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New Industrial Policies to Achieve Sustainable Asia-Wide Economic Development¹

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Abstract: *This paper underscores the need for a renewed industrial strategy tailored to East Asian and Southeast Asian nations and regions that have experienced rapid economic growth through industrialisation. The proposed strategy emphasises integrating digitalisation into industrial and development policies as a catalyst for innovation.*

In light of the global resurgence of industrial policy, the paper aims to advocate for the transformation of economic structures through the application of accumulated empirical knowledge and evidence-based policymaking. Additionally, it provides a comprehensive account of the historical development strategies in Asia and offers insights into how these strategies should adapt to future challenges and opportunities.

Keywords: East Asia and ASEAN, industrial policy, evidence-based policymaking, digitalisation

JEL Classifications: L52, O14, O21, O53.

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1. Introduction

Newly industrialised economies (NIEs) in Asia (i.e. Hong Kong, the Republic of Korea, Singapore, and Taiwan) achieved remarkable economic take-off after World War II. The World Bank (1993) called this the ‘East Asian Miracle.’ Other Association of Southeast Asian Nations (ASEAN) Member States (AMS) (i.e. Indonesia, Malaysia, the Philippines, and Thailand) soon followed suit; these AMS reoriented their policies in the latter half of the 1980s from import substitution to reliance on foreign capital and promotion of exports. Today, Asia is the driver of the world economy and is a global growth centre. ASEAN, China, Japan, and India accounted for roughly 30% of global gross domestic product (GDP) in 2020 (Table 1). Looking at these trends, it is almost certain that the global economic centre of gravity will further shift to Asia in the future.

Table 1: Global Gross Domestic Product, 2021

Country/Region	Nominal GDP (\$ billion)	Share (%)
United States	23,681	24.3
European Union	17,494	18.0
China	17,759	18.2
Japan	5,040	5.2
ASEAN	3,402	3.5
India	3,167	3.3
Others	26,859	27.6
World	97,403	100.0

ASEAN = Association of Southeast Asian Nations, GDP = gross domestic product.

Note: Nominal GDP is calculated according to the current prices in United States dollars.

Source: IMF, World Economic Outlook Databases,

<https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases> (accessed 13 December 2024).

Despite Asia's history of strong economic growth, the region now faces significant challenges. First, the COVID-19 pandemic was first reported in Wuhan, China in December 2019 and dragged the global economy into recession in 2020 and 2021. The pandemic also exacerbated economic gaps between countries (i.e. developed and developing) as well as within countries (i.e. upper- and lower-income classes and urban and rural regions). Moreover, global uncertainty is growing (Economic Policy Uncertainty).

Second, the war between Russia and Ukraine that broke out in February 2022 is highlighting geopolitical risks. Such geopolitical instability is giving rise to fears of cost-push

inflation due to resource shortages and logistics disruptions. Third, economic security issues have been debated amidst the heightened geopolitical risks. The US–China trade war has not only generated political tension between these two countries but has also accelerated the decoupling of their economies. The US and some countries in the Asia-Pacific region have begun discussions to maintain their economic security (i.e. how to secure scarce resources, reformulate global production networks, and protect critical technologies). This is likely to affect developing countries in Asia – particularly AMS – that depend on trade and investments from both the US and China.

Fourth, dramatic advances in digital technology such as artificial intelligence (AI), big data, and robotics are simultaneously causing broader industrial and technological transformation, known as the Fourth Industrial Revolution (4IR) that was accelerated by the pandemic. The 4IR is expected to enhance productivity improvement and technological innovation, thereby raising national incomes in developing countries. At the same time, however, it is creating the need to reskill workers who were replaced by automation and to nurture entrepreneurship that encourages business challengers to leverage these new technological opportunities.

Lastly, long-term challenges, such as climate change and the broader destruction of the environment, cannot be ignored. Developing countries must decarbonise by conserving energy and using renewable energy sources as well as learn to manage climate disasters appropriately. Transitioning to a circular economy that is focussed on recycling is key, a challenge whose urgency is highlighted by, for example, marine plastic waste. Many of Asia’s challenges are laid out in the Sustainable Development Goals adopted by the United Nations in 2015.²

AMS have reached the stage where they must pursue high-quality sustainable development and avoid stagnations represented by the middle-income trap. Indeed, achieving high-quality sustainable development while addressing challenges would allow Asia to showcase an ‘Asian Development Model 2.0’ to the world. They must be able to mobilise the power of markets and industrial policy measures by accessing and utilising the latest research findings. This paper thus aims to present potential industrial policies to help realise the substantial economic development by analysing the latest issues in Asia and various policy responses.

² The Sustainable Development Goals cover a wide range of social, economic, and environmental goals in 17 areas including poverty, health and well-being, industry and innovation, and climate and life below water, with the aim of achieving them by 2030. See UN, SDGs, <https://sdgs.un.org/goals>.

This paper is structured as follows. Section 2 reviews the industrial policy debate in the growing global interest of policymakers and researchers. The definition, characteristics, and significance of industrial policy are detailed with existing empirical literature. Section 3 demonstrates effective development strategies in Asia that consider digitalisation. Section 4 conceptualises a framework for sustainable economic development in Asia, and Section 5 concludes with recommended policy directions.

2. The Industrial Policy Debate

This section reviews existing issues surrounding public policy, particularly industrial policy, as it pertains to the government role in formulating development strategies. The growing interest in industrial policy within actual policymaking and academia is examined, and notable economics studies on industrial policy are detailed while touching upon the necessity of evidence-based policymaking (EBPM).

2.1. Growing Global Interest in Industrial Policy

The debate over the effectiveness of industrial policy began in the latter half of the 1970s with the experience of post-war Japan and East Asia in particular (Johnson, 1982; World Bank, 1993). The rise of neoliberalism in the US and Europe produced the Washington Consensus in the 1980s, which pursued deregulation and the concept of small government under market liberalisation and was applied to developing countries. An example was the response to the 1997/98 Asian financial crisis through market-oriented economic and structural reforms based on recommendations from international organisations such as the International Monetary Fund (IMF), which were imposed on Indonesia, the Republic of Korea, and Thailand.

Afterwards, industrial policy was met with global ignorance.³ Yet, with the 2008 global financial crisis, governments undertook measures to expand domestic demand in specific sectors (e.g. support for eco-friendly cars) and rescue private companies (e.g. General Motors) in response to the unforeseen exogenous demand shocks. Since then, industrial policy has once again emerged as a solution.

³ There is a counterargument that the US and European Union (EU) have employed industrial policy as a developmental state in disguise while insisting on the conformity of the Washington Consensus (Wade, 2014). A typical case frequently mentioned in the US is the Department of Defense's Defense Advanced Research Project Agency (DARPA), which has channelled federal funds to many private firms, research institutes, and universities, building the foundation for basic technologies such as the internet and global positioning systems (GPS). This model for research funding has been applied to other parts of the government, such as energy (Azoulay et al., 2019). In addition, the EU implemented *de facto* industrial policies such as export subsidies to develop the Airbus.

In the US, President Joseph Biden, Jr. announced the American Jobs Plan in March 2021 against the background of friction between the US and China. The plan has strong industrial policy elements, as it consists of investment in transport and utilities (e.g. roads, ports and harbours, and water supply), high-speed broadband, research and development (R&D) in science and technology (e.g. semiconductors, high-speed communications technology, biotechnology, and quantum computing), and domestic manufacturing and small businesses. In August 2022, the US Congress passed the CHIPS⁴ and Science Act (CHIPS-Plus) and the Inflation Reduction Act, which provide new funding to boost the US semiconductor industry and to facilitate energy security as well as to tame high inflation.

China had announced Made in China 2025 in May 2015 with the goal of positioning the country as a world manufacturing power. Made in China 2025 designates 20 industries in 10 cutting-edge sectors (e.g. next-generation information and communications technology and energy-saving and new-energy vehicles), aiming to increase the domestic production of key items by 2025 through enhancing competitiveness. China also proposed the Dual Circulation Strategy, which includes both domestic and global circulation, to strengthen resilient supply chains, increase domestic consumption and production, and promote exports.

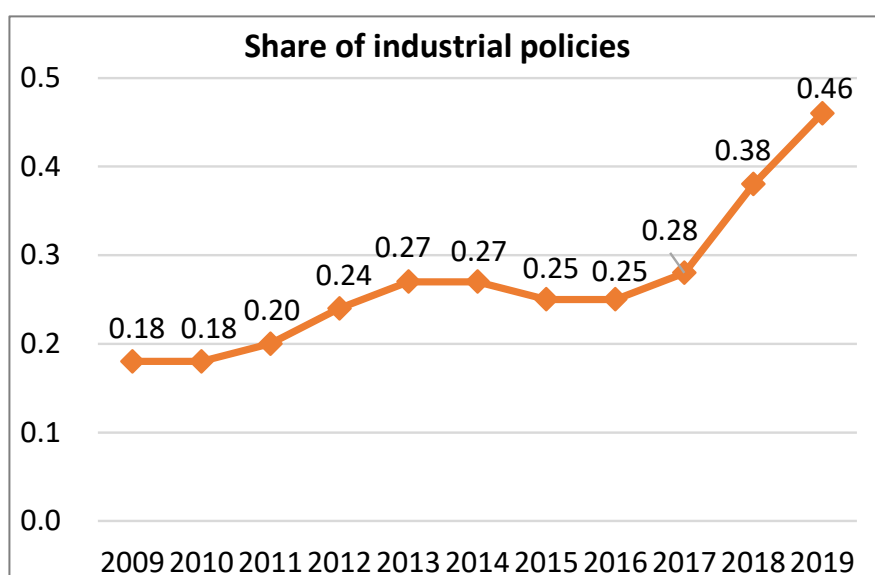
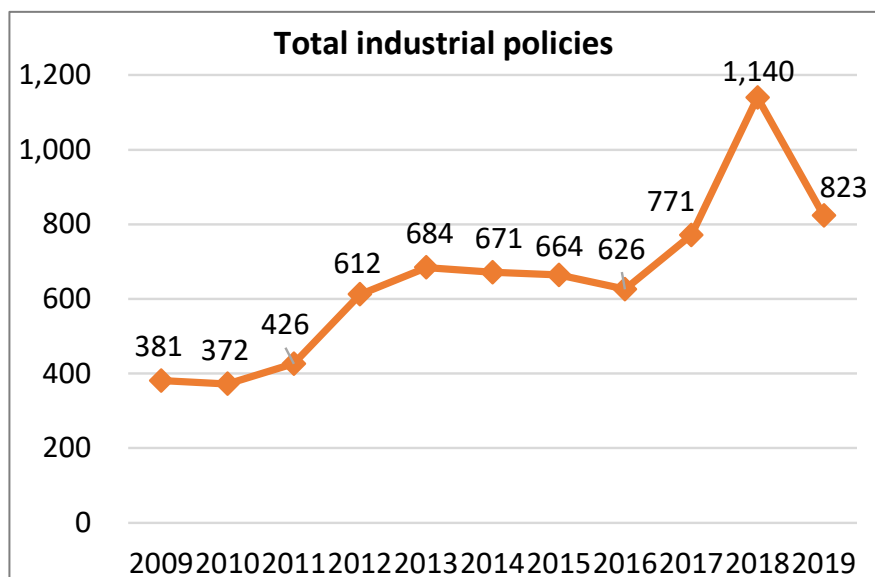
Inspired by the US and China, Japan's Ministry of Economy, Trade and Industry proposed its Innovation to Economic and Industrial Policy in June 2021. This advocates a mission-oriented industrial policy to tackle current challenging economic and social issues such as digitalisation and climate change. This policy aims to create and shape markets with assistance from the state beyond the Market Failures Approach, which is different from conventional industrial protections and simple structural reform approaches.

Thus, are policy measures called 'industrial policy' growing in number? Juhász et al. (2022) applied machine-learning methods to policy-related texts that appeared in the Global Trade Alert database from 2009 to 2020. According to their analysis, approximately 25% of the texts concerned industrial policy, and their proportion has indeed grown since 2010 (Figure 1). The study showed that subsidies and export promotion measures have increasingly replaced import duties and that high-income countries were more likely to implement industrial policy than low-income countries. Contrastingly, Evenett et al. (2024) found that emerging and developing economies were more inclined to impose trade restrictions on both exports and imports compared to advanced economies. Their research also highlighted the association between industrial policy measures and factors such as retaliation and political economy

⁴ Creating Helpful Incentives to Produce Semiconductors.

considerations, which are not clearly aligned with the mainstream rationale of addressing market failures typically used to justify industrial policy.

Figure 1: Time Trend of Industrial Policies



Note: This study examines the text database of Global Trade Alert between 2009 and 2020 using the machine learning method.

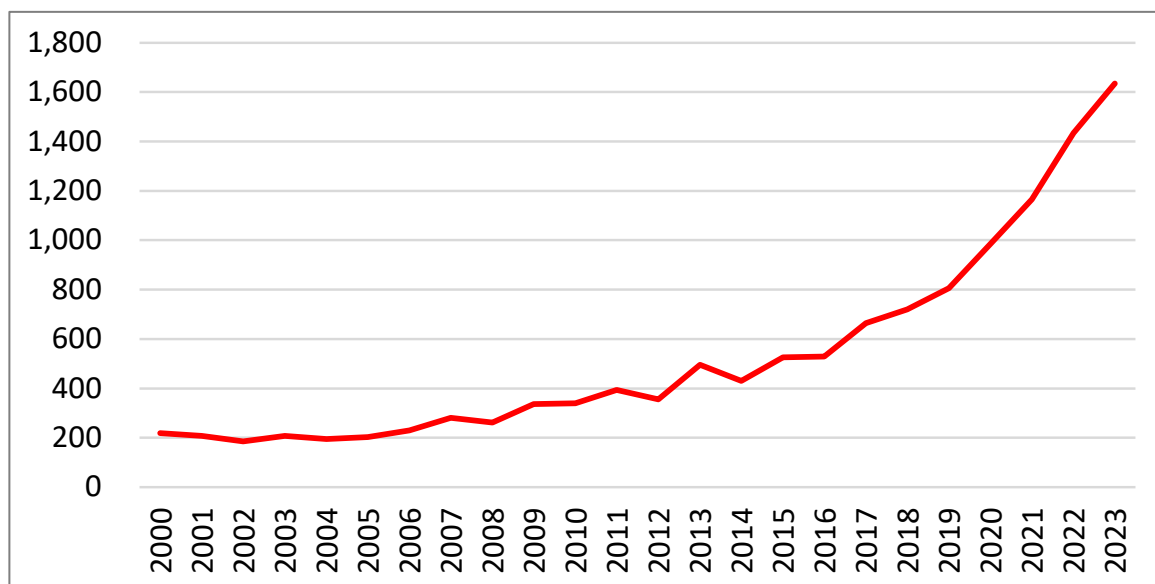
Source: Juhász et al. (2022).

2.2. Revival of Industrial Policy in Academia

A search based on Dimensions, the scientific research data platform, was conducted in which ‘industrial policy’ was chosen as the keyword, ‘economics’ as the research category, ‘title and abstract’ as the location, and ‘article’ as the publication type. It revealed that the total number of search hits rose from 219 in 2000 to 1,635 in 2023, implying that the number of

English-language academic papers on industrial policy has increased significantly since the 2010s (Figure 2).

Figure 2: Total Number of Search Hits for ‘Industrial Policy’, 2000–2023



Note: Number of search hits using ‘industrial policy’ as the keyword, ‘economics’ as the research category, and ‘title and abstract’ as the location, and ‘article’ as the publication type.

Source: Authors.

Considering that the overall number of papers on economics is growing as well, the data show that the ratio of hits to all papers on economics grew from 0.9% in 2000 to 1.5% in 2023. Moreover, more research found the same trend by showing that only one paper using ‘industrial policy’ as key words was published in the top five journals on economics⁵ between 2000 and 2009, while eight papers were produced between 2010 and 2019 (Okazaki, 2020). Industrial policy is being used more frequently at the policy forefront; accordingly, academic interest in the subject is also growing. However, research on industrial policy that covers Asia, especially South-East and South Asia, is still in the development stage. It is hoped that this paper will bridge the gap.

2.3. Defining Industrial Policy

There are, broadly speaking, two academic approaches to industrial policy (Juhász et al., 2022). One approach is provided by mainstream neoclassical economists (e.g. Stiglitz, Lin,

⁵ The top five economic journals are *The American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Quarterly Journal of Economics*, and *Review of Economic Studies*.

Monga, 2013; Lin, 2014; Cherif and Hasanov, 2019; Hasanov and Cherif, 2019). In their view, state intervention is justified to correct inefficiencies in the market allocation of resources – but only when a market failure occurs concerning economies of scale, public goods, externalities, market imperfection, information asymmetry, or coordination failure. The role of industrial policy consists of altering the relative prices of goods and services to shape the incentives of consumers and firms so that economic activities increase social welfare.

The second approach is the developmental state perspective. Japan, Korea, and Taiwan, which achieved great economic development after World War II, are cited as examples of states that implemented such an industrial policy (Johnson, 1982; Amsden, 1989; Haggard, 1990; Wade, 1990; Chang, 1994; Amsden and Chu, 2003; Kohli, 2004). This approach posits that the state has an essential role beyond the resolution of market failure towards the greater goals of economic development, poverty reduction, and sustainability. Some ‘developmentalists’ maintain that the desirable economic structure should be clearly defined and that the state is expected to play a more extensive and critical role towards the goals. Specifically, they point to a mission-oriented economy in which the state takes the lead in innovation, undertaking the risk of innovation instead of private businesses (Mazzucato, 2013, 2021; Kattel, Dreschsler, Karo, 2022). Such ‘moonshot’ industrial policies will create new markets and determine the orientation of the state’s growth.

Thus, there is no uniformly accepted definition of industrial policy, given the variety of ways in which the role of industrial policy is understood. The effort to define industrial policy has been continued in academia and by international organisations. Going forwards, this paper defines industrial policy by using a study by the Organisation for Economic Co-operation and Development – as encompassing all types of instruments that intend to structurally improve the performance of the domestic business sector (Criscuolo et al., 2022a).⁶ Industrial policy can include technology policy and firm (especially start-up) support policy since its objective is to support the business sector.

Industrial policy is not limited to the manufacturing sector; it applies to all business sectors including the agriculture and services sectors. Under this broad definition, policies not literally demarcated as industrial policy can be covered if they contribute to improving the

⁶ See Warwick (2013) and Aiginger and Rodrik (2020) for more definitions of industrial policy. Rodrik (2004) defined industrial policy as ‘restructuring policies in favour of more dynamic activities generally, regardless of whether those are located within industry or manufacturing per se’. Similarly, Rodrik (2008) stressed that the objective of industrial policy is to ‘stimulate specific activities and promote structural change’.

business sector (e.g. tax credits to promote firm investments in digitalisation or human resources development for the industrial workforce). For example, even a tax break for software programmers with eligible degrees can be an effective industrial policy because it can foster information and communications technology sector development (Manelici and Pantea, 2021). Policies prescribed by neoclassical economists and by developmentalists can both be included under industrial policy as defined here because they orient structural changes. In this sense, industrial policy should not be monopolised by industrialised countries; there is some leeway for the positive use of industrial policy in developing countries that aspire to strengthen their industrial competitiveness globally.

It is also necessary to note the relationship between competition policy and industrial policy. Competition policy has been traditionally placed in opposition to industrial policy, considering that the latter can be a serious distortion of the market mechanism. However, these two policies should be reconciled. Recent research revealed that targeted industrial policy is more conducive when proper competition policy is conducted (Aghion et al., 2015). Since the aim of competition policy includes the enhancement of business efficiencies as well as consumer surplus through competition pressures, this policy may be viewed as a part of industrial policy according to this paper's definition.

Some scholars have defined industrial policy even more broadly. Stiglitz and Greenwald (2013, 2014) argued that macroeconomic stabilisation policy, including fiscal, monetary, and exchange rate policy, is also industrial policy from the perspective of promoting learning in the economy and society. They emphasised that macroeconomic stabilisation policy should be implemented as industrial policy to prevent the deterioration of the learning accumulated by businesses, organisations, and workers due to the hysteresis characteristics of intangible assets and human capital. However, fiscal, financial, and other macroeconomic policies are typically used as countercyclical macroeconomic measures and are not aimed at the structural improvement of the business sector. Therefore, in this paper, macroeconomic policy does not fall under the definition of industrial policy.

Mazzucato (2021) explored another very broad view of industrial policy that encompasses the response to climate change, the pandemic, and other challenges. This expansive definition of industrial policy deserves some attention in today's increasingly complex socioeconomic context; however, it is not included in the narrow sense of this paper. For example, setting up pharmaceutical supply chains to deal with pandemics remains firmly in the realm of health care policy and is not classified as an industrial policy that supports the business sector. On the other hand, policies adopted to make agriculture production more

efficient can be regarded as industrial policies to promote the agriculture sector.

2.4. Significance of Industrial Policy and Its Measures

Over time, there have been plenty of debates over the value of industrial policy. While some have cast doubt on its effectiveness (Krueger, 1993; 1995), others who acknowledge the existence of market failures in the actual economy support industrial policy. In this latter view, positive government interventions are justified to correct market failures and to achieve more efficient resource allocation, given that countries engage in *de facto* industrial policy.

Infant industry protection is both a controversial and typical measure of industrial policy that developing countries (including AMS) have aggressively employed in their initial development stages. It assumes that, in the transition stage of industrial development, trade protection that temporarily restricts imports through tariff barriers and other constraints is desirable until technology is sufficiently advanced to enable economies of scale (i.e. the effect of fixed costs reduction is achieved) and targeted industries generate positive externalities (i.e. Marshallian externalities) (Harrison and Rodríguez-Clare, 2010). However, objections have been raised in that it favours industries lacking comparative advantages, discourages sound competition, and exacerbates innovation and productivity improvement. Government protection thus frequently leads to ‘picking losers’ and rent-seeking by protected incumbent industries. As an example, although some AMS sought to industrialise by developing their heavy and chemical industries before the 1980s, the general view is that such infant industry protection almost failed in industrial development. Furthermore, industrial policy measures could provoke tit-for-tat retaliatory actions from other countries (Evenett, 2024; Rotunno and Ruta, 2024).

Technology development policy has also been implemented as an important part of industrial policy by both developed and developing countries. Technology development has positive externalities in the form of spillover effects on firms that do not undertake it. This means that the social return on investment in technology development will be higher than the private return on investment, resulting in a lower level of private investment than the socially optimal level. This positive externality mechanism is regarded as justifying government support for technology development (Bloom, Van Reenen, Williams, 2019).⁷ Measures such as foreign direct investment from multi-national corporations and the establishment of industrial hubs

⁷ Bloom, Schankerman, and Van Reenen (2013) estimated gross social and private returns on R&D investment at 55% and 21%, respectively.

have been employed to accelerate technology transfer and generate spillover effects for domestic private business sectors, particularly in developing countries, including AMS (Ambashi, 2018). While R&D support and reinforcement of intellectual property right systems are popular in developed countries, they should receive more attention from policymakers in developing countries given the small amount of their R&D investment (Ambashi, 2019).

The Schumpeterian industrial dynamics argument posits that the entry of new firms achieving innovation and productivity improvement can push the exit of inefficient existing ones (Aghion and Howitt, 1992). Such ‘creative destruction’ signifies the role of industrial policy in facilitating the appropriate shift of resource allocation to generate better industrial dynamics. Therefore, the ‘crony capitalism’ prevalent in Asian economies, in which businesses having close relationship with state power are prioritised, should be controlled in view of industrial dynamics. Moreover, information asymmetry hinders efficient resource allocation in credit provision to private enterprises, particularly micro, small, and medium-sized enterprises (MSMEs) (Stiglitz and Weiss, 1981). When financial institutions are not as familiar with business projects as private firms because of the incompleteness of the financial market, a borrower firm, especially MSMEs, may not be able to secure funds (Banerjee and Duflo, 2005). Since it is observed that financial markets in developing countries are generally incomplete, it is desirable for governments to provide financial support through public financial institutions to address the incomplete financial market problem.

Moreover, situations exist in which coordination failure may be alleviated through state intervention. In a sector where there is a fixed cost and uncertainty, firms may not enter the market fearing uncertainty while incurring the fixed cost. Government interventions can resolve this difficulty for firms, accelerating new entries (Bolton and Farrell, 1990). Here, a policy to take the initiative in setting industry standards to encourage firm activities is regarded as a government role. In addition, industrial policy can be useful when there are externalities to manufacturing activities connected through supply chains (Liu, 2019). AMS still must design effective industrial policies to fully exploit international production networks and global value chains, which have been reinforced in Asia.

Yet industrial policy may have the potential to discourage new entries because of its strong tendency to support specific incumbents. Policies that support a small number of firms may not raise the productivity of the industry or the overall economy. Again, this means that it is necessary to combine industrial policy with competition policy as much as possible to foster industrial dynamism.

2.5. Horizontal and Vertical (Targeting) Policies

Policymakers and scholars often debate the kind of industrial policy desirable, that is, horizontal or vertical policy. The term ‘targeting policy’ is sometimes used to represent vertical policy. Economists who fear ‘government failure’ have argued in favour of horizontal policy, in which institutional environments are developed through market facilitation and regulatory reforms. Horizontal policy is applied to firms and sectors instead of fostering specific firms and sectors. Yet some economists, not developmentalists, favour vertical industrial policies that target specific firms and sectors (Aghion et al, 2021). One justification is the existence of path dependency in technology.⁸ Selective development of specific firms and sectors under government initiatives is vindicated when superior technology (e.g. clean decarbonising technology) will not necessarily be adopted because of past inertia. It may also be desirable for governments to alleviate coordination failure by giving incentives to specific firms to promote their investment. While the role of industrial policy is being revisited, it seems archaic to simply divide industrial policy into horizontal and vertical policy and then recognise only one.

Industrial policy can be roughly divided into three instruments: (i) within-firm instruments that directly affect individual firm performance (e.g. subsidies, financial loans, knowledge transfer, and infrastructure development), (ii) between-framework instruments that affect industry dynamics (e.g. developing capital markets and facilitating labour mobility, trade, and investment policy), and (iii) demand-side instruments that affect goods and services (e.g. product regulation and public procurement) (Criscuolo et al., 2022a).⁹ The key is to select appropriate instruments or combinations according to the objective.

2.6. Evidence-Based Policymaking

Research progress of EBPM in development economics has been influential in real economic policy (Banerjee and Duflo, 2012; 2019). EBPM has spread to other areas of economics, and arguments have been made in favour of applying it to industrial policy as well. EBPM takes the empirical method of economic analysis and applies it to policy analysis. Many empirical studies have been conducted all over the world in industrial policy. National development strategies that will be formulated in AMS are also expected to rely on EBPM.

⁸ Path dependency is the idea that the path to one equilibrium (out of many) is determined by background and history. The QWERTY keyboard is an example.

⁹ Criscuolo et al. (2022a) clarified industrial policy and industrial strategy. They defined the latter as groups of consistent and interconnected policy instruments aimed at achieving a specific policy objective (e.g. greening or AI development) and divided them into sectoral, mission-oriented, technology-focussed, and place-based strategies.

EBPM is a recent revolution in policymaking in which policy tools are selected based on evidence. The definition of evidence is empirically verified causal effects of a policy. The existence of this evidence is particularly important in EBPM when policy tools are determined. This idea originated in medical science, from which its use spread to public health, public policy, and development policy. Given the increasingly broader application of EBPM to policy fields, it is recommended that appropriate policy tools be chosen by applying evidence to economic and social issues that public policy should address (i.e. EBPM is a pattern of behaviour for those who engage in policy).

Casual inference, based on the statistical and econometrical methods that have developed around economics, is often used for this empirical demonstration in the policy field. In causal inference, there is a strict distinction made between causation and correlation. It is crucial to prove causal relationships in measuring the effects of policy intervention. Evidence produced by randomised controlled trials is considered of the highest quality (Duflo, Glennerster, Kremer, 2008). In randomised controlled trials, the subjects of the policy are randomly assigned to a treatment group or a control group. Since the two groups have, on average, identical characteristics except for the policy intervention, the difference between the average of the outcome variable can be measured as the causal effect of the policy intervention.

However, while randomised controlled trials are a potent methodology to verify policy effects, it is ethically and practically difficult to randomly assign targeted subjects (e.g. industries, firms, or workers), given the nature of industrial policy.¹⁰ Assigned treatment groups via industrial policy are frequently subject to sample selection, in which more motivated firms and workers tend to apply to policy programmes. For this reason, much research has been conducted through natural and quasi-experiments based on *ex-post* observational data, using exogenous variations in the policy interventions.¹¹ Structural estimation and dynamic macroeconomic general equilibrium models are also used by calibrating structural parameters from data based on the economic model of consumer and firm behaviours and estimating the effect of policy intervention on economic welfare against counterfactual simulations.

In sum, while the literature on industrial policies has been focussed on correlational

¹⁰ Deaton and Cartwright (2018) pointed to the limitations of randomised controlled trials and that they should be integrated with other methods to understand why policy interventions work.

¹¹ The emergence of research methods that identify causal effects by using natural and quasi-experiments is known as the credibility revolution (Angrist and Pischke, 2010). These representative methods include instrumental variable approaches, regression discontinuity design, propensity score matching, difference-in-differences, and synthetic control methods. See Angrist and Pischke (2009) and Conningham (2021) for details of these methods.

studies, new empirical methodologies along with EBPM have emphasised precision, causal inference, and economic structure based on firm-level panel data, historical episodes, and selective place-based policy variations. In addition, the latest literature has fostered a nuanced understanding of industrial policy impacts, shaped by a redefined governance understanding, a broader range of policy instruments, and the reality of de-industrialisation (Juhász, Lane, Rodrik, 2023). While it is unrealistic to implement policies only when there is robust evidence, it is important to integrate the essence of EBPM into industrial policy and development strategy in Asia moving forward.

2.7. Review of Empirical Studies on Industrial Policy

The following sub-section describes trends in empirical studies on industrial policy based on Lane (2020). The earliest empirical studies before 2000 highlighted policies that supported industries and firms. However, most ignored the selection bias caused by, for example, political decisions that affected the choice of targeted industries and firms. Consequently, the effect of industrial policy could only be interpreted as a correlation and not as a causal effect, which makes it difficult to evaluate the industrial policy in question.

However, after 2000, new trends emerged in the empirical study of industrial policy. First, while microdata analysis at the firm level had been feasible, it was now possible to estimate the effect of industrial policy on industries nationwide using production function and total factor productivity estimations. Second, policy cases were studied, in which industrial policies are applied exogenously to specific regions (i.e. place-based industrial policy) to identify the causal effects as natural and quasi-experiments by examining the difference between treated and non-treated regions (Bernini and Pellegrini, 2011; Kline and Moretti, 2014; Pellegrini and Muccigrosso, 2017; Becker, Egger, von Ehrlich, 2018; Criscuolo et al., 2019). Third, studies were conducted attempting to extract the economic impact of institutional changes from historical events. Research on infant industry protection triggered by the continental embargo during the Napoleonic Wars (Juhász, 2018), Marshall Plan expanded to post-World War II Italy (Giorcelli, 2018), and Korea's big push of the manufacturing sector in the 1970s (Lane, 2022) are a few examples.

Much research has been conducted on industrial policy in recent years, with a variety of data and methods used from the EBPM perspective. However, the aim of this paper is not to review all empirical studies on industrial policy. The focus is confined to empirical evidence of vertical and horizontal industrial policies relevant to developing countries by drawing on Harrison and Rodríguez-Clare (2010), Lane (2020), Morikawa (2020), Criscuolo et al. (2022b),

and Juhász et al. (2023).¹²

As an example of vertical industrial policy, infant industry protection of the microcomputer industry established in Brazil in the 1980s banned imports of foreign-made microcomputers to nurture the domestic industry. However, while the domestic microcomputer industry improved its productivity and decreased the price of microcomputers, it failed to catch up with that of the US; ultimately, the Government of Brazil abolished this policy (Luzio and Greenstein, 1995). Meanwhile, Korea in the 1970s targeted the industrial activity of heavy chemicals and industry; with supporting policies, it successfully increased its output and exports, improved productivity, and benefited downstream sectors through network effects (Lane, 2022). This positive effect on downstream firms in the supply chain contrasted with other existing studies that detected a negative effect (Blonigen, 2015). Moreover, while targeted subsidies have shown to be more effective for young, small firms than for large firms and multinational corporations (Bronzini and Iachini, 2014), inefficiencies in international industrial allocations have also been identified (Kalouptsi, 2017).

While some research using exogenous historical events found positive results from industry protection (e.g. Juhász, 2018), the effectiveness of such policy remains controversial. However, it is almost certain that only protection does not make domestic industries internationally competitive. At the least, erroneous technological bias must be avoided, and the whole industrial ecosystem in a country and the world should be taken into consideration when policymakers design targeted policies.

Aside from subsidies and tax credits targeted for investment, particularly R&D, horizontal industrial policy includes competition and regulatory reform policy as well as international trade and investment policy to improve the business environment (i.e. framework conditions) in developing countries. The first type of horizontal industrial policy comprises important channels for structural changes that expedite the entry (exit) of highly productive (unproductive) firms. It encourages the adoption of new technology and innovation through fierce competitive pressures while facilitating efficient resource allocation (Aghion et al., 2005). It is undesirable to indiscriminately shield domestic firms and industries from competition; it is essential to harmonise industrial policy with competition policy. Studies conducted in China have shown that when subsidies and other forms of industrial policy are implemented in a manner that targets competitive sectors or promotes competition within sectors by targeting

¹² Industrial policy also targets individual categories, including labour and capital markets, business law, intellectual property, standards, entrepreneurship, and energy conservation and new energy promotion.

new, highly productive firms, the productivity of firms rises (Aghion et al., 2015). Other studies have shown that R&D support for businesses is ineffective when no exit policy exists for inefficient firms (Acemoglu et al., 2018). With respect to regulation, one study using Organisation for Economic Co-operation and Development industrial data showed that counter-competition regulation in upstream industries leads to a decline in productivity in downstream industries, indicating the necessity of promoting regulatory reform (Bourlès et al., 2013).

The second type of horizontal industrial policy is more relevant to developing countries that intend to nurture strong industrial sectors. Many studies have revealed that simple protective trade measures are ineffective as industrial policy in terms of productivity. In fact, studies using firm-level data concluded that the promotion of free trade and foreign direct investment results in efficient resource allocations, productivity improvement, and innovation through such factors as import competition, lower prices of intermediate goods, knowledge spillover, and learning by domestic firms (Pavcnik, 2002; Javorcik, 2004; Todo and Miyamoto, 2006; Amiti and Konings, 2007; Shu and Steinwender, 2019).¹³ Some posited that dynamic gains from trade through cross-border knowledge spillovers are significantly greater than the static gains from comparative advantages within developed countries and between developed and emerging economies (Hsieh et al., 2019; Hsu, Riezman, Wang, 2019). These empirical findings indicated that international trade and investment policy promote structural change in domestic industries and firms as the result of previously mentioned channels. As free trade and economic partnership agreements policies enhance business sectors, these would continue to play a central role in the industrial policy of developing countries in Asia.

2.8. Macroeconomic Assessment of Industrial Policy

The macroeconomic literature on resource allocation has discussed the effects of industrial policy. The benefit of evaluating industrial policy using macroeconomic models is that it enables a comprehensive cost–benefit analysis of the policy while considering macroeconomic general-equilibrium effects. Ideally, both the statistical significance of policy effects as well as their quantitative significance should be demonstrated.

Macroeconomic studies have generally shown that total factor productivity as the core element of economic growth remains low because of inefficient resource allocation. Hsieh and

¹³ While it is observed that in the EU, firms have enhanced their patent activities, information technology investments, and productivity through import competition against Chinese firms (Bloom, Draca, Van Reenen, 2015), competition has had a negative effect on patent activities and R&D investments by US firms (Autor et al., 2020).

Klenow (2009) and Restuccia and Rogerson (2008) concluded that the inefficient resource allocation that drags total factor productivity down is the outcome of policy. Alvarez-Cuadrado and Pinteá (2009) and Esteban-Pretel and Sawada (2014) examined the effects of the Marshall Plan in post-World War II Europe and industrial policy performed in Japan, respectively, through neoclassical multi-sector growth models, and demonstrated that these policy effects were minimal. These studies focussed on the distortion that industrial policy creates in resource allocation, casting doubt on its efficacy. However, Hayashi and Prescott (2008) and Esteban-Pretel and Sawada (2014) argued that the key to Japan's post-war high growth rate was eliminating imperfections in the labour market. This observation indicates the importance of industrial policy that promotes the free movement of domestic labour through transport infrastructure (e.g. roads and high-speed railways), urban housing development, and regional industrial clusters.

3. Development Strategies of ASEAN Member States and Digitalisation

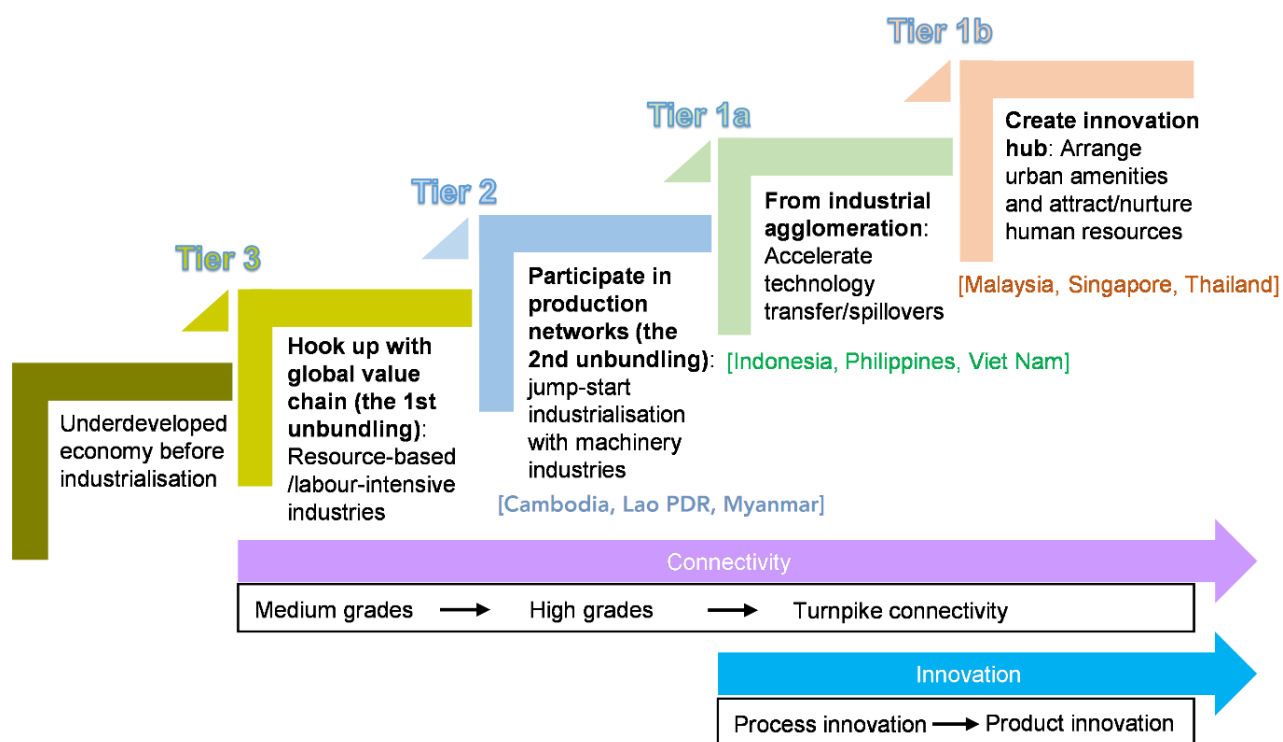
As the endogenous growth theory suggests, the dramatic accumulation of physical and human capital in Japan and NIEs served as the background for economic development in the post-war period, which was driven mainly by industrialisation and export expansion. Other AMS – Indonesia, Malaysia, the Philippines, and Thailand – followed this successful economic development. This historical pattern of economic development is known as the flying-geese model. The development process of these AMS will now be examined.

AMS experienced downturns in their growth rates in the 1960s and 1970s under a protective import substitution industrialisation strategy, which encouraged domestic production by restricting imports. Realising the limitation of this strategy, these countries adopted foreign capital-dependent, export-oriented industrialisation strategies as the foundation for their development policies. Since the 1990s, they have deepened economic integration with global value chains through trade and investment liberalisation (e.g. the ASEAN Free Trade Area and ASEAN Comprehensive Investment Agreement). The ASEAN Economic Community was established in 2015 to further deepen economic integration.

ASEAN's recent industrial development strategy is based on the regional specialisation of manufacturing, dominated by the automobile and electrical machinery industries. As economic integration has deepened, the international division of labour between manufacturing processes and tasks has also progressed with involvement by multi-national corporations, which accompanied active trade in parts and final goods. The deepest international production network in the world has been exploited according to respective AMS development stages

(Figure 3). Consequently, individual AMS have achieved extraordinary economic growth, poverty reduction, and expansion of a thick middle-income class, not only by utilising the deepest production network in the world but also by developing infrastructure and improving investment environments. The Economic Research Institute for ASEAN and East Asia (2015) illustrated the ASEAN development strategy, centred on industrialisation according to development stage.¹⁴

Figure 3: ASEAN’s Industrial Development Strategies



Source: ERIA (2015).

While AMS have enjoyed steady economic development, it is important for them to avoid the ‘middle-income trap’. There are serious concerns in developing and middle-income countries (e.g. Thailand) that their economic growth may stall over the long run at the current middle-income level (or per capita GDP) and may not reach the level of developed countries

¹⁴ Various authors have elaborated on growth ideas for practical use in developing countries. Hidalgo et al. (2008) demonstrated the concept of ‘product space’ (i.e. relatedness between products traded), which showed why sophisticated products are difficult to make in developing countries. Hausman, Rodrik, and Velasco (2008) advocated the decision-tree methodology of a ‘growth diagnostic’ to help identify and eliminate the binding constraints to growth for individual countries. Lin (2014) posited new structural economics, whereby developing countries can exploit their latent comparative advantages to generate dynamic industrial structures.

in the future. As they achieve middle-income country status, these AMS must create new development strategies and foster new, high-value-added industries that can realise productivity improvement and innovation (Ambashi, 2020).

Digitalisation is expected to be key in escaping the middle-income trap. Digitalisation encourages the division of labour at the task and human levels, as witnessed in the shift in the international division of labour from the second to third unbundling (Baldwin, 2016). This has led to a drastic change in technologies, innovations, and organisations. Specifically, there is a growing shift from ‘incremental innovation’, which focusses on the gradual improvement of existing goods and services in the industrialisation process, to ‘disruptive innovation’, which aims to introduce new goods and services and to create new markets. In disruptive innovation based on digitalisation, the accumulation of technology and knowledge previously required may not be significant. Then, leapfrogging economic development – jumping over presumed immediate development stages – would be possible (ERIA, 2022). Digital platform services are one such example. Smartphones, which have become widely adopted in AMS, have opened a new business frontier of online shopping, electronic payments, and ride-hailing services, which have enriched people’s living standards (Ito, 2020).

AMS intend to bring existing industries and digitalisation together, which is known as digital transformation. In 2011, Malaysia established a special innovation unit (Unit Inovasi Khas) under the Prime Minister’s Office to consolidate innovation policy at the national level jointly with the Malaysia Innovation Association. Thailand introduced its *Thailand 4.0* initiative in 2014, aiming to transform the country into a developed country by fostering high value-added sectors and leapfrogging beyond the existing phase of heavy industrialisation and reliance on foreign capital. In 2021, Thailand launched the Bio-Circular-Green (BCG) Economy Model to further support Thailand 4.0. This model leverages science, technology, and innovation to promote efficient resource utilisation and create a sustainable economy. Additionally, Indonesia introduced *Making Indonesia 4.0*, a 2018 road map. It aims to introduce the 4IR in which Indonesia’s manufacturing sectors (e.g. food processing, textiles, automobiles) will be revitalised.

To implement these development strategies, policymakers need to incorporate concrete industrial policy tools into development strategies based on evidence from the empirical studies previously detailed. The role of industrial policy in the early development stages of AMS is now accepted given Asia’s remarkable growth experience (ADB, 2020). In the present digitalisation age, it is also necessary to demonstrate how industrial policy can be useful in embodying industrial development strategies at higher development stages. Assuming that the

cooperation of stakeholders is necessary to develop new industries, in which there are significant knowledge spillovers associated with innovations, the role of industrial policy should be reconsidered to form effective development strategies in Asia.

Meanwhile, as Rodrik (2004) pointed out, why industrial policy was relatively successful in AMS must be highlighted. Specifically, AMS utilised desirable features such as outcome-based competition promotion, clear policy objectives, sunset clauses, and transparency with effective implementation mechanisms (ADB, 2020). Moreover, there were long-term visions and guidelines backing up development strategies, enabled by political leaders with foresight; powerful control towers that can incorporate leaders' ideas into industrial policies; and competent, meritocratic bureaucracies (Ohno, 2009).¹⁵ As the IMF (2024) highlights, industrial policy measures should be well-targeted, time-bound, cost-effective, transparent, and guided by clear objectives to ensure effectiveness. AMS should continue to utilise institutional frameworks that support effective policymaking and the implementation of industrial policies. However, the political forces influencing the selection of industrial policies and the state's capacity to execute them may act as 'governance constraints' (Juhász and Lane, 2024). Thus, conferring excessive powers on governments would run the risk of creating 'elite capture' (i.e. the appropriation of privileges and embezzlement by the elite). Accountability and transparency, corruption prevention, participation of a wide range of citizens in the debate on industrial policy, and other elements of governance continue to be necessary. In Japan, government advisory councils composed of representatives from industry, academia, and civil society helped secure governance in industrial policy through information sharing and mutual reasoning and trust.

While plausible factors that contributed to the success of industrial policy in Asia have been reviewed in this paper, policymakers should be cautious about indiscriminate applications of industrial policy. In general, successful industrial policy is dependent on conditions and environments in countries. This implies that industrial policy may not always be successful, so it is critical that it be tailored to fit changing needs of each country.

4. Framework for Sustainable Economic Development

In this section, the framework for sustainable economic development in Asia is discussed. Economic challenges that need to be addressed include (i) digital start-ups, and (ii)

¹⁵ The Ministry of International Trade and Industry in Japan, Economic Planning Board in Korea, Economic Planning Unit in Malaysia, National Economic and Social Development Board in Thailand, and National Economic Development Authority in the Philippines are considered significant players that implement respective national development strategies.

environmental problems and disasters.

4.1. Digital Start-Ups

MSMEs account for the bulk of firms and employees in any country; start-ups are expected to be the engine of economic growth. Start-ups force inefficient firms to exit the marketplace by accelerating market competition (Haltiwanger, Jarmin, Miranda, 2013). Moreover, they generate knowledge spillovers as creators of innovation, a positive externality whose impact appears in the enhanced performance of other geographically proximate economic entities. There are arguments both for and against the notion that information technology services could become a leading driver of economic development in developing countries (Aghion et al., 2021). Nevertheless, the progress in digitalisation has brought much attention to start-ups in developing countries from the perspective of economic growth, employment creation, poverty reduction, and inclusiveness.

Google, Apple, Facebook (now Meta), Amazon, and Microsoft in the US are prime examples of successful digital start-ups. The success of digital start-ups is a trend in Asia as well, as Alibaba, Baidoo, Tencent, and other corporations in China have grown and did not need initial large-scale R&D investments to start.¹⁶ All that was needed is a digital service and creative imitation of a US first mover (Kimura, Wong, Ambashi, 2019), which had the potential of disruptive innovation. For example, Gojek and Grab in Indonesia are competing fiercely in ridesharing, replicating the Uber business model. Indonesia's rideshare services enhance consumer welfare by supplementing urban transport and also provide jobs for many. The significant contribution to poverty reduction that digital start-ups have made through the expansion of employment cannot be denied. Moreover, the lockdowns that accompanied the COVID-19 pandemic have been an unexpected push towards digitalisation in national economies and social inclusiveness of digitalisation in business transactions and employment.

Digital start-ups depend on the originality and ingenuity of private firms – an attribute that governments cannot conjure directly. Governments instead must focus on both hard and soft infrastructure development and related institutional environments that enable digital start-ups to conduct their free activities in the marketplace without facing any difficulties. For example, high-speed internet services, such as 5G, comprise essential infrastructure to facilitate

¹⁶ Total early-stage entrepreneurial activity (i.e. percentage of people aged 18–64 years that are either a nascent entrepreneur or owner-manager of a new business) is 9.6% in Indonesia (2018), 21.6% in Malaysia (2017), 17.2% in the Philippines (2015), 19.7% in Thailand (2018), and 23.3% in Viet Nam (2017) – higher than the 6.3% in Japan (2021) (Global Entrepreneurship Monitor, 2023).

the adoption of remote technology and the internet of things on the production line. At the same time, however, it is necessary to continue to develop physical roads, rail, and other conventional hard infrastructure. Without such hard infrastructure, it is impossible to deliver physical goods to consumers, no matter how widely e-commerce is accepted. Moreover, enhancing the services of digital start-ups requires promotion policies that develop soft infrastructure, such as FinTech and e-payment methods.

The striking growth of digital start-ups and platforms has clarified industrial challenges. These platforms are characterised by economies of scale, network externalities, and significant market power. Dominant players often leverage data, create innovation barriers, and engage in anticompetitive practices, raising concerns over monopoly effects, such as unjust pricing and the sale of goods and services that harm consumer welfare (Tirole, 2023). In addition, since data collected by digital firms may include personal data, these must be managed properly from the perspective of privacy protection. Gig workers who work for digital start-ups are frequently forced to endure unstable incomes and are subjected to disadvantageous terms and conditions. If they do not have an employment relationship with the digital firms, they do not generally receive protections under labour law even in developed countries.

These concerns suggest that, when promoting digital start-ups and platforms, governments must establish appropriate, regulations, and institutional frameworks to address antitrust enforcement, data governance, fairness in competition, and the protection of consumers and labour. Furthermore, the taxation of digital firms that conduct business activities globally is an important issue, leading to calls for international harmonisation. AMS should also contribute to the debate in the World Trade Organization and other international fora to resolve this problem.

While the governments of developing countries have great expectations for digital start-ups, it is crucial that they develop relevant infrastructure and institutional systems simultaneously to enable domestic firms to fully exploit the potential of digitalisation. The industrial policy fostering digital start-ups should be based on a more horizontal policy approach to give benefits to a wide range of entrepreneurs.

4.2. Environmental Problems and Disasters

Environmental problems are a market failure, in which necessary goods and services are not provided by the market to maximise social welfare. For example, air and water pollution accompanying business activities produce negative externalities by endangering health. In this case, governments can maximise social welfare by restricting excessive business activities by

way of subsidies and taxes (i.e. Pigouvian subsidies and taxes) or direct regulations to reduce pollution. For other environmental problems, there is a social dilemma of the ‘tragedy of the commons’, in which common resources, such as forests and fishing grounds, are exhausted by excessive use. This issue is sometimes resolved by government interventions that give the interested parties property rights to manage it appropriately.

Today, growing attention is given to climate change as well as the disasters that it causes. Disasters tend to cause greater damage in developing countries because of their weak infrastructure, such as the eruption of Mount Pinatubo in the Philippines in 1991, earthquake and tsunami in Indonesia in 2004, and Cyclone Nargis that hit Myanmar in 2008. However, preventing and alleviating disasters are frequently disturbed by market failure. Although rising sea levels threaten to submerge islands and coastal areas, it is difficult through market forces to provide appropriate seawalls, levees, and other infrastructure necessary due to the free-rider problem on public goods provision. When a disaster strikes, maintaining and securing lifelines, such as electricity and water supply, are the most pressing tasks for governments. The private insurance market provides limited coverage for damage from disasters; the insurance market is very incomplete.

Thus, is industrial policy relevant to environmental problems and disaster management? According to the general definition of industrial policy in this paper, policies that seek to enhance firms’ international competitiveness through the development of energy conservation technology and renewable energy fall under this category. For this purpose, a mechanism is necessary that incentivises firms to develop environmental and energy technology and enables technology to function smoothly in the marketplace. Given the path dependency of technologies that firms use, it is sometimes necessary to provide powerful incentives to replace a high-carbon, polluting technology with a low-carbon, clean one (Aghion et al., 2016). In addition to carbon taxation, R&D subsidies, tax credits, and policies such as the establishment of intellectual property and financial markets to encourage a clean technology shift are conceivable. A public procurement policy for clean technology can also be expected to have the effect of bringing in private investments and funds as governments initiate R&D investment (i.e. a prime-pumping effect) and encourage private firms to develop new technology prototypes as a first step to technological innovation (Howell, 2017).

Providing disaster insurance for firms is another way to utilise the market mechanism to address disaster management. In most developing countries where financial markets are underdeveloped, some government support for the establishment of that insurance is necessary, particularly in its initial stage. Dealing with environmental problems and disasters mainly

through private firms by developing such underdeveloped markets can be done with an industrial policy through market creation and shaping (Mazzucato, 2013; 2021).

The primary role of government is to directly address market failure in the event of environmental problems and disaster management. Developing technology and establishing markets that resolve these challenges are important areas in which governments should consider intervening by using industrial policy. There seems to be some room for vertical industrial policy to be applied to specific markets and technologies to address these challenges.

5. Conclusion

In this paper, the importance of setting a new strategy towards sustainable economic development in Asia is emphasised. The role of industrial policy should be reconsidered amongst policymakers and researchers as a tool to strengthen business sectors and to transform economic structures.

Empirical knowledge was reviewed regarding industrial policies, confirming a significant demand for policymaking based on EBPM. The history of development strategies in Asia (especially AMS) was examined as well as how AMS should evolve going forwards using industrial policy. Above all, digitalisation should be incorporated in development strategies.

While the world has faced a variety of challenges, Asia, in the forefront of experiencing rapid growth and increasing trials, must present a renewed development strategy to the world. AMS need to balance the market and policy power, thereby creating a novel application to their national development strategies. It is hoped that the discussion elaborated in this paper will help satisfy such expectations to achieve sustainable economic development throughout the region and beyond.

References

- Acemoglu, D. et al. (2018), 'Innovation, Reallocation, and Growth', *American Economic Review*, 108(11), pp.3450–91.
- Aghion, P., C. Antonin, S. Bunel, and J. Cohen-Tanugi (2021), *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations*, Cambridge, MA: Belknap Press, Harvard University.
- Aghion, P. et al. (2005), 'Competition and Innovation: An Inverted-U Relationship', *Quarterly Journal of Economics*, 120(2), pp.701–28.
- (2015), 'Industrial Policy and Competition', *American Economic Journal: Macroeconomics*, 7(4), pp.1–32.
- (2016), 'Carbon Taxes, Path Dependency, and Directed Technical Change: Evidence from the Auto Industry', *Journal of Political Economy*, 124(1), pp.1–51.
- Aghion, P. and P. Howitt (1992), 'A Model of Growth through Creative Destruction', *Econometrica*, 60(2), pp.323–51.
- Aiginger, K. and D. Rodrik (2020), 'Rebirth of Industrial Policy and an Agenda for the Twenty-First Century', *Journal of Industry, Competition and Trade*, 20(2), pp.189–207.
- Alvarez-Cuadrado, F. and M.I. Pinteá (2009), 'A Quantitative Exploration of the Golden Age of European Growth', *Journal of Economic Dynamics and Control*, 33(7), pp.1437–50.
- Ambashi, M. (2018), *Innovation Policy in ASEAN*, Jakarta: Economic Research Institute for ASEAN and East Asia (ERIA).
- (2019), 'Government Initiatives Matter for Innovation in ASEAN', *ERIA Policy Briefs*, No. 2019–03, Jakarta: ERIA, <https://www.eria.org/publications/government-initiatives-matter-for-innovation-in-asean/>
- (2020), 'ASEAN Development and Innovation Strategy in the Era of New Industrialisation', *ERIA Policy Briefs*, No. 2020–06, Jakarta: ERIA, <https://www.eria.org/research/asean-development-and-innovation-strategy-in-the-era-of-new-industrialisation>
- Amiti, M. and J. Konings (2007), 'Trade Liberalization, Intermediate Inputs, and Productivity: Evidence from Indonesia', *American Economic Review*, 97(5), pp.1611–38.
- Amsden, A.H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, Oxford: Oxford University Press.
- Amsden, A.H. and W.W. Chu (2003), *Beyond Late Development: Taiwan's Upgrading Policies*, Cambridge, MA: MIT Press.
- Angrist, J.D. and J.S. Pischke (2009), *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton, NJ: Princeton University Press.

- (2010), ‘The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics’, *Journal of Economic Perspectives*, 24(2), pp.3–30.
- Asian Development Bank (ADB) (2020), *Asia's Journey to Prosperity: Policy, Market, and Technology Over 50 Years*, Manila, <https://www.adb.org/publications/asias-journey-to-prosperity>
- Autor, D. et al. (2020), ‘Foreign Competition and Domestic Innovation: Evidence from US Patents’, *American Economic Review: Insights*, 2(3), pp.357–74.
- Azoulay, P., E. Fuchs, A.P. Goldstein, and M. Kearney (2019), ‘Funding Breakthrough Research: Promises and Challenges of the “ARPA Model”’, *Innovation Policy and the Economy*, 19(1), pp.69–96.
- Baldwin, R. (2016), *The Great Convergence: Information Technology and the New Globalization*, Cambridge MA: Belknap Press, Harvard University.
- Banerjee, A.V. and E. Duflo (2005), ‘Growth Theory through the Lens of Development Economics’, in P. Aghion and S.A. Durlauf (eds.), *Handbook of Economic Growth*, New York: North Holland, pp.473–552.
- (2012), *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, New York: PublicAffairs.
- (2019), *Good Economics for Hard Times*, New York: PublicAffairs.
- Becker, S.O., P.H. Egger, and M. von Ehrlich (2018), ‘Effects of EU Regional Policy: 1989–2013’, *Regional Science and Urban Economics*, 69, pp.143–52.
- Bernini, C. and G. Pellegrini (2011), ‘How Are Growth and Productivity in Private Firms Affected by Public Subsidy? Evidence from a Regional Policy’, *Regional Science and Urban Economics*, 41(3), pp.253–65.
- Blonigen, B. (2015), ‘Industrial Policy and Downstream Export Performance’, *Economic Journal*, 126(595), pp.1635–59.
- Bloom, N., M. Schankerman, and J. Van Reenen (2013), ‘Identifying Technological Spillovers and Product Market Rivalry’, *Econometrica*, 81(4), pp.1347–93.
- Bloom, N., M. Draca, and J. Van Reenen (2015), ‘Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity’, *Review of Economic Studies*, 83(1), pp.87–117.
- Bloom, N., J. Van Reenen, and H. Williams (2019), ‘A Toolkit of Policies to Promote Innovation’, *Journal of Economic Perspectives*, 33(3), pp.163–84.
- Bolton, P. and J. Farrell (1990), ‘Decentralization, Duplication, and Delay’, *Journal of Political Economy*, 98(4), pp.803–26.
- Bourlès, R. et al. (2013), ‘Do Product Market Regulations in Upstream Sectors Curb Productivity Growth? Panel Data Evidence for OECD Countries’, *Review of Economics and Statistics*, 95(5), pp.1750–68.

- Bronzini, R. and E. Iachini (2014), ‘Are Incentives for R&D Effective? Evidence from a Regression Discontinuity Approach’, *American Economic Journal: Economic Policy*, 6(4), pp.100–34.
- Chang, H.J. (1994), *The Political Economy of Industrial Policy*, New York: St. Martin’s Press.
- Cherif, R. and F. Hasanov (2019), ‘Principles of True Industrial Policy’, *Journal of Globalization and Development*, 10(1), pp.1–22.
- Conningham, S. (2021), *Causal Inference: The Mixtape*, New Haven: Yale University Press.
- Criscuolo, C., N. Gonne, K. Kitazawa, and G. Lalanne (2022a), ‘An Industrial Policy Framework for OECD Countries: Old Debates, New Perspectives’, *Organisation for Economic Co-operation and Development (OECD) Science, Technology and Innovation Policy Papers*, No.127, Paris: OECD, <https://www.oecd.org/sti/an-industrial-policy-framework-for-oecd-countries-0002217c-en.htm>
- (2022b), ‘Are Industrial Policy Instruments Effective? A Review of the Evidence in OECD Countries’, *OECD Science, Technology and Industry Policy Papers*, No.128, Paris: OECD, https://www.oecd-ilibrary.org/science-and-technology/are-industrial-policy-instruments-effective_57b3dae2-en
- Criscuolo, C., R. Martin, H.G. Overman, and J. Van Reenen (2019), ‘Some Causal Effects of an Industrial Policy’, *American Economic Review*, 109(1), pp.48–85.
- Deaton, A. and N. Cartwright (2018), ‘Understanding and Misunderstanding Randomized Controlled Trials’, *Social Science and Medicine*, 210, pp.2–21.
- Duflo, E., R. Glennerster, and M. Kremer (2008), ‘Using Randomization in Development Economics Research: A Toolkit’, in P. Schultz and J.A. Strauss (eds.), *Handbook of Development Economics*, Amsterdam: Elsevier, pp.3895–962.
- Economic Policy Uncertainty, Economic Policy Uncertainty Index, <https://www.policyuncertainty.com/>
- Economic Research Institute for ASEAN and East Asia (ERIA) (2015), *The Comprehensive Asian Development Plan 2.0 (CADP 2.0): Infrastructure for Connectivity and Innovation*, Jakarta, <https://www.eria.org/publications/the-comprehensive-asian-development-plan-20-cadp-20-infrastructure-for-connectivity-and-innovation/>
- (2022), *The Comprehensive Asia Development Plan 3.0 (CADP 3.0): Towards an Integrated, Innovative, Inclusive, and Sustainable Economy*, Jakarta, <https://www.eria.org/publications/the-comprehensive-asia-development-plan-cadp-30-towards-an-integrated-innovative-inclusive-and-sustainable-economy/>
- Esteban-Pretel, J. and Y. Sawada (2014), ‘On the Role of Policy Interventions in Structural Change and Economic Development: The Case of Postwar Japan’, *Journal of Economic Dynamics and Control*, 40(C), pp.67–83.
- Evenett, S., A. Jakubik, F. Martín, and M. Ruta (2024), ‘The Return of Industrial Policy in Data’, *The World Economy*, 47(7), pp.2762–88.

- Giorcelli, M. (2019), 'The Long-Term Effects of Management and Technology Transfers', *American Economic Review*, 109(1), pp.1–33.
- Global Entrepreneurship Monitor (2023), *Global Entrepreneurship Monitor 2022/2023 Global Report: Adapting to a 'New Normal'*, London.
- Greenwald, B. and J.E. Stiglitz (2013), 'Industrial Policies, the Creation of a Learning Society, and Economic Development', in J.E. Stiglitz and J.Y. Lin (eds.), *The Industrial Policy Revolution I*, London: Palgrave Macmillan, pp.43–71.
- Haggard, S. (1990), *Pathways from the Periphery: The Politics of Growth in Newly Industrializing Countries*, Ithaca, NY: Cornell University Press
- Haltiwanger, J., R.S. Jarmin, and J. Miranda (2013), 'Who Creates Jobs? Small Versus Large Versus Young', *Review of Economics and Statistics*, 95(2), pp.347–61.
- Harrison, A. and A. Rodríguez-Clare (2010), 'Trade, Foreign Investment, and Industrial Policy for Developing Countries, in D. Rodrik and W. Rosenzweig (eds.), *Handbook of Development Economics*, Amsterdam: Elsevier, pp.4039–214.
- Hasanov, F. and R. Cherif (2019), 'The Return of the Policy That Shall Not Be Named: Principles of Industrial Policy', *International Monetary Fund (IMF) Working Papers*, No. 074, Washington, DC: IMF, <https://www.imf.org/en/Publications/WP/Issues/2019/03/26/The-Return-of-the-Policy-That-Shall-Not-Be-Named-Principles-of-Industrial-Policy-46710>
- Hausmann, R., D. Rodrik, and A. Velasco (2008), 'Growth Diagnostics', in N. Serra and J.E. Stiglitz (eds.), *The Washington Consensus Reconsidered: Towards a New Global Governance*, New York: Oxford University Press, pp.324–354.
- Hayashi, F. and E. Prescott (2008), 'The Depressing Effect of Agricultural Institutions on the Prewar Japanese Economy', *Journal of Political Economy*, 116(4), pp.573–632.
- Hidalgo, C.A., B. Klinger, A.L. Barabási, and R. Hausmann (2007), 'The Product Space Conditions the Development of Nations', *Science*, 317(5837), pp.482–7.
- Howell, S.T. (2017), 'Financing Innovation: Evidence from R&D Grants', *American Economic Review*, 107(4), pp.1136–64.
- Hsieh, C.T., E. Hurst, C.I. Jones, and P. Klenow (2019), 'The Allocation of Talent and US Economic Growth', *Econometrica*, 87(5), pp.1439–74.
- Hsieh, C.T. and P.J. Klenow (2009), 'Misallocation and Manufacturing TFP in China and India', *Quarterly Journal of Economics*, 124(4), pp.1403–48.
- Hsu, W.T., R.G. Riezman, and P. Wang (2019), 'Innovation, Growth, and Dynamic Gains from Trade', *National Bureau of Economic Research (NBER) Working Papers*, No.26470, Cambridge, MA: NBER, <https://www.nber.org/papers/w26470>
- International Monetary Fund (IMF), World Economic Outlook Databases, <https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases#sort=%40imfdate%20descending> (accessed 7 April 2023).

- IMF (2024), 'Industrial Policy Coverage in IMF Surveillance – Broad Considerations', Policy Paper, No. 2024/008, <https://www.imf.org/en/Publications/Policy-Papers/Issues/2024/03/11/Industrial-Policy-Coverage-in-IMF-Surveillance-Broad-Considerations-546162>
- Ito, A. (2020), 'Innovating Asia: Growth Pattern Changes in Post-Middle-Income Economies', in K. Goto, T. Endo, and A. Ito (eds.), *The Asian Economy: Contemporary Issues and Challenges*, Milton Park: Routledge, pp.129–46.
- Javorcik, B.S. (2004), 'Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages', *American Economic Review*, 94(3), pp.605–27.
- Johnson, C. (1982), *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975*, Redwood City, CA: Stanford University Press.
- Juhász, R. (2018), 'Temporary Protection and Technology Adoption: Evidence from the Napoleonic Blockade', *American Economic Review*, 108(11), pp.3339–76.
- Juhász, R., N. Lane, E. Oehlsen, and V.C. Pérez (2022), 'The Who, What, When, and How of Industrial Policy: A Text-Based Approach', SocArXiv, <https://osf.io/preprints/socarxiv/uyxh9/>
- Juhász, R. N. Lane, and D. Rodrik (2023), 'The New Economics of Industrial Policy', *NBER Working Papers*, No.31538, Cambridge, MA: NBER, <https://www.nber.org/papers/w31538>
- Juhász, R. and N. Lane (2024), 'The Political Economy of Industrial Policy', *NBER Working Papers*, No.32507, Cambridge, MA: NBER, <https://www.nber.org/papers/w32507>
- Kalouptside, M. (2017), 'Detection and Impact of Industrial Subsidies: The Case of Chinese Shipbuilding', *Review of Economic Studies*, 85(2), pp.1111–58.
- Kattel, R., W. Drechsler, and E. Karo (2022), *How to Make an Entrepreneurial State: Why Innovation Needs Bureaucracy*, New Haven, NJ: Yale University Press.
- Kimura, F., P.K. Wong, and M. Ambashi (2019), 'Innovation for ASEAN 2040', in F. Kimura, V. Anbumozhi, and H. Nishimura (eds.), *ASEAN Vision 2040 Volume III: Transforming and Deepening the ASEAN Community*, Jakarta: ERIA, pp.24–49.
- Kline, P. and E. Moretti (2014), 'Local Economic Development, Agglomeration Economies, and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority', *Quarterly Journal of Economics*, 129(1), pp.275–331.
- Kohli, A. (2004), *State-Directed Development: Political Power and Industrialization in the Global Periphery*, Cambridge, UK: Cambridge University Press.
- Krueger, A.O. (1993), *Political Economy of Policy Reform in Developing Countries*, Cambridge, MA: MIT Press.
- (1995), 'Policy Lessons from Development Experience since the Second World War', in J. Behrman and T.N. Srinivasan (eds.), *Handbook of Development Economics*, Amsterdam: Elsevier, pp.2497–2550.

- Lane, N. (2020), ‘The New Empirics of Industrial Policy’, *Journal of Industry, Competition and Trade*, 20(2), pp.209–34.
- (2022), ‘Manufacturing Revolutions: Industrial Policy and Industrialization in South Korea’, SocArXiv, <https://osf.io/preprints/socarxiv/6tqax/>
- Lin, J.Y. (2014), *The Quest for Prosperity: How Developing Economies Can Take Off*, Princeton, NJ: Princeton University Press.
- Liu, E. (2019), ‘Industrial Policies in Production Networks,’ *Quarterly Journal of Economics*, 134(4), pp.1883–1948.
- Luzio, E. and S. Greenstein (1995), ‘Measuring the Performance of a Protected Infant Industry: The Case of Brazilian Microcomputers’, *Review of Economics and Statistics*, 77(4), pp.622–33.
- Manelici, I. and S. Pantea (2021), ‘Industrial Policy at Work: Evidence from Romania’s Income Tax Break for Workers in IT’, *European Economic Review*, 133, 103674.
- Mazzucato, M. (2013), *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*, London: Anthem Press.
- (2021), *Mission Economy: A Moonshot Guide to Changing Capitalism*, London: Penguin.
- Morikawa, M. (2020), ‘Examination of Policy Impacts of Industrial Policy: Introduction of Domestic and Foreign Study Examples’, Research Institute of Economy, Trade and Industry (RIETI), https://www.rieti.go.jp/jp/special/ebpm_report/007.html [in Japanese].
- Ohno, K. (2009), ‘Avoiding the Middle-Income Trap: Renovating Industrial Policy Formulation in Vietnam’, *Association of Southeast Asian Nations (ASEAN) Economic Bulletin*, 26(1), pp.25–43.
- Okazaki, T. (2020), ‘The 21st Century Industrial Policy: Put a Great Value on Competition Promotion in Framework Building’, *Nihon Keizai Shinbun*, 29 May [in Japanese].
- Pavcnik, N. (2002), ‘Trade Liberalization, Exit, and Productivity Improvements: Evidence from Chilean Plants’, *Review of Economic Studies*, 69(1), pp.245–76.
- Pellegrini, G. and T. Muccigrosso (2017), ‘Do Subsidized New Firms Survive Longer? Evidence from a Counterfactual Approach’, *Regional Studies*, 51(10), pp.1483–93.
- Restuccia, D. and R. Rogerson (2008), ‘Policy Distortions and Aggregate Productivity with Heterogeneous Plants’, *Review of Economic Dynamics*, 11(4), pp.707–20.
- Rodrik, D. (2004), ‘Industrial Policy for the Twenty-First Century’, *John F. Kennedy School of Government (KSG) Working Papers*, No. RWP04–047, Cambridge, MA: Harvard University, <https://drodrik.scholar.harvard.edu/publications/industrial-policy-twenty-first-century>

- (2008), ‘Normalizing Industrial Policy’, *Commission on Growth and Development Working Papers*, No.3, Cambridge, MA: Harvard University, <https://drodrik.scholar.harvard.edu/publications/normalizing-industrial-policy>
- Rotunno, L. and M. Ruta (2024), ‘Trade Spillovers of Domestic Subsidies’, *IMF Working Papers*, No.2024/041, Washington: IMF, <https://www.imf.org/en/Publications/WP/Issues/2024/03/01/Trade-Spillovers-of-Domestic-Subsidies-545453>
- Shu, P. and C. Steinwender (2019), ‘The Impact of Trade Liberalization on Firm Productivity and Innovation’, *Innovation Policy and the Economy*, 19(1), pp.39–68.
- Stiglitz, J.E. and B. Greenwald (2014), *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*, New York: Columbia University Press.
- Stiglitz, J.E., J.Y. Lin, and C. Monga (2013), ‘The Rejuvenation of Industrial Policy’, *Policy Research Working Papers*, No.6628, Washington, DC: World Bank, <https://openknowledge.worldbank.org/handle/10986/16845>
- Stiglitz, J. and A. Weiss (1981), ‘Credit Rationing in Markets with Imperfect Information’, *American Economic Review*, 71(3), pp.393–410.
- Tirole, J. (2023), ‘Competition and the Industrial Challenge for the Digital Age’, *Annual Review of Economics*, 15(1), pp.573–605.
- Todo, Y. and K. Miyamoto (2006), ‘Knowledge Spillovers from Foreign Direct Investment and the Role of Local R&D Activities: Evidence from Indonesia’, *Economic Development and Cultural Change*, 55(1), pp.173–200.
- United Nations (UN), SDGs, <https://sdgs.un.org/goals>
- Wade, R.H. (1990), *Governing the Market: Economic Theory and the Role of the Government in East Asia Industrialization*, Princeton, NJ: Princeton University Press.
- (2014), ‘The Paradox of US Industrial Policy: The Developmental State in Disguise’, in J.M. Salazar-Xirinachs, I. Nübler, and R. Kozul-Wright (eds.), *Transforming Economies: Making Industrial Policy Work for Growth, Jobs and Development*, Geneva: International Labour Organization, pp.379–400.
- Warwick, K. (2013), ‘Beyond Industrial Policy: Emerging Issues and New Trends’, *OECD Science, Technology and Industry Policy Papers*, No.2, Paris: OECD, https://www.oecd-ilibrary.org/science-and-technology/beyond-industrial-policy_5k4869clw0xp-en
- World Bank (1993), *The East Asian Miracle: Economic Growth and Public Policy*, Washington, DC.

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