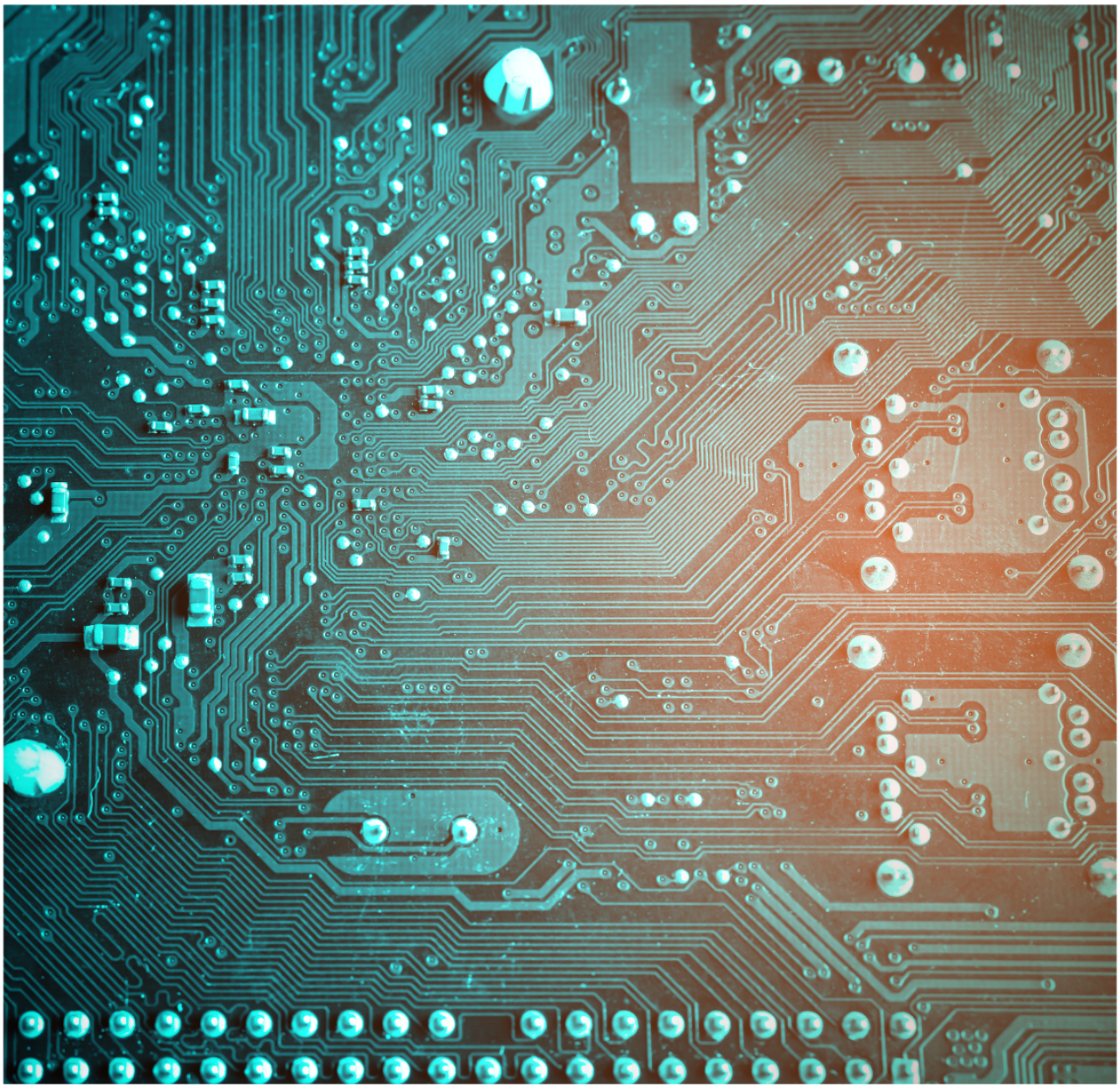
The Gendered Creep of Neo-classical Economics through Digitisation

Laura Mann



Co-funded by the European Union

FRIEDRICH EBERT STIFTUNG

IT for Change

Acknowledgments

Research and writing

Laura Mann, Assistant Professor, Department of International Development, London School of Economics and Political Science

Editing and review

Khawla Zainab, IT for Change

Proofreading, design and layout

Intifada P. Basheer, IT for Change

Funding support

This think piece was commissioned by IT for Change as part of Re-wiring India's Digitalising Economy for Women's Rights and Well-being, a project supported by the European Union (EU) and Friedrich-Ebert-Stiftung (FES).

Table of Contents

The Gendered Creep of Neo-classical Economics through Digitisation

Laura Mann

December 2022

Abstract

This think piece moves away from the visible containers of 'tech' and 'gender' to think more broadly about how technology firms have helped gender the division of labour. It argues that they have helped align the global economy with neo-classical models, facilitating a feminisation of labour to occur and bringing about limited economic gains for women workers in low- and middle-income countries. Yet such gains are precarious as they have been secured through women's subordinate position within society. Furthermore, as digitisation and automation proceed, there are reasons to believe that these opportunities may dwindle further as that alignment grows tighter.

Introduction

People are anxious about data, worried that it is being used for nefarious purposes. Others worry that it is being monetised or fed into new processes of work intensification. Others still may worry that they are not doing enough with their data or that the rules and regulations are tightening around them without the full implications being known. Despite this storm of worries, the subjects of our unease, 'data' and 'digitisation' remain elusive villains. The clearest 'crime scenes' are the big, visible technology companies with their consumer-facing websites and loud-mouthed CEOs: the platforms and apps like Facebook, Google, Amazon, Netflix, Alibaba, Baidu, Mercado Libre, Flipkart, Jumia, Uber, etc. These represent the 'self-contained villains' of the tech world, clearly identifiable as 'digital' and 'tech'. They are relatively accessible and measurable, and you can design surveys and interview the people who use them, design them, and implement them. In some cases, you may even study their transactional data to discern patterns over time. Like the charismatic villains who loom from our cinema screen, we can boo and jeer at them.

Yet, if we only focus on these self-contained objects, we may lose sight of the broader transformations happening around us: the diffused and embedded ways that technology creeps into our lives and transforms the way we think, produce, transact, and behave. We may miss the interactions between new 'bits' of technology and old bits of technology, and we may neglect the many instances when tech firms confront existing power structures and adapt and/or give way. We may also miss the many physical or political constraints that prevent software developers from realising what is technically possible through their code alone. Indeed, the longer I chase 'data' as an object of research, the more low-tech and mundane my research questions seem to become. I find myself asking: Are corner shops and street stalls still using paper notebooks to keep track, or have they moved onto excel spreadsheets, or perhaps even 'Enterprise Resource Planning' software? What 'data points' do buyers require from their suppliers about working conditions or pesticide use, and how do these requirements make visible what was previously hidden? Concurrently, what do they not ask and what remains hidden? At first glance, these questions seem quite boring, and 'low tech', but I believe they might reveal more about how digitisation is reshaping the world than a singular focus on big platforms. They reveal the degree to which the world has come to be or has not yet come to be aligned with code.

Like data, gender is not so easily contained. I was recently made aware of this parallel when a student commented that feminism was not a top priority in his country because poverty and conflict were more important issues. I immediately heard my colleague, Naila Kabeer's voice ring out like a bolt of lightning, "*And feminism isn't about poverty and conflict*?"! Like digitisation, sexism is a creeping kind of villain, seeping into our lives seemingly undercover (especially if you happen to be a man).

Of course, we are all encouraged (somewhat aggressively) to think about gender and tech in these self-contained packages. Imagine if you will, those panels at the Big Tech conferences. The line-up of high-powered women executives lamenting the lack of other women on corporate boards and hedge funds. Discussions of all those initiatives designed to boost the number of girls and women in 'STEM'. Yet what often gets missed on such panels are more fundamental questions about the gendered impacts of digitisation on labour in low- and middle-income countries, where, lest we forget, the majority of the world's women reside.

In this think-piece, I want to move away from the visible containers of 'tech' and 'gender' to think more broadly and diffusely about how technology firms have helped to gender the division of labour within the global economy. I will argue that digital infrastructures have played a role in aligning the global economy

with neo-classical models, which have, in many ways, allowed a feminisation of labour to occur, and have thus brought limited economic gains for women workers in low- and middle-income countries. Yet these gains have always been precarious at best as they have been secured through women's precarious position within society more generally. Furthermore, as digitisation and automation proceed ahead, there are reasons to believe that such opportunities may dwindle as that alignment grows tighter.

Re-engineering economies to align with great gender equality will require more conscious thought and care, carving out exceptions to neo-classical principles that extend to all citizens, not just those residing in former colonial powers and white settler states. In making my argument, I draw on ideas from a book I am writing, which examines digital transformations through different theories of 'rents' within classical, neo-classical, and heterodox economics. I have also drawn on a large volume of work by feminist economists and other colleagues who have done careful, long-term work on feminisation across the world. Before focusing on the gendered impacts of digitisation, I must first explain what I mean by neo-classical alignment, and so this is where I begin.

Part 1: Digitisation and Neo-classical Alignment

Economists like to think of their discipline as a 'camera' that captures increasingly accurate representations of the economy as its methods and technologies improve (MacKenzie, 2006). If an economist perceives a bias in an economic model, she "simply has to gather the appropriate data and present evidence which shows that a particular view is mistaken" for "[a] mistaken view is a public view" (Woolley, 1993), public and clear for everyone to see.

In contrast, economic sociologists view the relationship between economic theory and economic processes as far more complex. Economics is not a camera, the economic sociologist, Donald MacKenzie contends, but an engine, that remakes the world as it moves through it. When economists measure, they often re-arrange. When they ask people to account, they prod them to reconsider their choices. When they build predictive models, they implicitly reward those who "compute" and exclude those who do not. Such 'performativity,' as economic sociologists have termed this 'observer effect', entails any "practical use of an aspect of economics [that] makes economic processes more like their depiction by economics" (MacKenzie, 2006: 18).

Performativity complicates the idea of "the economy" as a free-standing object (Mitchell, 2008). Accuracy can never be achieved through some pure or passive objectivity, but through a reiterative process of alignment; economists adapt their theories and tools to better represent and explain the world, but the world is constantly being remade in light of those theories. And of course, such performativity plays out in a hierarchical world in which those with more resources and power exercise disproportionate influence over such theory and world making (and the 'exceptions' that are allowed) (Greenspon and Rodrik, 2021; Slobodian, 2018). As a result, alignment may not feel particularly harmonious to those with less power. Regardless of any feelings of dissonance, dominant policy paradigms form around these iterative processes, as technologists, policymakers and businesspeople all reshape the world in light of and sometimes in pursuit of prevailing ideas (Hall, 1993; Braun, 2014; Mann and Iazzolino, 2021).

Neo-classical economics currently serves as the prevailing policy paradigm (certainly in high-income countries but also in the many low- and middle-income countries that depend on high-income countries' finances and markets). And at the heart of neo-classical economics is the principle that capital must flow 'downhill' towards capital scarce regions where it is presumed to achieve the highest rate of profit and

growth. Any barrier that gets in the way creates friction, slowing down growth, and inflating rents. This is the foundation of both classical and neo-classical economics, but what distinguishes neo-classical economists from their intellectual ancestors is the belief that the efficient market is not just an interpretative framework for understanding the laws of capitalist motion, but an ideal framework that should be realised in order to achieve higher growth rates (Shaikh, 2016).

There are three broad types of market barriers: the politically imposed barrier, the intentional barrier imposed by a private firm, and the more incidental kind of barriers that can be surmounted by ingenuity and innovation. I will first deal with political barriers as these are the most politicized. They include policies such as tariffs, taxes, preferential credit, and industrial policies, all which restrict the free flow of capital, and create opportunities for private interests to capture rents. While some policymakers and heterodox economists might view such policies as potentially quite strategic, socially desirable, and/or perhaps even necessary for long-term structural transformation, neo-classical economists understand them to be inefficient (as they impose a welfare cost on society) and politically fraught (as they are prone to be 'captured' by private interests). Thus, neo-classical economists have tried to prevent policymakers from imposing such barriers, and pushing for harmonised global rules (Maravall, 1994; Mkandawire, 2006; 2010; Slobodian, 2018). This push gained momentum in the 1980s, when low- and middle-income countries were forced to introduce structural adjustment policies in exchange for debt relief. Structural adjustment required governments to liberalise their trade and financial policies, to privatize state assets, to dismantle commodity marketing boards and to refrain from using 'industrial policies' in order to structurally transform their economies. In short, they pushed policymakers to better align their economies with neo-classical precepts.

In the intervening years, many developing countries have enjoyed greater financial autonomy, and yet the legacies of structural adjustment remain in their fragmented and in some cases, privatised institutions, and in the presence of so many international organisations and multinational companies within their policy networks (Mkandawire, 2006; 2010). Yet low- and middle-income countries vary in terms of fiscal and policy space and institutional environments (and indeed, this variation interacts with digitisation in quite interesting ways).

Notably, while neo-classical economists frame such alignment in terms of a reduction in the role of the state in 'the market', this is not necessarily true, as states are still required to enforce private property rights and/or shield private investors from labour activism and other social demands. As new institutional economists and behavioural economists have further argued, developing countries are prone to many 'market imperfections,' requiring extra-market forms of governance and coercion to get neo-classical models to work in practice (Mann and Iazzolino, 2021). For all these reasons, I do not find it helpful to define neo-classical economics in terms of the opposition between the state vs. the market, but rather to frame its orthodoxy in relation to the clear analytical boundary drawn between rents and profits, and the overarching focus on efficiency and capital mobility as the ultimate objectives of economic policymaking.

While much neo-classical alignment has been political and not directly 'digital', digital technology infrastructures have contributed in at least one way. The harmonisation of global rules has been accompanied by a wider process of intellectual consensus-building through which data has come to play an increasing role. Elite universities in high-income countries and powerful international organisations such as the OECD and World Bank have built databases and indexes to measure adherence to neo-classical models and have funded research projects to calculate the short-term welfare costs imposed by deviant policies. Examples include the OECD's 'Distortions to Agricultural Incentives' and the OECD's 'Services Trade

Restrictions Database'. These projects present themselves as neutral knowledge production exercises, simply generating 'fact-based analysis' for policymakers to make 'better decisions'. However, by framing industrial policies in terms of 'distortions' and 'trade restrictiveness', they foreclose debate and raise the costs of deviance. They effectively provide data-driven surveillance over the behaviour of policymakers.[1]

However, not all market barriers are political barriers. Some are intentionally created by firms to inflate their profits but others are more incidental. A mountain range or sea can impede the flow of capital often times more effectively than a tariff regime (Milner et al., 2000), while sexism and racism can protect privileged groups from broader competition. Just like tariffs, these natural or 'naturalised'[2] barriers provide some 'natural protection', allowing certain actors to enjoy surplus profits or wages in excess of what would be possible in a flatter, less bumpy world (Langhammer, 1983). Within classical and neo-classical models of growth, the mere existence of such surplus is presumed to motivate private actors to engage in technical arbitrage in order to capture it for themselves. This is precisely how technical progress and efficiency are presumed to advance. Through the work of many diffuse private technological and business innovations, the profit rate is said to equalise across space, obliterating all those incidental barriers in the process. This is where digital technology firms have really played a starring role in the alignment of the world along neo-classical lines.

Such alignment came to a head in the 1980s through what has been called 'shareholder value ideology' (Davis, 2009). This ideology dictated that managers must maximise shareholder value at all costs. Practically speaking, managers came under pressure to identify all those inefficiencies, bottlenecks, and redundancies that reduced their companies' bottom lines. In so doing, they employed consultants and developers to design measurement infrastructure and compensation models that helped quantify 'friction', and to help managers distinguish between tasks that could be performed more cheaply and effectively within an organisation's workforce or infrastructure, and those that would be better left to third parties with lower production and/or higher technological capabilities (Ackroyd and Proctor, 1998; Davis, 2009). As a result, production has become increasingly fragmented as tasks once conducted in-house have shifted outside the firm, first into lower-wage regions within national economies and then into lower-wage economies offshore (Dicken, 2003; Bain and Taylor, 2008).

Digital technology firms have enabled this fragmentation to occur through the introduction of more intensive measurement systems and through the construction of more advanced communication and technology infrastructures that have made such intra-firm coordination possible. Digital systems have been used to quantify and evaluate performance and identify redundancies and waste within production and supply chains. Retailers have been able to orchestrate 'lean production' systems and 'just in time' inventory systems. Digitisation has also allowed managers to reduce 'rent-sharing' across workers, aligning individual compensation with performance and introducing staffing arrangements such as zero-hour contracts that allow managers to contract labour only when it is needed (Standing, 1999; Wood, 2020). Through such data-driven restructuring, firms can squeeze efficiency out of the workforce and remove more incidental barriers that reduce profits and inflate rents. This re-engineering has informalised work in even the so-called 'formal economy' and has transformed the nature of trade and investment within the global economy (Coe and Yeung, 2015).

1 Quotes taken from one of the project's own websites: https://www.agincentives.org/content/about-us

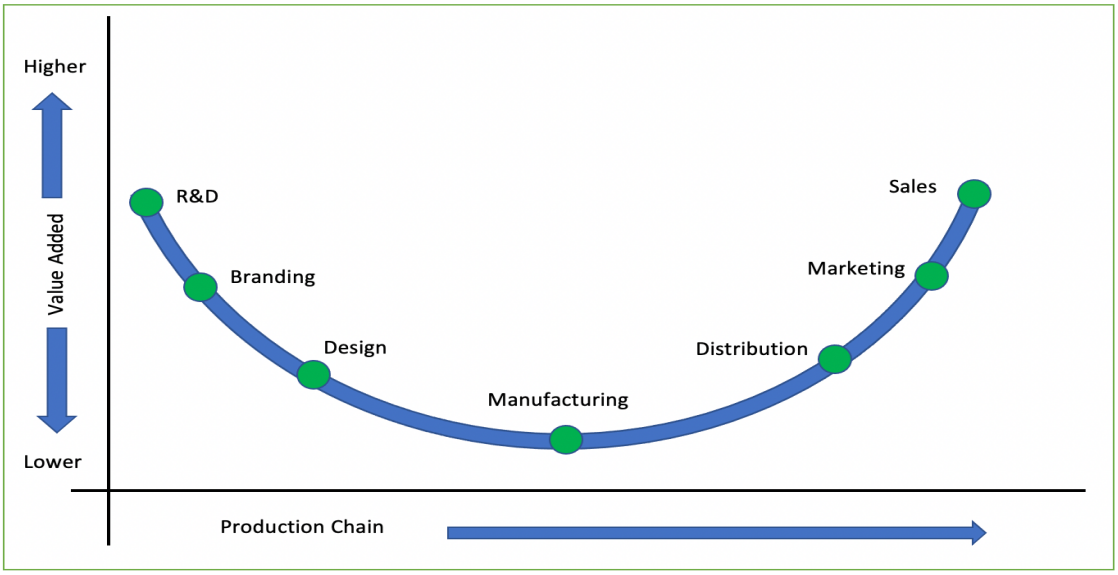
2 In the case of discrimination, difference is not really *natural* but *naturalised* through culture.

Prior to these transformations, many scholars understood development to be a story of technological diffusion across borders (Vernon, 1966). Innovation was presumed to occur in high-income countries, where more knowledge intensive workforces and more advanced infrastructures had been built (financed, in part, through centuries of colonial extraction). The relative rarity of manufacturing skills and the inability to shift such work overseas meant that these workforces could wage bargain and extract better working conditions. In other words, there was a lot of 'friction' around production (Mitchell, 2009). Wider social development and democracy were secured through labour mobilization and productivist welfare states, but in a highly gendered and racialized way. Better paid workers fought hard to control the technical know-how surrounding their jobs and resisted efforts to widen skills and benefits to new groups (such as non-unionized workers, immigrants, and women) (Cockburn, 1981). Thus, the 'friction' of the old system allowed the populations of high-income countries to benefit, but in stratified, unequal ways.

Development was understood as an expansion of these conditions across the world (Vernon, 1966). As a technology matured, firms and workforces in the high-income country would abandon the production in favour of more innovative and lucrative activities associated with newer technologies. Older, more mature production would therefore shift into lower-wage economies, where investors could find cheaper labor. This investment brought with it, a mix of high-skilled and lower-skilled work opportunities and thus, two kinds of developmental benefits: mass employment and an influx of technological capabilities. Again, the relative rarity of those capabilities within the wider world allowed this new workforce to extract similar kinds of social benefits and spillover (albeit reduced as the global skill pool had widened). Technological development was thus understood to move like a flock of geese migrating across borders.

However, digitization and globalization have altered this process (Bernard and Ravenhill, 1995; Kleibert and Mann, 2020). The production of a good or service no longer occurs within a single firm or region, and FDI no longer brings the same mix of high and low-value tasks. Instead, high-income countries have tended to retain higher-value activities associated with skill and technological infrastructures (as it would be costly to replicate those elsewhere), while largely lower-value activities have been outsourced elsewhere. Broadly speaking, this pattern correlates with the 'Smile Curve'.

Figure 1: The Smile Curve



Source: Compiled by author

Those tasks requiring technological infrastructures and skills remain clustered in higher-income regions as do low-value activities requiring geographical or intimate proximity to end consumers. Meanwhile, other low-value activities have shifted to low-wage regions with controlled labour regimes and more activist industrial policies, as have specific tasks associated with particular geographic clusters of skills (such as software development in India). This unbundling has led to a skill 'polarisation' within the global economy: a concentration of higher-skilled workers and a much larger pool of external workers, who lack skills and have limited bargaining power and social protection.

Low and middle countries can now easily get integrated into the global economy in immiserating ways (Hickey and Du Toit 2007; Murphy and Carmody 2015; Coe and Hess 2011). Likewise, their firms and workers can become 'stuck' in low-value activities with slim profit margins and low wages, and can struggle to raise sufficient investment capital nor acquire the necessary skills to move into more advantageous activities. This dead-end integration has been termed 'the middle-income trap' (Lebdioui et al., 2021). Compounding matters is the fact that the same kinds of processes that first allowed firms to fragment production and offshore tasks abroad, are now paving the way for greater automation of labour-intensive production processes, further reducing the opportunities for low- and middle-income countries to benefit from trade and investment going forward (Frey and Osborne, 2017; Kleibert and Mann, 2020).

To be clear, automation does not mean that robots are replacing humans, one for one. It is a more creeping kind of change. When workers are required to use digital systems, they adapt themselves to the technical architecture and slowly make themselves more 'machine readable' and amenable to computer surveillance and learning. Managers (and the various management consultants who live alongside me in London) use the resulting data to "optimize" production. Slowly, over time, work is redefined and re-constituted as consultants find new ways to eliminate skills and human cognition and reduce the vulnerability of capital to the 'friction' of industrial action.

If you visit an Amazon warehouse you will see such routinisation taken to its logical extreme; when a worker unloads goods from a truck, she does not even need to think about where to place the boxes. She simply scans them, deposits them onto the nearest trolley and then scans the trolley. Later, when a new order comes in, her handheld device uses the data to direct her to the right trolley to collect the goods. In this way, Amazon has eliminated the need for human thought, reducing workers to the sum of their nimble body parts. Because workers do not require skills or training, they can be more easily substituted, meaning that it does not matter if there is a high turnover.[3] It is currently prohibitive for the company to automate human arms and legs, and so for now, people remain on the warehouse floor, but the mental component of their work has been reduced.

This is the logic that low- and middle-income countries are up against: the quantification, routinisation and eventual automation of labor-intensive production and the progressive elimination of skills and bargaining power from growth. Slowly, over time, many of the benefits of trade and foreign direct investment, in the form of higher wages, knowledge resources, and broader investment, are therefore being eroded. For countries hoping to follow in the footsteps of the East Asian 'tigers,' they may find the path a bit rockier and narrower.

3 Although as we saw in the pandemic, such arrangements lead them vulnerable to crises.

However, it is not all bad news. Amidst the clamor for greater efficiency and flexibility, a countervailing trend is in effect, stemming from the various exceptions that have been carved out of the global governance system, instances where resistance to neo-classical alignment has been justified on social or ethical grounds. John Ruggie developed the concept of 'embedded liberalism' to capture these exceptions. He described how policymakers in the post-war period opted for a broadly 'liberal' trade regime (aka, furthering 'free' trade), but still allowed governments (primarily in high-income countries) to mitigate against the social consequences of unrestrained liberalism, through welfare regimes and policies designed to protect the environment, society, and national culture (see also, Polanyi, 1944). Such exceptions impede the flow of capital and impose barriers to investment and trade, and yet, they are tolerated as socially desirable and perhaps even democratically necessary.

Of course, the ability to carve out such permissive exceptions is not shared evenly: 'embedded liberalism' has thus largely been structured around the needs of high-income countries, and among the most powerful actors in those countries to shape social priorities. Therefore, while some countries can justify barriers on the basis of health and environmental concerns, comparable policy space for the purposes of transformative economic development has increasingly been eroded (Rodrik, 2001; Chang, 2002; Wade, 2003). My late colleague, Thandika Mkandawire, developed the concept of 'choiceless democracy' to describe how African democracies were deprived of the same ability to embed liberalism within their societies during and following structural adjustment; regardless of any democratic mandates or popular demands from their electorates, when pressed by debt and adjustment, many African politicians and political parties found they lacked the requisite policy space to embed global demands for liberalization in ways that would allow them to socially protect their societies. Other scholars such as Olukoshi, Laakso, and Boone have likewise linked adjustment to the break-down of the post-colonial social compact in African countries and therefore, to civil conflict (Olukoshi and Laakso, 1996; Boone, 2013).

Since the post-war period, the global trading regime has expanded dramatically, in terms of country membership in the WTO, in the number of regional trade agreements and in terms of the number of issues and agreements under discussion. Diplomats and trade negotiators from high-income countries have been able to introduce many policies designed to protect the environment, public health, consumer protection, national security concerns, and sometimes, commercial interests cloaked in social concerns. For example, producers must comply with various sanitary or phytosanitary documentation and trademark and labelling requirements to access high-income markets. Many of these requirements require new forms of digitisation, as producers must document more aspects of production and working conditions. Such policies have been termed 'non-tariff measures' or NTMs by economists and trade experts, indicating that such policies effectively impose barriers to trade akin to tariffs.

In addition to these public forms of governance, various private standards and certification schemes have also emerged in response to consumer preferences and business innovations in order to monetise those preferences (Barrientos, 2019). Here too, digital technologies have played starring roles. On the one hand, retailers have accumulated more granular data about their consumers. They can increasingly segment markets and price discriminate. If consumers have specific tastes and ethical preferences, retailers can meet those demands through higher-value products accompanied with greater 'transparency' about their production processes. On the other hand, these same processes have made retailers more vulnerable to environmental and labour campaigners seeking to publicise poor working conditions or deleterious environmental impacts. Thus, while the fragmentation of work made it difficult to assign responsibility for working conditions and environmental standards by creating more ambiguous subcontracting relations,

consumer facing companies are now under pressure to improve transparency and 'traceability' through digitization and documentation. Doing so may be necessary to comply with social audits, but it may also allow them to capture the benefits associated with labels such as organic, fair trade, etc.

Certain kinds of value chains (predominantly consumer facing) are therefore becoming digitised in potentially more lucrative and developmental ways (Barrientos, 2018). First, these processes require higher levels of technical sophistication and knowledge intensity, raising the potential for skilled labour and greater local technological capabilities within previously low-value production (Cramer et al., 2018; Cramer and Chisoro-Dube, 2021). Second, by appealing to ethical concerns, producers can extract higher prices from consumers, a phenomenon that Chris Cramer has dubbed 'ethical rents'.[4] Both kinds of opportunities exist in agriculture as well as manufacturing, complicating the notion of 'structural transformation' as a shift from agriculture to manufacturing.

To be clear, these processes do not guarantee that working conditions will improve nor ethical rents will flow up the value chain (indeed some studies have demonstrated that fair trade organizations tend to perform worse than unionized workforces- Cramer et al., 2017), and it is certainly true that some activities such as business process outsourcing are far less vulnerable to consumer demands, but nonetheless these changes do provide potential technical infrastructures for activists, unions, and policymakers to leverage. All these opportunities stem from their 'exceptional nature'. Exceptions create friction and friction creates the opportunity for producers and workers to capture benefits and surplus value.

In summary, digital technologies have been implicated in various transformations in the global economy. First, digital technology firms have helped policymakers and firms closer align the global economy with neo-classical economics in ways that have eliminated many of the benefits of trade and investment for low- and middle-income countries. Yet, on the other hand, digital technology firms are also involved in documenting many of the allowable exceptions and restrictions to such neo-classical alignment, in the form of non-tariff barriers and ethical rents. This is the landscape through which digitisation is reshaping development and divergence within the global economy. I will now dig deeper into what these transformations have meant for women workers and citizens.

Part 2: First Feminisation and then De-feminisation?

As many scholars have identified, this alignment process has had highly gendered impacts. While neo-classical economists frame the market as a neutral sphere in which individuals are simply rewarded in proportion to their productivity and people make decisions on the basis of market signals, human beings are in fact deeply social beings, who are embedded in social obligations and socialised into ascribed identities, which shape their ability to train, work, transact, and wage bargain.

While patriarchy takes many forms (Boserup, 1970; Kabeer, 2003), almost all societies disadvantage women, and capitalism has, in many ways, intensified their social subordination through the sexual division of labour. Societal norms impose greater responsibility over social reproduction and unpaid domestic labour, which constrain their choices of livelihoods, limit their mobility, and corral them into activities more compatible with part-time and 'flexible' labour arrangements, with weaker bargaining power as a result. Women are thus over-represented in the informal economy and are confined to more casualized professions where they lack

4 He has yet to publish anything on this concept but introduced this concept at a 2016 workshop. Please see: https://roape.net/2016/05/24/africas-turn-industrialize/

social insurance and worker protections (ILO, 2009). Girls and women are also often socialised into feminine gender norms that inculcate greater docility and compliance. Their families may also deprioritise their education and training while employers may refrain from investing in their training in fear women will leave or interrupt work for caring roles (Seguino and Braunstein, 2019). If and when women do acquire skills, those skills tend to be less well renumerated (Levanon et al., 2009). In professions where women dominate, wages are lower, and when a profession becomes more accessible to women, wages fall for everyone (Oldenziel, 1999; Seguino and Braunstein, 2019). This under-renumeration partly stems from direct discrimination but also reflects the scarcity logic within neo-classical models - as women become more educated, the entry barriers that previously protected men's skilled earnings fall, and so all workers lose their relative bargaining power. Finally, women face entrenched sexual harassment and threats of sexualized violence that impede their access to workplaces and prevent them from acquiring skills, experience, and bargaining power.

All these disadvantages make women cheap and compliant employees for managers seeking to hold down wages and eliminate frictions and inefficiencies from production and trade. The fragmentation and informalisation of work have therefore been accompanied by profound feminisation of work, widening economic opportunities to large numbers of women in low- and middle-income countries but largely confining them to low-value activities on informal contracts. By employing insecure women, employers save twice; once from their lower wages and second from the lack of non-wage costs associated with social insurance and other benefits (Standing, 1989). While we might say that digitisation paved the way for feminisation; we might equally say that feminisation also paved the way for digitsation. The two processes went hand-in-hand. Sexism is a kind of technological complement to digitization, helping to realise neo-classical models in the real world.

Interestingly, as Stephanie Barrientos (2019) has described, the greater incorporation of women into the workforce has also led to further technological innovations in production systems. Various economic activities that were once carried out in the home (clothing, food preparation, child, and elderly care) are themselves now becoming commodified and commercialised. However, this commodification has not resulted in women working less or receiving more recognition for the work they do. In fact, women often carry the double burden of a 'second shift,' working more overall hours than their male counterparts as they balance workplace responsibilities with household caring roles (Blair-Loy, 2018).[5] In this sense, while 'friction' has conveniently been removed for business owners and shareholders through digitisation and the fragmentation of production, friction remains for women workers who still bear the costs of sexism.

In some ways, women workers have benefited from increasing neo-classical alignment as massive numbers have been incorporated into the workforce for the first time. Even though these women earn relatively low wages, they have still been able to achieve measures of economic independence and autonomy outside the home. Yet, at the same time, women workers dominate parts of the global economy with the lowest wages and lowest recognised skill requirements.

Women dominate light manufacturing such as textile and garments, where labour costs constitute the largest share of production costs (ILO, 2016). While women's role in agriculture tends to vary around the world, women tend to be over-represented in low-paid, part-time, or seasonal wage work, where they do not receive training, and they are under-represented both in terms of land ownership and in more permanent, higher-paid employment where workers have the opportunity to access training and managerial experience (Barrientos, 2018). In the Business Process Outsourcing field, women again dominate routine tasks such

5 Studies on time-use surveys tend to be focused more on high-income countries.

as data capture and processing, outbound customer call centres and virtual services, whilst men dominate the more technical and skill intensive areas such as accounting, software development, inbound customer service, and technical support (Ahmed, 2013; ILO, 2016). Additionally, due to time zone differences, workers who undertake nightwork can earn premiums, further disadvantaging women who face restrictions on their mobility (Ahmed, 2013). In retail, including in high-income countries, women are over-represented in lower-skilled, low-value activities with the poorest working conditions (Barrientos, 2019). In professions such as care work and teaching, where automation has been more difficult, it has been women's labour that has kept costs low. While 'flexible' contracts may technically allow women to accommodate paid work with caring responsibilities, new innovations like zero-hour contracts can deprive women workers of adequate warning to plan and thus intensify the burden of the 'second shift' (Wood, 2020). Indeed, there is growing evidence to suggest that women's increasing participation in the labour force is as much about the deterioration in men's earnings as it is about women's empowerment. As Seguino and Braunstein (2019) write:

> Women's higher relative employment rates in a number of countries may be due not to job competition between women and men, but rather to women taking on inferior jobs in order to maintain family incomes in response to men's declining job opportunities and slow wage growth.

Thus, while the unbundling of production and a closer alignment between the global economy and neo-classical precepts have expanded women's participation, women have largely been crowded into poorly renumerated, insecure jobs. Furthermore, feminisation has taken place alongside the immiseration of trade and investment as drivers of economic development, making it difficult for policymakers to bargain for better conditions or amass sufficient domestic resources to address gender inequality in a more transformative, long-term way.

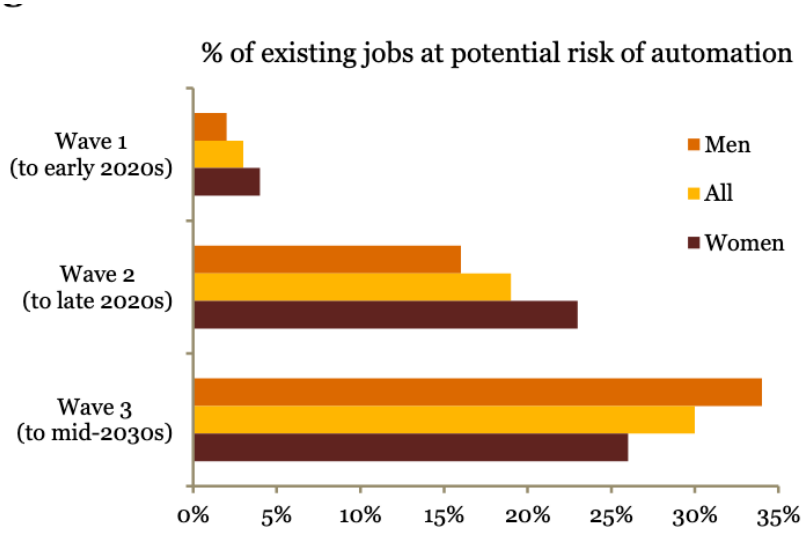
The paradox facing women workers is that as soon as restrictions on women's participation in a preferred economic activity are removed, the wage premiums associated with it also erode. For example, if we take the example of overtime call centre work mentioned above: if you make it possible for women workers to work inside their homes (and thus bypass restrictions on their physical mobility), you may invertedly erode the wage premium associated with that restriction by removing the scarcity value of that work. At the same, you are simultaneously confining women to the domestic sphere (where they may face work intensification from dependents).

Furthermore, industrial strategies designed to shift into higher value, more knowledge-intensive manufacturing activities tend to disproportionately benefit male workers who are more likely to have the relevant skills and social contacts, and who are viewed as being more capable of operating machines and technological systems. In agriculture, structural transformation can also have gendered effects if it benefits farm owners (who are more likely to be men) at the expense of more flexible wage workers (who are more likely to be women) (Barrientos, 2019). Indeed, economists have begun to discern a process of de-feminisation occurring in upgrading emerging economies today. In Indonesia, Malaysia, Mexico, South Korea, Sri Lanka, and Taiwan, for example, the female share in manufacturing employment has fallen as these countries have undergone upgrading. In other words, structural transformation may involve both an initial feminization phase and subsequent de-feminisation phase if proactive gender policies are not put in place to maintain women's labour participation (Kucera and Tejani, 2014; Tejani and Milberg, 2016). One silver lining of digital forms of automation in contrast to more manual automation is that they are often more 'button pushing' than heavy lifting. Thus, while women are certainly disadvantaged by unequal access to skills and

training, there is a case to be made that women's participation is actually quite compatible with digitisation if sexism and training can be addressed head-on.

Thus we observe a fundamental tension at the heart of current digital transformations of production; between automation and structural transformation. On the one hand, women are currently losing out from upgrading, but on the other hand, automation is also predicted to affect women more than men due to the way women are concentrated in labour-intensive activities with more routinised production (Florito et al., 2018; Brent et al., 2021). For example, one Price Waterhouse Cooper study identifies three waves of automation: an initial wave of automating computational tasks, a second augmentation wave in which repeatable tasks are automated, and a third wave in which problem-solving tasks are finally automated. The authors estimate that women will be disproportionately affected by the first two stages, but men will be more affected in the final stage (Hawksworth et al., 2018).

Figure 2: Gendered Risk of Automation



Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)

Source: Gendered Risk of Automation, from Hawksworth et al., 2018

This gendered pattern is dangerous because it may undermine cross-gender solidarity in the short- and medium-term. If men do not feel the pressures of automation in the initial periods of change, by the time they do feel the same level of dislocation, the goalposts may have already shifted uphill.

Studies of automation are of course, highly speculative, but there are reasons to think that the further elimination of 'friction' may threaten women in particular. For example, textile, clothing, and footwear sectors are at high risk of automation due to their labour intensity and repetitive tasks. In Cambodia, Lao PDR, the Philippines, Thailand, and Vietnam, women constitute an average of 70% of the workforce (ILO, 2016: xxiii). A similar situation prevails in the low-value, labour intensive Filipino BPO sector, where up to 89% of workers are women (Ibid: xxv). Women are therefore caught in the cross-fire of current trends in automation on the one hand, and current trends in structural transformation, on the other hand.

As I mentioned above, the various exceptions to neo-classical alignment may be able to provide relative entry barriers to firms and workforces and can allow activists and workers to use that 'friction' to leverage for better working conditions. Yet again we find that parts of the value chain associated with these new

technological requirements tend to advantage men. For example, while organic and fair trade have become common branding identifiers, a similar kind of label for gender equality has yet to gain widespread traction and women tend to dominate parts of the value chain least accessible to social auditors. Nevertheless, Stephanie Barrientos has studied some initiatives to try to tackle gender discrimination and sexual harassment head-on. In particular, both fashion retailers and flower producers are particularly exposed to social activism around women's working conditions, and some companies have therefore sought to pursue 'beyond compliance' in order to reduce their exposure to such reputational risk. Yet while these initiatives have had some success in tackling gender discrimination in the workplace, they struggle to address discrimination stemming from beyond the workplace. As Barrientos has written, these approaches (2018: 253):

> [fail] to take account of how paid work is embedded into wider societal and gender norms. These underpin not only more overt forms of abuse but also discriminatory practices that subordinate women within more precarious jobs, and their additional responsibilities for unpaid household and care work.

Compounding matters for women workers (and particularly minority women) are transformations to public services and welfare regimes brought about by digitisation. If automation plays out along gendered lines, then it is likely that political support for social protection will also vary by gender, potentially leading to a lag in male support for protection against automation (Kurer and Hausermann, 2022). Further, there are some suggestions that big data may undermine public support for risk-pooling across class, gender, and racial lines, by allowing individuals and firms to individualise costs. For example, if individuals gain access to personalised data about their health and social protection costs, then they may be less willing to subsidise the costs of others (Iversen and Rehm, 2016). Whether or not this risk will disadvantage women in particular, will depend on relative social policy expenditures across different groups and how gender intersects with other forms of discrimination and health inequities.

Thus, the future appears to be quite hostile for gender equality if we do not take stock and change our current direction of travel. If we focus all our attention on the big platforms and personalities online, we will miss all of these more subtle, creeping kinds of transformations happening across the world. Our attention needs to shift away from thinking about technology as a force of change, and thinking about the interaction between technology, economic theory, gender discrimination, and political contestation, and we must find ways to carve out more gender conscious exceptions to neo-classical domination in the coming years. Current trajectories do not look good but there are policies and actions that can help.

Conclusion: Making More Conscious and Less Colonial Exceptions

The good news is that the global economy was made by men, and so it can therefore be re-made by women and men. For the past half century, we have embraced a model of growth that has squeezed many of the developmental benefits out of production and trade, creating a more hostile world for transformative growth and development. For sure, some countries have been able to benefit from globalisation (largely in Asia) and in these countries, women's workforce participation has contributed to development and change. Yet, these economies are now attempting to upgrade and shift away from export-oriented manufacturing. There is a danger that women workers will be left behind. Elsewhere in the world, the threat of automation threatens to deprive other countries of the opportunities of export-oriented manufacturing and stop new sets of women from realising the same (partial) gains. Thus, the impact of digitisation is both gendered but also regionally

differentiated, reflecting the way different regions (and female workforces) are integrated within the global economy.

While we do not have data about the future, what we do have (and particularly, 'we' in high-income countries) is political power to change that future. For too long, we have been fed a dual narrative that the current digital transformations are inevitable and that we cannot afford to impose any restrictions or 'frictions' on free markets. Of course, both these narratives are false. There are important variations in digitisation across countries, as leaders and states with different ideologies and political economies have attempted to craft their own distinct regulations and digital industrial policies. While US trade negotiators have tried to lock in neo-classical principles within global trading and tax rules, these efforts have been countered, both by powerful emerging economies like China and India, as well as collective resistance by African diplomats and experts worried about the long-term implications (Foster and Azmeh, 2020). Policymaking and ideological choices can shape how digital infrastructures are built and deployed (Mann and Iazzolino, 2021).

Furthermore, certain actors have been able to carve out various exceptions to neo-classical economics, justified on environmental, social, and national security grounds. These exceptions largely reflect the post-materialist worldview of citizens in high-income countries (Pritchett, 2015). We should extend such exceptions more evenly; exceptions justified on the basis of structural transformation for developing countries and more exceptions justified on the basis of gender equality worldwide. Why should we accept that the principle of 'embedded liberalism' only applies to voters and politicians in high-income countries? Can we not recognise the coloniality of such a system of exceptions? We need to rethink our economic models in light of the huge inequalities that mark our world; inequalities across genders, but also importantly, across national boundaries. If we want a better world, then we must build it.

References

Ackroyd, S., & Procter, S. (1998). British Manufacturing Organization and Workplace Industrial Relations: Some Attributes of the New Flexible Firm. *British Journal of Industrial Relations*, *36*(2): 163-183.

Ahmed, G. (2013). Global Value Chains, Economic Upgrading and Gender in the Call Center Industry. In Staritz and Guilherme Reis, *Global Value Chains, Economic Upgrading, and Gender*. World Bank. Available electronically at: http://www.capturingthegains.org/pdf/GVC_Gender_Report_web.pdf

Bain, P., &Taylor, P. (2008). United by a Common Language? Trade Union Responses in the UK and India to Call Centre Offshoring. *Antipode,* 40(1): 131–154

Barrientos, S. (2019). *Gender and Work in Global Value Chains: Capturing the Gains?* Cambridge, UK: Cambridge University Press.

Bernard, M., & Ravenhill, J. (1995). Beyond Product Cycles and Flying Geese: Regionalization, Hierarchy, and the Industrialization of East Asia. *World Politics,* 47: 171–209.

Blair-Loy, M., Hochschild, A., Pugh, A. J., Williams, J. C., & Hartmann, H. (2015). Stability and Transformation in Gender, Work, and Family: Insights from the Second Shift for the Next Quarter Century. *Community, Work & Family*, *18*(4): 435-454.

Boone, C. (2007). Africa's New Territorial Politics: Regionalism and the Open Economy in Côte d'Ivoire. *African Studies Review*, *50*(1): 59-81.

Boserup, E. (1970). *Woman's Role in Economic Development*. New York: St. Martin's Press.

Braun, B. (2014). Why Models Matter: The Making and Unmaking of Governability in Macroeconomic Discourse. *Journal of Critical Globalisation Studies,* 7: 48-79.

Brent, M., Coles, K., Conlon, C., Lemaire, J., Macias, L., Park, J., Chakraborty, S., Gupta, R. Tripathi, V., Arman, M., & Rizov, M. (2021). *Keeping Workers in the Loop: Preparing for a Just, Fair, and Inclusive Transition to Circular Fashion*. BSR Report. Available electronically: https://www.bsr.org/reports/BSR-Keeping-Workers-in-the-Loop.pdf

Chang, H. J. (2002). *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.

Cockburn, C. (1981). The Material of Male Power. *Feminist Review*, *9*(1): 41-58.

Coe, N. M., & Yeung, H.W.C. (2015). *Global Production Networks: Theorizing Economic Development in an Interconnected World.* Oxford: Oxford University Press.

Coe, N.M., & Hess, M. (2011). Local and Regional Development: A Global Production Network Approach. In *Handbook of Local and Regional Development*, ed. Pike, A., Rodríguez-Pose, A., & Tomaney, J. pp. 128–138. London and New York: Routledge.

Cramer, C., Johnston, D., Mueller, B., Oya, C., & Sender, J. (2017). Fairtrade and Labour Markets in Ethiopia and Uganda. *The Journal of Development Studies*, *53*(6): 841-856.

Cramer, C., Di John, J., & Sender, J. (2018, August). *Poinsettia Assembly and Selling Emotion: High Value Agricultural Exports in Ethiopia.* AFD Research Papers Series, No. 2018-78.

Cramer, C., & Chisoro-Dube, S. (2021). The Industrialization of Freshness and Structural Transformation in South African Fruit Exports. In (Ed.) Andreoni, A., Mondliwa, P., Roberts, S., &Tregenna, F. *Structural Transformation in South Africa: The Challenges of Inclusive Industrial Development in a Middle-Income Country*. Oxford: Oxford University Press.

Davis, G.F. (2009). *Managed by the Markets: How Finance Reshaped America*. Oxford: Oxford University Press.

Dicken, P. (2015). *Global Shift.* London: Sage.

Florito, J., Aneja, U., & de Sanfeliu, M.B. (2018). *A Future of Work that Works for Women. G20 Insights.* Available electronically at: fusades.org/publicaciones/Work_works_for_women.pdf

Foster, C., & Azmeh, S. (2020). Latecomer Economies and National Digital Policy: An Industrial Policy Perspective. *The Journal of Development Studies*, *56*(7): 1247-1262.

Frey, C.B., & Osborne, M.A. (2017). The Future of Employment: How Susceptible are Jobs to Computerisation? *Technological Forecasting and Social Change,* 114: 254–280.

Greenspon, J., & Rodrik, D. (2021, October). *A Note on the Global Distribution of Authorship in Economics Journals*. National Bureau of Economic Research Working Paper 29435. https://www.nber.org/papers/w29435

Hall, P. A. (1993). Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain. *Comparative Politics*, 25(3): 275-96.

Hawksworth, J., Berriman, R., & Goel, S. (2018, February). *Will Robots Really Steal our Jobs? An International Analysis of the Potential Long-term Impact of Automation.* Price Waterhouse Cooper Report. Available electronically at: https://www.pwc.co.uk/economic-services/assets/international-impact-of-automation-feb-2018.pdf

Hickey, S., & du Toit, A. (2007). *Adverse Incorporation, Social Exclusion and Chronic Poverty.* Working Paper 81, Chronic Poverty Research Centre, Manchester.

ILO. (2009). *Global Employment Trends for Women March 2009*. Geneva: International Labour Organization.

ILO. (2016). *ASEAN in Transformation: How Technology is Changing Jobs and Enterprises.* Geneva: ILO. Available electronically at: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_579553.pdf

Iversen, T., & Rehm, P. (2016). *The Market for Creampuffs: Big Data and the Transformation of the Welfare State*. Available electronically at: https://sites.duke.edu/preferencesoverredistribution/files/2016/04/IversenRehm_April2016.pdf

Kabeer, N. (2003). *Gender Mainstreaming in Poverty Eradication and the Millennium Development Goals: A Handbook for Policy-Makers and the Other Stakeholders*. New Gender Mainstreaming Series on Development Issues. London: The Commonwealth Secretariat.

Kleibert, J. M., & Mann, L. (2020). Capturing Value Amidst Constant Global Restructuring? Information-technology-enabled Services in India, the Philippines and Kenya. *The European Journal of Development Research*, *32*(4), 1057-1079.

Kucera, D., & Tejani, S. (2014). Feminization, Defeminization, and Structural Change in Manufacturing. *World Development*, *64*: 569-582.

Kurer, T., & Hausermann, S. (2022). Automaton Risk, Social Policy Preferences, and Political Participation. In (Ed.) Busemeyer, M., Kemmerling, A., Marx, P., & Van Kersbergen, K. *Digitisation and the Welfare State*. Oxford: Oxford University Press.

Langhammer, R. J. (1983). The Importance of 'Natural' Barriers to Trade Among Developing Countries: Some Evidence from the Transport Cost Content in Brazilian Imports. *World Development*, *11*(5), 417-425.

Lebdioui, A., Lee, K., & Pietrobelli, C. (2021). Local-foreign Technology Interface, Resource-Based Development, and Industrial Policy: How Chile and Malaysia are Escaping the Middle-income Trap. *The Journal of Technology Transfer*, *46*(3): 660-685.

Levanon, A., England, P., Allison, P. (2009). Occupational Feminization and Pay: Assessing Causal Dynamics using 1950–2000 US Census Data. *Social Forces*, *88*(2): 865-891.

Mann, L., & Lazzolino, G. (2021). From Development State to Corporate Leviathan: Historicizing the Infrastructural Performativity of Digital Platforms within Kenyan Agriculture. *Development and Change*, *52*(4): 829-854.

MacKenzie, D. (2006). *An Engine, Not a Camera: How Financial Models Shape Markets.* Cambridge, MA: MIT Press.

Maravall, J.M. (1994, October). The Myth of the Authoritarian Advantage. *Journal of Democracy*, 5: 17–31.

Mitchell, T. (2008). Rethinking Economy. *Geoforum*, *39*(3): 1116-1121.

Mitchell, T. (2009). Carbon Democracy. *Economy and society*, *38*(3): 399-432.

Milner, C., Morrissey, O., & Rudaheranwa, M. (2000). Policy and Non-policy Barriers to Trade and Implicit Taxation of Exports in Uganda. *Journal of Development Studies*, *37*(2): 67-90.

Mkandawire, T. (2006, January). *Disempowering New Democracies and the Persistence of Poverty.* UNRISD, Democracy, Governance and Human Rights Programme Paper Number 21.

Mkandawire, T. (2010). Aid, Accountability, and Democracy in Africa. *Social Research: An International Quarterly,* 77(4): 1149-1182.

Murphy, J., & Carmody, P. (2015). *Africa's ICT Revolution: Technical Regimes and Production Networks in South Africa and Tanzania*. London: Blackwell.

Oldenziel, R. (1999). *Making Technology Masculine: Men, Women and Modern Machines in America, 1870-1945*. Amsterdam: Amsterdam University Press.

Olukoshi, A. O., & Laakso, L. (1996). Chapter One: The Crisis of the Post-Colonial Nation-State Project in Africa. In Olukoshi, A. O., & Laakso, L. (Eds). *Challenges to the nation-state in Africa*. Nordiska Afrikainstitutet; Sweden.

Polanyi, K. (1944). *The Great Transformation.* Boston: Beacon Press. Pola

Pritchett, L. (2015, February). *Can Rich Countries Be Reliable Partners for National Development?* Centre for Global Development Essays. Available electronically at: https://www.cgdev.org/publication/ft/can-rich-countries-be-reliable-partners-national-development

Rodrik, D. (2001). Trading in Illusions. *Foreign Policy*, 123: 54–62.

Ruggie, J. G. (1982). International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order. *International Organization*, *36*(2): 379-415.

Shaikh, A. (2016). *Capitalism: Competition, conflict, crises*. Oxford: Oxford University Press.

Seguino, S., & Braunstein, E. (2019). The Costs of Exclusion: Gender Job Segregation, Structural Change and the Labour Share of Income. *Development and Change*, *50*(4), 976-1008.

Slobodian, Q. (2018). *Globalists: The End of Empire and the Birth of Neoliberalism.* Harvard, MA: Harvard University Press.

Standing, G. (1989). Global Feminization Through Flexible Labor. *World Development*, *17*(7): 1077-1095.

Standing, G. (1999). Global Feminization through Flexible Labor: A Theme Revisited. *World Development*, *27*(3), 583-602.

Tejani, S., & Milberg, W. (2016). Global Defeminization? Industrial Upgrading and Manufacturing Employment in Developing Countries. *Feminist Economics*, *22*(2), 24-54.

Vernon, R. (1966). International Investment and International Trade in the Product Cycle. *Quarterly Journal of Economics,* 80 (2): 190–207.

Wade, R. (2003). What Strategies are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space. *Review of International Political Economy*, 10: 627–44.

Wood, A. J. (2020). *Despotism on Demand*. Cornell, NY: Cornell University Press.

Woolley, F. R. (1993). The Feminist Challenge to Neoclassical Economics. *Cambridge Journal of Economics*, *17*(4): 485-500.