

Foreign investment and value-added generation in resource rich countries in the Association of Southeast Asian Nations and Pacific Alliance⁴⁹

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Abstract

This study evaluates the effect of foreign direct investment (FDI) on the generation of added value in natural-resource-rich economies in the Association of Southeast Asian Nations (Brunei, Indonesia and Malaysia) and the Pacific Alliance (Chile, Colombia, Mexico and Peru). We use international input-output tables published by the OECD which contain transactions between 64 economies composed of 36 economic sectors each, from 2005 and 2015. First, we identify which are the global value chains (GVC) that make intensive use of minerals; then, we locate the position of each evaluated country-sector in such chains; and finally, we estimate, through an econometric regression, what role has foreign direct investment played in the sectors that transform minerals. After estimating the added value generated by country-sector in each link of the mineral-intensive value chain, we find that the ASEAN economies and Mexico are positioned in forward links in these chains, while Chile, Colombia and Peru still remain in initial links. We also find that FDI has played an active role in generating added value for ASEAN economies, but has not had similar effects in Latin American economies. The result is explained by the vertical industrial policies applied in the former, while for the latter the priority has been concentrated on horizontal policies.

Introduction

As is known, a value chain constitutes all the tasks necessary to produce a final product, that is, from its conception to its sale. The Global Value Chain (GVC)

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framework uses this concept to understand how value is created, captured, sustained, and harnessed within each link of the chain in currently transnationalized production processes (Gereffi & Lee, 2016). Because the value added (VA) is the difference between the value of a final product and that of its inputs, the strategies of leading companies in a GVC are geared toward positioning themselves in the link that generates the greatest VA to capture, or more precisely, its inherent profits or revenue (Kaplinsky & Morris, 2001). This strategy must be considered in the industrial policy of economies seeking to integrate into GVCs, which is particularly important for countries with abundant natural resources (NR), where both the exchange rate and foreign direct investment (FDI) have played an influential role in its productive structure, in many cases thereby further strengthening their extractive activities over the transformative ones.

In this scenario, this research identifies the position achieved by countries with abundant NR of the Association of Southeast Asian Nations (Brunei, Indonesia and Malaysia) and the Pacific Alliance (Chile, Colombia, Mexico and Peru) in mineral-intensive GVCs, using data from the OECD international input and output tables (OECD, 2018). We evaluate the factors that have contributed the most toward generating VA through exports in mineral-processing sectors and relate the findings to industrial policy measures that can be classified as horizontal or vertical, in the context determined by the globalized production process.

Value added improvements in mineral-intensive global value chains

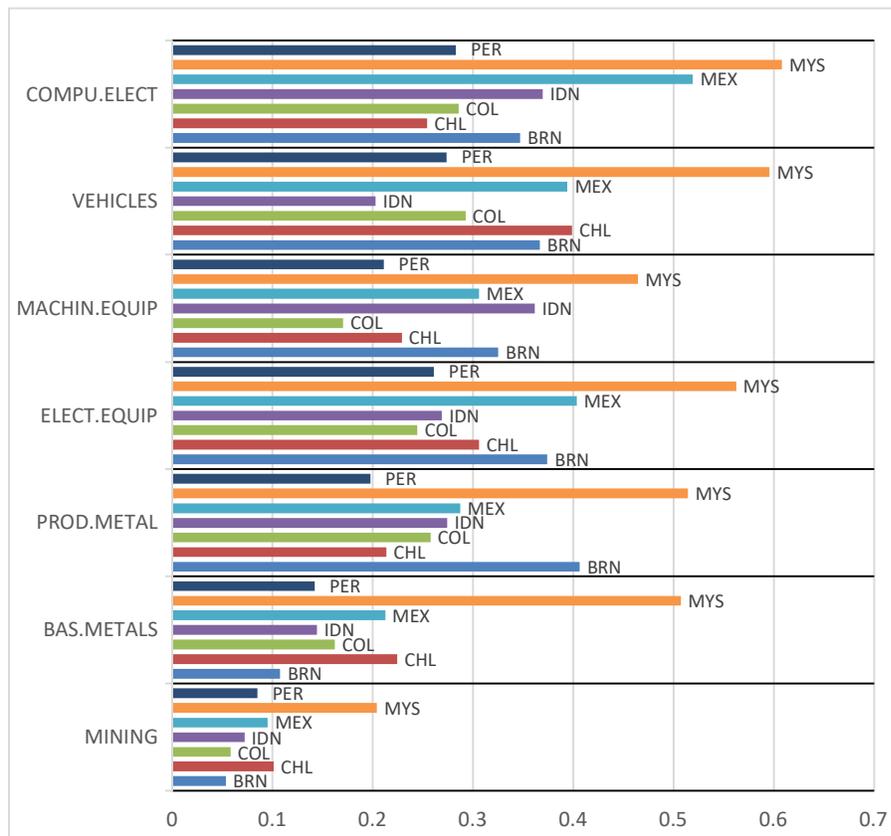
GVCs that make intensive use of minerals are composed of the following sectors: the extractive sector, where the main output is concentrated mineral; the basic metals sector, where refined mineral, bars, sheets, cables and metal coils are produced; the metal products sector, which corresponds to the production of metal parts and structures; the electrical equipment sector, which produces motors, generators, electrical transformers and household appliances; the mechanical equipment sector, which produces machines of specific purpose, according to the industry where it will be used; the vehicle manufacturing sector; and, the manufacture of computer equipment sector (Landa, 2019).

The output of each of these sectors becomes the input of the next, in such a way that each transformation implies adding value to the input, until it becomes a final consumer product.

Position of mineral-intensive countries-sectors in GVCs

Each of these stages are carried out in different countries, so we can identify which is the position of each one in this globalized production process, by measuring how much of the imported VA is contained in the VA exported in the analyzed countries. This measure is called backward linkages.

Fig. 1 Value-added (VA) content imported per unit of exported VA in mineral-intensive sectors in ASEAN₃ and PA countries (cumulative values for 2005–2015)



Source: Industrial policies of countries with abundant natural resources in the Association of Southeast Asian Nations and Pacific Alliance (Landa-Arroyo, 2020).
 Note: BRN = Brunei; CHL= Chile; COL= Colombia; IDN = Indonesia; MEX = Mexico; MYS = Malaysia; PER = Peru; BAS.METAL= Base metals; PROD.METAL = Metal products; ELECT.EQUIP = Electrical equipment; MACHIN.EQUIP = Machinery and equipment; VEHICLES = Vehicles; COMP.ELECT = Computers and electronics.

Observing Fig. 1 in a bottom–up order, it is evident that mining has lower backward linkages because it is the initial stage of several GVCs that add value to raw materials through their use, compared with the higher values of the vehicle manufacturing or computer manufacturing sectors, which are the final links in their respective value chains. With the highest values in nearly every sector, the positions of Malaysia and Mexico stand out, reflecting their strong integration to international production processes. These two countries have managed to locate themselves as the final links in vehicle and computer equipment production chains, taking over the assembly stage in many cases. Therefore, this is an example of industrial upgrading in several sectors to the extent that value is added within the country to the raw material coming from the mining sector.

Chile is slightly above the average of this indicator in the manufacturing of vehicles and electrical equipment, but Colombia and Peru are the economies with the lowest levels of international linkages. The low scores in these two countries reflect their difficulties in creating internal links that spread backwards the possible growth of the most advanced sectors of GVCs. That is why it is important to us to identify the role that FDI and industrial policies have played in promoting improvements in the generation of added value.

Determinants of VA exports in mineral-intensive sectors

The policies aimed at maintaining monetary stability, fiscal balance, and external equilibrium can be identified as horizontal policies, and correspond to the main obligations of a State to generate conditions for private investment, according to various authors (Easterly, 2001) (Stern, 2002).

However, vertical policies are those that promote the growth of specific economic sectors, according to the needs identified by regulatory entities. These policies have now become GVC-oriented policies and are aimed at entering a GVC link by providing a national or imported commodity or industrial goods that are transformed by adding greater value, thus becoming specialized goods. These policies are

associated with the active promotion of foreign investment to obtain positive externalities through technology transfer and productivity improves in local businesses tied to multinationals (De Groot, 2018).

In our study we created the variable GX that contains the added value from the sectors that transform minerals. To measure the effect of horizontal policies on GX, we use the inflation rate, exchange rate, trade balance, education, and R&D. With respect to vertical policies, we take the FDI as a proxy variable because of the manner in which it has been implemented in the analyzed countries. Table 1 shows the results of identifying factors that have contributed to VA exports in mineral-intensive sectors (GX). Column (a) shows the results for the 7 ASEAN and PA countries; column (b), the results only for the 3 ASEAN countries; and, column (c), only for the AP.

Regarding FDI, the results show that its contribution to the GX exports is significant for the entire sample, but is quite strong and important in ASEAN₃ countries. A 1% growth in FDI increases VA exports in 0.26% in the ASEAN₃ group. Unlike the case of PA countries, where the results show no effects.

Table 1. Determinants of VA exports from mineral-intensive sectors (GX_{ij}) for Brunei, Indonesia, and Malaysia (ASEAN₃) and Chile, Colombia, Mexico, and Peru (PA), 2005–2015*

Variable	ASEAN ₃ & PA (a)	ASEAN ₃ (b)	PA (c)
VA exports ($GX_{i,t-1}$)	0.83478447 0.03936849	0.64037837 0.15703504	0.6816362 0.11970841
Foreign direct investment (FDI_t)	0 0.08387118 0.02457396 0.0006	0 0.26728559 0.09287491 0.004	0 0.02061808 0.03212524 0.521
Trade balance (TB_t)	0.10486821 0.06781701 0.122	0.71344124 0.24984634 0.0043	-0.0182286 0.05679337 0.7482
Exchange rate, growth (ER_t)	-0.1854263 0.07211701 0.0101	0.01290863 0.12130927 0.9153	-0.2410926 0.08831855 0.0063
Inflation (Inf_t)	0.06785109 0.03621038 0.061	0.03210004 0.06549797 0.6241	0.10210119 0.04263149 0.0166
Education (Edu_t)	0.21838754 0.29610361 0.4608	0.21406017 1.3249385 0.8717	0.46223343 0.61697348 0.4537
Research & Development, sales ($R\&D_t$)	0.05176892 0.01438152 0.0003	0.1131296 0.1083915 0.2966	0.06745654 0.04266692 0.1139
Observations	490	210	280

*Only a part of the results is displayed. See the complete table in “Industrial policies of countries with abundant natural resources in the Association of Southeast Asian Nations and Pacific Alliance” (Landa-Arroyo, 2020).

Note: This table displays the coefficient, robust standard error and the p-value of each variable.

The results for ASEAN₃ can be understood by knowing the role of investment promotion entities, which reduce information asymmetries and learning costs and promote FDI in specific well-defined sectors, that is, through the use of vertical policies, according to Gligo (2007), Ramírez (2017) and Wan and Tung (2006). In the case of PA countries, despite the establishment of similar agencies (Gligo, 2007), the strategy to attract FDI has relied more upon horizontal policies, without effective long-term guidelines for industrial development, at least with respect to mineral processing. That is reflected in the nonexistent effect of FDI on *GX* exports, as shown in the results. In fact, we identified more differences in the treatment of FDI between the two groups of countries.

FDI in horizontal and vertical industrial policies

In the case of ASEAN₃ countries, FDI has been managed as a component of two widely used policy tools in East Asia, namely, investment councils and development plans. According to Wan and Tung (2006), both tools were used to industrial promotion, initially in Japan and Taiwan, and to face the coordination failures in sectoral production, which could not be resolved by the market. These tools were later imitated by other East Asian economies (Ramírez, 2017) including those with abundant NRs such as Brunei, Indonesia, and Malaysia (Chowdhury, 2008) to promote industrial development.

Investment councils are government entities that bring together various ministries linked to production, the private sector, and/or civil society. In Brunei, Indonesia, and Malaysia, these organizations are the Brunei Economic Development Board (BEDB, 2020), Indonesian Investment Coordinating Board, (BKPM, 2020), and the Malaysian Investment Development Authority (MIDA, 2020), respectively. With some nuances, the councils in all three countries state that their primary purpose is to promote the diversification and industrial development of specific sectors and incorporate agencies to attract FDI. Development plans contain a set of long-term goals of up to 20 years, which are divided into five-year and, later, yearly strategic plans. In Brunei, the current long-term plan is called the *Wawasan Brunei 2035*, which is currently deployed in its eleventh five-year plan. In Indonesia, the main plan is the National

Long-Term Development Plan 2005–2025, which is divided into five-year plans and accompanied by an Economic Development Acceleration Master Plan. In Malaysia, the Third Industrial Master Plan 2006–2020 is framed in the Vision 2020 Plan and is also implemented through five-year plans.

In general, each five-year plan is composed of a list of projects with an allocated budget and a responsible entity. Projects are selected on the basis of the prioritized social, economic, and/or industrial sectors to be developed. However, being a part of the plan does not ensure the successful execution of the expenditure. These plans combine both horizontal and vertical policy instruments, reflecting the pragmatic vision of growth management in East Asia (Wan & Tung, 2006).

Table 2. Prioritized sectors for FDI in five-year plans in Brunei, Indonesia, and Malaysia, 2010–2015.

	Brunei ⁽¹⁾	Indonesia ⁽²⁾	Malaysia ⁽³⁾
Prioritized sectors for FDI	<ul style="list-style-type: none"> • Does not include the extractive sector • Goods derived from oil and gas • Other sectors 	<ul style="list-style-type: none"> • Does not include the extractive sector • Industrial processing of cacao, sugar, and minerals • Other sectors 	<ul style="list-style-type: none"> • Petrochemical industry • Services tied to the extraction of hydrocarbons • Other sectors
Institutional mechanisms	<ul style="list-style-type: none"> • Industrial parks • Special economic zones 	<ul style="list-style-type: none"> • Industrial parks • Special economic zones • Industrial corridors 	<ul style="list-style-type: none"> • Industrial parks • Special economic zones • Industrial corridors
Financing through	<ul style="list-style-type: none"> • Explicit budget allocation and considers private sector participation • Public–private partnerships • Special fund for small and medium industries 	<ul style="list-style-type: none"> • National Development Fund and channeling of private funds • Public–private partnerships • Special fund for small and medium industries 	<ul style="list-style-type: none"> • Facilitation Fund as a complement to private investment • Public–private partnerships • Special fund for small and medium industries
Monitoring mechanism	Quantitative compliance targets per project	Monitoring and evaluation system on project results and impacts	Monitoring indicators by results

Source: Industrial policies of countries with abundant natural resources in the Association of Southeast Asian Nations and Pacific Alliance (Landa-Arroyo, 2020).

Note: (1) Tenth National Development Plan 2012–2017 (DEPD, 2012); Brunei Economic Development Board (BEDB, 2020). (2) National Medium Term Development Plan 2010–2014 (MNDP, 2010); Indonesian Investment Coordinating Board (BKPM, 2020). (3) Tenth Malaysia Plan 2011–2015 (EPU, 2010); Malaysian Investment Development Authority (MIDA, 2020).

Table 2 shows the role assigned to FDI in the five-year plans evaluated in Brunei, Indonesia, and Malaysia. Each plan defines prioritized industries that are promoted to foreign investors. Notably, despite the fact that these are economies with abundant NR, the industries that process the resources are prioritized over the extractive sector. Similarly, industrial clusters are a widely used policy instrument that acts as a connection space between foreign companies and national suppliers because they increase the competitiveness of the latter (APEC Secretariat, 2017). These clusters are accompanied by special economic zones and industrial corridors.

While these are public targets for production and employment in the selected sectors, in large part, the results must be achieved by private companies. To this end, the government uses its own budget as a financing mechanism and incentivizes the financial system for participation. Similarly, with regard to infrastructure projects, public-private partnerships are a specific mechanism used. The plans' goals are evaluated by monitoring the results of each project.

In the case of PA countries, planning of national objectives is conducted almost exclusively through government plans defined in each presidential term (CEPAL, 2020), which are roughly equivalent in time to East Asian five-year plans. However, although Chile and Peru have formulated longer-term plans (Agenda 2030 for Sustainable Development in Chile and Vision of Peru to 2050), they lack a regulatory mechanism connecting the achievement of these goals through the implementation of government plans. As such, the promotion of specific industries and their ad-hoc mechanisms is contingent on the development concept followed by the authorities in power in each government period, in the four countries.

In general, following the implementation of economic reforms on the basis of the Washington Consensus in Latin America in the 1980s and 1990s and given their limited success in the area of industrial development, the decision was made to implement the second-generation reforms in the 2000s. These were primarily tied to improving institutions, providing better public services, and the flexibilization of the labor market (Rodrik, 2011). These reforms adhere to the premise that only adequate horizontal policies are needed for industrial growth.

Although the four countries that constitute the PA adopted very similar economic policies in the evaluated period, Table 3 reveals certain nuances in terms of promoting FDI. While Colombia and Mexico have explicitly declared that non-extractive sectors would be prioritized for FDI, Chile promotes investment in mining exploration and manufacturing mining equipment, and Peru insists on promoting mining extraction. Although all four countries treat national and foreign investments equally, in Chile and Colombia, there is a predominance of tax incentives based on the locality or sector selected. In Mexico, a development bank, known as Bancomext, is responsible for facilitating direct financing for investments in prioritized sectors. In Peru, priority is given to public–private partnerships and Work for Taxes, a program that facilitates tax payment through the execution of public works projects in a local community (Proinversión, 2020). This is because its primary interest is using FDI to bridge the country’s infrastructure gap. In the evaluated period, each country had a government entity responsible for attracting FDI; however, in 2019, the Government of Mexico deactivated its entity by shifting some of its functions to the Ministry of Economy.

Table 3. Prioritized sectors for foreign direct investment (FDI) in Pacific Alliance (PA) countries.

	Chile ⁽¹⁾	Colombia ⁽²⁾	Mexico ⁽³⁾	Peru ⁽⁴⁾
Prioritized sectors for FDI	<ul style="list-style-type: none"> • Food industry • General services • Mining (exploration, equipment, and service suppliers) • Energy • Tourism 	<ul style="list-style-type: none"> • Agro-industry (several) • Agrochemicals, metalworking, plastics, automotive, etc. • Services (several) 	<ul style="list-style-type: none"> • Automotive • Electric-Electronic • Energy • Maquila and industrial warehouses • Transportation and logistics • Tourism • Aerospace • Mining-Metallurgy • Telecommunications 	<ul style="list-style-type: none"> • Productive infrastructure • Tourism • Mining (extraction) • Education and health
Institutional mechanisms	<ul style="list-style-type: none"> • Tax exemptions in specific regions for nationals and foreigners • Free zones 	<ul style="list-style-type: none"> • Tariff exemptions for the automotive sector • Free zones 	<ul style="list-style-type: none"> • Direct credit from banks supported by preferential funding sources • Financial support from commercial banks • Border zones 	<ul style="list-style-type: none"> • Public–private partnerships • Work for Taxes • Legal Stability Agreement for nationals and foreigners • Free zones

Source: Industrial policies of countries with abundant natural resources in the Association of Southeast Asian Nations and Pacific Alliance (Landa-Arroyo, 2020).

Note: (1) Chilean Investment Promotion Agency (InvestChile, 2020); (2) Official Investment Website of Colombia (Procolombia, 2020); (3) National Bank of Foreign Trade (Bancomext, 2020); (4) Private Investment Promotion Agency (Proinversión, 2020).

Conclusions

Horizontal policies alone do not effectively promote the generation of VA in the industrial sector in economies with abundant NRs, particularly in the context of a global economy that requires the sourcing of raw materials to facilitate its growth. These policies need to be complemented by vertical instruments that commence by identifying prioritized sectors and are even better if they are linked to specific GVCs. This is particularly true for FDI, which is shown to have spillover effects when the macroeconomic and microeconomic environments allow i

As for vertical policies, their time scale influences their success. In the East Asian countries evaluated, sectoral policies are integrated into long-term objectives that include monitoring mechanisms, while the PA countries are susceptible to changing of course depending on the permanence of governments. In the evaluated period, both country groups demonstrated that they are open to global trade and FDI. However, the positive effect of these policies on VA growth in ASEAN₃ countries is explained by their continuity.

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