. digital). We also removed words that appeared in less than 0.5% of documents. While this is a somewhat arbitrary (although commonly used) standard, qualitative inspection revealed but proofed to be a useful threshold that removed many very specific and rare terms while still retaining un-common but not unimportant words.

C.3.4.2   Number of Topics

We chose a topic model with k = 60 topics. While our decision was assisted by several metrics, the choice was ultimately a theoretical one, based on two criteria. First, given that we are primarily interested in comparing the content of discourse, we want our topics to be broad enough to be at least potentially relevant in different countries, but narrow enough to capture the themes we are interested in (e.g., automation vs compensation). On the one hand, we want obtain topics that are broad enough to be at least potentially relevant in different countries and for different actors. If we chose k=350, for example, we might get many topics that are about particular events in a country (e.g. the introduction of a new technology at a particular company), and will most likely not be discussed in other countries. On the other hand, we want enough topics to allow for meaningful differences to emerge. If we only had, say, 5 topics, these will be too coarse to say anything interesting about cross-country or other differences. Second, while topics are often considered "as an operationalization of policy frames" (Gilardi, Shipan, and Wüest 2020, 3), topic models easily uncover more sensible topics than there could possibly be frames (Nicholls and Culpepper 2020, 8). We therefore opted for using a higher number of topics than we would have had we assumed that topics directly capture real-world frames. We then aggregated these topics into "frame packages" (Nicholls and Culpepper 2020, 11) that capture discursive foci that are neither too broad nor too narrow and are therefore theoretically interesting. For example, topics on

industry 4.0, the technological transformation of the production process, cloud computing, or smart factories were combined into the frame package 'digital manufacturing', which covers debates on how digitalization is changing industrial production and manufacturing.

Based on our intuition about which k should yield topics that are both broad and interesting, we wanted k to be somewhere between 25 and 75. We therefore run topic models with ks between 10 and 100 so as to allow various quantitative metrics to guide our decision. Figure 34 plots four metrics – semantic coherence, exclusivity, residuals, and held-out-likelihood – for models with different ks. Semantic coherence is a metric that measures how often the most frequent words in a topic actually co-occur in a document. While semantic coherence has been shown to correlate well with human judgments of topic quality, it has been shown to increase when topics are dominated by very common words (Roberts 2018). Exclusivity, by contrast, penalizes models with few dominant top words. It measures the share of top words which are distinct to a given topic, thus creating something of a trade-off with semantic coherence.

The residuals capture overdispersion of the variance of the multinomial in stm's data generating process (Roberts 2018). Higher values indicate overdispersed residuals, implying that the latent topics cannot account for the overdispersion and more topics may be needed to use up the extra variance. Held-out likelihood estimates the probability that words appear in a document when these words have been removed before the estimation. It is a measure of predictive performance, with higher values indicating better performance.

Hence, we want semantic coherence, exclusivity, and held-out likelihood to be as high and the residuals to be as low as possible. Topics numbers higher than the number of plausible individual frames on digitalization - of which there can only be so many - are justifiable as we can combine different topics to frame packages (Nicholls and Culpepper 2020). In the end, we settled for 60 topics, which the quantitative metrics supported and which also made

sense qualitatively. It has to be said, though, that topics were very similar and stable with

10 or even 15 fewer or more topics.
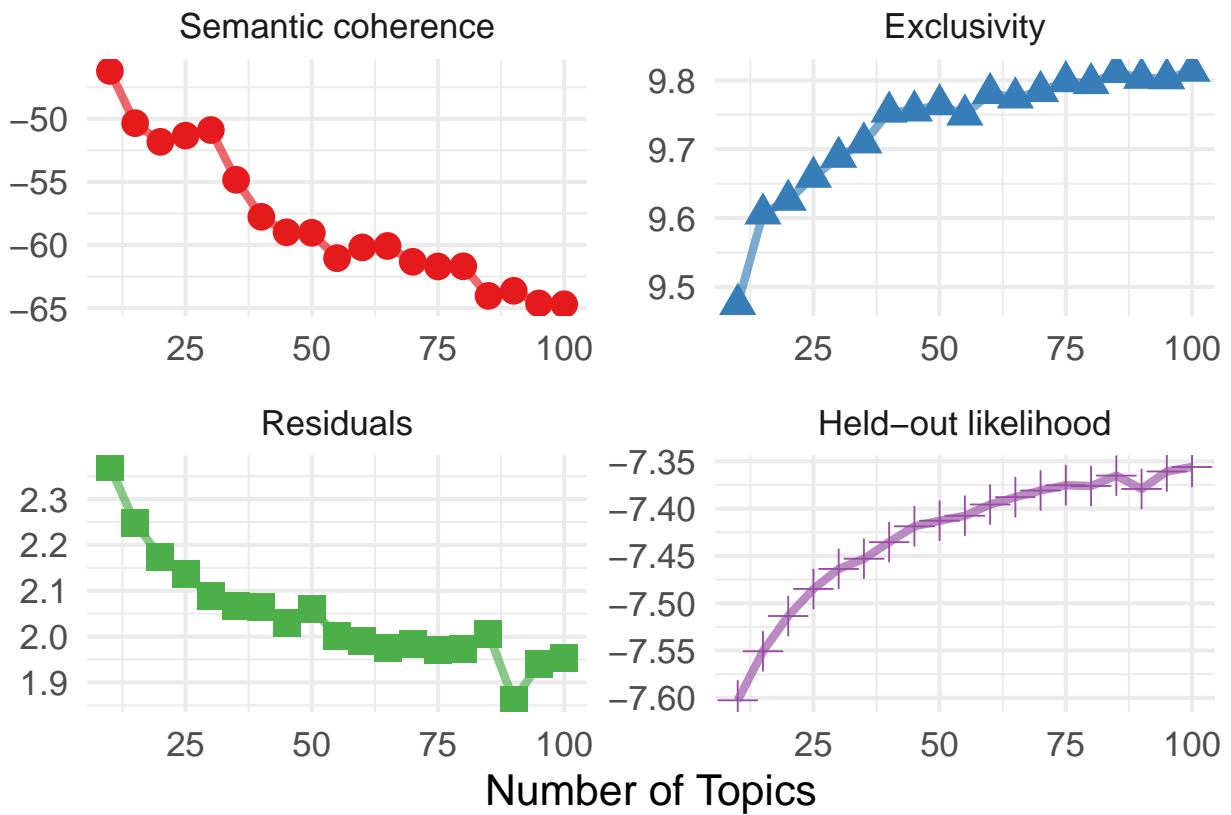
Figure 34: Model diagnostics for different numbers of topics (10 to 100)

C.3.4.3   Validation

While topic models are powerful tools "for discovering and exploiting the hidden thematic structure in large archives of text" (Blei 2012, 82) they are no magic bullet and need to be carefully interpreted and validated. Validation requirements are somewhat lower if the main goal is not to measure some pre-specified latent trait but, as is the case here, to explore and usefully summarize texts in order to facilitate comparisons (cf. Ying, Montgomery, and Stewart 2019, 1–2). It is nonetheless crucial to at least make this process transparent and to ideally also establish "semantic validity" (Quinn et al. 2010, 216; Ying, Montgomery, and Stewart 2019, 6) by showing that topics are coherent and make sense to external annotators. Table 7 shows a complete list of topics and, when applicable, the frame package to which we assigned this topic. We only assigned topics to one of the 6 frame packages presented in the paper, which does not mean that the others could not have been assigned to different frame packages or that other topic-frame-package combinations would not have been possible. The labeling of topics as well as their assignment to frame packages was an interpretative process, based on the most *FR*equent and *EX*clusive Words (FREX) and theoretical reasoning. For this reason, we make the topic terms transparent, and we externally verified the semantic validity of our topics. That is, we checked whether they make sense to human readers and whether they can be semantically distinguished from other topics by asking two external researchers to complete two tasks (Chang et al. 2009; Ying, Montgomery, and Stewart 2019). First, we gave them the list below but instead of only the correct category label, we gave the correct label plus two other randomly chosen labels. The task was to pick the correct label. Second, we gave them a list with the top 4 FREX terms plus the highest FREX term from another randomly selected topic. Their task was to correctly identify the 'incorrect' word. In the first task, they, on average, picked the right topic label 85 % of the time; in the second task, they chose the non-fitting word 73,3 % of the time. These results compare well with

results from similar tasks (Ying, Montgomery, and Stewart 2019) and make us confident that our topic model produces semantically valid topics.

Table 17: Complete List of Topics and Topic Categories

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
1	artists, admission, story, father, artist, love, art, scene, journalist, film, writer, woman, stories, watch, novel, book, friend, exhibition, journalists, famous	Art	/
2	ambition, inclusion, opening, actors, mediation, open, public, literacy, communities, citizens, practices, citizen, empowerment, administrations, encourage, governance, uses, stakeholders, recommends, administrative	Digital Government	Digital Industrial Policy
3	exposure, prevention, occupational, accidents, preventive, safety, psychosocial, risks, accident, chemical, healthy, exposed, dangerous, n°, substances, protective, agents, diseases, fax, aspects	Occupational Safety	Status Platform Workers
4	industrial, industry, revolution, manufacturing, automotive, production, factories, transformation, smart, industries, advanced, leading, energy, robotics, chains, electronics, competitiveness, strategy, 3d_printing, manufacturers	Industry 4.0	Digital Manufacturing
5	revenue, waste, circular_economy, recycling, materials, environmental, packaging, raw_materials, recovery, circular, reuse, emissions, material, water, disposal, collection, energy, carbon, sustainability, renewable	Sustainability	/
6	patients, patient, healthcare, medical, care, hospital, health, medicine, doctors, doctor, hospitals, benefiting, clinical, drug, treatment, diseases, disease, treatments, drugs, cancer	Health Care	/
7	artificial_intelligence, ai, machine_learning, algorithms, intelligence, algorithm, artificial, computer, language, scientists, ethical, computers, ethics, deep, humans, machine, recognition, neural, images, human	Artificial Intelligence	Automation & Compensation
8	differences, table, digitization, index, percentage, degree, proportion, significant, size, family, smes, workload, intensity, difference, higher, scope, affected, expectations, compatibility, variables	Statistics	/
9	trades, uberization, salaried, collaborative_economy, social_dialogue, collective, subordination, mobilization, impacts, cooperative, status, telework, branch, anticipate, profession, generalization, autonomy, disconnect, subject, evolve	Platform Work	Status Platform Workers

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
10	taxi, ordering, accounting, license, permit, traffic, center, centers, amendment, vehicle, section, authority, holders, shall, vehicles, equipment, regulations, reservations, licenses, permits	Taxi Regulations	/
11	cloud, data, big_data, computing, customer, applications, digital_transformation, solutions, analytics, digital, technologies, blockchain, iot, devices, customers, systems, virtual, technology, processing, things	Cloud Computing	Digital Manufacturing
12	entrepreneurs, academics, investors, financing, entrepreneurship, loans, capital, credit, bank, start_ups, startups, loan, entrepreneur, growth, entrepreneurial, funds, venture_capital, academic, investor, startup	Entrepreneurship	/
13	transformation, technological, productive, strategies, competitive, textile, processes, value_chain, sector, sectors, efficiency, process, components, enablers, technologies, digitization, integration, competences, elaboration, structured	Transformation of the Production Process	Digital Manufacturing
14	determination, data_protection, flexibility, flexible, collective_agreements, collective_bargaining, co, working, interests, councils, seize, federal, social_partners, employers, unions, shaping, participation, options, working_conditions, statutory	Work Councils	/
15	year, turnover, quarter, sales, first, months, revenues, largest, last, half, annual, group, third, grow, forecast, total, forecasts, figures, compared, trend	Economic Statistics	/
16	digital_skills, skills, skill, employability, learning, graduates, literacy, training, cognitive, apprenticeship, solving, career, transversal, learn, mastery, apprenticeships, digital_technologies, careers, qualifications, soft	Digital Skills	Digital Investments
17	cars, car, electric, driving, driverless, roads, autonomous, bus, truck, vehicles, trucks, road, vehicle, parking, cities, drones, city, wheel, aviation, flight	Autonomous Vehicles	Automation & Compensation
18	theme, path, capable, born, excellence, explains, innovation, starting, chain, widespread, dedicated, destined, underlines, universities, shapes, choices, center, leap, thanks, hi	Other	/

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
19	robot, robots, robotic, robotics, humans, arm, arms, humanoid, programmed, hands, brain, beings, science_fiction, vacuum, human, 1950s, body, colleague, movements, moves	Robots	Automation & Compensation
20	profiles, degrees, artistic, occupation, animation, technicians, sound, competences, profile, audiovisual, graphic, content, programming, design, graduated, designer, visual, professionals, training, techniques	Creative Skills	Digital Investments
21	labour, independent, platform, knowledge_intensive, platforms, freelancers, clients, professionals, firms, earnings, freelance, transaction, might, tasks, firm, wage, skilled, temporary, consultants, organising	Independent Platform Work	Status Platform Workers
22	policies, productive, social_dialogue, administrations, competitiveness, reforms, employment, labor, essential, digitization, fabric, adequate, priority, youth, country, commitment, necessary, deficit, regulatory, reform	Competitivness Reforms	Digital Industrial Policy
23	talent, recruitment, managers, candidates, hr, executives, hiring, leadership, recruit, candidate, recruiting, surveyed, teams, respondents, leaders, believe, talents, professionals, management, selection	Human Resources	/
24	higher_education, college, education, university, courses, educational, students, student, vocational, colleges, universities, continuing_education, secondary, doctoral, institutions, programs, school, exam, lifelong_learning, grants	Higher Education	Digital Investments
25	uber, taxi_drivers, drivers, delivery, passengers, restaurants, protest, deliveries, riders, eat, driver, strike, taxis, couriers, app, bicycle, restaurant, passenger, rings, corporations	Gig Work	Status Platform Workers
26	graph, television, video, advertising, music, content, games, audiovisual, publishing, books, consumption, internet, tv, newspapers, turnover, game, billing, film, radio, distribution	Multimedia	/
27	think, thing, say, want, lot, going, look, talk, get, things, much, ca, feel, money, got, bad, tell, ask, happy, go	Other	/

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
28	jobs, automation, occupations, automated, workforce, skilled, productivity, replaced, wages, wave, inequality, job_losses, likely, rise, risk, advances, economist, roles, routine, economists	Automation	Automation & Compensation
29	sharing_economy, platforms, consumer, transactions, sharing, rental, collaborative_economy, users, rent, legal, platform, trader, law, liability, disputes, housing, dispute, rules, legislation, user	Sharing Economy	/
30	amortization, hyper, investments, incentives, super, depreciation, tax_credit, interventions, machinery, plan, continuation, incentive, maneuver, budget, decree, relief, subsidized, purchase, extension, credit	Investment Incentives	Digital Industrial Policy
31	century, humanity, lives, era, book, societies, capitalism, history, 21st_century, planet, 19th, intellectual, live, philosopher, revolutions, revolution, imagine, man, invention, let	Digital Future	/
32	agenda, member, regional, issues, reports, representatives, adopted, agendas, members, report, proposals, commission, consultation, county, forum, follow, dialogue, meetings, appointed, meeting	EU Agenda	/
33	labor_market, unemployment, proportion, unemployed, part_time, restructuring, educated, unions, structural, salary, increased, decreased, groups, figure, differs, wage, longer, union, extent, fixed	Labor Market Inequality	Automation & Compensation
34	smes, promote, projects, initiatives, tourism, actions, promotion, promoting, collaboration, facilitate, initiative, aimed, awareness, entities, implementation, aid, support, objectives, programs, lines	SME Support	Digital Industrial Policy
35	tech, said, chief_executive, voice, chief, centre, firms, might, officer, banks, firm, banking, bank, organisations, founder, seeing, centres, lawyers, biggest, office	Business News	/
36	broadband, infrastructure, connectivity, network, networks, telecommunications, energy, mobile, coverage, smart, operators, connected, deployment, fiber, high_speed, fast, connections, electricity, wireless, buildings	Digital Infrastructure	Digital Investments

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
37	municipalities, municipal, respondents, extent, individuals, assignments, survey, home, estimated, municipality, libraries, reduction, mail, costs, effect, net, estimate, expected, websites, differences	Municipalities	/
38	union, bargaining, relations, representation, autonomy, citizenship, inequalities, social, institutional, organizational, contractual, democratic, collective, participation, decent, reflection, organization, labor, forms, relationships	Industrial Relations	/
39	incidents, security, attacks, trust, cyber, privacy, expressed, page, answer, cybersecurity, suffered, continuity, attack, communications, micro, files, incident, consulted, damage, survey	Cyber Attacks & Data breaches	/
40	further_training, qualification, operational, employees, councils, mechanical_engineering, department, continuing_education, processes, requirements, learning, networking, topics, agile, participation, map, departments, digitization, involved, employee	Further Training	Digital Investments
41	programme, deliver, businesses, organisations, programmes, ensure, enable, enterprise, ensuring, delivering, adoption, local, wider, approach, address, supporting, engagement, digitalisation, range, vital	Business Support	Digital Industrial Policy
42	free, personal_data, users, user, search, neutrality, web, site, exploitation, sites, online, loyalty, advertising, consent, collection, audience, engine, freedom, blogs, terminals	Data Protection & Internet Regulation	/
43	professions, robotization, disappear, automation, routine, qualified, specialists, jobs, replace, tasks, threatened, original, replaced, job, labor_market, repetitive, profession, machines, experts, author	Automation	Automation & Compensation
44	gig_economy, minimum_wage, tribunal, gig, riders, rights, ruling, holiday_pay, protections, insecure, couriers, contractors, contracts, pay, sick, status, workers, worker, entitled, courier	Gig Worker Rights	Status Platform Workers
45	networked, topic, networking, medium_sized, boss, manufacturer, federal, wants, digitalization, mechanical_engineering, sees, politics, says, location, standards, board, corporations, association, enormous, head	Digital Manufacturing	Digital Manufacturing

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
46	plan, client, clients, brand, team, store, customer, best, marketing, product, ideas, purchase, experience, mind, channels, sell, brands, channel, commerce, moment	Business Strategy	/
47	exports, scenarios, crisis, elaborations, imports, diversification, ranking, economies, manufacturing, weight, goods, trade, foreign, export, added, specialization, geographical, relative, recorded, dynamics	Exports	/
48	president, edition, conference, yesterday, director, meeting, explained, event, organized, vice, held, stressed, deputy, attended, presentation, speakers, dedicated, headquarters, fair, head	High-level meetings	/
49	women, teachers, school, teaching, gender, schools, female, girls, men, teacher, students, children, science, male, parents, mathematics, classroom, boys, stereotypes, educational	Women & STEM	Digital Investments
50	research, efforts, r&d, universities, innovation, researchers, funding, colleges, entrepreneurship, collaboration, grants, climate, environments, scientific, institutes, strategic, institutions, societal, evaluations, grant	Research & Development	Digital Investments
51	factory, sensors, plant, assembly, maintenance, plants, components, factories, machine, warehouse, machines, additive_manufacturing, glasses, production, logistics, printing, parts, mechanical, manufacturers, augmented_reality	Smart Factory	Digital Manufacturing
52	self_employment, work_environment, self_employed, employer, false, investigation, hired, responsibility, client, contractor, employee, persons, work-, staffing, phenomenon, assignments, self-, employed, safety, contractors	(False) Self-Employment	/
53	election, politics, politicians, political, vote, party, left, elections, presidential, voters, reform, governments, minister, immigration, wing, chairman, liberal, reforms, anti, campaign	Elections	/
54	r&d, aid, clusters, expenditure, mission, creators, high_speed, favor, patent, fund, equity, venture_capital, heart, funding, patents, innovative, deployment, incubators, funds, seed	Industrial Policy	Digital Industrial Policy

Table 17: Complete List of Topics and Topic Categories *(continued)*

Topic	Top FREX Words	Topic Label	Aggregated Topic Category
55	competition, market, markets, economy, prices, price, global, consumers, profits, players, competitors, value, currency, traditional, margins, giants, monopoly, goods, consumption, profitable	Competition	/
56	vat, taxation, article, taxable, decree, invoice, obligations, paragraph, directive, invoicing, obligation, discipline, purposes, profits, tax, art, entities, electronic, establishment, compliance	Taxation	Taxation
57	approval, tax_system, approved, tax, fees, tax_evasion, crime, investigation, fraud, taxes, applicant, abuse, revocation, grounds, nutritional, chapter, deductions, conduct, error, section	Tax Evasion	Taxation
58	competence, digitalisation, efforts, society, opportunities, development, increased, small, needed, possibilities, contribute, welfare, goals, county, industries, important, parts, actors, businesses, regional	Digital Competences	Digital Investments
59	income, pension, insurance, retirement, contributions, basic, taxes, social_security, dividends, universal, compensation, unemployment, paid, self_employed, wages, unconditional, pay, salary, allowance, welfare	Compensation	Automation & Compensation
60	disappears, choices, productivity_gains, unit, evolutions, salaried, dematerialization, developments, poses, progress, emancipation, deregulation, divide, stagnation, tion, intervention, transforms, struggles, isolation, forms	Other	/

D   Appendix: Investing in the Digital Future

D.1   Additional Information on Variables

Table 18 gives a descriptive overview of the variables used in the analysis and their source. Four (sets of) variables require further elaboration as their compilation was more complex: the digital investment index itself; the government position variables; the corporatism index; and the textual or ideational variables.

D.1.1   Digital Investment Index

The digital investment index represents the weighted average of three subindicators, which were compiled as follows:

Investments in education were measured as the share of GDP spend on primary, secondary and tertiary education. To obtain that measure with as few missing values as possible, I combined the OECD's COFOG (Classification of the Functions of Government) spending data with UNESCO data on education expenditure. For the COFOG data I selected the subcategory of total education spending. I also included the social protection subcategory family and children for both substantive reasons and to make the data more compatible with the UNESCO data. This is because COFOG data are based on ISCED-97 while the UNESCO data use ISCED-2011. One of two main differences between the datasets is that the UNESCO data include education expenditure that COFOG classifies according to its main purpose as child care services under social protection, not under education expenditure.

The other main difference is that the UNESCO data include in education expenditure any research conducted in tertiary educational institutions. On the other hand, COFOG classifies R&D expenditure conducted in tertiary educational institutions to the respective functions (e.g. 01.4 basic research, 07.5 R&D health), and only includes R&D spending on education

Table 18: Descriptive statistics for the main variables

	Mean	SD	Min	Max	Source
Digital Investment Index	-0.249	1.939	-4.872	4.741	OECD & Unesco
Investment Priorities	14.149	5.885	0.000	36.530	CMP (Volkens et al. 2020) & ParlGov (Döring & Manow 2019)
RILE Index	-0.159	16.342	-47.870	65.000	CMP (Volkens et al. 2020) & ParlGov (Döring & Manow 2019)
Social Democratic Seat Share	29.333	37.288	0.000	100.000	ParlGov (Döring & Manow 2019)
Corporatism Index	0.017	0.594	-1.108	1.339	ICTWSS (Visser 2019)
Trade Openess	80.719	50.254	10.757	408.362	OECD
Inflation	7.793	39.520	-4.478	1020.621	OECD
Growth	2.894	3.035	-14.839	25.163	OECD
Deficit	-2.336	4.271	-32.064	18.671	OECD
Unemployment Rate	7.461	4.225	0.556	27.466	OECD
Small State Dummy	0.170	0.375	0.000	1.000	OECD
Debt Rule	0.227	0.419	0.000	1.000	IMF
Deindustrialization	66.663	9.832	39.252	90.344	OECD
Share 65+	0.138	0.035	0.031	0.284	OECD
Political Constraints Index	0.764	0.123	0.000	0.894	QoG (Dahlberg et al. 2020)

directly, i.e. pedagogy broadly conceived. The measures are thus highly (r = 0.78) but not perfectly correlated, which poses problems if data are not missing at random. I decided to prioritize data availability over potential bias (especially because data for some countries are entirely missing), but not only retained the individual measures for robustness checks but also averaged values when values from both measures were available.

Investments in R&D were measured using the OECD's GBARD (Government budget allocations for R&D) data. As the index is meant to capture investments in digital goods, I included only categories that are particularly relevant to surviving and thriving in the knowledge economy. Thus, I for example excluded spending on energy or agriculture. This is a somewhat conservative choice but one that gives me greater confidence in the validity of the index. Specifically, I included the spending on transport, telecommunication and other infrastructures, industrial production and technology, political and social systems, structures and processes, general advancement of knowledge, financed from both General University Funds (GUF) and other sources than GUF as well as defense.

Investments on active labor market policies were measured using the OECD's LMPEXP dataset. Included was only spending on active (as opposed to passive) spending. In addition, administrative spending was excluded. Included was thus spending on training, job rotation and job sharing, employment incentives, sheltered and supported employment and rehabilitation, direct job creation, and start-up incentives. These categories measure investments that foster the creation and maintenance of both individually and collectively-held knowledge-based capital. In constructing the digital investment index, spending on active labor market policies was weighted down by 50 per cent as it comprises by far the smallest of the three spending categories in absolute terms.

D.1.2 Government Positions

Government positions are measured either directly as the share of social-democratic parties in government or indirectly through the Manifesto Project. In the latter case, the emphasis of party manifestos on either of the following four categories were summed up: per404 (favorable mentions of long-standing economic planning by the government); per410 (need for government to encourage or facilitate greater production and to take measures to aid economic growth); per411 (importance of science and technological developments in industry and need for training and research within the economy as well as calls for public infrastructure spending); per506 (need to expand and/or improve educational provision at all levels). Additionally, category per507 (limiting state expenditure on education) was subtracted. These categories capture, respectively, whether parties see room for an active and leading role of the state in the economy (Mazzucato 2013) and the importance they assign to the public provision of (knowledge-based) public goods (R&D, infrastructure, and education).

To do this, I used data from the Comparative Manifesto Project (CMP) (Volkens et al. 2020) as well as data on the partisan composition of cabinets from the ParlGov database (data for the United States, which is missing from the ParlGov database, were added manually) (Döring and Manow 2019). This allowed me to calculate the relative share of different party families in cabinets and to then weigh them by the number of days they were in office in a given year. The relative issue emphasis parties put on, or the relative importance parties they assign to, different categories - a more reasonable conceptualization of the CMP data (Gemenis 2013, 19) - was calculated for each government by combining the relative emphasis of the governing parties weighted by their seat share. In years with multiple cabinets, values were taken from whichever cabinet was in office for more days.

D.1.3   Corporatism Index

The corporatism index used in the study is a reconstruction of Jahn's (2016) index of corporatism, which is itself based on data from the ICTWSS database complied by Visser (2019). Jahn's index stands out among other conceptions of corporatism not only because it uses variables that are available over many decades and for many capitalist countries; but also because it offers a parsimonious or narrow definition of corporatism that does not contain what it might be used to explain, i.e. things like small open economies, consensual or even consociational political tradition, dominance of a unified social democratic party, high level of social expenditure, and successful economic performance (Jahn 2016, 51). Rather, it focuses on the structural aspects of corporatism, i.e., the hierarchical centralization of collective bargaining; its functional aspect, i.e., "the role these organizations play vis-à-vis the state" and the "style of interest mediation by the state" (Jahn 2016, 51); and the scope of corporatism which focuses on the output side and captures who is actually affected by corporatist arrangements. The robustness checks in Appendix D.2.3 include a version of the corporatism variable that only takes its functional dimension into account.

I additionally included variables that cover whether in a given year a (tripartite) social pact or a (nation-wide) agreement was signed. Somewhat confusingly, they are part of the do-file made available by the Jahn but are explicitly excluded from the index because there are no data on their long-term effects and because including them might lead to double counting similar effects (Jahn 2016, 56). I nonetheless included them because, as Jahn himself notes, they are meaningful indicators of corporatism and also play an important role in Ornston's (2012) conception of corporatism. The inclusion of such variables, however, does not result in noticeable differences in the index itself. Table 19 summarizes this conceptualization and shows how the three aspects of corporatism - structure, function, scope - are operationalized.

The reason why I had to reconstruct Jahn's index in the first place is that the original index provided by Jahn only goes until 2010. Next to the inclusion of social pacts and collective agreements (which are, however, also part of Jahn's do-file), there are two additional differences between Jahn's original index and my reconstruction. First, the linear interpolation of missing data led to implausible values at least when done in R, so I was more conservative than Jahn here and only interpolated values when the maximum number of missing values was less than 4. Second, because of small differences in the normalization of the variables, my index has somewhat less variance than Jahn's, i.e. it compresses values somewhat more to their mean, which however, should only lead to conservative estimates. Figure 35 plots Jahn's original index next to my reconstruction and clearly shows that all remaining differences are very small. Both indices clearly capture the same phenomenon.

Table 19: Corporatism Index

Aspect	Description	Operationalization
Structure	Degree of hierarchical centralization	Organizational structure of collective actors (measure of centralization of wage bargaining) (CENT variable), Structure of work council representation (WC_struct variable, Rights of work councils (WC_rights variable
Function	Degree of concertation with the state	Government intervention in wage bargaining (Govint variable), Dominant level of wage bargaining (Level variable), routine involvement of unions and employers in government decisions (RI variable), social pact or collective agreement signed (Pactsign and AgrSign variables)
Scope	Degree to which agreements encompass broader segments of society	Coordination of wage bargaining (measure of bindingness of norms regarding maximum or minimum wage rates or wage increases) (Coord variable), Mandatory extension of collective agreements (Ext variable)

D.1.4   Textual Variables

D.1.4.1   Data

To test my ideational explanations, I collected 90311 newspaper articles for 32 countries. Newspaper articles were collected via factiva and Nexis Uni based on three sets of search strings.

a search string capturing discourse on technological change with references to *technological change* or *technological progress*

a search string capturing discourse on public debt and deficits with references to *public debt* or *government debt* or *public deficit* or *government deficit*

a search string capturing discourse on public investments references to *public investment* or *government investment*
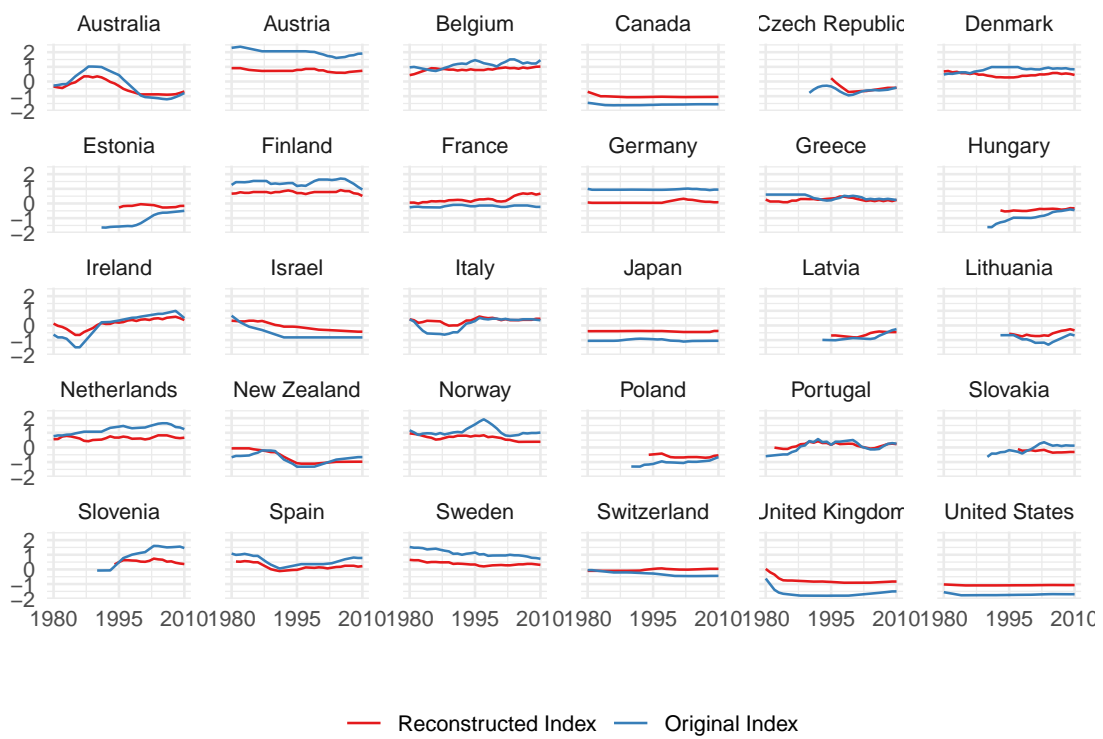
Figure 35: Comparing Jahn's original to my own corporatism index

These search strings had to appear at least once in an article within 2 words from each other (i.e. public-sector investment also counted). Translations of these search strings were verified by native speakers of the respective languages, who sometimes also added particular terms that are used in their country's debates on these issues (e.g. Staatsschulden in Germany). All newspaper articles additionally had to contain at least one reference to the country in questions in order to make it less likely to collect articles that a solely about discourses in other countries (although this is not per se problematic as the way in which countries talk about, say, public deficits in another country also reflects the way they think about it themselves). If searches led to a particularly high number of articles (>10000 for one topic in one country), the search strings were made somewhat more restrictive, i.e. they had to contain at least two references to the above-mentioned terms.

For many countries, it was relatively easy to find articles from the countries' main newspapers of the center-left and center-right, i.e. those that can in combination be considered representative of the national discourse. In those cases, it was also possible to collect articles going back to the 1990s and thus have continuous time series over 20 years or so. For some countries, however, it was more difficult to obtain such time series, and for a few others still it was also not possible to get access to a country's main newspapers but only to their English-language versions or to English-language newspapers that specifically cover the region. Thus, while for the United States we have continuous coverage from the New York Times, the Washington Post, and the Wall Street Journal since the 1980s, for Sweden the articles only reach back to the early 2000s. For Greece, I used the English edition of Kathimerini, one of the country's main newspapers. For South Korea, I used some of the main English-speaking outlets such as the Korea Times. Often, newspaper were also complemented by press wires.

However, in all these cases, I manually made sure that only such newspapers or news agencies were included in the sample that reliably conveyed a good picture of the national discourse, i.e. those that were either translations from original-language articles or contained many

quotes by national social actors and were thus trying to depict national political debates. Articles that mainly contained technical or economic information (such as the latest unemployment statistics) were excluded. Table 20 gives an overview of the newspaper included in the sample.

Table 20: Newspaper Corpus Overview

Newspaper	Number of Articles
Australia	
Sydney Morning Herald	2752
The Daily Telegraph	380
Canberra Times	14
The Australian	1
Austria	
Austria Presse Agentur	2175
Die Presse	1185
Der Standard	679
Wirtschaftsblatt	522
Salzburger Nachrichten	321
Kurier	74
Belgium	
Agentschap Belga	531
SeeNews Belgium	43
Canada	
The Globe and Mail	5149
The Toronto Star	2741

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
National Post	2148
La Presse Canadienne	309
The Financial Post	61
Czech Republic	
Hospodárské Noviny	1124
Lidové Noviny	251
Denmark	
Politiken	1135
Ritzau General News Service	395
ErhvervsBladet	178
Webnews - Danish	178
Jyllands-Posten	107
Estonia	
Baltic Business Daily	472
The Baltic Times	92
Baltic Daily - Political/Social News	76
BNS Baltic Business News	53
Baltic Business Weekly	39
Baltic Business News	23
Finland	
Kauppalehti	529
Suomen Tietotoimisto	192

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
France	
Le Monde	2811
Le Figaro	1614
L'Humanité	649
La Croix	308
Libération	36
Germany	
Handelsblatt	863
Süddeutsche Zeitung	739
taz, die tageszeitung	313
Der Tagesspiegel	237
WirtschaftsWoche Online	212
Die ZEIT	158
Greece	
Kathimerini English Edition	472
Greek Reporter	66
Hungary	
Világgazdaság	933
Napi Gazdaság	378
Ireland	
The Irish Times	3608
Irish Independent	1556

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
Irish Examiner	903
Sunday Business Post	646
Evening Herald	8
Israel	
The Jerusalem Post	620
Globes	548
The Times of Israel	63
Italy	
Corriere della Sera	2027
La Stampa	1786
La Repubblica	1443
Japan	
Jiji Press	1492
The Nikkei	674
The Daily Yomiuri	437
The Japan Times	260
The Japan Economic Journal	197
The Japan News	57
Report From Japan	53
Japanese Business Digest	5
WebNews - Japanese	1
Latvia	

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
Baltic Business Daily	914
Baltic Daily - Political/Social News	95
BNS Baltic Business News	73
The Baltic Times	63
Baltic Business News	29
Baltic Business Weekly	19
Lithuania	
Baltic Business Daily	474
BNS Baltic Business News	49
The Baltic Times	43
Baltic Daily - Political/Social News	35
Baltic Business Weekly	29
Baltic Business News	5
Luxembourg	
Tageblatt	634
Le Quotidien	441
Luxemburger Wort	250
Netherlands	
NRC Handelsblad	1066
Het Financieele Dagblad	982
de Volkskrant	532
De Telegraaf	220

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
Vrij Nederland	34
De Groene Amsterdammer	22
New Zealand	
The New Zealand Herald	1677
The Dominion Post	445
The Press	364
Waikato Times	205
Norway	
Dagens Næringsliv	542
Norsk Telegrambyrå	254
TDN Nyhetsbyrå	94
Aftenposten	35
Bergens Tidende	17
Stavanger Aftenblad	16
Norsk Telegrambyr	5
Vestnytt	3
Poland	
Rzeczpospolita	1566
Gazeta Wyborcza	857
Gazeta Prawna	718
Gazeta.pl	61
Portugal	

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
Publico	1811
Jornal de Notícias	501
Correio da Manhã	404
Slovakia	
Slovenska Tlacova Agentura	497
Výber správ zo Slovenska	270
Dennik N	60
Slovenia	
The Slovenia Times	228
Esmerk Slovenia News	21
Slovenia Today	15
M-Brain Slovenia News	11
News Bites - Central and Eastern Europe: Slovenia	5
South Korea	
The Korea Herald	435
Korea Times	381
Korean News Gazette	34
Spain	
ABC	1334
El Periódico	1323
El Pais	1153
El Mundo	609

Table 20: Newspaper Corpus Overview *(continued)*

Newspaper	Number of Articles
La Vanguardia.com	290
El Diario.es	63
Sweden	
Nyhetsbyrån Direkt	922
Dagens Nyheter	187
Helsingborgs Dagblad	42
Sydsvenskan	18
Switzerland	
NZZ	1192
Tages-Anzeiger	305
Blick	13
United Kingdom	
The Guardian	3696
The Times	2424
The Daily Telegraph (UK)	1479
United States	
The New York Times	4122
The Washington Post	2626
The Wall Street Journal	870

D.1.4.2 Analysis

Sentiment Analysis The paper uses a dictionary-based approach to sentiment analysis but complements it with natural language process in order to account for negators, amplifiers and deamplifiers. I used standard negators, amplifiers and deamplifiers obtained from the lexicon package.

The sentiment scores represent the unweighted average of four different dictionaries:

– the AFINN dictionary developed by (Nielsen 2011);

– the Bing sentiment lexicon developed by Hu and Liu (2004);

– the NRC Word-Emotion Association Lexicon developed by Mohammad and Turney (2010); and

– the syuzhet dictionary (and accompanying R package) developed by Matthew Jockers and the Nebraska Literary Lab (Jockers 2017).

While these dictionaries are widely used and relatively general in purpose, I combined them to make sure that the results are not driven by the particularities of any one of these dictionaries. In case of the NRC dictionary, I did not use their emotion-based dictionaries (such as those for anger, fear, or hope) but only those for positive and negative terms. The afinn and syuzhet dictionaries have a higher resolution than bing and nrc by scoring words not just as negative (-1) and positive (+1) but allowing more gradation. I transformed these higher-resolution scales to a binary positive-negative score for both technical reasons and to provide more robust estimates. After all, whether a word is positive or negative is a much more straightforward question than whether a positive word is quite (+3), very (+4) or extremely (+5) positive, especially across different contexts and for machine-translated documents.

Topic Modeling Preprocessing

The topic models included only articles about public debt/deficit and public investment as they were meant to capture different state identities, which revolve around debt cultures and

conceptions of the role of the state in the economy. For pre-processing, I used annotated part-of-speech tags to select nouns, adjectives, and verbs. I discarded punctuation and stopwords as well as semantically less meaningful parts of speech like determiners or names entities like dates. I also included a list of 184 n-grams, which was manually compiled based on the most frequent collocations identified in the text (with log-frequency biased mutual dependency used as the ordering metric). I lowercased but did not stem our document feature matrix as the difference between singular and plural forms can be meaningful while the difference between uppercased and lowercased words is most likely not – at least in the types of policy and newspaper documents I look at. In addition, I removed remaining word trash such as html tags, common untranslated words, as well as country-specific information using the named entity information. This latter removal is meant to ensure that differences in topic prevalence are, as much as possible, the result of substantive differences and not of local vernaculars or parochial word usage. Lastly, I removed words that appeared in more than 50 per cent or less than 0.5 per cent of documents. While this is a somewhat arbitrary (although commonly used) standard, qualitative inspection revealed but proofed to be a useful threshold that removed many very specific and rare terms while still retaining uncommon but not unimportant words.

Number of Topics

I chose a topic model with k = 45 topics. This decision was assisted by several metrics. Figure 36 plots four metrics – semantic coherence, exclusivity, residuals, and held-out-likelihood – for models with different ks. The range of k was theoretically decided as topics should be broad enough to be at least potentially relevant in different countries, but narrow enough to capture interesting frames of public debt or public investment. This suggests a number of topics somewhere between 20 and 80. Semantic coherence is a metric that measures how often the most frequent words in a topic actually co-occur in a document. While semantic coherence has been shown to correlate well with human judgments of topic quality, it has

been shown to increase when topics are dominated by very common words (Roberts 2018). Exclusivity, by contrast, penalizes models with few dominant top words. It measures the share of top words which are distinct to a given topic, thus creating something of a trade-off with semantic coherence. The residuals capture overdispersion of the variance of the multinomial in stm's data generating process (Roberts 2018). Higher values indicate overdispersed residuals, implying that the latent topics cannot account for the overdispersion and more topics may be needed to use up the extra variance. Held-out likelihood estimates the probability that words appear in a document when these words have been removed before the estimation. It is a measure of predictive performance, with higher values indicating better performance. Hence, we want semantic coherence, exclusivity, and held-out likelihood to be as high and the residuals to be as low as possible. Figure 36 suggest that a topic model with k = 45 should be a good choice, and one that falls squarely within the realm of what we would expect.

Topic Interpretation & Aggregation

I allowed the country variable and the date variable to influence the prevalence of topics. The topics were then labeled based on the most *FR*equent and *EX*clusive Words (FREX). Lastly, topics were assigned to either the ascetic state category or the inclusive state category or they were not assigned at all. Based on Dyson (2014), topics were assigned to the ascetic state category if they were about balanced budgets, credit ratings, structural reforms, or the like. They were assigned the inclusive state category if they were about investments in infrastructure, green technologies, research, education, or worker protection. Figure 37 plots wordclouds with the most common FREX terms for the topics that make up the inclusive state (red) or ascetic state category (blue).
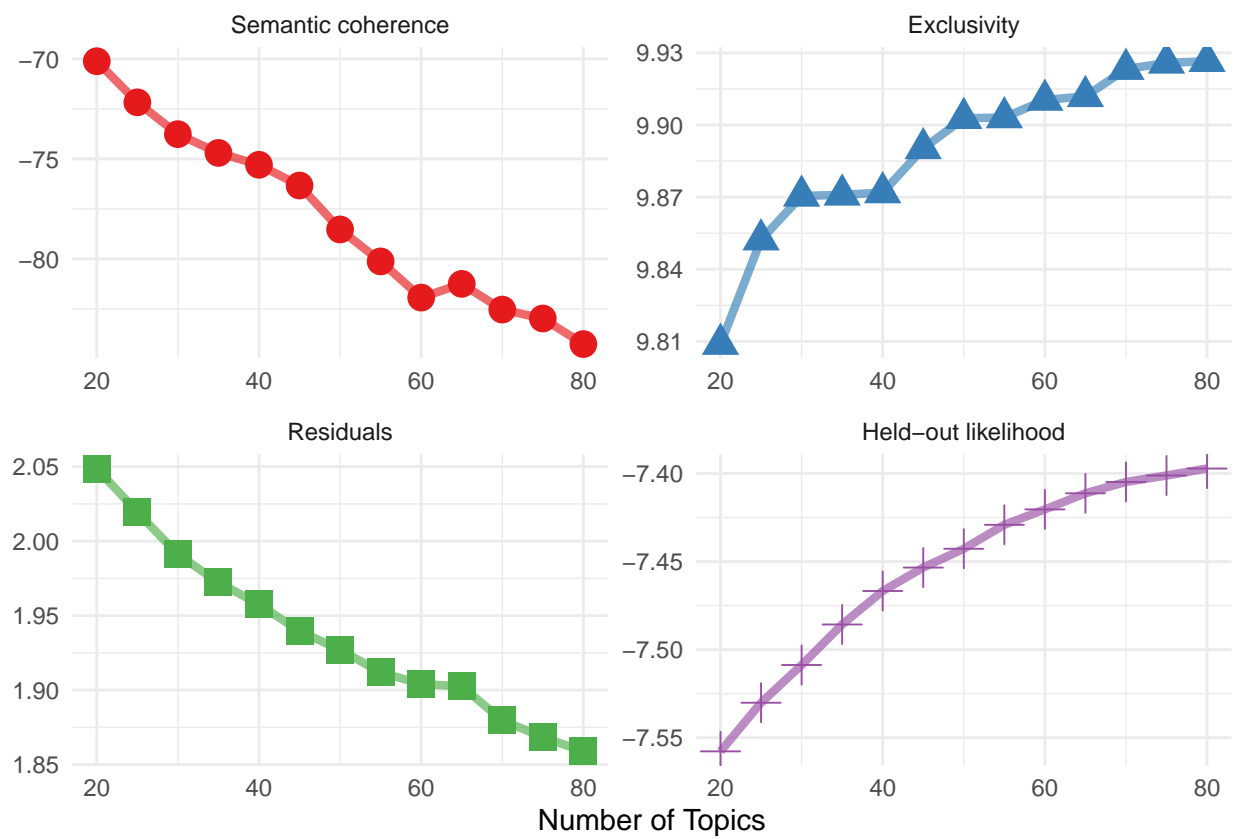
Figure 36: Model diagnostics for different numbers of topics (20 to 80)
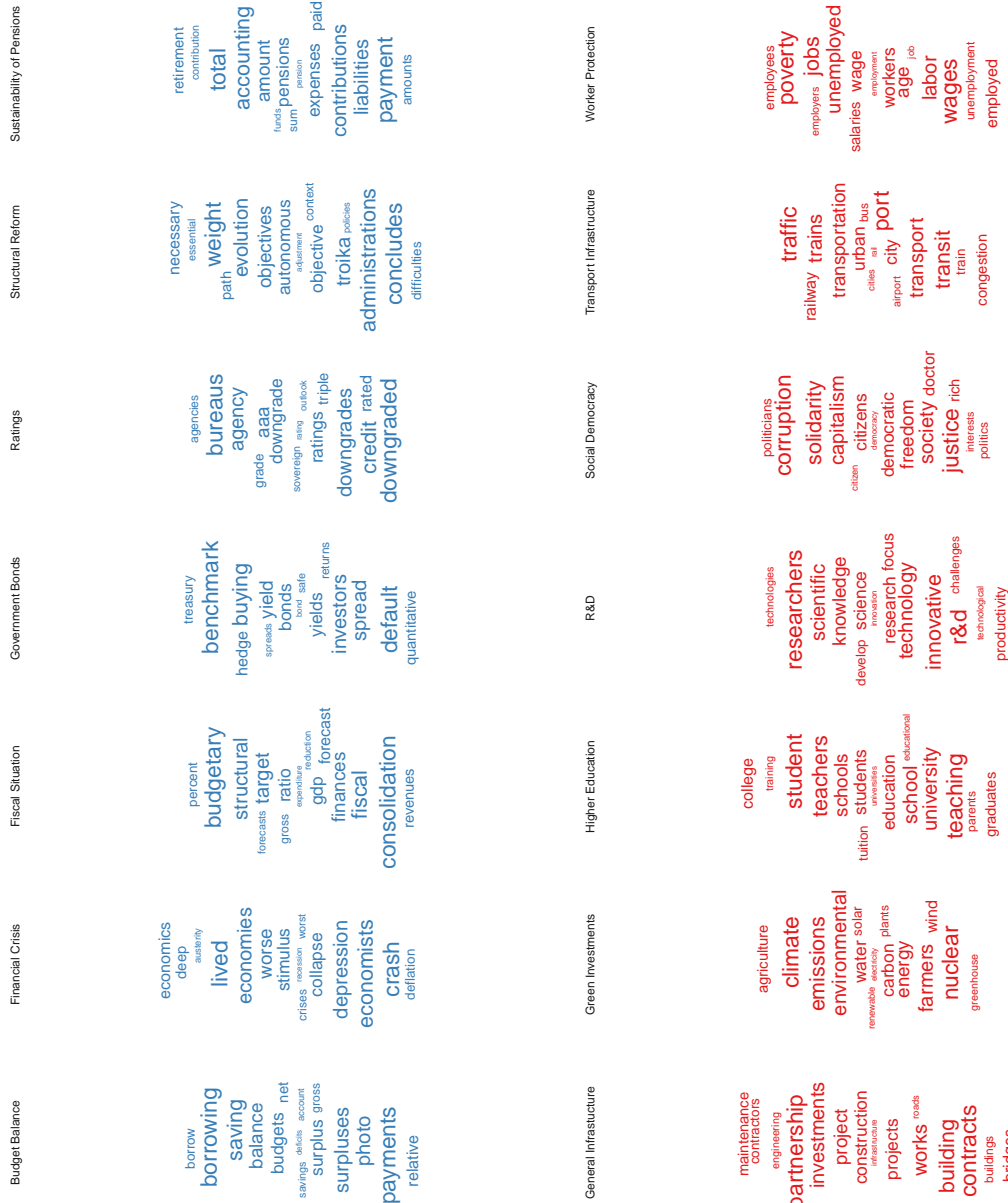
Figure 37: Wordcloud with top FREX terms for topics assigned to the inclusive state (red) or ascetic state category (blue)

D.2   Additional Information on Empirical Strategy

D.2.1   Missing Data

Missing data are a perennial problem of quantitative comparative political research. Most statistical methods assume the absence of missing values, that is, they require rectangular datasets. However, 'rectangularizing' a dataset by dropping all partially observed observations from the analysis can lead to biases, inefficient use of the existing information, and incorrect uncertainty estimates. For this reason, multiple imputation techniques are widely considered as the royal road to handling missing data. The idea is to extract as much information as possible from the available data, to use that information to construct multiple, complete datasets where the observed values are the same and the imputations vary depending on the estimated uncertainty in predicting each missing value, and to then combine the results (Honaker and King 2010, 561).

I used Amelia, a multiple imputation technique and package specifically designed to handle missing data in time-series-cross-sectional datasets by allowing to impose smoothness over time-series variables (by including q-order polynomials), shifts over cross sectional variables, and interactions between the two where the time-trends can vary across cross-sectional units (Honaker and King 2010; Honaker, King, and Blackwell 2019). Since imputations are predictive and not causal, I included all available variables as well as their lags and leads. I also included a degree one polynomial indicating linear time effects. Because some variables are strongly correlated (the digital investment index and its subcategories), I applied a ridge prior of 1 percent of the rows of the data to shrink the covariances and aid the stability of the EM algorithm, basically trading an increase in bias for an increase in efficiency (Honaker, King, and Blackwell 2019, 23).

There are a number of tools to evaluate the imputations. One is to visually inspect the mean and variances of the imputations across time and over countries and compare them to

the observed values. Figure 38 does just that for a number of countries and for the digital investment index variable (note that the time series are longer here than in the datasets that were actually used for the analysis; this is because I wanted to make use of as much available information as possible). Figure 39 does the same for budget deficits (note again that only data from 1980 onwards were actually used). What we can gather from this (as well as from doing the same for other variables) is that there are at least no strange or obviously erroneous imputed values. The range of imputed values falls well within what we would find plausible, although we can of course by definition not know whether or not these imputed values are correct.
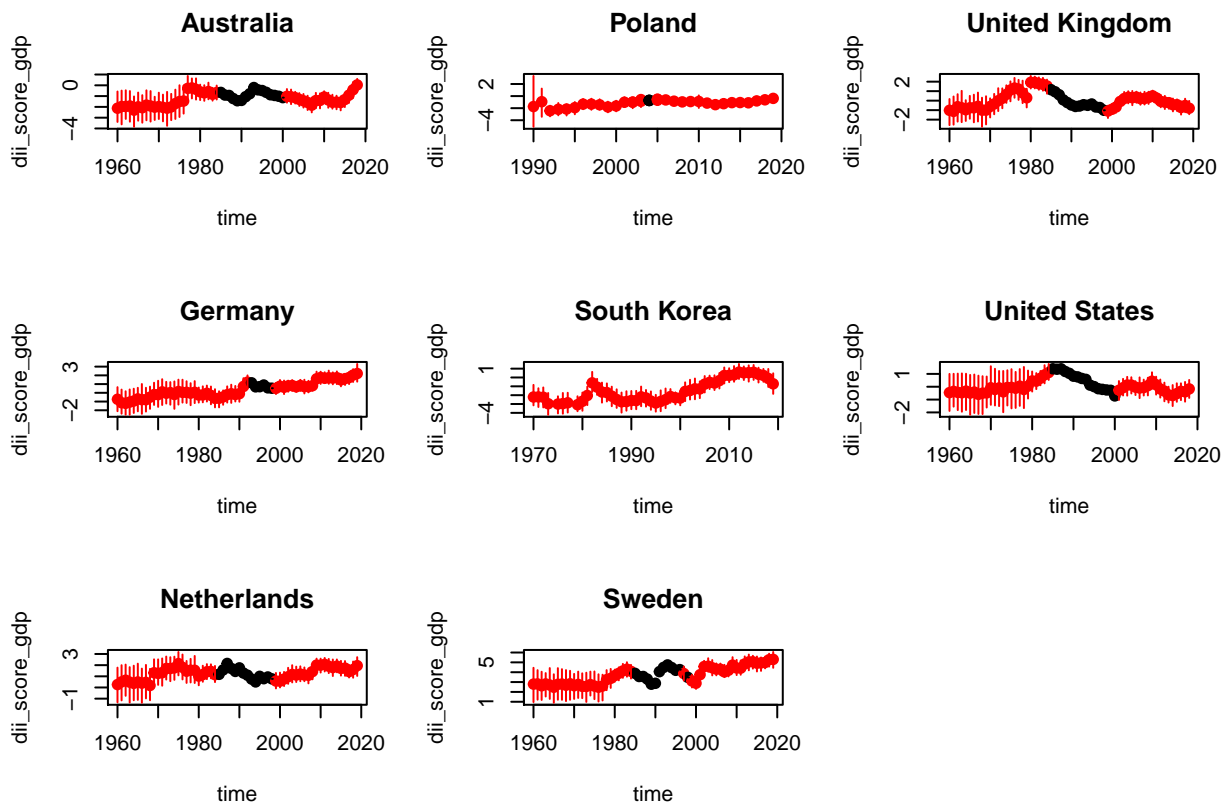
Figure 38: TSCS Plot for Digital Investment Index. The black points represent observed values, the red represent the mean of the imputations, the red lines represent 95% confidence bands of the imputation distribution
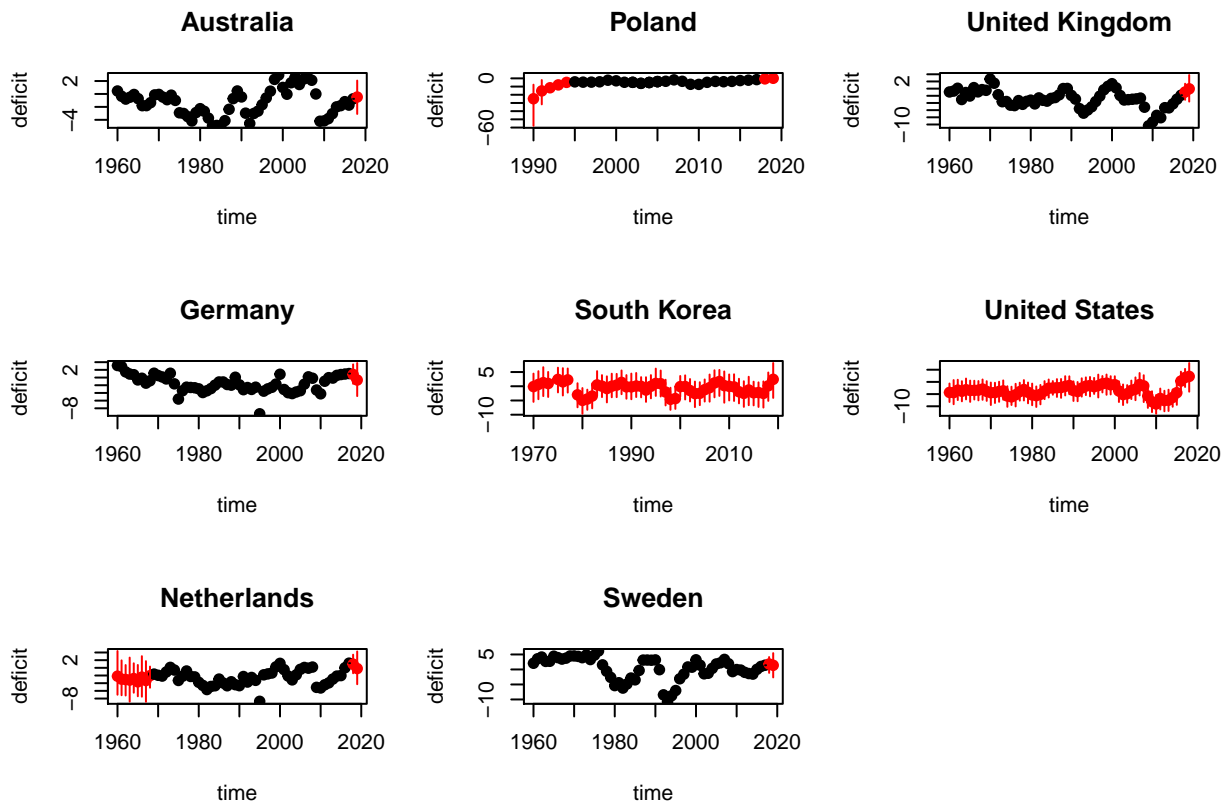
Figure 39: TSCS Plot for Deficit Variable. The black points represent observed values, the red represent the mean of the imputations, the red lines represent 95% confidence bands of the imputation distribution

Another thing we can do is to overimpute, that is, to "sequentially treat each of the observed values as if they had actually been missing" (Honaker, King, and Blackwell 2019, 31). We can then multiply impute these values and thus construct a confidence interval of what the imputed values would have been had the actually observed data been missing. This allows us to evaluate whether the observed data "fall within the region where it would have been imputed had it been missing" (Honaker, King, and Blackwell 2019, 31). Figure 40 shows the results for the digital investment index, Figure 41 does the same for the corporatism index. For those as well as for the other variables, the vast majority of confidence intervals fall on the $x = y$ line, and for all variables most of them do. This gives us confidence in the predictive validity of the imputation model (Honaker, King, and Blackwell 2019, 31).

A final way to evaluate the imputations is to compare the distribution of imputed values to the distribution of observed values. Figure 42 and Figure 43 are examples of such density plots, assuring us at least that the most imputations fall within the known bounds (the density distributions can also 'correctly' differ if there is a systematic reason why values for certain observations are missing).

D.2.2   Model Diagnostics

As all models, mixed effects models rely on a number of assumptions that need to be met or approximated to get unbiased estimates. Here, I present a number of such model diagnostics - all values being averaged across the multiply imputed datasets.

D.2.2.1   Multicollinearity

To detect multicollinearity, I calculated the variance inflation factor (VIF) for the different variables in the imputed models to estimate how much the variance of a regression coefficient is inflated due to multicollinearity in the respective models. Table 21 shows the averaged

Observed versus Imputed Values for Digital Investment Index
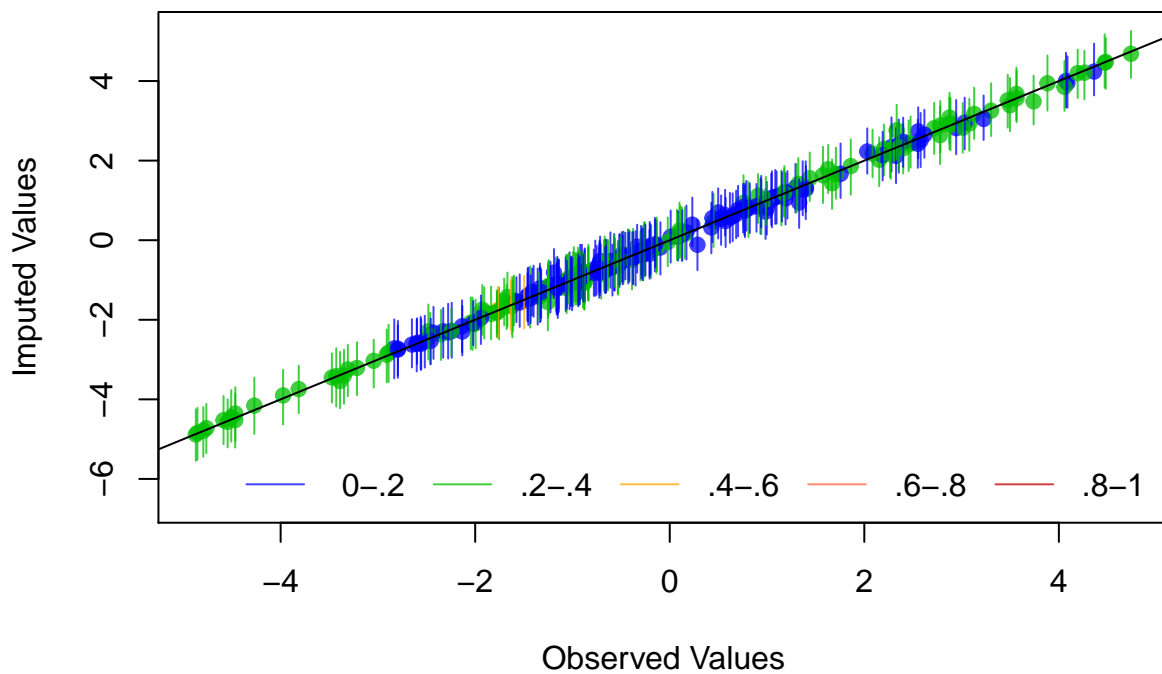
Figure 40: Overimputation Diagnostic Graph. If all imputed values fall on the x = y line, the imputation model would be a perfect predictor of the true value. If most confidence intervals (>90%) fall on this line, this gives us confidence in the imputation model. The colors of the line represent the fraction of missing observations in the pattern of missingness for that observation
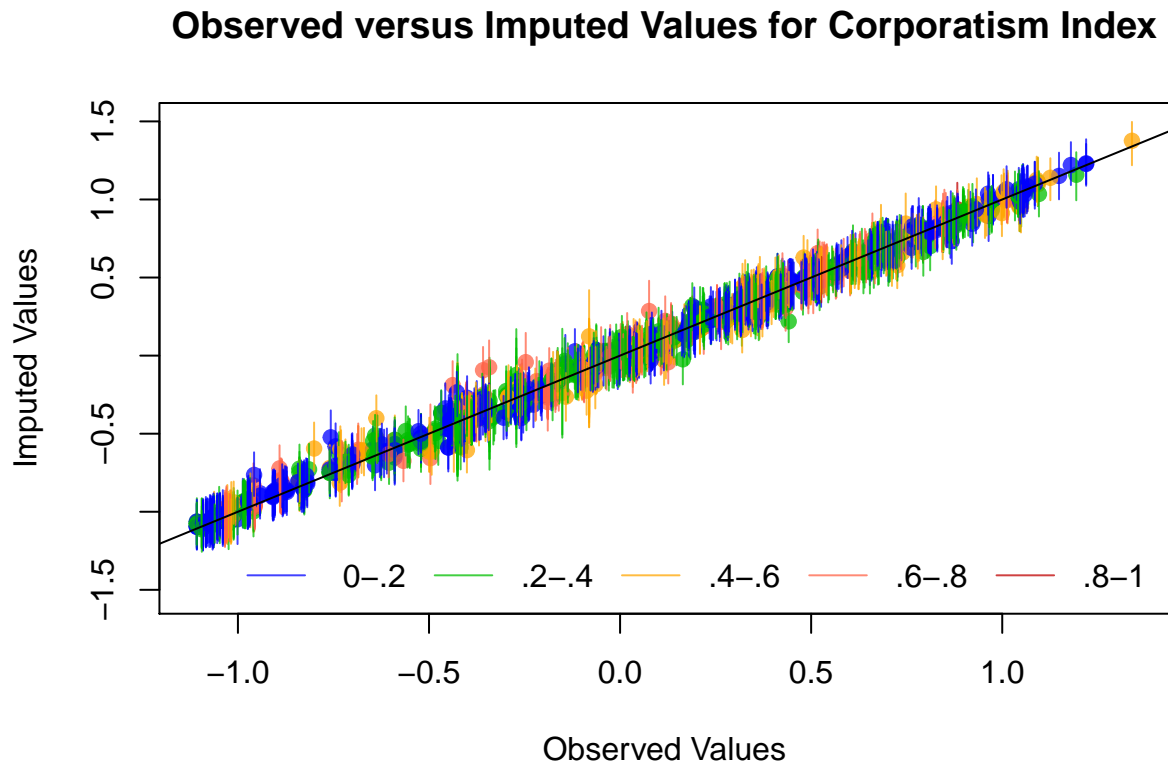
Figure 41: Overimputation Diagnostic Graph. If all imputed values fall on the x = y line, the imputation model would be a perfect predictor of the true value. If most confidence intervals (>90%) fall on this line, this gives us confidence in the imputation model. The colors of the line represent the fraction of missing observations in the pattern of missingness for that observation
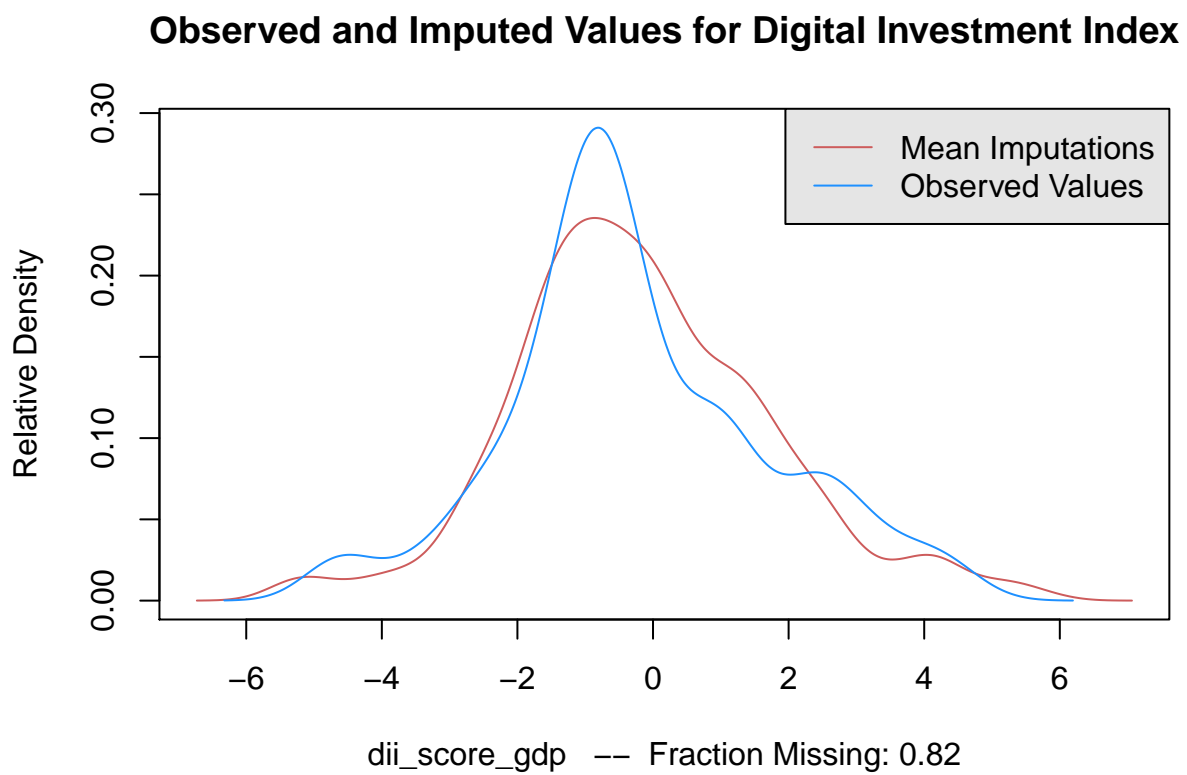
Figure 42: Density Plot. The distribution of mean imputations is shown in red, the distribution of observed values is shown in blue
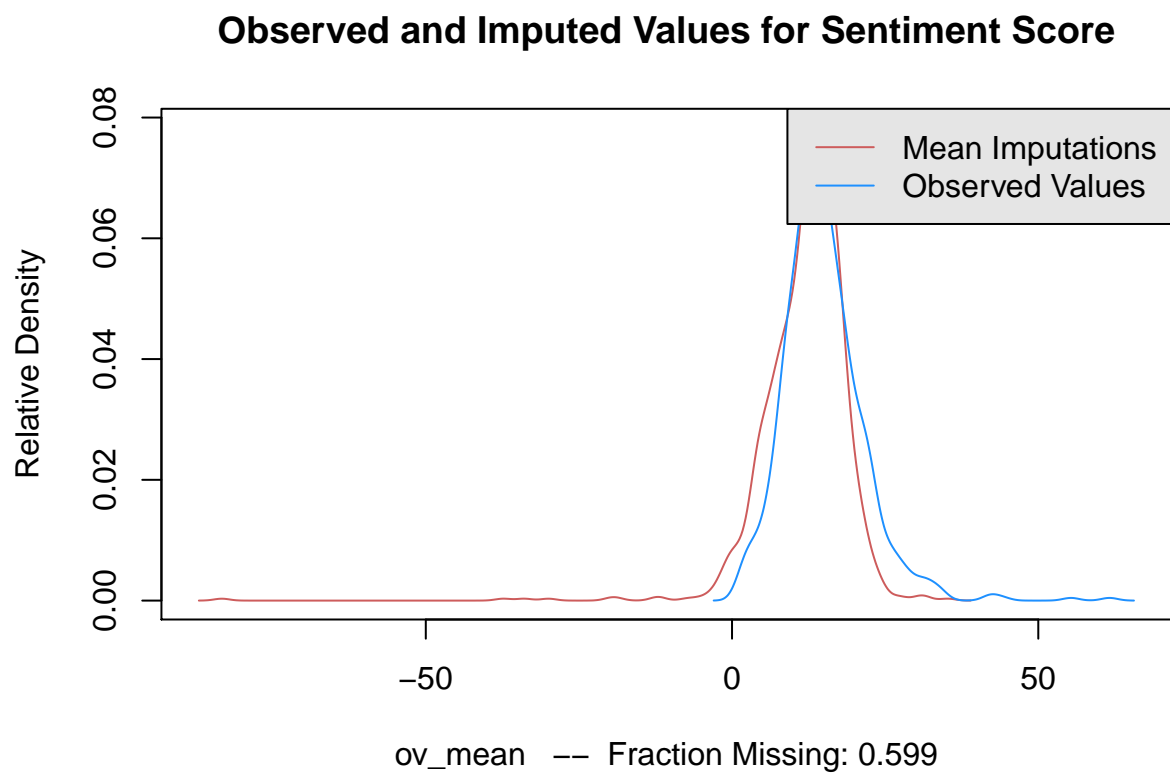
Figure 43: Density Plot. The distribution of mean imputations is shown in red, the distribution of observed values is shown in blue

values for the different variables in the respective models. It shows that the VIF are very low (around 1) to moderate (for the deindustrialization and share of elderly people variables). None of the VIFs is very high, which gives us confidence that multicollinearity does not bias the results (common rules of thumb argue for excluding variables with VIF of 4 or higher, or even 10 or higher). However, including GDP per capita as a control leads to relatively high VIFs for this variable as well as the deindustrialization variable (VIFs of between 4 and 6). I therefore excluded it as a control variable. Importantly, as the next section shows, including GDP per capita does not change any of the main findings.

Table 21: Variance Inflation Factors

Variable	Variance Inflation Factor
Deindustrialization (within)	2.476367
Share 65+	2.252918
ratio_normal	1.727522
Trade Openness	1.491473
Sentiment (between)	1.477878
Corporatism (between)	1.435117
EU Member	1.331594
Deindustrialization (between)	1.328066
Lagged Dependent Variable	1.309550
Unemployment	1.285217
Adjusted Deficit	1.228637
Debt Rule	1.186807
Small State	1.167855
Institutional Constraints	1.148111

Sentiment (within)	1.123647
Corporatism (between)*Deindustrialization (within)	1.099335
Corporatism (within)	1.050711
Social Democratic Party	1.043266

D.2.2.2 Distribution of Residuals

Figure 44 and Figure 45 show that the residuals - again averaged across models - are homoscedastic and approximately normally distributed.
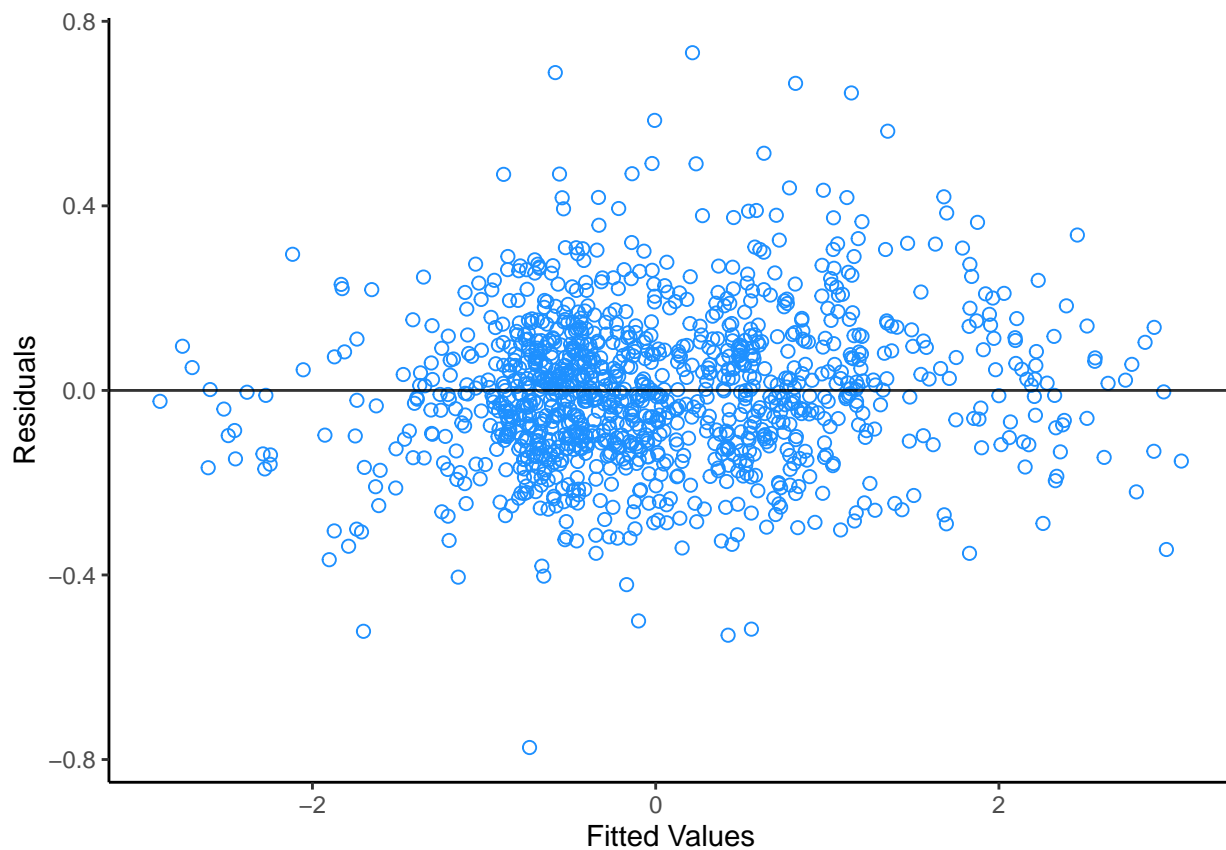
Figure 44: Residuals versus fitted values
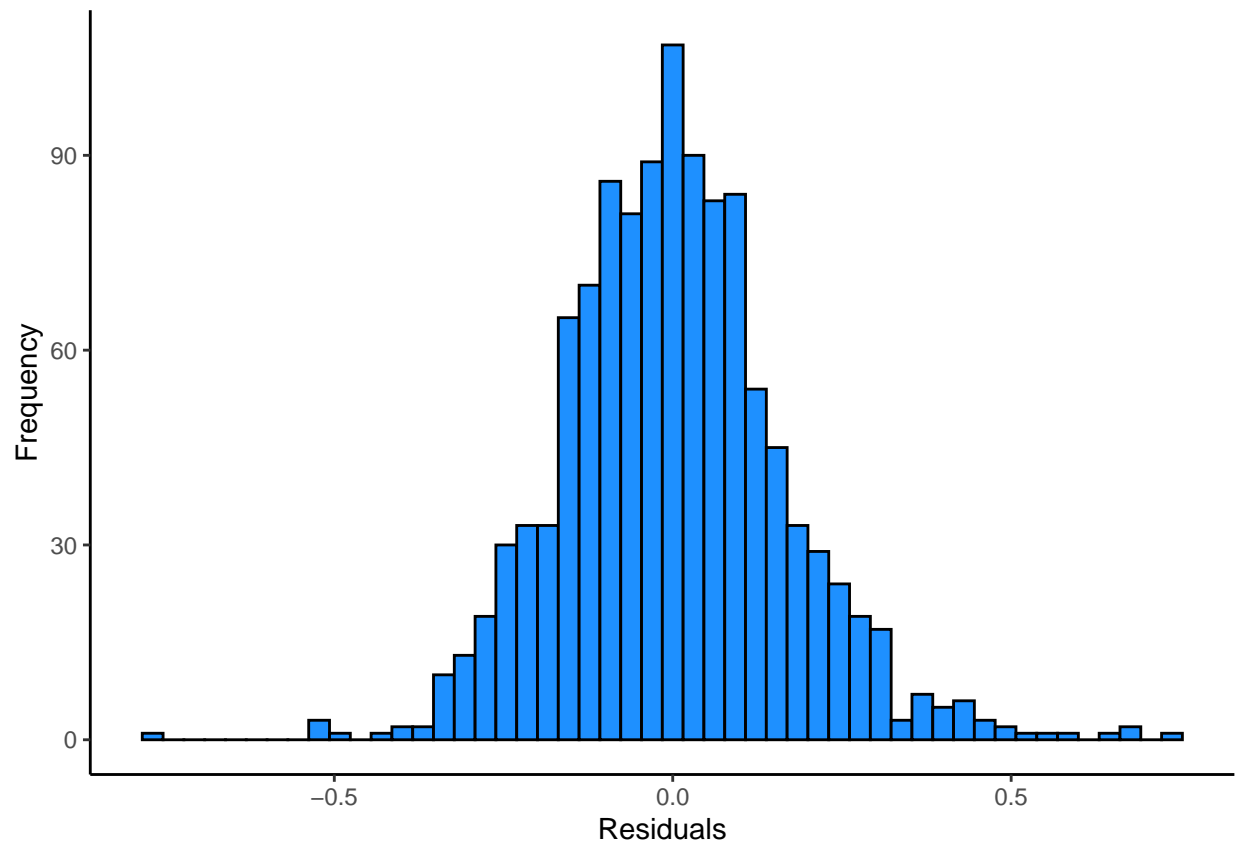
Figure 45: Histogramm of Residuals

D.2.3   Robustness Checks & Alternative Specifications

I ran a number of alternative model specifications to ensure the robustness of my main findings. The first model in Table 22 is equivalent to Model 3 in the main paper but uses a direct measure of partisan preferences instead of the share of social democratic parties. The results remain the same: at least in recent years and decades, the partisan composition of government and the positions of governing parties had no significant influence on investment spending. The second model includes a GDP per capita variable as an additional control variable, which was excluded from the main model because of potential multicollinearity issues. As we can see, however, including it does not substantially alter any of the main results. The third model excludes the lagged dependent variable. Again, this does not change any of the main findings, in fact, it only strengthens them, in particular the between effects. Model 4 uses a version of the digital investment index that only uses education data from UNESCO - instead of the version where education data are combined with COFOG data from the OECD (see Appendix A.3). Again, results remain very similar.

The first model in Table 23 includes a measure of foreign direct investment (FDI) as it is plausible to assume that countries invest in knowledge-based capital to remain attractive to foreign investors. This is measured as inflowing FDI as a share of GDP. However, I do not find any effect in either direction. The second model changes the corporatism variable by only including its functional elements, i.e. those that pertain to the role social partners play vis-à-vis the state, such as the involvement of unions and employers in government decisions. We find that this more parsimonious yields very similar results. Interestingly, if we include employment instead of unemployment levels, we find a significant negative effect of employment on investments. Moreover, this negative effect is purely a within effect. In fact, the between effect is positive at the 0.1 level. In other words, countries that increase their employment levels over time decrease their investment spending, while countries that

	Direct Measure	With GDP/Capita	Without Lag DV	Alternative DV
(Intercept)	**−28.07****	**−39.18****	**−61.58*****	**−24.38****
	(8.91)	(14.26)	(11.62)	(9.00)
Lagged Dependent Variable	**0.57*****	**0.55*****		**0.56*****
	(0.04)	(0.04)		(0.04)
Social Democratic Party		−0.01	−0.02	−0.02
		(0.01)	(0.02)	(0.02)
Weighted Emphasis Investment	−0.01			
	(0.02)			
Corporatism (within)	0.02	0.02	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)
Corporatism (between)	**0.22****	**0.24*****	**0.53*****	**0.22****
	(0.07)	(0.07)	(0.15)	(0.07)
Institutional Constraints	0.02	0.03	0.03	0.02
	(0.03)	(0.03)	(0.04)	(0.03)
Adjusted Deficit	**−0.07*****	**−0.07*****	**−0.11*****	**−0.07*****
	(0.02)	(0.02)	(0.02)	(0.02)
Deindustrialization (within)	0.01	0.01	0.01	−0.01
	(0.04)	(0.04)	(0.07)	(0.05)
Deindustrialization (between)	**0.21*****	**0.25*****	**0.46*****	**0.22*****
	(0.06)	(0.07)	(0.13)	(0.06)
Sentiment (between)	0.12°	0.12°	0.26	0.12
	(0.07)	(0.08)	(0.17)	(0.08)
Sentiment (within)	−0.02	−0.02	−0.02	−0.02
	(0.02)	(0.02)	(0.02)	(0.02)
State Identity	−0.03	−0.01	−0.08	−0.02
	(0.07)	(0.07)	(0.15)	(0.08)
Trade Openness	**−0.13****	**−0.11***	**−0.21****	**−0.14****
	(0.04)	(0.05)	(0.07)	(0.05)
Unemployment	0.03	0.03	**0.11*****	**0.06***
	(0.02)	(0.02)	(0.03)	(0.02)
Share 65+	0.04	0.04	0.05	0.04
	(0.04)	(0.04)	(0.06)	(0.04)
Small State	**0.25****	**0.26****	**0.34***	**0.26***
	(0.10)	(0.10)	(0.16)	(0.11)
Debt Rule	**−0.08***	**−0.09***	**−0.10°**	**−0.12****
	(0.04)	(0.04)	(0.05)	(0.05)
EU Member	0.11°	0.10	0.11	0.07
	(0.06)	(0.06)	(0.09)	(0.06)
Corporatism*Deindustrialization	**0.08****	**0.09****	**0.16****	**0.07****
	(0.03)	(0.03)	(0.05)	(0.03)
GDP/Capita		−0.08		
		(0.07)		
AIC	700.31	703.96	896.00	774.33
N (Government)	439	439	439	439
N (Country)	32	32	32	32
N (Total)	1157	1157	1157	1157
Variance Government Level	0.00	0.00	0.07	0.00
Variance Country Level	0.08	0.09	0.46	0.10
Residual Variance	0.08	0.08	0.06	0.08
Variance Random Slope	0.01	0.02	0.06	0.01
Covariance Random Slope/Intercept	−0.01	−0.01	−0.04	−0.01

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; °$p < 0.1$

Table 22: Mixed-Effect Models

	With FDI	Corporatism (functional)	Employment	Debt Instead of Deficit
(Intercept)	**−28.08****	**−35.32***	**−64.61*****	−15.54°
	(8.77)	(14.28)	(12.00)	(8.04)
Lagged Dependent Variable	**0.57*****	**0.55*****		
	(0.04)	(0.04)		
Social Democratic Party		−0.01	−0.02	−0.02
		(0.01)	(0.02)	(0.01)
Corporatism (within)	0.02		0.01	0.01
	(0.01)		(0.01)	(0.01)
Corporatism (between)	**0.22****		**0.50*****	**0.19****
	(0.07)		(0.14)	(0.06)
Corporatism functional (within)		0.02		
		(0.01)		
Corporatism functional (between)		**0.22****		
		(0.08)		
Institutional Constraints	0.02	0.02	0.02	−0.01
	(0.03)	(0.03)	(0.04)	(0.02)
Adjusted Deficit	**−0.07*****	**−0.07*****	**−0.11*****	
	(0.02)	(0.02)	(0.02)	
Debt Level				**−0.14*****
				(0.03)
Deindustrialization (within)	0.01	0.01	0.05	0.04
	(0.04)	(0.04)	(0.06)	(0.05)
Deindustrialization (between)	**0.21*****	**0.25*****	**0.32***	**0.22*****
	(0.06)	(0.07)	(0.13)	(0.05)
Sentiment (between)	0.12°	0.14	0.18	0.10
	(0.07)	(0.09)	(0.15)	(0.06)
Sentiment (within)	−0.02	−0.02	−0.02	−0.03
	(0.02)	(0.02)	(0.02)	(0.02)
State Identity	−0.03	−0.02	−0.07	−0.02
	(0.07)	(0.08)	(0.14)	(0.06)
Trade Openness	**−0.13****	**−0.11***	**−0.20****	**−0.15*****
	(0.04)	(0.05)	(0.08)	(0.04)
Unemployment	0.03	0.03		**0.07****
	(0.02)	(0.02)		(0.02)
Employment (within)			**−0.07****	
			(0.02)	
Employment (between)			0.24°	
			(0.14)	
Share 65+	0.03	0.06	0.04	**0.10****
	(0.04)	(0.04)	(0.06)	(0.03)
Small State	**0.25****	**0.22***	**0.36***	0.16
	(0.10)	(0.10)	(0.15)	(0.10)
Debt Rule	**−0.08***	**−0.09***	−0.10°	**−0.12****
	(0.04)	(0.04)	(0.05)	(0.04)
EU Member	0.11°	0.10°	0.11	0.06
	(0.06)	(0.06)	(0.09)	(0.06)
Corporatism*Deindustrialization	**0.08****		**0.17****	**0.05***
	(0.03)		(0.05)	(0.02)
GDP/Capita		−0.07		
		(0.07)		
FDI Inflows	−0.00			
	(0.00)			
AIC	712.06	708.53	902.62	780.00
N (Government)	439	439	439	439
N (Country)	32	32	32	32
N (Total)	1157	1157	1157	1157
Variance Government Level	0.00	0.00	0.07	0.00
Variance Country Level	0.08	0.09	0.40	0.06
Residual Variance	0.08	0.08	0.06	0.09
Variance Random Slope	0.01	0.02	0.06	0.01
Covariance Random Slope/Intercept	−0.01	−0.01	−0.05	−0.01

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; °$p < 0.1$

Table 23: Mixed-Effect Models

	Long Time Series - Fewer Countries	All Countries - Shorter Time Series
(Intercept)	-31.50^{**}	-15.49
	(10.85)	(13.80)
Lagged Dependent Variable	0.59^{***}	0.41^{***}
	(0.04)	(0.06)
Social Democratic Party	-0.01	-0.01
	(0.01)	(0.02)
Corporatism (within)	0.01	0.02
	(0.01)	(0.01)
Corporatism (between)	0.26^{**}	0.32^{***}
	(0.09)	(0.09)
Institutional Constraints	0.00	0.02
	(0.02)	(0.04)
Adjusted Deficit	-0.06^{***}	-0.09^{***}
	(0.01)	(0.02)
Deindustrialization (within)	-0.02	0.04
	(0.05)	(0.05)
Deindustrialization (between)	0.24^{**}	0.28^{**}
	(0.08)	(0.08)
Sentiment (between)	0.11	0.16
	(0.09)	(0.10)
Sentiment (within)	-0.02	-0.01
	(0.02)	(0.02)
State Identity	-0.01	-0.04
	(0.08)	(0.10)
Trade Openness	-0.13^{**}	-0.12°
	(0.05)	(0.06)
Unemployment	0.03	0.03
	(0.02)	(0.03)
Share 65+	0.02	0.07
	(0.05)	(0.06)
Small State	0.17	0.33^{**}
	(0.17)	(0.11)
Debt Rule	-0.10^{*}	-0.07
	(0.04)	(0.05)
EU Member	0.17^{*}	0.04
	(0.07)	(0.08)
Corporatism*Deindustrialization	0.09^{**}	0.03
	(0.03)	(0.03)
AIC	362.20	601.87
N (Government)	308	321
N (Country)	20	32
N (Total)	851	833
Variance Government Level	0.00	0.00
Variance Country Level	0.09	0.16
Residual Variance	0.06	0.08
Variance Random Slope	0.01	0.01
Covariance Random Slope/Intercept	0.00	0.00

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\circ}p < 0.1$

Table 24: Mixed-Effect Models

have higher employment levels overall also invest more in knowledge-based capital. While the between effect is rather intuitive - countries with higher employment levels invest more to maintain these employment levels - the within effect is more surprising. One explanation is that as countries increase their employment levels, there is less pressure on governments to further invest in knowledge-based capital while countries with decreasing employment levels are pressured to step up their investments in order to ensure the viability of their tax base and contribution systems.

Table 24 shows models where it were not the model specifications that were changed but the underlying data. Model 4 uses data only for selected (essentially non-Eastern European) countries that have been advanced capitalist democracies before the 1990s but uses data going back to 1980. Model 5 uses data for all countries but only goes back to 1995 from which on we have reliable data also for countries that turned democratic more recently.

E   Appendix: Spirit of Digital Capitalism

E.1   Data Collection & Sampling

E.1.1   Elite Corpus

Compiling the elites corpus – a corpus of interviews, speeches, self-descriptions by the most recent generation of digital elites – involved three steps. First, we used to 2015 Forbes 400 list to identify the most successful (i.e., richest) tech elites, selecting those that made their money with digital technologies, be it as entrepreneurs (e.g. Larry Page, Elon Musk), high level executives (e.g. Eric Schmidt, Sundar Pichai) or as some mixture of entrepreneur and venture capitalists (e.g. Peter Thiel, Reid Hoffmann). Second, we selected those on that list that started what made them rich in the second half of the 1990s or later, the argument being that this newest generation of mainly web-based entrepreneurs should be quite different – both age-wise and with regard to the kinds of companies they built – from an earlier generation of mainly PC-based entrepreneurs like Steve Jobs or Bill Gates (O'Reilly 2017). Finally, we manually searched for recent documents in which these individuals describe their motivation or make programmatic statements from which their broader beliefs – as opposed to their technical knowledge, etc. – are evident. This sampling procedure resulted in 90 documents – all dating from between 2009 and 2018 – which were then split into 2326 paragraphs. Table 25 depicts the individuals that make up the digital elites corpus as well as how many documents from each individual were included.

Table 25: List of digital elites (based on Forbes 400) with number of documents

Name	Number of Documents
Bob Parsons	3
Brian Acton	2
Brian Chesky	6
Dustin Moskovitz	3
Elon Musk	8
Eric Schmidt	4
Evan Spiegel	3
Evan Williams	3
Gabe Newell	3
Jack Dorsey	3
Jan Koum	5
Jeffrey Skoll	3
Jerry Yang	1
Joe Gebbia	2
Larry Page	5
Marc Benioff	4
Mark Zuckerberg	4
Michael Rubin	1
Nathan Blecharczyk	1
Nick Woodman	1
Peter Thiel	5
Pierre Omidyar	3
Reid Hoffman	4

Robert Pera	2
Sean Parker	2
Sergey Brin	3
Sundar Pichai	3
Travis Kalanick	3
Overall	**90**

E.1.2   Wired Corpus

We scraped the Wired corpus from the web and – after manually inspecting the data – we are reasonably confident to have acquired if not all than most articles published in Wired between the magazine's founding in 1993 and 2019. We again split all articles into paragraphs – our unit of analysis. We then removed very short paragraphs with less than 200 characters as they often contain no useful information. As a result, we ended up with 1.514.839 paragraphs.

E.1.3   Harvard Business Review Corpus

We also scraped the Harvard Business Review corpus from online library provider EBSCO-host. We first generated the article-links and then downloaded all the available html-files as text from the provider. As the texts were already divided into paragraphs in the HTML-source, we it was fairly easy to extract the articles. However, we realized that the articles we obtained via our library's access provider were incomplete as not all articles are available as HTML; most of the older articles were only available as PDF-Files. Thus, we were so far unable to retrieve all documents as text, as we'd need to find a reliable way to extract the paragraphs from the available PDF documents, which – on top of other OCR-related diffi-culties – are irregularly divided into two to sometimes even four columns. Figure 46 depicts

the HBR articles that are available as HTML files (red) versus all available articles (black) on EBSCO Host. To avoid bias, we restricted our analysis – for the moment – to all years after 1980, where were able to acquire not all but most articles. This procedure resulted in 209.582 paragraphs.
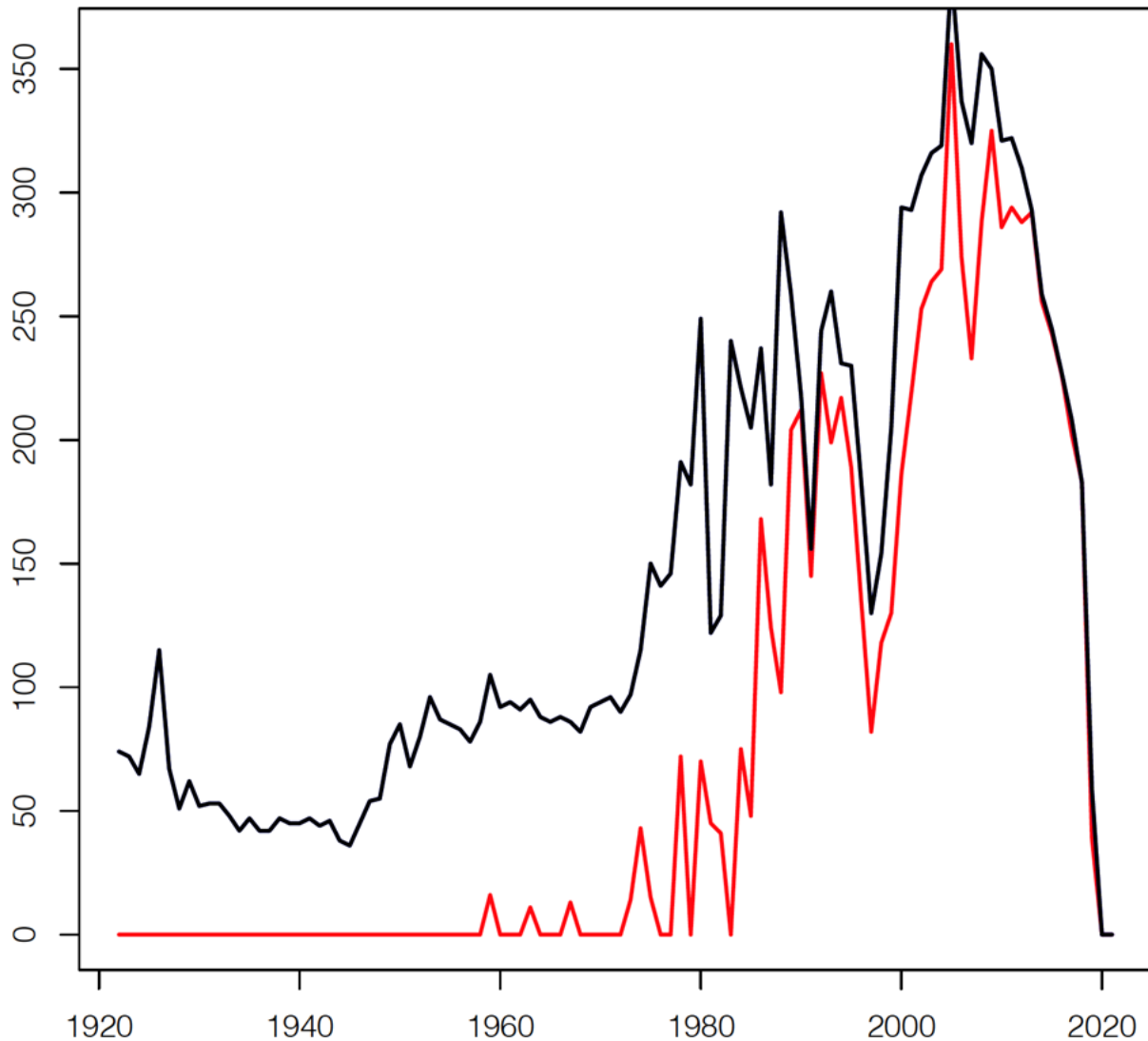
Figure 46: PDF (red) versus all (black) HBR articles

E.2   Intercoder Reliability

After training the coders and refining the coding scheme, we randomly sampled 1518 paragraphs with roughly equal numbers from the three corpora: 398 for the elite corpus, 591 from the Wired Corpus, 529 from the Harvard Business Review Corpus. Table 26 reports various measures of intercoder reliability, plus bootstrapped confidence intervals when available. Table 28 depicts a confusion matrix showing that many disagreements resulted from one coder choosing "Other" while the other code chose one of the polities. As reported in the paper, if we remove these disagreements, reliability scores further improve, as reported in Table 29.

Table 26: Intercoder Reliabiltiy Metrics

Measure	Value	95% Confidence Interval
Krippendorff's Alpha	0.697	0.68–0.71
Cohen's Kappa	0.697	0.67–0.73
Gwet's AC1	0.747	0.72– 0.77
Holsti's Method (Percentage Agreement)	0.769	-

Table 27: Agreement Matrix

	Market	Industry	Inspiration	Domestic	Opinion	Civic	Project	Green	Solutionist	Other
Market	**167**	13	2	1	4	0	10	0	9	27
Industry	1	**115**	1	0	0	1	7	0	3	23
Inspiration	1	2	**44**	0	2	0	3	0	2	9
Domestic	0	0	1	**9**	0	0	3	0	0	1
Opinion	0	0	0	0	**34**	1	0	0	0	0
Civic	1	7	0	2	1	**63**	3	0	1	24
Project	2	4	4	2	0	1	**83**	0	5	17
Green	0	0	0	0	0	0	0	**12**	0	0
Solutionist	12	9	1	1	1	3	5	0	**99**	5
Other	30	26	13	0	8	11	18	0	7	**541**

Table 29: Intercoder Reliabiltiy Metrics after removing x-other disagreements

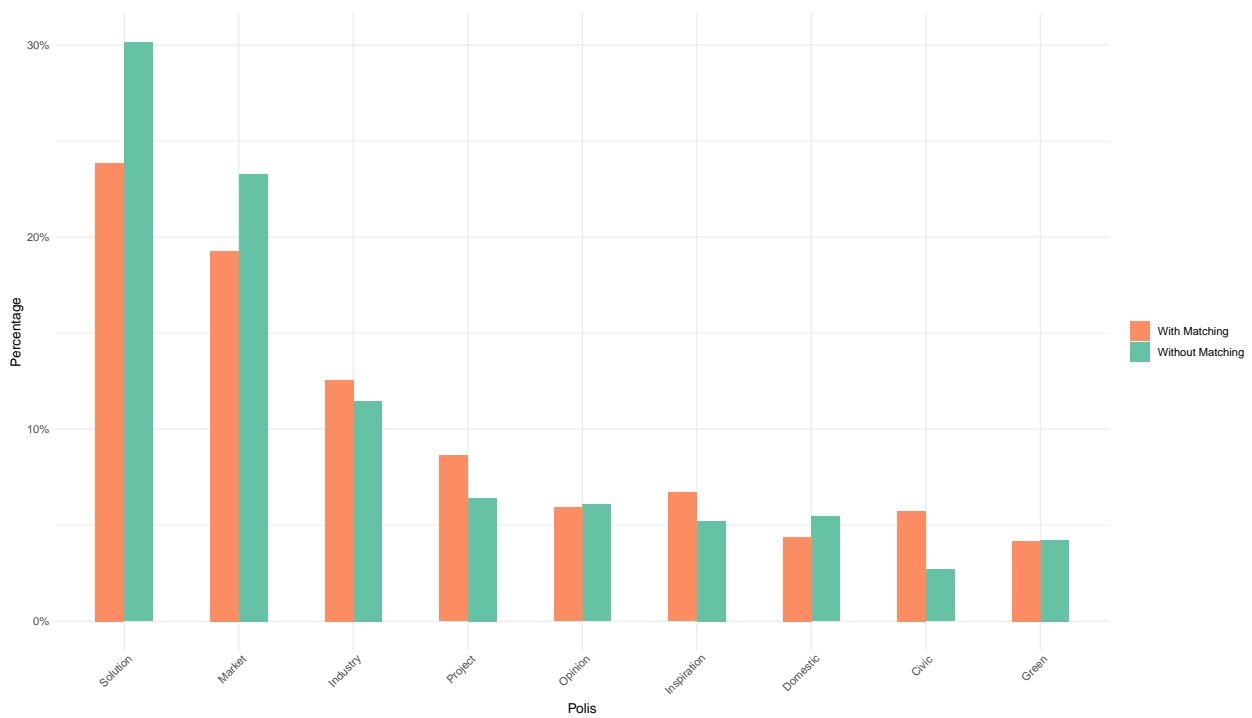| Measure	Value	95% Confidence Interval
Krippendorff's Alpha	0.868	0.86–0.87
Cohen's Kappa	0.868	0.85–0.89
Gwet's AC1	0.889	0.87– 0.91
Holsti's Method (Percentage Agreement)	0.898	-

E.3   Results with and without matching
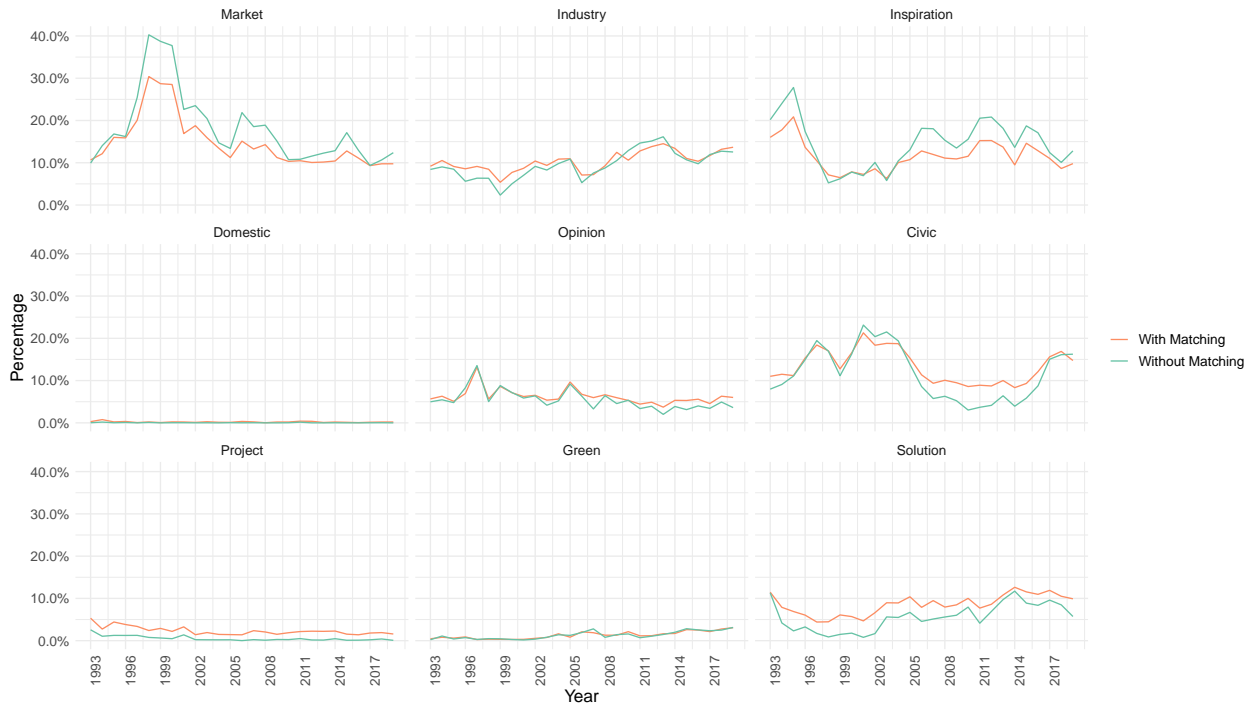

Figure 47: Elites with and without matching

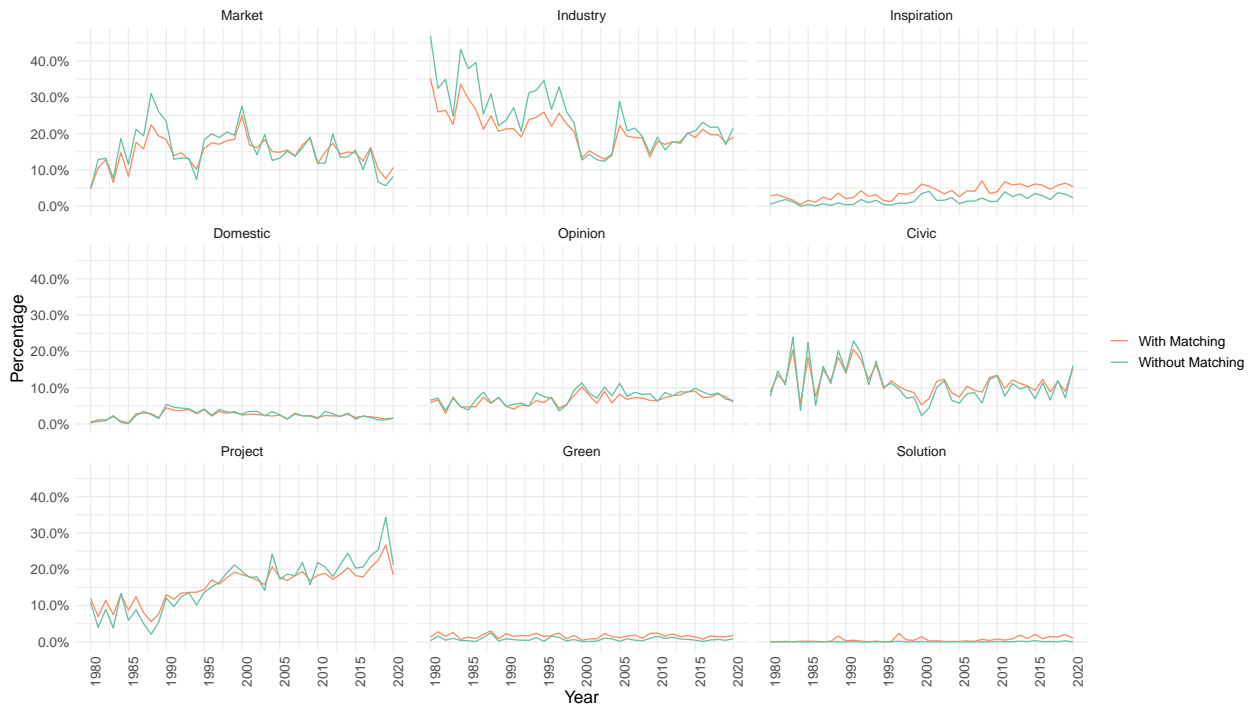Figure 48: Wired with and without matching

Figure 49: Harvard Business Review with and without matching

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