1 Introduction

1.1 DE-GLOBALIZATION AND THE NEED FOR NEW THINKING

Once the dominant paradigm, globalization has faced a series of setbacks. The first was the 2008–2009 global financial crisis, which was the first red flag indicating a crisis of finance-led globalization. This was followed in 2016 by the first referendum on Brexit and public support for Great Britain exiting the European Union (EU). The second setback was the beginning of trade de-globalization triggered by struggles over hegemonic dominance between the United States and China following Trump's election in 2017 and his imposition of tariffs on Chinese exports to the United States. The third setback was the de-globalization of manufacturing (and value chains) caused by the COVID-19 pandemic that began in early 2020. The pandemic revealed the vulnerabilities of global value chains (GVCs), which are fragmented globally and rely on production operations in multiple countries. The most recent setback has been the 2022 Russian invasion of Ukraine, which disrupted the global supply of agricultural products, oil and other minerals, as well as foreign exchange settlement systems, such as SWIFT. Consequently, the paradigm of free trade and production has been thrust into a state of uncertainty, and countries are rebalancing GVC efficiency and resiliency by pursuing new modes of production and value chains while reconsolidating alliances with key allies (Stiglitz, 2022) In general, the trend has been toward more in-sourcing than out-sourcing and promoting domestic production over foreign imports. This sudden and radical change in the environment of global capitalism has left emerging countries struggling to find a solution.

Once a strong promoter of globalization and free trade, the United States has now switched to protectionism and alliance-based

economic coalitions. China, in contrast, continues to advocate free trade and multilateralism while also employing strategic interventions to promote specific industries. For emerging economies, this new global environment seems to have disavowed the "one-size-fits-all" model for economic growth that is associated with international integration and the so-called Washington Consensus. This shift away from the conventional economic paradigm can also be interpreted in terms of the so-called "globalization paradox" raised by Rodrik (2011), which highlights the trilemma of being unable to simultaneously pursue economic globalization, national sovereignty, and democracy. Therefore, given the constraints facing globalization, countries have become freed from this trilemma and are seeking to focus on national autonomy. Each economy and government is free to operate according to the new premise that markets and governments are not adversarial but rather complementary, and that economic prosperity can be achieved through diverse institutional arrangements (Rodrik, 2011, xviii). Each country has suddenly been given the freedom to pursue its own economic policies, including protecting domestic industries as a form of industrial or innovation policy.

Some have predicted that there will be a return to globalization. However, the world is currently split into two blocs of similar economic sizes, with the US-led bloc on one side and the China-led bloc on the other with their respective GVCs. This bifurcation of the world economy will likely continue to act as a structural force keeping the world decoupled for some time (Lee, 2021a). The next several decades will continue to be influenced by the two opposing forces of integration and disintegration. Regardless of the direction in which the pendulum swings, the role of the state is expected to increase either to counterbalance the costs of past globalization or to respond to the challenge of de-globalization. In this context, the role of the state may go beyond the regulatory or welfare state to include preemptive investments and interventions not only at the pre- and postproduction stages but also at the production stage (Rodrik & Stantcheva, 2021). Currently, we are witnessing the reinforcement of

developmental states conducting industrial policies (Johnson, 1982), as well as progress toward entrepreneurial states conducting mission-oriented innovation policies (Mazzucato, 2011).

Regardless of the roles they assume, governments around the world are placing additional emphasis on keeping manufacturing value chains within their own territory, and agriculture and other primary industries are also gaining importance. Simultaneously, manufacturing, agriculture, and other industries have been undergoing digitalization, a trend that has been further reinforced by the COVID-19 pandemic and value-chain disruptions. From an emerging or latecomer economy perspective, this global paradigm shift points to the need to identify a new model of economic development and strike a balance within various global–local interfaces while giving more weight to domestically owned and controlled firms as well as resource and value chains. Therefore, this book focuses on the following three points.

First, there are several alternative development pathways for latecomers who currently either do not have to or cannot follow the standard paths of forerunners. Even before the advent of de-globalization, many emerging economies were having difficulty generating growth beyond the middle-income stage or obtaining high-income status. Whereas market opening and international integration have been the typical prescriptions for growth, such approaches have largely failed in the Global South. Meanwhile, success stories of economic catch-up in East Asia indicate that opening should be more strategically managed and combined with policy interventions.

Second, although developing and emerging economies have to be open to global forces and knowledge by inviting foreign direct investment (FDI) and multinational corporations (MNCs), latecomers should strategically manage global–local interfaces to promote domestically owned firms that can eventually generate value added and domestic jobs. Otherwise, latecomers will remain stuck in low value-added sectors or value segments with no hope of transitioning into high-end value segments. This is because technology transfers

and market access become more difficult as a country gets closer to the frontier. Additionally, foreign capital is constantly on the move and seeking to enter low-wage territories to secure higher margins.

Third, although the prevailing view is that no country has obtained high-income status without nurturing a sizable manufacturing sector, obtaining high-income status and sustaining a robust economic catch-up drive requires generating a certain number of domestically embedded big businesses that command some export power in world markets regardless of the sector. This is because breaking through the barriers to entering medium and high-end manufacturing requires the consolidation of available resources and competencies within big businesses. This is also because non-manufacturing industries and some agricultural and resource-based industries are becoming more knowledge-oriented and could emerge as sources of export-based profit in global markets.

I will elaborate on these three arguments in my explanation of the innovation–development detours framework that follows.

1.2 INNOVATION–DEVELOPMENT DETOURS

1.2.1 Problems with the Linear View: The More, the Better?

Many developing countries continue to face difficulty initiating and sustaining economic development, and this situation has been exacerbated by the COVID-19 pandemic, resulting in a larger divergence between rich and poor countries. One important economic development question for latecomer countries is whether they should follow the similar trajectories of present-day rich countries or follow a different path (Lee, 2019).

While it would appear to be a fundamental question, economists studying latecomer development have not explored this question adequately and have simply indicated that latecomers should follow the trajectories of forerunners. For example, the policy prescriptions of the Washington Consensus advocate for an immediate and comprehensive liberalization of trade and investment and privatization of

state-owned enterprises, given that all rich countries are liberalized economic systems with few publicly owned enterprises. Although this term – Washington Consensus – is now seldom used, even by the World Bank, no workable alternative has been identified.

There is another stream within the development literature that includes the structural transformation school. Scholars in this group tend to offer linear prescriptions and advocate that latecomers should follow a similar path to that of mature economies, meaning they should begin with primary sectors and subsequently develop their manufacturing and service sectors. According to this perspective, latecomers should first achieve an economic structure in which manufacturing constitutes a significant share of the economy. Another example of the linear view would be those who base their policy suggestions on the concept of economic complexity, which holds that latecomers should attempt to enter the same product spaces as advanced economies. This approach, however, does not consider entry barriers to some product spaces.

The early studies on the technological development of latecomers, such as those by Lall (2000) and Hobday (1995a, 1995b), have observed that latecomers have tried to catch up with advanced countries by assimilating and adapting the incumbents' obsolete technology. However, in a previous co-authored paper (Lee & Lim, 2001), a colleague and I asserted that latecomers have not always followed advanced countries' path of technological development; rather, they sometimes skip certain stages or even create their own paths that differ from those of the forerunners. In a previous book (Lee, 2019), I suggested an explicit nonlinear alternative centered around the concept of detours and leapfrogging that is responsive to the catch-up paradox of "You cannot catch up if you just keep catching up." Indeed, once a country reaches the middle-income stage, several barriers to entering high-end sectors and industries emerge that justify the need for latecomers to attempt detours and leapfrogging (Lee, 2019; Saviotti & Pyka, 2011). These barriers include restrictions on intellectual property rights, counteractive or protectionist measures by incumbent

countries, and the limitation of latecomers' policy spaces by the World Trade Organization (WTO).

This book attempts to propose an effective alternative to mainstream development thinking by focusing on nonlinearity and multiplicity in pathways for economic development by latecomers, especially those in the middle-income stage. Given that innovation is considered to be both a bottleneck for continued growth beyond the middle-income stage and the solution for the middle-income trap (MIT) (Lee, 2013c; World Bank, 2010), this book explores detour paths of economic development pursued by latecomers that rely on the power of innovation, and therefore the title of this book employs the term "innovation–development detours." Detours are necessitated by the presence of the various barriers latecomers face in their efforts to use innovation to aid development. In my previous work (Lee, 2019), I suggested three specific detours as solutions to the obstacles latecomers face when attempting to enhance their innovation capabilities.

The first detour involves adopting imitative innovation under a loose IPR (intellectual property rights) regime in the form of utility models (or petty patents) and trademarks instead of promoting and strengthening regular patent rights. The second detour is directly opposed to the linear view of GVCs (Baldwin, 2016), which argues that the more participation in GVCs, the better, and rather promotes a GVC-related detour whereby an economy initially learns by participating in GVCs but later reduces its reliance on these chains by building increased domestic value chains and entering high-end segments. Without such a detour, latecomers will remain stuck in low value-added sectors, which is a symptom of the MIT. The third detour involves specializing first in short-cycle technology sectors and products (e.g., IT) and later in long-cycle sectors and segments (e.g., pharmaceuticals). Long-cycle technologies are highly profitable and desirable but also enable existing knowledge to be utilized for a long period of time, thus acting as an entry barrier against latecomers. Therefore, latecomers are advised to first target short-cycle technologies – where entry barriers are low, but growth prospects

are high – because high innovation frequency often disrupts the dominance of the incumbent.

This book seeks to offer new insights regarding detours to economic growth that have become more viable in the age of deglobalization, with a focus on non-manufacturing industries, global–local interfaces, and the coevolution of firms and surrounding systems. Regarding the book's theoretical framework, it applies a Schumpeterian approach, with a focus on the concept of innovation systems, which have been theorized at the national, sectoral, regional, and firm levels (Lundvall, 1992; Nelson, 1993). This book explores the following three issues, which have been relatively neglected in the existing literature: (1) the possibility of multiple linear and nonlinear pathways for latecomers to upgrade their innovation systems; (2) the importance of strategically managing global–local interfaces and, by extension, the necessity of domestic ownership and knowledge for long-term growth; and (3) the coevolution of firms, in particular domestically owned firms, with several tiers of innovation systems, including national innovation systems (NIS), sectoral innovation systems, regional innovation systems, and even corporate innovation systems (Granstrand, 2000).

1.2.2 *Multiple Pathways and Detours*

First, this book applies the innovation systems perspective to the context of latecomer economies and focuses on the possibility of latecomers following multiple nonlinear pathways. The term "nonlinear" implies that latecomers will not necessarily follow the same paths as advanced economies and may not increase the key variables of innovation systems in a linear fashion. This book also intervenes in the longstanding debate on balanced versus imbalanced economic development paths and compares the utility of balanced versus imbalanced NIS for latecomers attempting to achieve sustained economic catch-up. The book also discusses the "trapped NIS" responsible for the catch-up failure that leads to countries becoming caught in the MIT (Lee, Lee, & Lee, 2021).

Various NIS have been measured and analyzed in diverse ways. In a previous paper (Lee, Lee, & Lee, 2021), colleagues and I adopted a definition from Lundvall of NIS as the "elements and relationships which interact in the production, diffusion and use of new and economically useful knowledge" (Lundvall, 1992). This approach uses the five key variables of knowledge localization, diversity of knowledge portfolio, decentralization of innovators, the cycle time of technologies (CTT), and knowledge combinations (originality). National innovation systems in mature and advanced economies tend to be well balanced, scoring high values for all five variables. Their innovations tend to be strongly based on local knowledge (high knowledge localization) and dispersed over a large number of firms (decentralization) and sectors (technological diversification). They also often specialize in long CTT-based sectors where entry barriers and profitability are high. Therefore, a balanced, catch-up NIS pathway for latecomers may focus on improving in a linear and balanced manner five indices of NIS, such as in the cases of Spain, Ireland, and most recently, Russia and India. Contrastingly, imbalanced catch-up NIS pathways may refer to cases in East Asia. That is, in some East Asian countries, a handful of big businesses rather than a large number of small- and medium-sized enterprises (SMEs) have led specialization in short rather than long CTT while attaining a level of technological diversity and knowledge localization commensurate with advanced economies.

This understanding of the imbalanced catch-up NIS pathway is consistent with the concept of nonlinearity in the sense that latecomers do not follow the path of forerunners (or adopt long CTT and decentralized NIS) but rather forge their own paths and seek out their own niches. Such nonlinearity can be rationalized in terms of the existence of entry barriers in long-CTT sectors and the need for latecomers to concentrate their resources within a few big businesses that successfully enter low barrier-to-entry (short-CTT) sectors and technologies (Lee, 2013c; Han & Lee, 2022). In short-CTT sectors, "creative destruction" (Schumpeter, 1942) occurs more

frequently, and therefore, the knowledge base of existing technologies is more quickly destroyed or made obsolete.[1] In this sense, short CTT-based sectors have lower barriers to entry because existing technologies owned by incumbents either become quickly outdated or are frequently disrupted. In contrast, the trapped NIS pathway is discussed in terms of its "too early" specialization in long-CTT technologies without achieving substantial commercial success from innovation and failing to sustain economic growth while being stuck in the MIT.

Late latecomers facing higher entry barriers to high-end sectors and technologies may seek diverse entry points in knowledge-intensive IT services or resource-based sectors rather than hard manufacturing by adopting a detour or leapfrogging strategy. Such possibilities are also consistent with the idea of the multiplicity and nonlinearity of development paths. Figure 1.1 summarizes the above discussion on innovation–development detours, which is further explored in Chapter 2. The top of Figure 1.1 features a box of multiple pathways, including imbalanced (short cycle) and balanced (medium cycle) catch-up pathways as well as the imbalanced, trapped pathway. The same box also lists services and resource-based sectors that are alternatives to manufacturing-based catch-up. The potential of these alternative trajectories will be discussed in Chapter 2 with reference to the examples of Chile and Malaysia (resource-based development) and India (IT service-based development).

Given that all economies around the world, both developing and developed, have undergone several decades of opening up and globalization, competing successfully in international markets is a crucial factor that determines the fortunes of economies. Due to the

[1] Schumpeter (1942, p. 73) explains creative destruction as follows, "The opening of new markets, … the organizational development … illustrate the same process of industrial mutation – I may use that biological term – that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism."

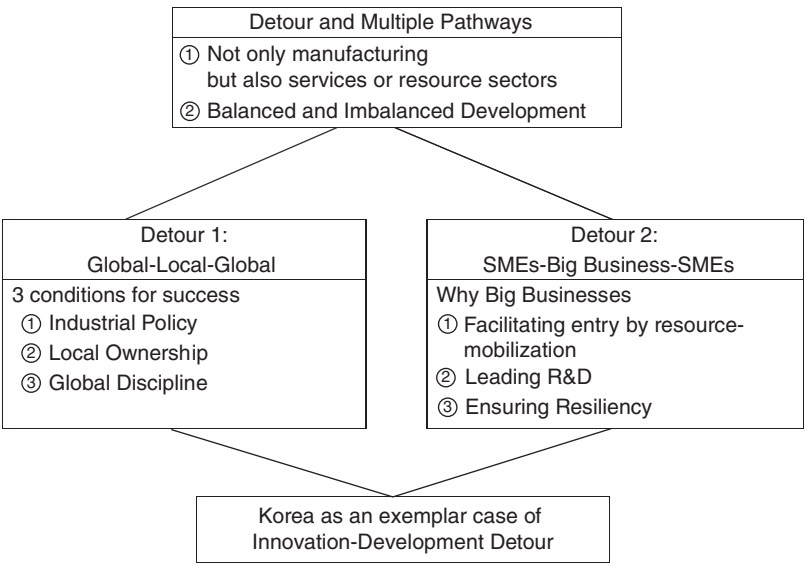

FIGURE 1.1 Innovation–development detour

lack of stable sources of export earnings and convertible currencies, export competition is vital for latecomer economies to be able to earn dollars to pay for imported capital goods. However, the innovation system literature has been somewhat sluggish in exploring the international dimension of innovation systems and articulating such concepts as global innovation systems (Binz & Truffer, 2017) in discussions over building technological capabilities.

To address this gap in the literature, this book argues that managing successfully global–local interfaces is a key condition for building up technological capabilities. This is represented by the box on the left marked as "Detour 1: Global–Local–Global" in the middle tier of Figure 1.1. The first term, "global," indicates that all latecomer economies have been open to global knowledge and know-how in the form of inviting FDI for development. However, they have experienced difficulty leveraging FDI to enhance domestic capabilities in production and innovation. When this dimension of the global–local interface is poorly managed, latecomers often