1 Introduction

The increasing penetration of artificial intelligence (AI) and robotics into everyday workplaces has led to the proliferation of scenarios about the future of work ranging from utopic visions of shorter workweeks and higher incomes to declining wages and the practical enslavement of individuals to algorithms. Although concerns about the impact of new technological developments on jobs have existed since the Luddite movement in the early nineteenth century, Schwab (2017) argues that the emergence of these developments since the beginning of the twenty-first century adds new urgency to this debate. In the past they tended to affect one industry at a time, enabling people to shift to new jobs as their previous ones were eliminated. Today, the ability of displaced employees to find new jobs is cast in doubt by the fact that new developments are simultaneously disrupting almost every sector. Blue-collar jobs are being threatened by the introduction of increasingly sophisticated advanced manufacturing and automation, while white-collar ones are now being threatened by AI (Ford 2018). A particular challenge to these jobs is coming from generative AI programs such as ChatGPT. This type of software reduces the time dedicated to writing reports of all sorts by roughly 44 percent (Garg 2023). Improvements in robotics and AI enable firms to achieve the same output and higher quality with significantly fewer employees at almost all levels. They are also affecting professions ranging from factory workers and engineers to doctors and people employed in the entertainment industry. The current strikes by writers and actors in the United States over the ability of AI to write scripts and create virtual actors is just one indication of the extent to which AI in particular has changed industries that were once thought to be safe from automation.

There is a general feeling of discontentment across capitalist countries. Although new technological developments could potentially lead to a growing standard of living in which the demand for more leisure activities could create a variety of new jobs (Nübler 2018), most people in capitalist societies across the world currently do not share this optimistic outlook. A 2019 poll by Edelman Trust Barometer found that 58 percent of people across the globe believed that capitalism was doing more harm than good (McCarthy 2020). Individuals are increasingly feeling anxious about whether the existing rules of the game actually benefit the average person (Ford 2018). Social contracts are on the decline, while political discontent and polarization is growing (Paus 2018). In the United States, more than two-thirds of white working-class individuals believe that large corporations and the wealthy control elections (Case and Deaton 2020). Wolf (2023) contends that there is a growing sensation that neither capitalism nor democracy are serving people's

interests. Significant portions of populations in democratic countries are losing faith in democratic institutions, causing the growth of right- and left-wing populist movements (Wolf 2023) that blame their feelings of malaise on immigrants or minorities (Ford 2018). Seventy-eight percent of the people in the United States that said their economic situation was worse in 2016 than in 2012 voted for Trump (Baldwin 2019). In Germany, the far-right AfD has become the second strongest political party after the Christian Democrats (Loveday and Brady 2023). "If business interests and the plutocracy become overwhelmingly powerful, democratic capitalism may fall apart, to be replaced by a plutocratic or autocratic version" (Wolf 2023: 318). Democratic countries are facing a situation similar to that of the 1930s and 1940s. Governments need to respond to these challenges by developing better policies in order to avoid the potential collapse of democracy (Wolf 2023).

The increasing unease of people in democracies is often link to the apparent ability of robotic automation such as advanced manufacturing and AI to eliminate jobs. Indeed, one report argues that job losses from new technological developments in OECD countries could be as high as 57 percent (Smith 2023). Nevertheless, another report claims that it could be as low as 9 percent (Chandy 2017). Those reports that have high estimates about the number of jobs that will be lost to these technologies do not make the distinction between the elimination of jobs and the replacement of tasks by automation (Smith 2023). Arntz, Gregory, and Zierahn (2016) contend that those studies that register higher numbers simply categorize entire jobs as being safe or possible to automate. They argue that researchers should consider that a job has the potential to be eliminated if 70 per cent of all tasks in it can be automated. Using this threshold, they contend that only 9 percent of individuals in the United States face a high likelihood of losing their jobs to new technological developments. Some countries have extensive craft sectors. Work in these fields will be more difficult to automate because tasks change often. Hence, fewer workers are likely to lose their jobs to AI and robots in these sectors. The prevalence of craft sectors and craft-style work in other areas can explain why despite the fact that Germany, Italy, South Korea, and Denmark had high growth rates in robot density between 1993 and 2007, they lost considerably fewer manufacturing jobs than the United Kingdom and the United States (Nübler 2018).

Job losses may also not impact all professions equally. Although Balliester and Elsheikhi (2018) claim that the destruction of old jobs will be greater than the creation of new ones, a survey of 18,000 employers from forty-three countries by Manpower group in 2017 found that 64 percent of firms believed that technology would not have an impact on the quantity of people they would employ over the next two years (World Bank 2018). The jobs most affected by

new technological developments are middle-skilled ones. Losses in these jobs could be more than compensated by an increase in the number of positions at the upper and lower ends of the job market (O'Reilly et al. 2018). These developments in the twenty-first century tend to augment the efficiency of workers by making some of the tasks they perform more efficient, not by replacing their jobs outright (Nübler 2018). Firms could actually maintain workers and implement new technologies if productivity improvements lead to an expansion of the breadth and/or depth of market penetration.

The technical possibility to use robots and AI rather than humans for the provision of certain tasks need not mean that the substitution of humans by "machines" actually takes place (Arntz, Gregory, and Zierahn 2016). Artificial intelligence and robotics need extensive standardization in order to prove effective (Autor et al. 2020). In order to determine the potential impact of these new technological developments on the future of work and the availability of jobs in a given country, we need to understand the degree to which tasks are standardized in it. A variety of factors, including batch sizes and/or inputs with varying quality, can limit the extent to which tasks in a country can be standardized and therefore the degree to which AI and robots can prove helpful; these factors are present in traditional industries as well as in services. Given the relationship between standardization and these developments, those countries with the highest level of standardization will also face the greatest political challenges in accommodating displaced workers. The degree to which tasks can be standardized is linked to the historical evolution of institutions in a given country, whereby the governments in those countries in which institutions support standardization will be more challenged to develop policies to mitigate the impact of new technological developments on individuals. This argument is illustrated in Figure 1.

Arntz et al. (2016) argue that legal, economic and social hurdles have a significant impact on the pace at which any country is being transformed by these new technological developments. How they will impact a given society is a political question (Paus 2018: 5). "The impact of technological change on the future of jobs is not deterministic, but is influenced by the capabilities that a society has accumulated through past experience, and by those it will develop in the future" (Nübler 2018: 64–65). The future of work in any country is not

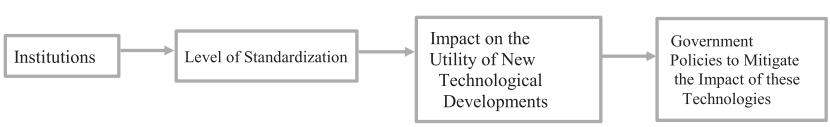

Figure 1 Illustration of my argument.

simply determined by technological developments. The prospect for the proliferation of good jobs on a massive scale depends on governmental policies (Nübler 2018). Polanyi (2001) contends that governments can either speed up or slow down the rate at which change occurs. He claims that the intervention of the Tutor and early Stuart governments in England were critical in slowing down the enclosure movement, thereby providing individuals time to find new jobs in the emerging cities. People need time to adjust to change.

Governments in emerging markets will not face the same pressure to change their policies as those in the developed world simply because technologies take time to spread throughout the world. The widespread adoption of any new technological developments on a grand scale often takes decades (Arnold et al. 2018; Atkinson 2018; Paus 2018). New technological developments from the last 20 years will take a significant amount of time to impact the majority of industries and workplaces (Atkinson 2018; Autor et al. 2020). Today, 17 percent of the global population still does not have electricity, while almost half of the world's inhabitants still does not have access to the Internet (Schwab 2017). Disruptions in labor markets caused by AI and robotics will impact emerging markets later than developed ones (Paus 2018). Nevertheless, there are also significant differences across these former countries that shape the impact of AI and robotics on the operations of firms. Although overall investments in AI in the world have increased by over 9,000 percent from 2010 until 2021, they have been concentrated in Europe, the United Kingdom, the United States and China. Private investments in AI in 2020 reached $23 billion in the United States and $9.9 billion in China (The Economist Group 2022). Although China now competes directly with advanced industrialized countries in a wide range of industries and has more multipurpose industrial robots than the United States, the majority of its producers only undertake extremely basic manufacturing activities. Except for a few large companies, most of the firms in China undertake little innovation and witness slow productivity growth.

In contrast to China, the majority of countries in Latin America and sub-Saharan Africa never created a significant number of labor-intensive manufacturing jobs (Paus 2018). This observation can explain why China has 49 robots per 10,000 workers, while this number is 16 in Argentina and 11 in Brazil (Oppenheimer 2019). While China is expected to see its GDP grow by 26.1 percent by 2030 as a result of the introduction of AI, it is predicted that Latin America will only see an increase in its GDP by 5.4 percent over this same period as a result of AI. This region simply does not have the existing talent needed to develop an effective AI ecosystem. Moreover, 41 percent of the population in Latin America did not even have access to the Internet in 2018

(The Economist Group 2022). Less than half of the population in this region have enough skills to use computers for basic operations. Consequently, it is not surprising that Latin America has lagged behind in the adoption of new technologies (Cadena, White, and Lamanna 2023).

Given the radical differences not only between Germany and the United States but also between China and the vast majority of other emerging market countries, scholars, and practitioners alike are in need of a theoretical framework that can enable them to understand the impact of new technological developments on the future of work in a given country and how governments could tailor policies to their local circumstances. Such a framework should use a set of critical factors to identify similarities between countries so that they could learn from each other. Copying policies from radically different countries would prove counterproductive as they would not address the specific problems facing a given country. Individual studies will not suffice as we need to be able to group countries according to their institutional similarities so that they can potentially learn from one another and avoid copying reforms from countries that have radically different circumstances. Wolf (2023) argues that any change in policy should be in accord with existing institutions. He analyzes a variety of institutions ranging from tax codes to government policies to promote innovation. Nevertheless, he does not provide an overarching theoretical framework for systematically comparing how existing policies and the changes needed differ between countries.

The field of comparative institutionalism provides the basis for effectively comparing countries. Within this area of research, scholars have focused on "the varieties of capitalism," developing a diversity of frameworks for understanding institutional differences across the world. This Element focuses on the most predominant one developed by Hall and Soskice (2001) entitled the varieties of capitalism (VoC) approach. I argue that VoC is better suited for making these comparisons than other theories in this field because it focuses on five critical institutions in capitalist societies, assigns countries to different ideal types and demonstrates how a particular combination of institutions shapes the competitiveness of firms in a given country. Although some of the existing ideal types need to be modified and others created, I argue that this approach encapsulates the most important variables shaping the strategies of firms. I maintain that this theory can prove particularly useful not only in helping scholars understand why the future of work will be different across countries but also in enabling governments to grasp the types of reforms they need to undertake to confront the specific challenges presented by new technologies.

In the next section, I summarize the evolution of institutional theory and its influence on VoC. It pays particular attention to how institutions in capitalist

societies have evolved, highlighting the importance of path dependency. The following section describes the underlying concepts and logic of the VoC approach, paying particular attention to how this theory explains why companies from countries with different institutional structures can thrive in global competition. It also describes the major ideal types that have been developed using this approach. Section 4 examines the major competitors to VoC and evaluates the most important criticisms of this theory. It suggests that some existing ideal types need to be reenergized and new ones created by means of a fine-grained analysis of the five institutions of VoC in a variety of countries. In this section, I coin the term, non-standardized mass production, to describe the type of production most prevalent in emerging markets. The following section analyzes the future of work in capitalist societies, summarizing what type of work can be conducted by AI and robots and arguing that these new technological developments will have the greatest impact on those economies with the highest level of standardization. It includes an analysis of how the five institutions in the VoC framework will shape the impact of these developments in the United States, Germany, and Brazil; they were selected because they are exemplars of the three most developed ideal types in this approach. I argue that the United States will be more affected by new technological developments because business operations are more standardized in this country, while Germany and Brazil have specific, but different, mitigating factors. The next section examines how the ideal types developed in VoC can help policy makers design regulatory reforms to address the challenges of the future of work in these three countries. The conclusion presents a summary of the arguments made in this Element, while also providing guidelines for future research.

2 Institutional Theory and the Varieties of Capitalism Approach

At the heart of political economy lies a debate as to whether economic growth will improve the conditions of the poor. Scholars drawing on neoclassical economics contend that economies will grow faster and the conditions of everyone will improve if governments do not interfere in the operation of markets (Coates 2000). Countries supposedly can only reach a maximum level of growth by eliminating regulations (Elmslie and Criss 1999). Adam Smith contends, "had human institutions, therefore, never disturbed the natural course of things, the progressive wealth and increase of the towns would, in every political society, be consequential" (Smith 1776: 503). However, Smith also saw how regulations could benefit the functioning of markets. For example, he was in favor of laws that required inheritance to be divided among all children in a family because he believed it would improve the allocation of

capital and lead to lower prices of property (Smith 1776). This insight opens up conversations about the proper role of regulation. Those scholars supporting statutory interventions point out that countries with a significant degree of regulation have reached levels of productivity and economic growth that are equal to more "liberal" ones (Hall 2015). Given this fact, it is not surprising that alternative capitalist paths have not only emerged but persisted (Storz et al. 2013). Convergence toward one liberal model of minimal government interference is simply not necessary for countries to prosper and even thrive.

The recognition of the fact that economies can persist without eliminating governmental regulations draws attention to the need for scholars to clearly understand how institutions emerge and evolve. North (1990) examined how institutions provide the basis for efficient interactions by providing actors sets of incentives and disincentives to behave in particular ways. The institutions he examines range from regulations that are enforced by laws to informal practices that generate expectations about how people should conduct themselves. Institutions act as "collectively enforced expectations" that generate predictable patterns of behavior (Streeck and Thelen 2005). They establish the basic rules of the game and improve the efficiency of human interactions by reducing uncertainty (North 1990). "The idea of persistence of some kind is virtually built into the very definition of an institution" (Mahoney and Thelen 2010: 4). Institutions improve the efficiency of organizations by allowing parties to transactions to avoid having to explain their perceptions and understandings to each other, thereby enabling them to coordinate their activities without centralization. (Streeck and Thelen 2005). Actors resist changing institutions because the efficiency of their operations is derived from existing ones (Deeg and Jackson 2008). Neoclassical economists and those scholars that draw inspiration from this school of thought do not neglect the impact that institutions have on the behavior of actors. "However, they tend to neglect the effects that institutions can have on the strategic interaction between actors – that is, those effects that are stressed by those who favor the varieties of capitalism framework" (Allen 2004: 98).

Institutions arise out of individuals sharing common historical experiences that in turn form common expectations across society. Coordination between actors is also facilitated by shared histories and consistent expectations (Paul 1994). "The more actors adopt and apply a specific institution (i.e., an organizational rule or routine), the more efficient the interaction among these actors is, since the behavior of the actors is rule guided and can therefore be anticipated and reactions can be considered in advance" (Sydow, Schreyögg, and Koch 2009: 699). As actors continue to behave in ways in accordance with existing institutions, they constrain human behavior and provide a sense of consistency

within a society (David 1994). Repeated behaviors create path-dependent ways of acting in an economy. Present decisions are shaped by how actors within a society are expected to behave. Yet, they are potentially unaware of how institutions shape their behavior (Arthur 1994; David 1985). A certain degree of obedience is a precondition for coordination in and outside organizations. This obedience reinforces the value of institutions creating lock-ins (Sydow et al. 2009) in which actors are often unable to change their behavior even in the face of more efficient options (Arthur 1989).

One of the most significant differences in theories about institutions revolves around whether they are consciously designed by humans rationally weighing costs and benefits (North 1990) or emerge out of a country's history and culture (Powell and DiMaggio 1991). Rational choice institutionalism is a theory based on the premise that institutions arise from utilitarian calculations. This form of institutionalism presupposes that actors have fixed preferences that they seek to maximize through rational action (Schmidt 2010). It assumes that individuals work together to create institutions to realize mutual benefits. A particular institution endures because it provides more benefits than alternatives. Since humans construct institutions, they can decide whether or not to obey them (Hall and Taylor 1996). The literature on rational choice institutionalism overlooks how historical contexts shape human behavior (Jackson et al. 2019). By contrast, historical institutionalism examines how institutions arise from historically contingent social compromises (Streeck 2001; Streeck and Yamamura 2003; Thelen, 2004; Thelen and Steinmo, 1992), while sociological institutionalism probes how individual preferences arise from cultural contexts. It attributes variations in behavior across societies to differences in rules and norms (Schmidt 2010). Historical institutionalism and sociological institutionalism focus on how human behavior is shaped by factors beyond their control. Actors are even sometimes unaware of how history and culture shape their behavior (Thelen and Steinmo 1992).

The repetition of behavioral patterns creates path dependency in a society, causing the institutions of the past to shape future ones (David 1994). Some scholars argue that institutions shape the way people interpret the behavior of others and even what they can imagine themselves doing. These scholars argue that they even shape how individuals frame solutions to problems (Hall and Taylor 1996). These existing patterns of behavior shape the nature of institutions that actors will design for new circumstances (Hall and Taylor 1996; Sydow et al. 2009). New institutions cannot simply be grafted onto existing political economies without being shaped by existing ones (Hall and Thelen 2009). Institutional slates can neither be simply wiped clean nor ignored (Fligstein and Freeland 1995; Jackson and Deeg 2006; Thelen and Steinmo 1992). At the same time, any