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Accelerating Innovation and Digitalization in Asia to Boost Productivity

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Executive Summary

For many Asian countries, the COVID-19 crisis opened deep economic scars, which has led to intensifying pre-pandemic weaknesses—most notably, declining productivity growth. While no panacea will reverse productivity losses, digitalization and innovation can provide a way out. Digitalization can mitigate scarring during downturns—for example, by facilitating virtual education, remote work, and contactless sales—while improving productivity and innovation during expansions. Moreover, firms and industries that harness digital technologies are able to unlock productivity gains at all times. As digital adoption accelerated during the pandemic, countries can capitalize on both technological and organizational innovations associated with digitalization to alleviate scarring effects.

To reap the gains from innovation and digitalization, countries must have proactive policies. The reason for this need: the increased pre-pandemic innovation effort in the region—evidenced by higher spending on research and development (R&D), increased number of patents, and an expanding digital landscape—did not prevent a steady decline in the region's productivity growth. Two key elements that persist to date underpin this disconnect between innovation and productivity: (1) the growing dispersion in innovation and digitalization within and across sectors and (2) large digital divides and bottlenecks.

Asia has emerged as an innovation powerhouse. Before the pandemic, the region contributed to more than half of world's patents, including 60 percent of patents in digital and computer technologies. Asia's emergence as an innovation hub was driven by a few frontier countries that spend nearly as much as most innovative economies worldwide in R&D. In keeping with Asia's moniker of "manufacturing power-house," about two-thirds of the world's industrial robots are also employed in the region. Countries need not to be at the technological frontier to benefit from innovation. Asian developing countries have benefited from technology diffusion through a higher share of imported high-technology goods and by granting more patents to nonresidents, supported by improvements in human capital and digital infrastructure.

The COVID-19 pandemic has accelerated digitalization and automation in Asia. Patent applications for remote work, e-commerce sales, and the use of industrial robots have all risen sharply since the onset of the pandemic, supported in many countries by active public policies. Asia now accounts for nearly 60 percent of the world's online retail sales, spurred by a concomitant boom in digital payment technologies.

Despite these successes, Asia still faces important divides that prevent it from fully reaping the benefits of innovation-led growth. Innovation and access to cutting-edge technologies is increasingly concentrated in a handful of firms, and there is scope to increase the quality of innovation. Within countries, diffusion of innovation from high-performing firms to other firms is limited, including due to constraints in access to finance, management capabilities, and skill gaps in information and communications technologies. Digital gaps and unequal access to digital technologies prevent a sizeable share of firms and workers from reaping the full rewards of participating in the new economy and reaching their full potential.

Asia's future is digital—digitalization and innovation can be powerful forces in boosting productivity and mitigating scarring. Firm-level data for advanced and developing Asia allow us to investigate the drivers of productivity dispersion across firms and to identify factors that impede innovation (for countries and firms closer to the technological frontier) and technological diffusion (for countries and firms farther from the frontier).

- Asian firms that are more innovative and digitalized tend to be more productive. However, the high concentration of innovation activities in large, capital-intensive firms is associated with large dispersion in productivity within countries and sectors, weighing on aggregate productivity. Productivity dispersion tends to be higher in more digitalized sectors and in sectors less exposed to international markets.
- Firms tend to benefit from productivity spillovers from their peers at the frontier, but benefits accrue disproportionately to firms in the top of the distribution. Meanwhile, firms at the bottom are being left behind. External exposure to competition and innovation—including through trade and greater digitalization—support innovation and help close productivity gaps for firms closer to the frontier.

Decisive reforms are needed to enhance broad-based innovation and digitalization across countries, sectors, and firms. Policies to foster more equal access to innovation and digitalization, reduce productivity gaps, and ultimately boost aggregate productivity can be grouped into three buckets:

- To foster innovation in countries and firms at the technology frontier, key policies include well-designed and targeted R&D tax credits and grants, higher public spending on basic research, and measures to facilitate experimentation and help bring innovation to markets such as improving small and medium enterprises' access to finance and digital technologies.
- To facilitate technology diffusion and unlock potential, key policies include lowering trade barriers to foster greater integration to the international economy; streamlining foreign direct investment regulations to encourage foreign firm entry, particularly in services; facilitating information and knowledge sharing between foreign and local firms, for example, by developing a network of providers; enhancing business-university R&D collaboration to reduce the cost of technology adoption; and further improvements in digital infrastructure and the skill base to facilitate the adoption of new technologies. Enhancing the legal environment, including for data protection and cybercrime, can also help lower barriers to information sharing and support technological adoption.
- To enable healthy competition and firm dynamism, actions such as simplifying the insolvency framework would support the needed resource reallocation post pandemic through the exit of less productive firms and the entry of new innovative firms.