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Adjusting Towards a Digital Economy: The Critical Role of Labour Mobility

*Jayant Menon**

Technologies of the Fourth Industrial Revolution (4IR) will create new ways for citizens to connect and trade, allow poor countries to leapfrog, improve agricultural incomes, and support micro and small and medium enterprises. Image: Freepik.com. By rawpixel.com/Freepik at https://www.freepik.com/vectors/background.

**Jayant Menon is Senior Fellow in the Regional Economic Studies Programme at ISEAS – Yusof Ishak Institute.* *The author is grateful to Cassey Lee and Siwage Dharma Negara for their useful comments and suggestions without implicating them in any way.*

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EXECUTIVE SUMMARY

- The COVID-19 induced acceleration towards a digital economy may worsen inequalities within and between countries, but it can also be a powerful force for economic inclusion.

- Technologies of the Fourth Industrial Revolution (4IR) will create new ways for citizens to connect and trade, allow poor countries to leapfrog, improve agricultural incomes, and support micro and small and medium enterprises.

- Addressing rising unemployment amongst the low skilled and widening wage disparities due to the skills premium will be key in the short to medium term.

- Ensuring labour, capital and data mobility in a post-pandemic new normal will reduce adjustment costs, as will policies that promote trade.

- In the long term, new systems of education that increase labour force flexibility and promote lifelong learning will be required, while retaining the importation of requisite skills.

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INTRODUCTION

One of the oft-cited silver linings of the coronavirus (COVID-19) pandemic is the acceleration towards the Fourth Industrial Revolution (4IR). Although there is optimism that many aspects of the 4IR such as artificial intelligence, robotics, blockchain and 3D printing may have sped up, it is the transition towards a digital economy that has dominated and captured our attention, especially in Southeast Asia.[1] Lockdowns and other social distancing measures have accelerated the creation and adoption of new technologies that enable work from home and remote learning. Looking forward, firms are already starting to restructure their operations to better adapt to a new normal that will involve less human interaction and be restricted by other risk mitigation regulations (see APEC, 2020).

The likely impacts of the acceleration towards a digital economy, especially its distributional consequences, and policy responses towards it, are the subject of this piece. These issues have been prominent in policy discussions in all Southeast Asian countries. Although a lot has been written about how the 4IR may worsen existing inequalities between and within countries (see, for instance, UN, 2017), there are offsetting effects that may reduce its negative consequences.

The role that labour mobility will need to play in minimising adjustment costs in the short run is a key focus of this paper. It also considers the effectiveness of national and regional policies in producing the kind of factor mobility required, and how trade may need to play a supplementary role in the adjustment process.

This paper begins with a brief overview of some of the key elements of the 4IR. It then examines the distributional impacts of the acceleration towards a digitalised economy, both the positive and negative ones. Next, it considers how policy should respond, both in the short run and in the long run, in managing the disruption from technology, compounded by diverging demographics. The central role of skills and labour mobility is then highlighted.

THE FOURTH INDUSTRIAL REVOLUTION: A SELECTIVE OVERVIEW

The 4IR is the fusion of technologies across physical, digital and biological realms which will transform our way of life. It builds on the technological advancements of previous industrial revolutions, particularly those of the Third Industrial Revolution (3IR) that produced computers, the Internet and digital technologies. However, the 4IR is unlike other revolutions due to its breadth, depth and speed of change.

Technologies of the 4IR and the interaction between them, offer new ways to create and consume, transform how we deliver and access public services and open new ways to communicate and govern.[2]

New technologies are emerging faster, being adopted more quickly and delivering greater impact.[3] Machine learning and big data analytics mean that the process of discovery and analysis no longer requires human agency. Digital networks allow products and services to scale more quickly. The processing power of computer chips (from the 3IR) has increased

by one quadrillion times over the past 50 years but quantum computing has the potential to perform tasks that would not even be possible today.

The consequence of all this is that change in the 4IR will be hard to predict. The technology itself is difficult to map because its growth rate can be exponential, factorial or higher. It is this unpredictability that is making impact assessments difficult, though not impossible.

Equally, it heralds a new brand of 'superstar' economics (Rosen, 1981; Nuesch, 2007). Returns to knowledge and skills are exponential which – if not equally shared – can lead to increasing inequality. This in turn may lead to social exclusion and political instability. The 4IR provides transformative technologies but it will be the job of social and political institutions to ensure that the technologies are used for the benefit of the majority and not of just a few.

THE DISTRIBUTIONAL IMPACTS OF THE 4IR

As noted earlier, the impetus that the pandemic has provided in accelerating the move towards a digital economy is often hailed as one of the few positive things to come out of this crisis. Even as lockdowns were lifted, various social distancing measures remained in place, necessitating the use of technology to continue working and learning.

The adoption rate of these technologies has varied across countries, however, and the more developed economies are better able to respond to this need than less developed ones. The level of preparedness of countries is generally negatively correlated to their level of development, and this may widen development gaps if left unaddressed. In a cruel twist, there is concern that even this supposed silver lining of the pandemic may end up exacerbating inequality between countries, further increasing the digital divide.

Apart from the digital infrastructure being limited in poor countries, access to what is available can vary by income class within society. The poor in developing countries are less likely to have the means to access this infrastructure, and hence be further marginalised as a result. The 4IR may also lead to a further concentration of the gains from trade in the hands of the few (see, for instance, Bacchetta *et al.,* 2021). Therefore, not only is inequality between countries likely to increase, but there could also be a rise in income and wealth disparities within them.

The poor may also be disadvantaged by the fact that the sectors within which they tend to be employed are usually less amenable to the adoption of such technologies. Physical contact may represent a critical aspect of work for low-skilled employees in the manufacturing or construction sectors, for instance. The introduction of social distancing measures may leave them temporarily unemployed, as a result. More generally, the 4IR may also pose a greater threat to their jobs, as automation and robotics take hold initially in the low-skilled, repetitive tasks before progressing to more complex activities.

Apart from these negative impacts, there are several ways in which the 4IR can either reduce inequality or have offsetting effects that can limit its increase. Although attention has been focused on how the 4IR can exacerbate inequality, there are various countervailing effects that are often overlooked or ignored.

Increasing economic inclusion

The 4IR can be a powerful force for economic inclusion. 4IR technologies will create new ways for citizens to connect, trade with each other, and access services that were previously unavailable. In Indonesia, Myanmar, the Philippines and Vietnam, less than a third of the population have a bank account. Innovations such as Aadhaar, a digital identification system, is driving financial inclusion and bringing banking services to more than a billion people in India who had previously been excluded. These financial services enabled by technology allow households to save in secure instruments to enlarge their asset base and escape cycles of poverty and inequality.

Under the 4IR, citizens will gain access to new sources of information, such as high-frequency news and market prices, that can materially affect incomes and welfare. In a now-famous study, Jensen (2007) showed how the adoption of mobile phones by fishermen and wholesalers in South India was associated with a dramatic reduction in price dispersion and the elimination of waste, resulting in increases in consumer and producer welfare. It can also enable new forms of education, such as online courses and virtual classrooms, and new healthcare services, such as telemedicine powered by smartphones linked to diagnostic pills (Menon and Fink, 2018).

These innovations should reduce inequities in access and could result in a much more inclusive form of economic growth.

Opportunities for Leapfrogging

The opportunities for leapfrogging provided by the 4IR is related to the so-called latecomer's advantage hypothesis.[4] This is where late adopters of technology may be better positioned because they can avoid the mistakes of the past and adapt technologies in a way that benefits them more than early adopters.[5] In certain instances, they are even able to leapfrog early movers, further consolidating their advantage.

Technologies of the 4IR create the opportunity for developing countries to bypass traditional aspects of industrial development. A commonly cited example relates to avoiding costly investments in telephone lines and focusing instead on mobile telephone infrastructure. Apart from the savings in public expenditure that can be directed towards other social goods and services, this type of technology can also be used to access services such as financial transfers and medical advice, as noted earlier. The technologies of the 4IR can also provide alternative solutions for connecting people in isolated regions where physical infrastructure is costly and/or limited.

Localised renewable energy production, such as solar power coupled with new battery storage technology, could reduce the need for investing in expensive power distribution networks. Drones could help to deliver lightweight high-value goods such as medical supplies to remote regions with poor transport infrastructure. While drones will not remove the need to build roads for the transport of heavy goods and people, they do offer the opportunity to sequence and design transport infrastructure in new ways and to reduce the need for "last-mile" road connectivity. These alternatives can increase economic opportunities for poor and marginalised communities.

Enhancing Agriculture

The 4IR has the potential to transform agriculture in poor countries. In the short run, the impact of connecting farmers to the Internet has already brought well-documented improvements to farmer productivity, profitability and sustainability. Smartphones give farmers better access to market prices, weather information, and knowledge about soil, seeds and fertiliser. Smartphones may also enable a "sharing economy" to take hold, whereby farmers who cannot afford to buy expensive mechanical equipment can rent it by the hour from other farmers by accessing online sharing sites. In India for instance, Mahindra & Mahindra, an equipment maker, has set up a platform of this type called Trringo.

These enhancements will allow both poverty and inequality to be addressed at their source. It will also reduce the pressure on densely populated urban centres by limiting the amount of rural-urban migration that might occur in the absence of such enhancements improving returns to agriculture.

Supporting Micro and Small and Medium Enterprises (MSMEs)

More than 90 per cent of enterprises in the formal sector within ASEAN are micro and small and medium enterprises (MSMEs). MSMEs have become almost synonymous with the informal sector. These MSMEs, in the formal and the informal sector, account for the overwhelming majority of employment in ASEAN.

MSMEs are often constrained by a lack of access to business and financial services, but blockchain technology has the potential to dramatically increase the security of cross-border financial transactions and logistics even in countries where these services are relatively underdeveloped. Therefore, this technology has the potential to benefit the smallest firms in the poorest regions of ASEAN. The rise of online marketplaces also provides platforms for MSMEs to access markets throughout ASEAN and beyond.

LABOUR MOBILITY AND ADJUSTMENT COSTS

As noted earlier, one of the major challenges of the 4IR will be the impact on the labour market caused by automation and increasingly advanced robotics and artificial intelligence. Many low-skilled repetitive jobs are being automated, starting in high wage countries but already spreading quickly to the developing world. With two-thirds of the world's robots

already in East Asia, some expect this region to be particularly susceptible to these changes. Although the net impact on jobs and the labour market in the long run remains unclear,[6] there is little doubt that disruptive technologies will result in significant labour churning and job displacement in the short-run (see McKinsey, 2017). These adjustment costs and associated negative employment outcomes will affect some countries more than others. Low-skilled repetitive jobs such as assembly line workers, are most at risk, and service jobs, such as business process outsourcing, will be increasingly under threat.

As an immediate response, enabling greater mobility of unskilled workers would curtail unemployment in net labour-sending countries and help sustain growth in net labour-receiving ones while also helping counter growing economic inequality within and between these countries.

Apart from the challenges posed by the 4IR, ASEAN also has to deal with another long-term factor in the form of divergent demographics (Menon and Nakamura, 2009). While the newest members of ASEAN have relatively young populations, the rest of ASEAN is ageing rapidly.

For the younger and less developed economies, the biggest challenge lies in adopting policies that will allow them to utilise the demographic window to achieve rapid economic growth, increase per capita incomes, and build up human capital. Central to meeting this challenge is providing productive employment and enhancing the skills of the growing labour force. This is particularly critical, considering the negative impact that 4IR technologies can have on industries and jobs in the short run.

In ASEAN, harmonisation and streamlining of employment visas have been an important initiative in reducing barriers to labour mobility. ASEAN economies have signed several mutual recognition agreements (MRAs) for skilled jobs, but implementation has been stymied by domestic rules and regulations on employment and licensing requirements. Furthermore, these MRAs will have to be more responsive to the skill and labour market conditions changing rapidly as a result of the pandemic and the 4IR.

Removing barriers to labour mobility through regional arrangements may be politically difficult, given the sensitivities involved. Therefore, bilateral agreements may end up being more feasible than regional ones. In fact, the India–Singapore Comprehensive Economic Cooperation Agreement (CECA) is one such bilateral deal that has enabled short and long-term employment visas, ranging from 2 months to 3 years, to nationals of both countries. Similar agreements involving other ASEAN countries would be of mutual benefit.

Even at the bilateral level, prospects for increasing labour mobility beyond specific skill categories remain limited. if these agreements cannot promote greater factor mobility, they can assist by promoting trade by limiting the resort to protectionism and by ensuring an open trading system for goods and services. As demonstrated by Samuelson's (1948) factor price equalisation theorem, commodity movements and factor movements can serve as close substitutes in achieving similar outcomes. That is to say, even when the cross-border movement of labour or capital is restricted, trade in goods and services that are produced

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using these factors is sufficient to equalise wages and rentals in both countries over time. Therefore, trade liberalisation through regional agreements or other means can serve an important role in achieving the desired outcomes in the adjustment process when increasing factor mobility is difficult or delayed.

While importing skills can help countries catch up and address the challenges posed by the 4IR in the short run, the long-term challenges will require a fundamental transformation in systems of education and learning. Governments must pursue education reform and promote lifelong learning. Augmenting cognitive skills such as mathematics and sciences will be critical for the transition to a more innovative, knowledge-based economy. There will also be a need to strengthen regional education networks and connect innovation incubators in the region, facilitated by skilled labour movement and exchange. New and innovative approaches to public-private collaboration are also needed, particularly in areas such as research and development.

CONCLUSION

The COVID-19 pandemic has sped up the move towards a digital economy, as well as other aspects of the 4IR. There are fears that this accelerated transition will result in a rise in inter- and intra-country inequality. Often overlooked are the various ways in which the 4IR can produce offsetting effects by increasing social, financial and economic inclusion, increasing connectivity, improving agriculture, and supporting MSMEs. To enable this, however, policy changes need to be made.

In the short run, greater factor mobility can help equalise capital-labour ratios and normalise differences in labour and capital productivity to promote more inclusive growth. Greater labour mobility, while politically sensitive, can reduce skills deficits in poorer countries in the short run, and help in preparing the workforce for the 4IR. Given the sensitivities involved, however, bilateral agreements may end up being more feasible than regional ones. The India–Singapore Comprehensive Economic Cooperation Agreement (CECA) provides a useful model that other ASEAN countries could consider, adapting it to suit their specific needs after accounting for differences in skills requirements and demographic trends.

Even if regional or bilateral agreements cannot promote factor mobility, they can help equalise factor prices by increasing commodity trade. That is to say, even if factors cannot cross borders, increased trade can produce similar results in reducing adjustment costs.

In the longer term, changes in education and learning systems will be necessary in moving towards an innovative society. This will need to be done while concurrently addressing basic challenges in improving retention rates in secondary schooling, for instance. Overcoming these fundamental challenges is necessary to provide a strong base to build upon in order to exploit the opportunities presented by the 4IR and mitigate its negative impacts, including limiting the rise in inequality.

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[1] At the regional level, the ASEAN Digital Transformation Agenda to Accelerate ASEAN's Economic Recovery and Digital Economy Integration was officially endorsed by the 20th ASEAN Economic Community Council in October 2021.

[2] For a more comprehensive overview of the 4IR and its evolution, see Shwab (2016); (2018).

[3] For instance, while landline telephones took more than 75 years to reach 100 million users, mobile phones took less than 15 years. More recently, the internet reached 100 million users in about 6 years, Facebook in about 4 years, WhatsApp in about 3 years, and Instagram in about 2.
[4] This was noted as far back as Veblen (1915), although modernized by Gershenkron (1952) as "the advantage of relative backwardness".
[5] This assumes that the technology is available for purchase or is easily diffused, which may not be unreasonable given that intellectual property rights are poorly protected or enforced in developing countries.
[6] For a discussion on how the long run impacts are likely to be net positive, see OECD (2016) and Menon (2019).

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