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Sustainable Economic Growth for ASEAN Developing Countries: The Role of Export Diversification

Abstract: A country must raise its growth rate in line with the equilibrium of its balance of payments in order to grow faster without worsening the balance of payments. When many developing countries are suggested to diversify exports, this strategy must be considered more cautiously. Good diversification/concentration should level up the threshold for sustainable economic growth rate. Applying the theory and methodology of Mania and Rieber (2019) for developing countries in ASEAN, we show the heterogeneous effects of export diversification/concentration on increasing the threshold of sustainable economic growth across countries. Therefore, each developing country in the bloc needs to have an appropriate diversification or concentration strategy to relax the economic growth constraint and, hence, grows sustainably.

Keywords: sustainable economic growth; Thirlwall law; export diversification; developing countries; ASEAN.

Croissance économique durable pour les pays en développement de l'ASEAN : le rôle de la diversification des exportations

Résumé : Pour assurer une croissance économique durable, un pays doit prendre en compte le taux de croissance compatible avec l'équilibre de la balance des paiements. Lorsqu'il est suggéré à de nombreux pays en développement de diversifier leurs exportations, cette stratégie doit être envisagée avec plus de prudence. Une bonne diversification/concentration devrait élever le seuil d'un taux de croissance économique durable. En appliquant la théorie et la méthodologie de Mania et Rieber (2019) aux pays en développement de l'ASEAN, nous montrons les effets hétérogènes de la diversification/concentration des exportations sur l'augmentation du seuil de croissance économique durable entre les pays. Par conséquent, chaque pays en développement du bloc doit avoir une stratégie de diversification ou de

concentration appropriée pour relâcher la contrainte de croissance économique et ainsi croître de manière durable.

Mots clés : croissance économique durable ; loi de Thirlwall ; diversification des exportations ; pays émergents ; ASEAN.

Introduction

Achieving sustained economic growth is one of the major objectives of developing economies. It is widely agreed that exports are considered to be an engine of growth for developing countries. The traditional theory of trade suggests that a country should specialize in producing and exporting products for which they have a comparative advantage to enjoy “immiserizing” growth (Ricardo, 1817, Krugman, 1979, Prebisch, 1950, Singer, 1950). Accordingly, industrialized countries are mainly oriented towards exporting high-value goods, contrasting with developing countries, whose export focus predominantly lies on primary commodities or products requiring labor-intensive production processes. However, the theory has been challenged by the recent experiences of the newly industrialized countries in Asia and China. The rapid growth of those countries is the result of the fact that, instead of concentrating on producing and exporting, they try to diversify their export structure (Lin and Chang, 2009, Rodrik, 2011). The positive effect of export diversification on economic growth is well documented in the literature. Theoretically, in a monopolistic competition model proposed by Melitz (2003), an increase in the number of exporting firms induces an increase in export variety - a type of export diversification. It can increase productivity and then economic growth since exporters are more productive than non-exporters. Empirically, this positive effect is widely confirmed in various studies on developing countries (Imbs and Wacziarg, 2003, Agosin, 2007, IMF, 2014, 2017). Specifically, it can be shown that export diversification can reduce exposure to external shocks, reduce macroeconomic volatility and increase economic growth (Lederman and Maloney, 2012).

Participating actively in the global value chain might nowadays be inevitable for a developing country to avoid specialisation in a specific good. Instead, in a vertical fragmentation of the production process, developing countries are responsible for producing a defined segment of the production chain. While this has a positive impact on their export structure, it could leave them with limited comparative advantage by forcing them to specialise in labor-intensive, low-complexity tasks with import content. Therefore, the integration of a country into a GVC undoubtedly accelerates industrialization and facilitates export diversification; however, it also carries the potential to entangle the economy within an “under-industrialization trap” (Baldwin, 2012).

In this line, the question for developing countries might not be only whether export diversification boosts economic growth, but more importantly, whether export diversification can ensure sustainable economic growth. To address this issue, we rely on Thirlwall’s balance-of-payment constrained growth model and the augmented model of Mania and Rieber (2019).

The idea behind the Thirlwall law is that there exists a threshold of economic growth rate beyond which growth will be qualified as “non-sustainable” in the long run. In line with Mania and Rieber’s (2019) model, we integrate the export diversification index into the Thirlwall model. This enables us to pinpoint the fundamental requirements for encouraging positive export diversification, which in turn promotes long-term, sustainable economic growth.

According to Imbs and Warziarg (2003), the relationship between export diversification and per capita income follows an inverted U-shaped pattern. Specifically, for lower-income countries, a higher degree of export diversification is associated with an increase in per capita income. By contrast, higher-income countries tend to specialize in their exports (i.e., have a lower degree of export diversification). Therefore, we do not consider the cases of Brunei Darussalem and Singapore, which are high-income countries. Besides, due to the lack of data, we cannot perform the exercises for the three developing countries in the bloc that are Lao PDR, Malaysia, and Myanmar. The diversity of income levels and development levels, along with the process of engaging in global supply chains, allow us to minimize potential survival biases and distortions, even though our research is restricted to just five developing countries in the region: Indonesia, Cambodia, the Philippines, Thailand, and Vietnam.

We use a dataset of five developing countries in ASEAN (Indonesia, Cambodia, the Philippines, Thailand and Vietnam) in the period 1995-2019. Indeed, these countries are in the ASEAN bloc which is more involved in GVC participation (AJ Center, 2019). This is also a region with a high level of export diversification accompanied by high economic growth.

Our paper is structured as follows. After describing the context in Section 1, we explain the theoretical framework in which we incorporate export diversification in the balance of payment constrained growth model, as in Mania and Rieber (2019) in Section 2. In Section 3, we present the empirical analysis. Finally, we make a conclusion.

1. Context

Central to the Asia-Pacific area, which is a booming economic center, are eight middle-income nations of the ten countries that make up the ASEAN Union. Although many of these countries pursue an export-led growth strategy, they have diverse geopolitical characteristics that we need to consider. Indonesia and Thailand are two countries in the region that adopted the export-led growth strategy early on, in the 1980s and 1990s. During this time, countries with cheap labor, such as those two, were able to gain an advantage in producing and exporting labor-intensive industrial products due to the rapid development of newly industrialized countries (NICs) and their switching of the export structure from labor-intensive to high-tech products. There are distinctions between these two countries' shifts in their export structures, though. As the most populous country in the region with a large area and exceptionally rich natural resources, Indonesia has a competitive advantage in resource-intensive and labor-intensive manufacturing industries. Resource-based products have always accounted for a large proportion of this country's export structure. Coal, palm oil, textiles, base metal products, and natural gas are Indonesia's top five exports. However, these are products with lower world

demand growth and many price fluctuations, which could make Indonesia vulnerable to external price shocks. Thailand's export structure is generally more evenly distributed between 1995 and 2019 compared to Indonesia (Figure 1). In particular, the share of labor-intensive and agriculture-based goods tends to decline while that of sophisticated industrial products tends to rise. But recently, the country has had to deal with internal political unrest and the rise of competitors (like Vietnam) in fields where Thailand has a competitive advantage, such as food and electronics. That can result in Thailand losing its inherent competitive edge.

Among developing countries in the region, the country with the most notable and obvious changes is Vietnam. Vietnam formally implemented Doi Moi in 1986, which kicked off the country's modernization and industrialization drive. This country has pushed its economic openness strategy, drawn in foreign investment, and signed eleven bilateral and regional free trade agreements since the 1990s. As a result, Vietnam's export structure shifts substantially from mining and agriculture to the processing sector. Specifically, from 44% in 1995 to 17% in 2019, the share of the mining and agriculture industries fell considerably. On the contrary, the manufacturing sector, particularly electronics, had a significant growth from 0.6% in 1995 to 39% in 2019. Meanwhile, Philippine export growth is somewhat slow compared to other nations in the area (Figure 2). The government of this country's lack of policies supporting production and export activities is the cause of this predicament. For instance, during the period 2000–2006, the Philippines' GDP was just 2.8% invested on infrastructure, compared to 5% in neighboring countries. Furthermore, the geographical characteristics of many small islands raise transportation costs, reducing the competitiveness of the production of exported goods. Consequently, compared to other ASEAN nations, the electronics industry's export turnover is very low, even if its share in the export structure is rather large. Of the nations in the sample, Cambodia has low export turnover and is mostly focused on labor-intensive sectors (clothing). However, Cambodia will have greater room to diversify its product line into other industries with average technology content when neighboring nations like Vietnam and Thailand are compelled to find ways to enhance their export goods to include more technology content.

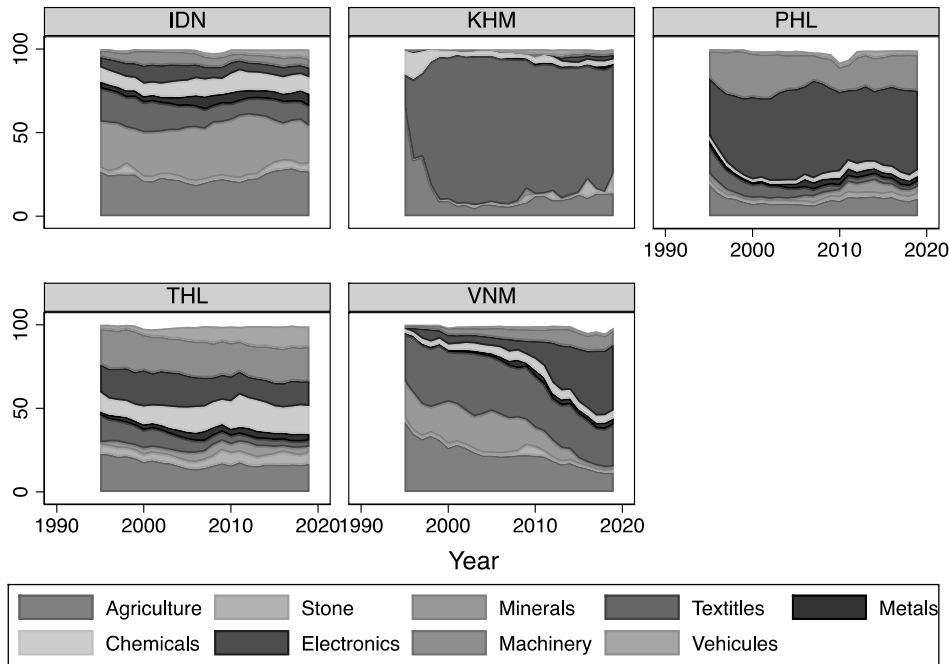


Figure 1. Export structure (%), 1995-2019-Source: Author's calculation from Growth lab (<https://atlas.cid.harvard.edu/>)

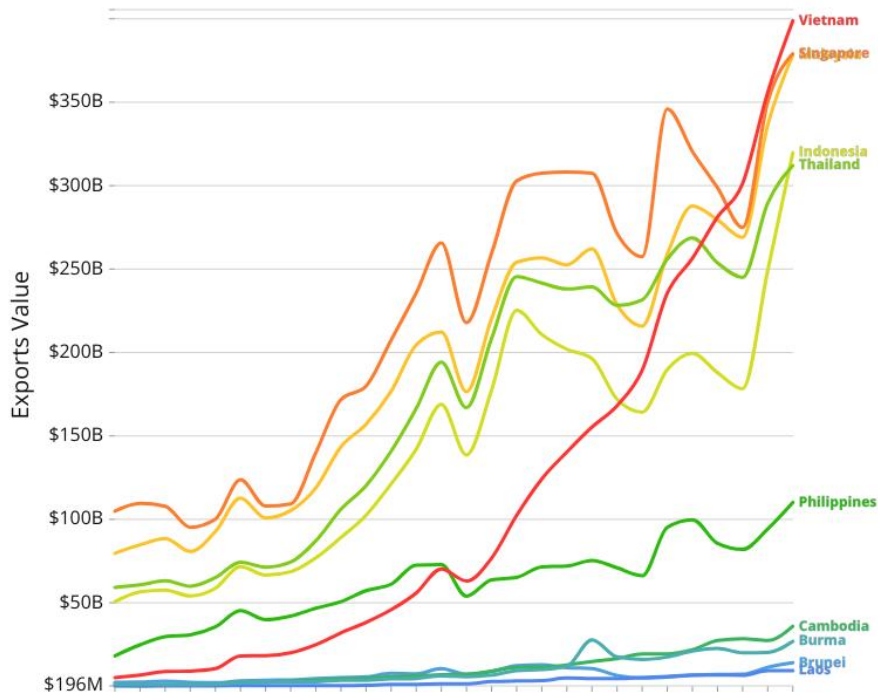


Figure 2. Exports value in ASEAN, 1995-2022-Source: CEPII BACI

2. Theoretical framework

Different from other growth theories that focus mainly on the supply side such as technological change, Thirlwall points out that the rate of economic growth compatible with the balance of payments equilibrium is a binding constraint. Accordingly, theoretically, “no country can grow

faster than the rate consistent with balance-of-payments equilibrium on the current account unless it can finance ever-growing deficits, which in general it cannot”.

The balance-of-payments equilibrium in the current account means that exports equal imports. A balance-of-payments surplus occurs when a country exports more goods and services than it imports, thereby shifting welfare to other countries. By contrast, when its imports exceed its exports, the country will run a balance-of-payments deficit. Although the deficit may induce a temporary increase in welfare, a country should not maintain this position in the long run since it would have to sacrifice other final goals such as faster growth. Thirlwall (1986) points out the conflict between balance-of-payments equilibrium and faster growth. Indeed, the attempt at faster growth requires investment goods. For most developing countries where domestic resources are still limited, investment goods must be provided from abroad. This will increase imports, and if imports expand rapidly while exports grow at a steady rate governed by world demand, this will deteriorate the balance-of-payments. If substantial deficits cannot be financed by either domestic savings or foreign exchange, economic growth cannot be sustainable. In other words, one could say that growth would be balance-of-payments constrained (Thirlwall, 2013).

It should be noted that current account deficits do not necessarily have negative implications. A current account deficit is sustainable when its underlying forces enable a smoother adjustment in the future. It is unsustainable and leads to macroeconomic imbalances when it is persistently large and cannot be financed (Devadas and Loayza, 2018). The important question is: how do countries, particularly developing ones, achieve faster growth without worsening the balance of payments? As Prebisch (1950) pointed out, the income elasticity of demand for a country’s imports and exports determines whether it can grow at the same rate as other countries without falling into balance-of-payments problems. From Prebisch (1950)’s view, Thirlwall built a model of balance of payments constrained growth. Accordingly, the natural growth rate should not exceed the growth rate consistent with the balance of payments equilibrium which is simply calculated as the ratio of export growth to the income elasticity of demand for imports. The construction of the Thirlwall Law is based on the main assumption of price neutrality, which means that relative price growth is constant over the long run. This assumption is indeed supported by the empirical evidence that there can be minimal fluctuation in relative prices over an extended period of time (Ball et al., 1977; Wilson, 1976). Under the assumption, the growth rate with balance of payments equilibrium depends on export growth and the income elasticity of demand for imports:

$$y^* = \varepsilon z / \pi \quad (1)$$

where y^* is the long run growth rate or the sustainable growth rate, ε is the income elasticity of demand for exports, z is the foreign economic growth rate, the product εz is hence the export growth rate, and π is the income elasticity of demand for imports. While z can be observed from the data, ε and π are estimated by the export and import function. To increase the sustainable growth rate, a country should increase export growth (εz) or reduce its appetite for import (π).

The Thirlwall Law implies that

$$y^* \pi = \varepsilon z \quad (2)$$

where the left-hand side is the import growth rate compatible with the balance of payments equilibrium, the right-hand side is the export growth rate. In the unsustainable situation where the actual income growth rate, y , is over the long run sustainable growth rate, y^* , the import growth rate exceeds the export growth rate.

The country would generate a trade surplus under the threshold growth rate and become a net capital exporter. Otherwise, according to the Thirlwall Law, the actual economic growth rate would be considered unsustainable. Indeed, in this case, the import growth would exceed the export growth, causing a growing deficit in the long run that a country cannot finance indefinitely.

The lesson of Thailand from the Asian financial crisis in 1997 has shown how substantial current account deficits do not lead to sustainable economic growth. In the pre-crisis period, Thailand was the world fastest expanding economy with a real GDP growth rate of 10.4 percent (Warr, 1996) between 1986 and 1996. Along with Thailand's faster growth were the high export growth of 14.5 percent, the low average inflation of 5.3 percent and the rising gross domestic savings to over 30 percent of gross national products. Despite its rise, domestic savings were still insufficient to support the high level of investment required for rapid growth. Therefore, Thailand had to attract a large amount of foreign capital inflows that tripled to \$14 billion per year during 1990-1996 (Mahmood and Aryah, 2001). However, inefficient use of capital (most of which are invested in non-manufacturing sectors, especially real estate), lead to less export volume. From 1987 to 1995, the annual import growth exceeded the annual export growth (Table 1). This deepened current account deficits. As Thailand's growth began to slowdown in 1995, coupled with a worsening balance of payments, speculators deemed their investments unprofitable and withdrew their money from Thailand. The economy faced a credit crunch problem. Even investors with effective investment opportunities could not borrow capital to operate their businesses. That made economic growth more hindered (Sharma, 2002).

Year	Import growth rate (%)	Export growth rate (%)
1985	-12.7	9.8
1986	-0.9	15.4
1987	33.6	21.8
1988	39.6	27.2
1989	21.6	21.5
1990	23.7	13.4
1991	12.9	15.1
1992	8.97	13.8
1993	13.2	13.0
1994	17.5	13.1
1995	23.0	15.4
1996	-3.2	-4.5
1997	-8.7	9.1

Table 1. Thailand' import and export growth rate, 1985-1997-Source: World Development Indicator

As mentioned above, to increase long-run sustainable economic growth, a country should increase its export growth. In the context of developing countries in Asia deeply participating in global value chains, the question is whether increasing exports will bring about sustainable growth. Indeed, the integration of a developing economy into GVCs through low-complexity tasks, without substantial restructuring of its productive framework, exemplified by assembly tasks, undoubtedly broadens the export portfolio. However, this expansion entails a considerable import component, which may pose long-run sustainability concerns. In contrast, integration through sophisticated tasks characterized by a high level of technological components will ease the external financing constraint due to the positive spillover effects on the economy's productive structure. To evaluate the impact of export diversification on sustainable economic growth, we rely on the theory of Mania and Rieber (2019). Accordingly, this impact depends not only on the income elasticities of imports and exports, as in the original Thirlwall Law, but also on how export diversification affects these elasticities. The long-run sustainable growth rate is given by:

$$Y_{BOP} = \frac{\tilde{\varepsilon}z + \alpha zDIV}{\tilde{\pi} + \beta DIV} \quad (3)$$

where DIV indicates the degree of export diversification, α and β indicate the impact of export diversification on the income elasticity of demand for exports and imports, respectively. A higher value of α means that export diversification improves export performance, a higher value of β implies that such structural changes increase the appetite for import goods. The effect of export diversification on the long-run sustainable growth rate is given by:

$$\frac{\partial Y_{BOP}}{\partial DIV} = \frac{z(\alpha\tilde{\pi} - \beta\tilde{\varepsilon})}{(\tilde{\pi} + \beta DIV)^2} \quad (4)$$

Thus, the sign of the relationship depends on $(\alpha\tilde{\pi} - \beta\tilde{\varepsilon})$. For instance, let's consider a developing country that integrates into the GVC and its exports have a content of imports. The positive impact of export diversification on the income elasticity of import demand (positive β) reflects the fact that diversifying exports amplifies import growth. If this effect is higher than the (weighted) impact of export diversification on the income elasticity of export demand ($\beta > \alpha\tilde{\pi}/\tilde{\varepsilon}$), export diversification will have a negative impact on sustainable GDP growth. Indeed, such “bad” export diversification, while having a positive impact on export growth, increases import content, and thus it will tighten the balance of payments equilibrium growth rate. Conversely, export diversification is considered “good” when it raises the threshold of the growth rate by improving export performance (high α) while lowering the need for imports (low β), so $\beta < \alpha\tilde{\pi}/\tilde{\varepsilon}$.

To determine the impact of export diversification on the long-run sustainable growth rate, we need to estimate the income elasticity of demand for export and import and the impact of export diversification on these elasticities (the parameters ε , π , α , β , respectively) that identify the sign of Equation 4. These parameters could be obtained through the export and import functions. Given that the impacts of export diversification on income elasticities (ε , π) are associated with structural changes that take time to occur, we include the time lag in the variable DIV. Assuming that exports and imports require time to adapt to the appropriate level, we have a dynamic specification for export and import functions as follows:

$$\log X_{it} = a_1 \log X_{(it-1)} + a_2 \log \left(\frac{P_d}{P_f} \right)_{it} + a_3 \log Z_{it} + a_4 \log DIV_{it} + a_5 DIV_{t-1} \log Z_{it} + e_{it} \quad (5)$$

$$\log M_{it} = a_1 \log M_{(it-1)} + a_2 \log \left(\frac{P_d}{P_f} \right)_{it} + a_3 \log Y_{it} + a_4 \log DIV_{it} + a_5 DIV_{t-1} \log Z_{it} + e_{it} \quad (6)$$

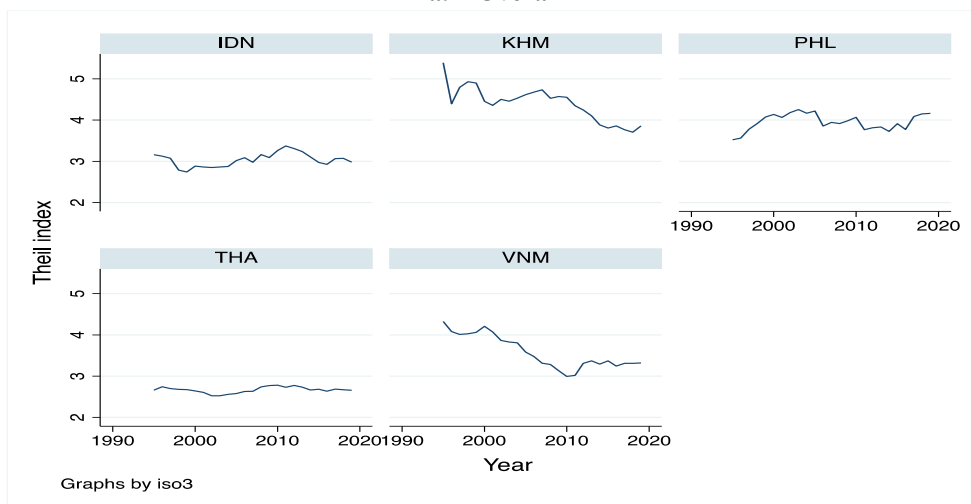
where X_{it} and M_{it} are country i 's real exports and imports in time t , Z_{it} and Y_{it} is the real level of world income and domestic income, respectively. The relative domestic and foreign price measured in a common currency, P_d/P_f , is approximated by the ratio between the country's GDP deflator and the world's GDP deflator. Those variables are taken from the World Bank Indicator (WDI) database. These functions, on the one hand, allow us to capture the heterogeneous characteristics of a country and, on the other hand, represent the country's dynamic process.

3. Empirical analysis

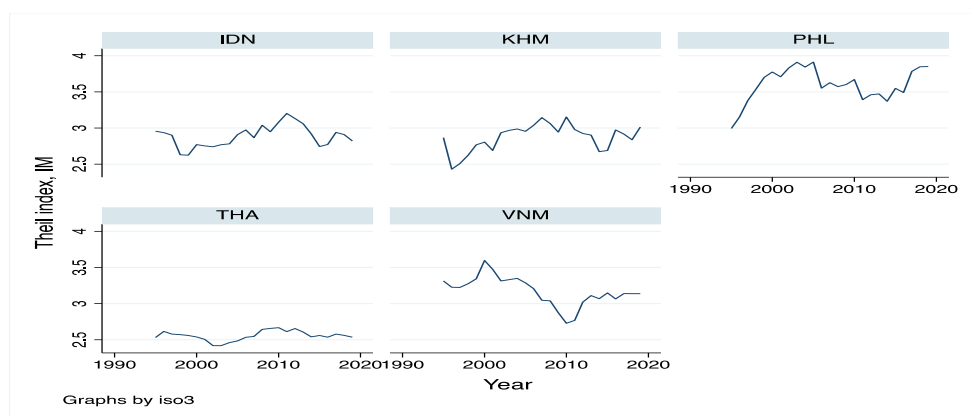
To estimate the import and export function, we collect import and export data (in constant US dollars 2010) from the World Development Indicator (WDI) database of World Bank over the period 1995-2019. To calculate the diversification indicators, we used the CEPII BACI database, which groups together exports (and imports) from a country i to a country j at a very fine level of disaggregation (6-digit Harmonised System code). This database brings together trade flows from more than 200 countries and more than 5,000 goods, which allows us to construct very precise indicators. The Theil index is used to measure the degree of export diversification. A major advantage of this index is that we can decompose it into extensive margin (EM, diversify exports by introducing new export lines) and intensive margin (IM, diversify exports by spreading the trade values across existing products for even). The Theil index is proportional to the level of export concentration: a lower Theil index indicates a higher degree of export diversification, and vice versa. Therefore, empirically, a negative sign of the term $(\alpha\tilde{\pi} - \beta\tilde{\varepsilon})$ implies a positive linkage between export diversification and the long-run sustainable growth rate. A positive sign indicates "bad" diversification in terms of productive

transformation. In other words, the country should concentrate its exports rather than diversify them. Figure 3 shows the Theil-index of the five countries studied. Regarding export diversification in overall (Figure 3a), Cambodia and Vietnam have a greater increase in export diversification degree, as indicated by the sharp decline in the Theil index since 1995. Indonesia and Thailand have the highest degree of export diversification in the region. While decomposing in intensive and extensive margin, we have a clearer picture of how these countries diversify their exports. Indeed, in the period studied, Cambodia, the Philippines and Vietnam diversify by increasing the export line (Figure 3c). Indonesia and Thailand diversify their exports in both dimensions, intensive and extensive margin.

a. Overall



b. Intensive margin



c. Extensive margin

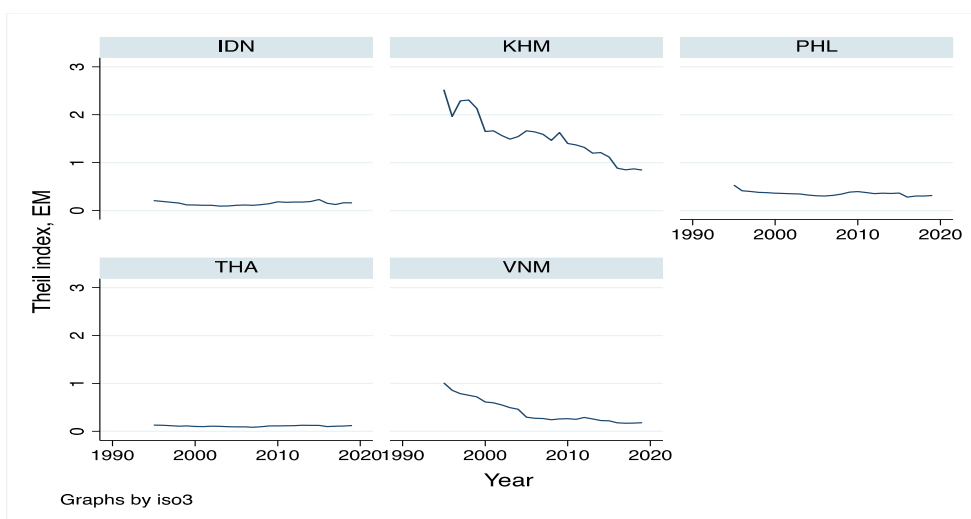
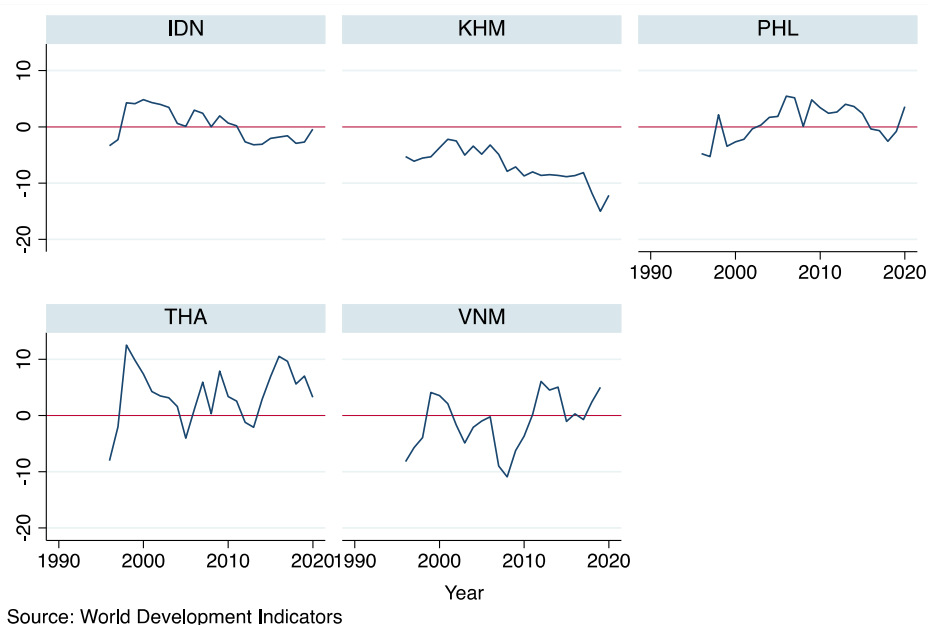


Figure 3. Theil index-Source: Authors' calculations

Before investigating the balance of payments constrained growth, we look at the current accounts of selected ASEAN developing countries. Figure 4 shows the countries' current

account balance as a percentage of GDP during 1995-2019. We observe different patterns in the current account balance according to the level of development of countries in the region. For instance, the more developed countries in the region, such as Thailand, the Philippines, have a current account surplus. By contrast, the less developed countries (Cambodia, Indonesia and Vietnam) which are known to have had high growth rates in the last two decades, have maintained current account deficits.



Source: World Development Indicators

Figure 4. Current account balance, % GDP

3.1. How Sustainable Income Growth Rate Is for ASEAN Countries?

Based on the Thirlwall Law, we investigate the sustainable income growth rate for selected ASEAN countries, including Cambodia, Indonesia, the Philippines, Thailand and Vietnam, during 1995-2019. Table 2 shows the countries' actual GDP growth and the balance of payments equilibrium growth rate indicating the threshold beyond which the GDP growth rate should not exceed indefinitely. The last column of the table shows how countries are growing *vis-à-vis* their balance of payments constraints. For most developing countries in the region, the estimates of the balance of payments equilibrium growth rate are higher than the actual growth rate. This suggests that their growth performance through exports generates surpluses. For the Philippines and Vietnam, the estimated GDP growth rate consistent with the balance of payments equilibrium is lower than the actual GDP growth rate, meaning that those countries have moved into deficit over the period.

Country	Income elasticity of exports, ε	Income elasticity of demand for imports, π	Balance of payments equilibrium growth rate $\dot{Y}_{BOP}(\%)$	% Growth in GDP $\dot{Y}(\%)$	$\dot{Y}_{BOP} - \dot{Y}$
Indonesia	1,61	0,8	5,95	4,54	1,40
Cambodia	4,9	1,54	9,41	7,68	1,72
Philippines	3,67	2,14	5,07	5,11	-0,04
Thailand	2,62	1,69	4,58	3,5	1,08
Viet Nam	4,58	2,22	6,1	6,69	-0,59

Table 2: The Thirlwall Law

The tightened balance of payments equilibrium growth rate may be caused by either the decrease in export growth rate or the increase in income elasticity of demand for imports. For instance, in a deeper investigation of Vietnam, Bagnai et al. (2015) decomposed the balance of payments equilibrium growth rate to determine the international dynamics that caused Vietnam's balance of payments to deteriorate. Accordingly, the first effect that contributed to tightening Vietnam's balance of payments came from the volume of exports destined for developed Asia. Despite taking a large portion of Vietnam's exports, its exports to developed Asia have contracted since the mid-2000s, eroding Vietnam's export performance. The increase in exports to the United States cannot offset this decline. Meanwhile, the second and more important effect is the sharp increase in income elasticity of demand for imports from Asian developing countries, meaning that the more Vietnam's economy grows, the more dependent the country is on imports from its developing neighbours.

3.2. Impact of Export Diversification/Concentration on The Balance of Payments Constraint Growth Rate

As suggested by Thirlwall (2004), if a country wishes to grow faster without worsening the balance of payments, it must raise the growth rate in a way compatible with the balance of payments equilibrium. As noted earlier, the latter is proportional to the country's income elasticity of demand for exports, which means, how the goods exported by the country are attractive to their partners, and its income elasticity of demand for imports or its "appetite" for imports. Policies aimed at increasing the income elasticity of exports, such as modifying the export mix, may have favourable impact on long-run growth. However, the country's higher imports may hinder these efforts, as in the case of Vietnam in the 2000s mentioned above.

Historically, developing countries mainly exported primary commodities that are embedded with low income elasticity and imported manufactured goods that have higher income elasticities. This worsened their balance of payments and hindered their long-run income growth rate. Following export-led growth strategies, many developing countries have diversified their exports instead of specialising in primary goods. Along with these strategies, the researchers emphasise the importance of the quality of their export diversification in terms of productive transformation. Accordingly, "good" export diversification should level up their

balance of payments constraint by increasing the income elasticity of export demand and lowering the income elasticity of import demand.

Developing countries in ASEAN all experienced a shift in export structure, from primary goods with low income elasticity of export demand to manufactured goods with higher income elasticity in the 1960s and 1970s (Indonesia, the Philippines and Thailand) or in the late 1980s (Cambodia, Vietnam). This boosts their export performance and, hence, their economic growth. However, the structure of exports in the industry in terms of technology differs across countries (Figure 5). In general, countries tend to reduce low-tech goods and increase exports of goods with medium to high technology. The shift towards exporting high-tech products has been strong in the Philippines since the late 1990s. This country always maintains the lowest proportion of low-tech exports, accompanied by a high proportion of high-tech goods. For Cambodia, Laos, Indonesia and Vietnam, low-tech products such as food, textiles and leather products account for a large proportion. However, Vietnam has had a big shift in the export structure of industrial products: the share of high-tech exports increased sharply in the late 2010s, accounting for the largest proportion and reaching 43% of total production. export products in 2019.

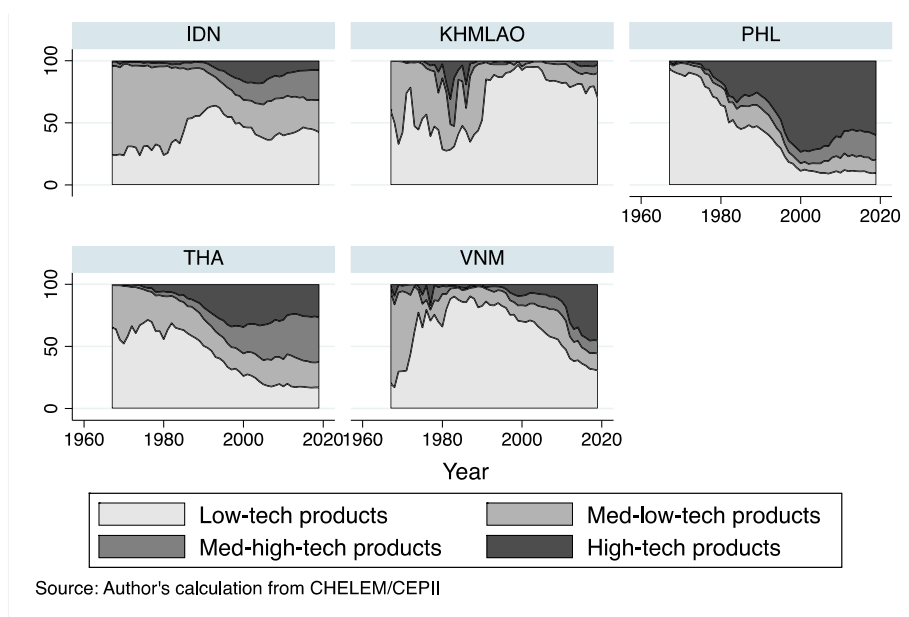


Figure 5. Export share of manufactured goods, by technology (%)

Note: The CHELEM/CEPII combines the data from Cambodia and Laos. Therefore, we cannot separate out the exports of those two countries.

To evaluate the effect of export diversification on the income growth compatible with the balance of payments equilibrium, i.e., the threshold of long-run sustainable growth, in ASEAN developing countries, we apply Mania and Rieber (2019)'s theory.

The impact of export diversification on the income elasticity of import and export demand and thus on the long-run sustainable GDP growth rate is heterogeneous across countries (Table 3). Recall that a negative sign of the impact implies a positive linkage between export diversification and the long-run sustainable growth rate. This suggests that each country should

pursue an appropriate export diversification policy to achieve long-term sustainable economic growth.

Country	DIV	Income elasticity of exports, $\bar{\epsilon}$	Impact of the Theil index on income elasticity of exports, α	Income elasticity of imports, $\bar{\pi}$	Weighted impact of the Theil index on income elasticity of exports, $\alpha \times \frac{\bar{\pi}}{\bar{\epsilon}}$	Impact of the Theil index on income elasticity of imports, β	Sign of the impact
Indonesia	Overall	1.5542	0.0176	0.8029	0.009	0.0232	(-)
	Extensive	2.056	0.0566	0.7357	0.02	No impact	(+)
	Intensive	1.5533	0.0191	0.7995	0.0098	0.0266	(-)
Cambodia	Overall	No impact	No impact	1,2535	No impact	No impact	No impact
	Extensive	3,2509	-0,0069	No impact	No impact	No impact	No impact
	Intensive	2,941	0,0211	1,155	0.008	0,0118	(-)
Philippines	Overall	No impact	No impact	No impact	No impact	No impact	No impact
	Extensive	1,2313	No impact	No impact	No impact	No impact	No impact
	Intensive	1,1823	No impact	No impact	No impact	No impact	No impact
Vietnam	Overall	4,8393	0,0047	2,3499	0.004	No impact	(+)
	Extensive	4,2391	-0,0219	2,1071	-0.011	No impact	(-)
	Intensive	4,425	0,0049	2,2254	0.002	No impact	(+)
Thailand	Overall	1,4116	No impact	No impact	No impact	No impact	No impact
	Extensive	No impact	No impact	1,7554	0.043	No impact	No impact
	Intensive	1,4798	0,0362	No impact	No impact	No impact	No impact

Table 3. Impact of export diversification on the long-run sustainable economic growth

First, let's focus on countries where economic growth is not considered sustainable since the growth rate exceeds the rate compatible with the balance of payments equilibrium, namely the Philippines and Vietnam. Among those countries, only in the case of Vietnam, we observe an obvious effect of export diversification on long-run sustainable economic growth. This influence comes from the impact of export diversification on the income elasticity of export demand as there is no impact on the import side. Specifically, different diversification strategies in terms of products have contrasting impacts on the sustainable growth rate. Regarding the positive sign of the effect, diversifying exports by spreading the trade values across existing products for even (intensive margin diversification, IM) decreases the (weighted) income elasticity of export demand and then lowers long-run sustainable economic growth. In other words, it is more beneficial for the country to concentrate its exports on the IM. By contrast, diversifying exports by introducing new export lines (extensive margin diversification, EM) can push up the sustainable economic growth level. Therefore, exporting

new products and increasing the share of existing exported products help create the room for GDP to grow sustainably without any adverse effect related to the deficits. For the Philippines, a change in export composition does not have any impact on its sustainable economic growth.

Second, among the remaining countries whose economic growth rate is below the sustainable one, we only record a clear impact of overall diversification on the threshold of growth rate in the case of Indonesia. Indeed, the export diversification strategies of Indonesia can relax the long-run economic growth since the sign is negative. This beneficial impact comes from the combination of two forces: the diversification at the IM, which takes up a major proportion of the overall diversification and drives the impact of overall diversification on the sustainable growth rate, and the concentration at the EM. These results suggest that diversifying exports by distributing the export share of existing products more evenly and surprisingly concentrating its exports on products with a relatively greater comparative advantage are more beneficial for Indonesia's sustainable GDP growth. For example, instead of focusing on agriculture-based exports, Indonesia should introduce policies to promote the production and export of high-tech products such as automobiles, electronics, and chemicals. This will help Indonesia minimize the negative impact caused by strong volatility in commodity prices. In a similar way, diversifying exports by distributing the export values of existing products more equally would increase the sustainable economic growth rate of Cambodia. Finally, a change in export composition for Thailand does not have any impact on its sustainable economic growth.

In sum, our empirical results show the diverse impact of export diversification on economic growth for ASEAN developing countries. For instance, for all three countries Cambodia, Indonesia, and Vietnam, it would be beneficial to distribute the existing export products more evenly. Besides, while diversifying exports by increasing the new export lines would be recommended for Vietnam, concentrating exports on some products, particularly high-value-added manufactured products (such as vehicles and electronics), could help Indonesia not only flatten out its structure but also make its economic growth more sustainable. These countries, although in a bloc, need to pursue different economic strategies to promote sustainable growth. This may be accomplished when ASEAN adopts policies that encourage the division of trade operations to assist one another rather than compete, as was learned in East Asia in the 1990s. In other words, ASEAN has the potential to develop into a region where production will be divided among several participants. As in the case of more developed countries in the region, such as Indonesia, which concentrate primarily on producing sophisticated industrial goods and leave the production of resource- and labor-intensive goods to less developed countries, such as Cambodia, then import those goods from this one. This helps Cambodia to distribute its export structure more evenly. Conversely, lower-income countries, like Vietnam, might encourage production to substitute imports and boost exports of low- and medium-tech products when Indonesia curtails its exports of these goods. Considering this, Vietnam benefits from growing exports by introducing more new goods, while Indonesia assures sustainable growth as a result of emphasised exports.

Conclusion

In sum, according to the Thirlwall Law, there exists a threshold for the long-run sustainable economic growth rate beyond which the economic growth rate should not be exceeded. Otherwise, sustainable economic growth cannot be maintained in the long run. Therefore, the economic growth of a country is constrained. Although the strategy of export diversification is widely recommended for developing countries to promote economic growth, this strategy needs to be considered more carefully since it cannot always guarantee sustainable growth. For instance, the export of goods with low-income elasticity of export demand, i.e., less attractive products, together with the import of goods with high elasticity of demand will put pressure on the balance of payments equilibrium in the long run. This will hinder the sustainable growth of countries. When we look at the effect of export diversification in terms of productive transformation on economic growth, we get mixed results across ASEAN developing countries in the region. Therefore, each developing country in the bloc needs to have an appropriate diversification or concentration strategy to relax the economic growth constraint, and hence grows sustainably.

In the context of globalization, a country's economic growth - particularly that of those following export-led growth policies - depends on the economic growth rate of its partners. Our research uses the macroeconomic trade data that, unfortunately, do not provide any information on the volume of bilateral trade between those countries and their trading partners. The future research on sustainable economic growth rate should consider the bilateral trade to capture the mutual interdependence among countries.

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