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The Philippine Review of Economics

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Mapping feasible routes towards economic diversification and industrial upgrading in the Philippines*

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Using time series data from 1961 to 2023, we estimate econometric models to answer the following questions: 1) What factors drive economic diversification in the Philippines? 2) What role does industrialization play in broader-based diversification? and 3) What are the benefits of economic diversification in the country? The empirical results suggest that re-industrializing the domestic production base can significantly enhance economic diversification. Strategies that accelerate the growth of local industries, especially to catch up with the dominant services sector, are vital. Effective policies should focus on developing physical and human capital, improving connectivity, and fostering domestic innovation. This push for greater diversification is justified by its potential benefits on output and growth stability, and diversification and growth of exports. The paper also explores various routes towards economic diversification and industrial upgrading in the Philippines using the product space approach. The first route is directed towards leapfrogging to a more sophisticated economic structure in the product space. The second route points at climbing the value ladder within global value chains. The third route leads to the strengthening of the local industrial base that is heavily populated by small and medium-sized establishments.

JEL classification: L16, O14, O25, O33
Keywords: economic diversification, industrial upgrading, structural transformation, manufacturing, exports, product space, global value chains, SMEs, Philippines

* This article contains updated portions of a 2021 policy paper entitled "Diversification, jobs and the COVID-19 recovery: exploring opportunities for economic diversification and productive employment in the Philippines", prepared by the authors for the United Nations Philippines.

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1. Introduction

The Philippines' economic trajectory has been characterized by erratic historical performance, despite being strategically located in a high-growth region.[1] In the 1950s, the Philippines boasted one of the highest per capita gross domestic products (GDP) in Asia, trailing only Japan, the former Malaya, Hong Kong, and Singapore. Despite an early lead in industrialization, the country was soon surpassed by its Asian neighbors—South Korea and Taiwan in the 1950s, followed by Thailand, Indonesia, and China from the 1970s through the 1990s [Balisacan and Hill 2003]. While the country showed stronger performance in the decade following the Great Recession, growth levels were insufficient for a robust catch-up.[2]

Numerous analyses have identified key factors impeding the Philippines' growth and development. A 2007 Asian Development Bank (ADB) study highlighted critical constraints to Philippine economic growth: tight fiscal situation; inadequate infrastructure, especially in electricity and transport; weak investor confidence, particularly due to corruption and political instability; and chronic market failures leading to a narrow industrial base. Specifically, a lack of economic diversification, the focus of this paper, resulted in a service-driven economy without a vibrant manufacturing sector. This failure in structural transformation stifled manufacturing and exports, with services emerging as the primary growth driver. By 2023, the services sector accounted for 62 percent of GDP and 59 percent of total employment.

The connections between growth, productivity, innovation, and diversification are intricate yet intuitive. Hidalgo and Hausmann [2009] previously noted that upgrading and diversification stem from accumulating complex domestic capabilities, essential for developing sophisticated industrial processes and expanding the knowledge base. Growth, as ADB [2007] suggested, is driven by the creation of innovative goods, alongside scaling existing production. Rodrik [2007] enumerated the following stylized facts about industrial development as an engine of growth: i) economic development requires diversification instead of specialization; ii) rapidly growing countries have large manufacturing sectors; iii) growth accelerations are associated with structural changes in the direction of manufacturing; iv) countries that promote exports of more "sophisticated" goods grow faster; and v) some specialization patterns are more conducive than others to promoting industrial upgrading. Usui [2012] also noted that the successful transformation of the Asian Tigers in the 1970s had the following specific dimensions: i) production shifted from low- to high-productivity manufacturing goods; ii) labor moved from the primary sector to modern industrial activities; and iii) the export basket diversified toward more sophisticated products. In contrast,

[1] These historical swings are reflected in the evolving monikers given to the Philippines through the years, from being one of the "New Asian Tigers" to the "Sick Man of Asia" to the "Rising Star of Asia."
[2] As of end-2020, the Philippines had also been overtaken by Vietnam in terms of per capita GDP.

Usui's [2012] diagnosis suggests that the Philippines' poor performance is tied to sluggish productivity due to slow industrial upgrading and diversification.

The empirical literature broadly supports the positive relationship between diversification and growth, particularly in the early stages of development. Imbs and Wacziarg [2003] documented a nonlinear relationship: developing countries diversify across more sectors, but this trend reverses as specialization becomes advantageous at higher income levels. Francis [2016] showed that diversification enhances economic and social welfare, impacting income distribution, innovation, and foreign direct investment (FDI). Theoretically, diversification is driven by two main factors: a general trend to expand production and consumption with increasing domestic income and capabilities [Imbs and Wacziarg 2003], and risk mitigation to reduce vulnerabilities to economic shocks [Acemoglu and Zilibotti 1997]. For commodity exporters, diversifying lessens the impact of shocks from price volatility and uncertainty in global markets. However, Imbs and Wacziarg [2003] rightly observed that entering into new products, sectors, or markets involves huge fixed costs, suggesting better diversification opportunities for countries with greater physical, technological, and knowledge resources.

This paper builds on the broad argument that economic diversification can drive industrial upgrading and growth in an emerging economy like the Philippines. Freire [2019] suggests that long-run growth may be propelled by diversification within the subset of complex economic activities and sophisticated products. This underscores the potential synergy between diversification, technology-driven industrial upgrading, and productivity growth. In light of these insights, this current study analyses the various dimensions of economic diversification in the Philippines through key research questions: 1) What are the historical origins of the Philippines' narrow economic base? 2) What factors drive economic diversification in the country? 3) What role does industrialization play in broader-based diversification? and 4) What benefits does economic diversification bring to the Philippines? Based on the results of this analysis, the paper then explores feasible routes towards economic diversification and industrial upgrading in the Philippines using the product space approach.

The rest of the paper is organized as follows. The second section discusses the empirical analysis of the drivers and benefits of economic diversification in the Philippines. The third section uses the product space to map several feasible routes for economic diversification and industrial upgrading. The final section concludes with policy insights.

2. Drivers and benefits of economic diversification in the Philippines

From a balanced and stable sectoral distribution in the 1950s to 1960s, the structure of the Philippine economy experienced rapid changes in the succeeding decades. The 1970s marked a decline in agriculture and rise in manufacturing

as the key driver of the domestic economy.[3] While emerging economies in East and Southeast Asia adopted export-led growth models, the Philippines continued with the import substitution strategy established in the 1950s [ADB 2007]. This policy involved foreign exchange controls and trade barriers (e.g., high tariff regimes and quantitative import restrictions) to protect priority sectors and infant industries [World Bank 2013]. However, this industrial surge was fleeting; by the late 1980s, services had overtaken manufacturing, as agricultural productivity continued to deteriorate. Employment data reveal that industrial expansion during the 1970s and early 1980s did not result in a proportional increase in the share of manufacturing in total employment. While there were brief periods of manufacturing resurgence in subsequent decades, these were often disrupted by economic crises, political turmoil, and natural disasters.[4]

The services sector emerged as the main engine of economic growth due to the manufacturing sector's inability to sustain a robust recovery. According to Williamson and de Dios [2014], the Philippines' *deviant manufacturing behavior* after the 1960s and its path towards premature deindustrialization was due to a "perfect storm" of protectionism, political instability, missed opportunities during the surge of FDIs in the 1980s, overreliance on foreign capital, and two financial crises. As Figure 1 illustrates, the intersectoral Shannon diversity index (SDI) for Philippine GDP has decreased overtime, reflecting the economy's increasing focus on services.[5] The data also indicate that the services sector has been contributing more than half of Philippine GDP growth since the 1990s. Moreover, low-skilled and low-productivity jobs became the catch basin of workers, as the industrial sector struggled to create more employment (Balaoing-Pelkmans and Mendoza [2024]; World Bank [2013]).

In the ideal path of industrialization, a developing country should progress with a balanced "two-legged" approach: industry-led growth supported by modern, high-skill services, along with enhanced agricultural productivity and export-driven manufacturing to be able to provide productive job opportunities and achieve inclusive growth [Usui 2012]. However, Balaoing-Pelkmans and Mendoza [2024] documented that the Philippines has been "standing on one leg" (i.e., services), while maintaining the relatively weakest manufacturing leg among emerging ASEAN-6 economies.[6] The stagnation of manufacturing made domestic industries unable to absorb the excess labor coming from less productive sectors, particularly agriculture [World Bank 2013]. This anemic state of manufacturing

[3] However, it should be noted that the share of manufacturing (agriculture) in output had been gradually increasing (decreasing) even before the 1970s.

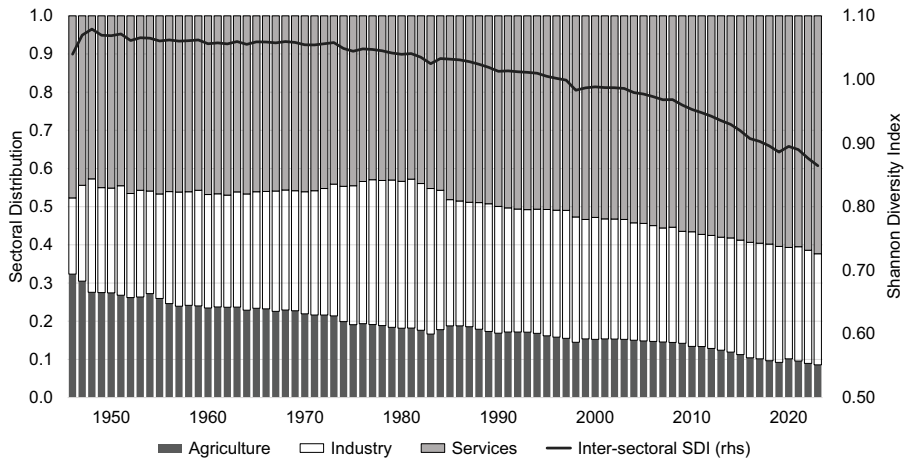
[4] See Balaoing-Pelkmans and Mendoza [2024] for a longer discussion of stylized facts that trace the historical origins of the Philippines' narrow economic base, especially with respect to the regional context in East and Southeast Asia.

[5] The SDI is computed using the following formula: $\sum_{i \in \{A,I,S\}} s_i \ln(1/s_i)$, where $s_i \in (0,1)$ is the share of component i in total GDP; and $\{A,I,S\}$ correspond to agriculture, industry, and services, respectively. A higher index value is associated with greater diversity.

[6] This excludes Singapore which had a different set of initial endowment and constraints.

manifests strongly in the weak diversification of domestic production activities, especially in high-tech sectors [Balaoing-Pelkmans and Mendoza 2024]. As a consequence of this narrow production base, Philippine exports have remained concentrated on a few major products that rely heavily on imported raw materials and technologies. In fact, Hidalgo and Hausmann [2009] classified the Philippines among "non-diversified countries producing standard products." Unfortunately, this does not provide the ideal conditions for achieving sustained growth. Long-run economic success needs aggressive efforts to develop the ability to produce and export a diversified basket of complex goods [Hidalgo et al. 2007].

FIGURE 1. Sectoral distribution of Philippine real GDP (percent of total), 1946 - 2023



Source: Philippine Statistics Authority.

The pursuit of long run diversification is a complex process. It requires countries to build capabilities in new and preferably more sophisticated economic activities [Hidalgo and Hausmann 2009]. This aligns with the concept of structural transformation, which involves reallocating resources from low- to higher productivity sectors alongside investments in critical skills, capital, and technology [Brenton et al. 2019]. Such transformation requires innovation to unlock new capabilities to produce new goods and services across a broader range of sectors.

Using cross-country data from Sub-Saharan Africa, an IMF [2017] study found that macroeconomic stability (e.g., stable inflation and manageable external debt), access to credit, infrastructure (e.g., access to electricity), ease of doing business, and human capital development are positively associated with economic diversification. This is broadly consistent with Haraguchi's [2019] findings that the principal constraints to economic diversification are as follows: limited

manufacturing capacity, limited access to trade finance, transport infrastructure, limited agricultural productivity, and poor international competitiveness. Industrialization in turn, is highly dependent on technological innovation and capacity buildup.

Empirical studies often focus on export diversification, which is closely linked to domestic economic diversification. IMF [2017] highlighted that countries with limited manufacturing and export diversity experience lower trade flows, suggesting common drivers for domestic production and export diversification. Using data for 79 countries from 1962 to 2000, Agosin et al. [2011] tested three sets of determinants of export diversification: economic reforms (e.g., trade openness and financial development), structural factors (e.g., endowments), and macroeconomic variables (e.g., exchange rate volatility). Their regressions showed mixed results, with some evidence for the positive effect of human capital accumulation on export diversification. On the other hand, trade openness tends to favor specialization, while access to credit and exchange rate volatility are statistically insignificant. The result for trade openness is consistent with the finding Osakwe et al. [2018] that Sub-Saharan African countries more open to trade have less diversified exports. However, they also showed that trade liberalization (i.e., lower tariff) contributes to long-run export diversification in developing countries.

Effective policy is crucial for diversification. Kurul [2023] found that border efficiency and quality infrastructure significantly enhance product and market diversification and that ICT access boosts export diversification, especially in least developed countries. These results are consistent with Agosin and Retamal's [2021] theoretical simulations which showed that subsidizing investments that facilitate knowledge spillovers and easy access to information about useful production technologies may lead to the establishment of new sectors. They argued that the best strategy for infrastructure selection is choosing projects that cater to the growth of skill-intensive sectors, which can generate positive spillovers to the rest of the economy. Agosin and Retamal [2021] model the provision of those investments as being hindered by a coordination problem, which makes a case for an industrial policy that harmonizes the strategies and activities of government and the business sector.

Based on the foregoing discussion, we empirically analyze the drivers of economic diversification in the Philippines using the following regression model:

$$D_t = \beta_0 + \boldsymbol{W}'_{t-1}\boldsymbol{\beta}_{\boldsymbol{W}} + \boldsymbol{X}'_{t-1}\boldsymbol{\beta}_{\boldsymbol{X}} + \boldsymbol{Z}'_{t-1}\boldsymbol{\beta}_{\boldsymbol{Z}} + \varepsilon_t \quad (1)$$

where D_t is a measure of economic diversification at time t, $\boldsymbol{W}_t$ is a vector of structural factors (e.g., sectoral shares, productivity growth), $\boldsymbol{X}_t$ is a vector of enabling factors (e.g., human capital development, infrastructure, capital accumulation, innovation), $\boldsymbol{Z}_t$ is a vector of policy-related variables (e.g., macroeconomic, trade, and industrial policies), the β's are model coefficients, and $\varepsilon_t \sim WN(0,\sigma_\varepsilon^2)$ is the white noise error.

To estimate Equation 1, we applied ordinary least squares (OLS) regression with autoregressive errors using the time series variables summarized in Table 1, constrained to the period of 1980 to 2021 due to data availability. All variables entered the regression equation in their stationary forms. To analyze the benefits of economic diversification, we estimated additional regressions for these outcome variables: two-year standard deviation (SD) of ln(GDP) as proxy for output volatility, the two-year SD of real GDP growth to measure growth volatility over time, annual growth of merchandise exports, and the Herfindahl-Hirschmann Index (HHI) for export concentration.[7] Data for these outcome variables (except HHI-Exports) are available from 1961 onwards.

TABLE 1. Variable descriptions and summary statistics

Variable description	*N*	Mean	SD	Min	Max	*d*
Shannon diversity index for GDP	42	0.979	0.046	0.886	1.041	0
SD of sectoral contributions to GDP growth	63	1.311	0.642	0.082	2.951	0
• 1980 to 2021 only	42	1.444	0.614	0.345	2.951	0
• 1980 to 2023 only	44	1.493	0.645	0.345	2.951	0
Industry value added (percent of GDP)	42	34.996	4.040	28.400	43.113	0
Industry/services value added ratio	42	0.744	0.216	0.478	1.229	0
Growth of GDP per capita	42	1.537	3.835	-10.978	5.418	0
Trade openness (percent of GDP)	42	53.785	19.221	28.792	90.542	1
Growth of gross capital formation per capita	42	2.187	14.853	-37.918	28.130	0
Growth of telephone subscriptions per 100 people	42	4.303	9.460	-20.101	27.119	0
Life expectancy (years)	42	68.316	3.048	62.499	72.119	2
Patent applications per capita (ln)	42	-10.328	0.241	-11.464	-9.923	0
Inflation	42	7.721	7.990	-0.325	46.673	0
Growth of real effective exchange rates	42	0.321	7.544	-20.728	10.758	0
Growth of domestic credit to private sector	42	6.162	14.470	-38.408	38.095	0
Two-year SD of ln(GDP)	63	0.035	0.013	0.003	0.071	0
• 1980 to 2023 only	44	0.034	0.015	0.003	0.071	0
Annual growth of merchandise exports	63	8.943	15.914	-24.328	71.364	0
• 1980 to 2023 only	44	7.240	12.624	-21.684	33.984	0
HHI – Exports	29	0.331	0.068	0.223	0.472	1

Sources of data: Bruegel, IMF, PSA, UNCTAD, World Bank.
Note: *d* = number of differencing to achieve stationarity.

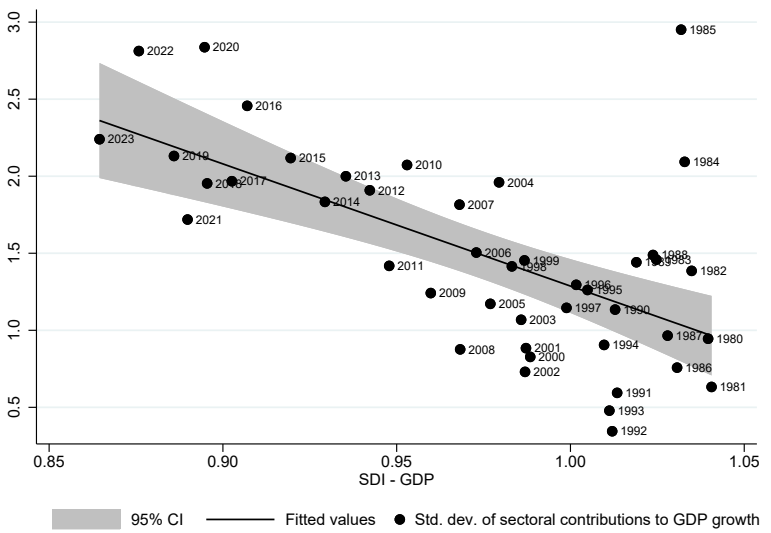
[7] The HHI is computed using the following formula: $\sum_{i=1}^{h} s_i^2$ where $s_i \in (0,1)$ is the share of component i, i=1,…,h. A higher index implies more concentration.

Initial analysis suggests that the SDI for GDP (SDI-GDP) exhibits near random walk behavior despite being stationary.[8] To avoid potentially spurious results, we proxy economic diversification by the SD of sectoral contributions to overall GDP growth ("SD-within"). For each sector *i*, the contribution to GDP growth is calculated as follows:

$$\frac{Y_{it} - Y_{i,t-1}}{\sum_{i\in\{A,I,S\}} (Y_{it} - Y_{i,t-1})} \times \left(\frac{\sum_{i\in\{A,I,S\}} Y_{it}}{\sum_{i\in\{A,I,S\}} Y_{i,t-1}} - 1 \right) \times 100 \qquad (2)$$

where Y_{it} is output of sector *i* at time *t*. Figure 2 indicates a strong negative linear relationship between SDI–GDP and SD-within ($\hat{\rho}$ = -0.623), suggesting that a diversified economy derives growth from a wide range of sectors rather than relying on a few dominant ones. This aligns with the notion that diversification helps reduce economic volatility and builds a stable path towards equitable growth [Brenton et al. 2019]. Moreover, Francis [2016] also noted that sectoral concentration leads to a higher variance of GDP.

FIGURE 2. Economic diversification vs. sectoral concentration of GDP growth



Source: Authors' calculation based on PSA data.

Table 2 summarizes the baseline regression results using SD-within as the dependent variable. Given the relationship observed in Figure 2, factors increasing (decreasing) economic diversification should have negative (positive) coefficients in our regression model. Models 1 and 3 estimate the initial OLS regressions using

[8] SDI-GDP follows a first-order autoregressive (AR(1)) process with ϕ= 0.99. This is almost like a random walk process which is the limiting form of an AR(1) process when ϕ=1.

several proxies for industrialization (i.e., share of industry value added to GDP and ratio of industry and services value added). While the OLS models satisfy most regression assumptions (e.g., no specification bias, no multicollinearity, and homoskedastic and normal errors), both models exhibit errors that are serially correlated and not yet white noise. This makes the OLS results potentially biased and spurious. To address this, we estimated regression models with exogenous variables and autoregressive errors (ARX) in Models 2 and 4, obtaining errors that are white noise and normally distributed.

TABLE 2. Baseline regression results

	1	2	3	4
Industry value added (percent of GDP)	-0.088** (0.035)	-0.085** (0.039)		
Industry/services value added ratio			-1.356** (0.645)	-1.455* (0.774)
Growth of GDP per capita	0.065* (0.032)	0.071*** (0.025)	0.061* (0.035)	0.067*** (0.025)
Trade openness (percent of GDP)	-0.028** (0.014)	-0.022** (0.011)	-0.030** (0.014)	-0.023** (0.011)
Growth of gross capital formation per capita	-0.021** (0.010)	-0.017*** (0.006)	-0.022** (0.010)	-0.017*** (0.006)
Growth of telephone subscriptions per 100 people	-0.019** (0.009)	-0.016** (0.007)	-0.020** (0.009)	-0.015** (0.007)
Life expectancy (second difference)	-0.413*** (0.079)	-0.336*** (0.087)	-0.471*** (0.076)	-0.361*** (0.086)
Patent applications per capita (ln)	-0.076 (0.216)	-0.248 (0.166)	-0.026 (0.227)	-0.264 (0.176)
Inflation	0.040 (0.027)	0.040*** (0.015)	0.035 (0.029)	0.039** (0.016)
Growth of real effective exchange rates	-0.042** (0.015)	-0.032*** (0.012)	-0.039** (0.016)	-0.030** (0.012)
Growth of domestic credit to private sector	0.018** (0.009)	0.013* (0.007)	0.019** (0.008)	0.013* (0.007)
Constant	3.365 (2.054)	1.473 (1.975)	1.874 (2.332)	-0.564 (1.885)
AR(1) coefficient		0.487*** (0.153)		0.534*** (0.144)
No. of observations	42	42	42	42
R-squared	0.450***		0.408***	
Power test on R-squared	0.963		0.922	
AIC	78.098	72.368	81.217	73.128
Average VIF	2.32		2.32	
RESET *F*-stat	1.16		0.77	
White's test χ^2-stat	42.00		42.00	

TABLE 2. Baseline regression results (continued)

	1	2	3	4
Breusch-Godfrey test χ^2-stat	8.116***		9.518***	
Shapiro-Wilk test *z*-stat	0.154	0.039	-0.129	-0.132
White noise test *Q*-stat	7.420***	0.139	8.921***	0.094

Source: Authors' calculations
*** p < 0.01, ** p < 0.05, * p < 0.10
Dependent variable: standard deviation of sectoral contributions to GDP growth
Note: Models 1 and 3 are estimated using OLS regression. Models 2 and 4 are estimated using ARX regressions. Numbers in parentheses are robust standard errors. All explanatory variables are lagged to reduce reverse causality.

Model 2 confirms that a greater contribution of the industrial sector to aggregate output enhances economic diversification and improves the distribution of the sectoral sources of growth in the Philippines. This makes a case for "re-industrialization" as a potential strategy to achieve a balanced and stable growth path. Francis [2016] argued that while concentration might spur growth initially, industrial diversification can reduce the welfare and productivity losses from sector-specific shocks. Meanwhile, Model 4 suggests that achieving a broader domestic production base is possible if the industrial sector grows faster to catch up with the dominant services sector. This supports "walking on two legs", advocating a sophisticated manufacturing industry backed by a modern services sector. Transforming the economy into a complex structure requires robust supply chain linkages and the complementarity of technology and skills across interconnected manufacturing and services sectors.

In terms of the domestic drivers of diversification, Models 2 and 4 consistently show that rapid capital accumulation, especially of the kind that supports industrial growth, significantly broadens the domestic production base. Francis [2016] noted that increased capital supply boosts diversification and reduces economic volatility through several channels: providing infrastructure required to enter new sectors, supporting education and research and development (R&D) for more sophisticated activities, and shifting the economy away from primary sectors that rely heavily on natural resource endowments. Our proxies for human capital development (i.e., life expectancy) and connectivity (i.e., growth of telephone subscriptions per 100 people) also have significant effects on improving economic diversification in the Philippines. The regressions particularly point to improvements in human capital as having the largest partial effect on economic diversification. Intuitively, developing the domestic production base requires a highly skilled workforce for handling complex tasks; while physical and digital connectivity facilitates efficient flow of resources in the economy, strengthens sectoral linkages, and opens new economic opportunities. These are broadly consistent with the literature showing positive effects of human capital and infrastructure development on diversification (IMF [2017]; Haraguchi [2019];

Agosin et al. [2011]). Interestingly, our proxy for innovation (i.e., ln of patent applications per capita) has insignificant direct effects on diversification, possibly due to limited domestic innovation activities and the inadequate capture of incremental and non-R&D innovations by patent measures in a developing country like the Philippines.

Supply-side competitiveness is essential for diversification. Education enhances workforce skills, enabling sectors to upgrade and diversify into more complex industries. Efficient logistics reduces costs and boosts competitiveness across diverse industries by facilitating supply chains. Trade policy reform can enhance market access and competitiveness by reducing barriers. Remittances increase household income, providing capital for diverse entrepreneurial investments. Finance, when properly allocated beyond traditional sectors, fosters growth in underrepresented industries.

In terms of macroeconomic policies, the regressions suggest that faster inflation results in less diversification, as high and fluctuating prices increase uncertainties and cause distortions in the allocation of resources across sectors. In contrast, real exchange rate appreciation and the growth of domestic credit to the private sector yield counterintuitive results. The positive coefficient for domestic credit indicates a concentration of loans in the services sector, suggesting limited access for agricultural and industrial enterprises.[9]

The negative sign for real effective exchange rate (REER) might be explained by importing, which facilitates diversity-enhancing learning through knowledge spillovers, technology, and inputs. This is consistent with the negative coefficient for total trade openness, which suggests that wider international exposure through exports and imports provides access to products, inputs, technologies, and knowledge that can boost domestic production capacities.

Given the insignificance of the patent variable, we re-ran the ARX models with an additional interaction between our proxies for industrialization and innovation (Models 2a and 4a). As summarized in Table 3, at the mean of industry value added (percent of GDP), the effect of patent applications per capita (in ln) on SD-within is calculated as 22.846 - (0.661 × 34.996) = -0.286. At the mean of the industry to services ratio, the effect of patent applications per capita (in ln) on SD-within is calculated as 8.354 - (12.496 × 0.744) = -0.943. Both interaction effects are negative and statistically significant, implying that innovation can support more diversification when the innovative activities directly support the growth and upgrading of domestic manufacturing sectors, especially to catch up with services. This is consistent with previous findings that reducing barriers to innovation and technology adoption promote diversification and higher growth [IMF 2017].

[9] For instance, data from the Bangko Sentral ng Pilipinas show that as of March 2014, services account for 63 percent of the Philippine banking system's loans outstanding to production activities by residents. Manufacturing only got 16 percent.

TABLE 3. Interaction of industrialization and innovation

	2a	4a
Industry value added (percent of GDP)	-6.898*** (0.052)	
Industry/services value added ratio		-130.334*** (48.060)
Patent applications per capita (ln)	22.846*** (0.095)	8.354*** (3.192)
Industry value added (percent of GDP) × Patent applications per capita (ln)	-0.661*** (0.005)	
Industry/services value added ratio × Patent applications per capita (ln)		-12.496*** (4.659)
No. of observations	42	42
AIC	65.323	66.623
Shapiro-Wilk test *z*-stat	0.462	0.121
White noise test *Q*-stat	0.030	0.0978

Source: Authors' calculations
*** p < 0.01, ** p < 0.05, * p < 0.10
Dependent variable: standard deviation of sectoral contributions to GDP growth.
Note: The coefficients for other variables are suppressed but are broadly consistent with the baseline results. Numbers in parentheses are robust standard errors. All explanatory variables are lagged to reduce reverse causality.

In the next set of estimations, we analyze the effects of economic diversification using the following simple regression model:

$$B_t = \gamma_0 + \gamma_1 D_{t-k} + \eta_t \quad (3)$$

where B_t is a measure of the potential benefits of diversification on domestic production and exports, D_{t-k} is SD-within at lag t-k, γ_0 and γ_1 are coefficients, and $\eta_t \sim WN(0,\sigma_\eta^2)$ is the white noise error term. Due to data constraints, we only estimated regression models using the following dependent variables: two-year SD of ln(GDP) for Models 5 and 5a, annual growth of merchandise exports for Models 6 and 6a, and first difference of HHI-Exports for Model 7. The two-year SD of real GDP growth rate was also considered as a dependent variable but the results were not used due to some diagnostic issues. The regressions explored different lags k of SD-within to account for the possible medium- to long-term benefits of diversification.

The regression results for Equation 3 are summarized in Table 4. Consistent with the literature, output stability seems to be the most apparent benefit of a broader domestic production base. This is suggested by the results for Models 5 and 5a, which show a positive and significant effect of SD-within on the volatility of output across time. In other words, more sectoral concentration tends to be followed by a higher volatility of production over time (alternatively, increased sectoral

diversification leads to more stable production.[10] Models 6 and 6a also lend some support, albeit weakly significant, that diversification of the domestic economy has a positive medium-term effect on the growth of merchandise exports. Finally, Model 7 shows that SD-within has a positive and significant contemporaneous relationship with the change in HHI-Exports. This means that a narrower domestic production base is associated with faster increase in export concentration. Put differently, a more diversified economy contributes to export diversification. This is intuitive given that the margins of trade are partly dictated by the production capabilities of the domestic economy. However, due to the low statistical power of the slope test for exports, further study with larger datasets is recommended.

TABLE 4. Benefits of economic diversification

	5	5a	6	6a	7
lag 0					0.024** (0.011)
lag 1	0.007*** (0.003)	0.010*** (0.003)			
lag 2			-5.692* (2.858)	-5.402* (3.200)	
No. of observations	63	44	63	44	28
R-squared	0.102**	0.197***	0.299**	0.067*	0.101**
AIC	-369.109	-253.752	508.106	347.923	-97.238
RESET *F*-stat	1.80	2.57*	2.75*	2.39	0.27
White's test χ^2-stat	0.02	0.26	0.79	0.07	2.38
Breusch-Godfrey test χ^2-stat	1.110	0.030	0.412	0.017	0.531
Shapiro-Wilk test *z*-stat	1.715	0.637	-2.526	-0.688	-0.630
White noise test *Q*-stat	0.972	0.019	0.422	0.018	0.584
Power of slope test	0.747	0.894	0.410	0.414	0.401

Source: Authors' calculations
*** p < 0.01, ** p < 0.05, * p < 0.1
Note: For all regressions, various lags of the SD of sectoral contributions to GDP growth were used as the sole explanatory variable to proxy for domestic economic diversification. Model 6 adds a year dummy for 1973. Models 5 and 6 used available data from 1961 to 2023, while Models 5a and 6a used data from 1980 onwards. For Model 7, data are available for 1996 to 2023 only. Numbers in parentheses are robust standard errors.

Even with GDP growth rates of five to six percent, diversification is still crucial for the Philippines because it enhances the sustainability and robustness of economic growth. While current growth is strong, a narrow economic base increases vulnerability to sector-specific shocks, which can destabilize overall growth. Diversification reduces output volatility, as demonstrated in Models 5 and 5a of our study, by mitigating the adverse effects of relying too heavily on the services

[10] The initial estimates using the two-year standard deviation of real GDP growth rate as dependent variable provide some evidence that sectoral diversification also reduces the volatility of growth over time.

sector. In the context of recent global uncertainties, such as trade wars, economic sanctions, supply chain disruptions, and pandemics, diversification becomes even more important. A diversified economy can better absorb and adapt to external shocks, minimizing negative impacts. Moreover, diversification may promote export growth (Models 6 and 6a) and reduce export concentration (Model 7), which can enhance international competitiveness and increase resilience to global market fluctuations. Overall, diversification not only sustains growth but also contributes to a more stable economic environment, supporting long-term development goals and improving welfare and productivity across sectors.

3. Routes towards economic diversification and industrial upgrading

The preceding section made a case for re-industrialization and the active use of policy to build a broader domestic production base. This section builds on that analysis by exploring three potential routes for economic diversification and industrial upgrading, supported by industrial policy (IP). Balaoing-Pelkmans and Mendoza [2021] outline these routes given that purely market-led diversification and upgrading are often insufficient to generate the kind of growth needed by a developing country to catch-up. Table 5 summarizes the three routes, which though distinct, often overlap due to shared challenges across domestic industries. The framework and methodology underpinning these routes use the Product Complexity Index (PCI) and the concept of "proximity" in the product space developed by Hidalgo et al. [2007], as well as the analysis of Revealed Comparative Advantage (RCA) indices.

TABLE 5. Three routes towards diversification and industrial upgrading

	Route 1	Route 2	Route 3
Approaches to diversification	Leapfrogging: upgrading towards high-productivity, more sophisticated goods	Climbing the value ladder: upgrading in global value chains (GVCs)	Sustaining the local industrial base: ensure survival and expansion of local firms (especially SMEs)
Industrial policy (IP)	Active, cohesive, and targeted IP	Open-economy IP; direct engagement with GVC lead firms	Local firms-centric IP
Target sectors	High-technology, achievable in medium to long term	Top exports in GVCs	Top traditional exports; firm- and labor-populous sectors
Policy guide questions	What is the structure and density of the product space? How to jump to nearby, more complex products?	Which sectors are in GVCs? Which lead firms in key GVC sectors should be targeted?	What are the major constraints in the competitiveness of local firms?

TABLE 5. Three routes towards diversification and industrial upgrading (continued)

	Route 1	Route 2	Route 3
Broad policy goals	Target productivity- and complexity-enhancing sectors	Make the country an attractive host for GVC lead firms; stimulate GVC linkages with local suppliers; upgrading of local firms	Increase competitiveness of local firms in domestic and foreign markets
Timeframe	Long run (ten to 15 years)	Short run to medium run	Continuous

Source: Balaoing-Pelkmans and Mendoza [2021].

Route 1, the leapfrogging strategy, aims to directly upgrade to more sophisticated production activities, bypassing intermediate steps. This ambitious approach requires significant government intervention to support technological advancements and necessary skills development, overcoming the "quiescence trap" where low growth and limited diversification reinforce each other. The strategy's success hinges on breaking this path dependency through targeted government support for technology and skills accumulation—a "juggernaut" activating self-sustaining growth dynamics. Although costly and prone to errors, inaction is costlier due to resulting technological stagnation.

The empirical evidence shows that developing comparative advantage in complex products without prior experience in similar products is difficult [Mehta and Felipe 2014], highlighting the need for proactive capacity building. Successful leapfrogging, as demonstrated by newly industrialized Asian countries, requires a coherent long-term vision, massive upskilling investments, effective technology acquisition strategies, strong coordinating government agencies, continuous policy learning and adaptation, a high-quality bureaucracy, close monitoring of firms, and robust collaboration with the private sector. To identify the targets in Route 1, our approach prioritizes products with comparative advantage, potential market size, and high opportunity gains, even if distant from the country's current capabilities. This necessitates a "big push" towards high-quality skills and aggressive technology acquisition. The challenge lies in incentivizing skill development ahead of high market demand.

Another important consideration for leapfrogging is the pragmatic reckoning of what could be achieved in the medium to long run given the country's comparative advantage, as well as a strategic long-term vision that looks beyond the natural limits of current capabilities.[11] As in the experiences of early industrializers in the 1970s and 1980s, it typically takes ten to 15 years before leapfrogging

[11] In targeting a sector for industrial policy, Singapore set its sight on producing products that would otherwise not have been produced in the country on the basis of comparative advantage alone.

projects produce visible results. While the detailed contour of industrial strategies is designed in a step-by-step learning-by-doing policy-making approach, the identification of target sectors can help kick-start the process. Having target sectors creates the imperative to reach a broad-based consensus on what kind of competencies would be needed, as well as how priorities could be ranked in terms of urgency and feasibility. The targeted sectors may evolve over time, depending on how agile policymakers are in evaluating firm performance and correcting policy errors.

The second route looks at climbing the value ladder within GVCs. A GVC-driven open economy IP is considered a pragmatic and less interventionist approach since the value ladder provides a natural trajectory for functional and intersectoral upgrading. However, GVC participation per se does not provide a straightforward path towards upgrading and export diversification [Mendoza 2023]. While some local firms are able to shift to more complex functions within the value chain, other suppliers are trapped in low value-added segments of production where the resources and incentives for upgrading are scarce. It would normally appear that GVCs can serve as a catalyst for leapfrogging, especially when they facilitate the production of sophisticated goods using international frontier technology. But the sourcing strategies of GVC lead firms are based on exploiting the comparative advantage of their hosts to attain greater efficiency and scale. Therefore, developing countries that attract GVC firms based on low-cost labor or natural resource endowments will naturally be assigned labor- or resource-intensive tasks. Hence, while GVCs bring productive employment and provide potential stepping stones for economic upgrading, they give no guarantee of meaningful industrial diversification if local firms participate on the basis of undynamic comparative advantage (e.g., cheap labor or natural endowments). In this case, governments may intervene through regulations or incentives to induce GVC lead firms to invest on upgrading, and to improve the global competitiveness of local suppliers.

Route 2 explores the product complexity index (PCI) and the product space structure, targeting products within the GVC core characterized by high complexity, strong comparative advantage, and extensive linkages with other complex products. The approach recognizes that while GVCs can serve as catalysts for leapfrogging, particularly when employing frontier technologies, their inherent sourcing strategies often exploit host countries' comparative advantages, potentially leading to stagnation in low-value-added activities.

The third route makes a case for sustaining the local industrial base that is populated by small and medium-sized establishments (SMEs). In 2022, SMEs accounted for 99.6 percent of all firms in the Philippines. This means that the seeds of the country's industrial champions can be sown in this vast field of promising firms that potentially include innovative start-ups, new export entrants, and new GVC participants. Broad-based industrialization entails not only the birth of new firms and new products but also the survival and expansion of existing

sectors with strong comparative advantage.[12] Yet, the intensely competitive global environment threatens to drive small and newly emerging producers out of the market which can further shrink the narrow industrial base in developing economies. In the Philippines, nine sectors with more than 20 years of comparative advantage have disappeared from the roster of strong traditional export sectors; while those that remained have stagnant or falling RCA indices [Balaoing-Pelkmans and Mendoza 2021]. The global competition has been particularly felt in the textiles and garments sectors, where RCA indices have been consistently falling since 1995, resulting in the disappearance of 33 out of 44 product lines with comparative advantage. The struggle to compete with countries or GVCs with enormous scale advantages is also driving local firms to downgrade into lower cost but also lower quality product niches, use cheaper but environmentally harmful technologies, and/or further push down labor costs in order to survive.

Fast-growing SMEs are crucial for inclusive development and employment, yet their sheer number cause poorly targeted government resources to be spread thinly across thousands of firms. Middle-sized firms, in particular, are considered big enough to survive on their own; yet these firms are precisely the most vulnerable to competition and other supply shocks as they begin to traverse the more perilous open seas of domestic and foreign markets. Middle-sized firms play a critical role—they are strongly linked to local supply chains populated by micro and small-sized firms and they are also suppliers to large local and foreign firms. Populating this "missing middle" is key to a robust, inclusive industrial base, but requires clear targeting guidelines, enforceable timelines, and a cohesive strategy involving local government units. Analysis of falling RCA indices and revenues can pinpoint sectors facing pressure and prioritize support for large employers with strong local value chain linkages. The approach acknowledges that even established exporters of bananas and electronics—facing competition from Ecuador and Vietnam, respectively—require support to weather intensified global competition.

The rest of the section explores the product space developed by Hidalgo et al. [2007] to identify target HS4 products for each route.[13] (See Balaoing-Pelkmans and Mendoza [2024] for the location of these targets in the product space.) Hidalgo et al. [2007] developed the PCI which measures the level of complexity required to produce a certain product. They also defined the concept of proximity in the product space based on the principle of relatedness; i.e., the probability

[12] Balaoing-Pelkmans [2017] documented progressive shrinking of the mass of Philippine exporters due to a declining entry rate alongside an increasing permanent exit rate of firms in the export market, resulting in decreasing survival rates of manufacturing exporters since 2001.

[13] The Harmonized System (HS) is a standardized system of nomenclature and number codes to classify traded products. At the four-digit level of the codes (HS4), specific product descriptions can already be identified (e.g., "T-shirts, knit" (HS6109 in the 1992 classification) which falls under "Articles of apparel and clothing accessories, knitted or crocheted" (HS61). However, we note that at a high degree of aggregation (e.g., HS4), the heterogeneity of the subcategories in terms of complexity and value creation is not fully observable. Policymakers may access more granular product level data to fully disaggregate the existing exports under these broad categories.

of producing a new product increases with the number of related items that a country already manufactures. Nearby goods in the product space often have similar capability requirements which means that skills and technologies used in a particular product can be easily repurposed for the manufacturing of neighboring products. The strength of the connection between two products (i.e., their degree of proximity) will influence the speed with which a country's product space grows. Products that are well connected (i.e., those near the core) provide greater opportunities for sophisticated diversification and growth. Using the concept of proximity, one may also quantify the relatedness between a country *c* and particular product *p*; i.e., how compatible country *c*'s current export structure and complexity is with what is required to export a new product *p*. The opposite of relatedness is called distance. Information on proximity and product-level complexity may also be combined to calculate OG_{cp} or the opportunity gain of developing a particular product; i.e., the potential contribution of producing a new product *p* to country *c*'s overall complexity.

It should be noted that relatedness and opportunity gain are strongly negatively correlated; that is, products with high opportunity gain tend to have very low relatedness to the country's current export structure. In fact, goods with the highest relatedness values are associated with negative opportunity gains. This implies that developing these products will not significantly contribute to the complexity of the Philippine product space. The danger of diversifying based only on relatedness is that the Philippine product space is sparse and still concentrated in relatively simple products. In this context, path dependence dictates that the direction of diversification, at least in a short-run scenario without a conscious effort to leapfrog, would be towards similarly unsophisticated sectors. Moreover, the diversification will be most likely slow and limited to the periphery where Philippine exports are concentrated. On the other hand, upgrading based on potential gains in complexity may require massive and fast-tracked investments in technology and skills. The challenge for policy is how to strike a balance between the two such that exploring new products is both feasible and complexity-enhancing.[14]

For a leapfrogging IP with a time horizon of at least a decade (Route 1), the top ten promising products are identified based on the opportunity gains of triggering diversification towards complex products, the potential size of these opportunities as indicated by the size of world trade, and tempered by distance and comparative advantage considerations (see Table 6). These products are actually outliers in the sense that they are highly complex and far from the cluster of the country's current

[14] Bayudan-Dacuycuy and Serafica [2019] previously analysed the Philippine export basket in 2014 and identified 26 targets for a short-run diversification strategy that used proximity, relative sophistication, import intensity, and RCA as screening criteria. The products identified for short-run diversification "have RCA, are relatively sophisticated, and are close to the current products in the country's export basket." In the current study, some of the products identified by Bayudan-Dacuycuy and Serafica [2019] fall under Routes 2 and 3 targets.

major exports; yet, display huge potential for comparative advantage (they are all in the top 30 percent of Philippine exports in terms of RCA). This shows that firms active in this sector are already developing a set of sophisticated skills very much different from what most Philippine exporters possess. Route 1 is partly supported by our earlier econometric results which imply that industrialization backed by innovation targeted towards key sectors can boost economic diversification and its potential benefits in terms of reducing output volatility and boosting export growth.

TABLE 6. Profile of Route 1 products, 2021

Product description	1992 HS4 Code	PHL Exports (million USD)	World Trade (billion USD)	RCA	Distance	PCI	OG
1) Machines n.e.c.	8479	69.45	145	0.242	0.869	2.04	1.22
2) Screws & similar articles (iron/steel)	7318	142.69	46.1	0.67	0.879	1.62	1.22
3) Transmission shafts	8483	132.31	63.3	0.39	0.878	1.31	1.06
4) Appliances for thermostatically controlled valves	8481	142.83	100	0.306	0.864	1.72	1.16
5) Instruments for physical or chemical analysis	9027	11.59	54.6	0.132	0.87	1.77	1.15
6) Equipment for temperature change of materials	8419	67.55	44.8	0.608	0.867	1.32	1.04
7) Instruments for measuring properties of liquids or gases	9026	32.85	21.3	0.798	0.872	1.44	1.08
8) Parts and accessories for metal working machines	8466	68.20	19.5	0.58	0.874	1.51	1.15
9) Ball or roller bearings	8482	25.41	35.1	0.24	0.867	1.41	1.05
10) Electrical lighting equipment used for motor vehicles	8512	102.34	34.8	0.997	0.856	0.962	0.781

Sources of data: UN Comtrade and Growth Lab [2024].
RCA = revealed comparative advantage; PCI = product complexity index; OG = opportunity gain
Data for HS4 9026 are for 2020.

The main challenge for a leapfrogging IP is how to incentivize the buildup of skills that might not yet have a critical demand. In this sense, leapfrogging IP is primarily a big push towards the overall quality skills needed to accumulate productive knowledge, as well a push towards more aggressive technology acquisition strategies. This is consistent with our econometric results which

suggest that human capital accumulation can have the largest impact on high-tech diversification. The fact that most countries failed to leapfrog shows how exceptionally difficult it is to assemble a critical package of interventions [Mehta and Felipe 2014]. Overcoming this challenge is not impossible, but the experience of successful late industrializers suggests that this requires strong leadership and a long-termist bureaucracy, resources, and the establishment of long-term partnerships and collaboration with key stakeholders. The industrial policies of Singapore, Taiwan, and South Korea in the 1970s to the 1980s were based on the premise that rapid industrialization will not take place without a deliberate leapfrogging policy. For instance, Singapore pursued well-calculated strategies to transition away from labour-intensive products to products with higher technology content to generate higher-paying jobs. This was implemented through a long-range economic development strategy which includes, among others, fiscal, infrastructure, and institutional support.

Given the difficulties of leapfrogging, integration in GVCs has been seen as a relatively easier way towards industrialization as developing countries can participate in the large-scale global production architecture of high-technology products by specializing in the labor-intensive segments of production. The idea is that the tighter relationships that bind foreign and local firms within GVCs will eventually facilitate the transfer of technology and skills. However, this is usually not an automatic process. Similar to Route 1, local firms still need to build absorptive capacities and improve technical capabilities for further technological, skills, and functional upgrading in GVCs [Mendoza 2023]. In Table 7, the Philippines' top GVC sectors are items 1-4, 6-8, and 10. Almost all of these major exports are clustered together in the periphery of the product space. The specificity of the skills required in manufacturing these products partly explains why forward and backward linkages with other local firms are difficult to establish. For these sectors, the most practical aim for industrial policy is to stimulate process upgrading with an emphasis on skills training for the workforce.

The products of interest for Route 2 diversification are those situated in the core (i.e., items 5, 9, and 11-14 in Table 7) because of the higher opportunities for expansion to sectors that require similar skill sets. Products such as electrical apparatus for less than one thousand volts, electric motors and generators, automatic regulating instruments, vulcanized rubber plates, and parts for use with electric generators, have the good properties of extensive linkages with other complex products, high complexity indices, and strong comparative advantage. Consistent with our econometric results, innovation-driven diversification along Route 2 will help broaden the domestic economic base through its direct expansionary effect on local production as well as through the possible learning effects of GVC transactions. The ongoing reorganization of Factory Asia, driven in part by the outmigration of GVC firms from China due to rising costs, geopolitical tensions, and trade conflicts, presents a significant opportunity for the Philippines.

Diversification along Route 2 can enhance the country's resilience and overall trade performance in this evolving landscape. By strategically targeting products within the GVC core , the Philippines can attract lead firms seeking more stable alternative locations for their vulnerable GVC segments. This targeted approach, coupled with proactive government engagement to improve the country's locational advantages and foster direct engagement with GVC lead firms, will be critical to capitalizing on emerging GVC opportunities.

TABLE 7. Profile of Route 2 products, 2021

Product description	1992 HS4 Code	PHL Exports (billion USD)	RCA	PCI
1) Electronic integrated circuits	8542	27.4	8.29	1.133
2) Parts and accessories for office machines	8473	11.0	9.22	1.256
3) Computers	8471	3.74	0.07	1.050
4) Semiconductor devices	8541	2.75	4.72	0.993
5) Electrical transformers	8504	2.43	4.49	0.912
6) Electrical machines with individual functions n.e.c.	8543	0.06	0.58	1.404
7) Electrical capacitors	8532	1.69	10.2	1.209
8) Sound storage media	8523	1.04	4.42	1.604
9) Electrical apparatus for < 1k volts	8536	1.08	2.07	0.696
10) Parts of radios, telephones, and TVs	8529	0.51	1.66	0.591
11) Electric motors and generators	8501	0.84	2.81	0.882
12) Automatic regulating instruments	9032	0.19	1.15	1.137
13) Vulcanized rubber plates	4008	0.02	0.92	0.856
14) Parts for use with electric generators	8503	0.11	1.08	0.866

Sources of data: UN Comtrade and Growth Lab [2024].

What does it entail to pursue a diversification strategy with GVCs as a linchpin? There are two approaches that can be deduced from Table 7. The first addresses the problem of weak capabilities which traps local firms in "captive" value chains where lead firms wield more power and control over their suppliers. Understandably, foreign lead firms need to exercise this control to ensure that strict quality parameters and technical specifications are met by suppliers. Lead firms must also ensure that their knowledge assets are protected. In this captive environment, suppliers themselves must exert purposeful efforts to demonstrate that they are capable of performing more complex GVC functions. However, suppliers in this captive relationship usually have weak capabilities. Horizontal industrial policies that enhance the country's locational advantages (e.g., infrastructure, ease of doing business, upskilling) will also improve the bargaining position of local firms. Some elements of these policies are already in place in

export processing zones (EPZs) since the 1990s. The challenge is how to replicate this ideal climate for GVC production in the rest of the domestic supply chain.

What differentiates a GVC-driven industrial strategy is the second approach that is characterized by more direct engagements with GVC lead firms. The government can make a difference by lending its various powers to strengthen the bargaining position of local firms vis-à-vis the foreign multinationals that organize the largest GVCs. In this case, the government not only regulates but also proactively negotiates with lead firms in order to obtain the conditions that can ensure progressive upgrading of local production and employment and more opportunities for linking with the domestic economy. However, promoting domestic linkages through legal requirements may raise production costs or expose GVC firms to supply risks that could induce them to go around the rules or move to alternative locations. Hence, effective use of bargaining power also entails a realistic assessment of the cost implications of local industrial policies on GVC lead firms.

Broad-based industrial diversification entails not only the creation of new sophisticated exports (Route 1) and upgrading in GVCs (Route 2) but also the survival and expansion of existing sectors with strong comparative advantage. Unfortunately, the Philippines has been unable to preserve its international presence in many traditional sectors despite having accumulated competitive production capabilities in the 1990s. The openness of the Philippines to global markets means that local firms, regardless of size and market orientation, must compete with foreign firms that can deliver quality products at a competitive price. While the domestic market is being flooded by cheaper and higher-quality goods, many local manufacturing firms are challenged by deteriorating quality and eroding competitiveness. Route 3 emphasizes that the survival and eventual expansion of SMEs in traditional export sectors will create a more organic path to industrialization. The growth of domestic demand for locally manufactured goods relies on the steady flow of incomes for workers employed in these sectors. Rising income may also generate a demand for innovation due to the increasing sophistication of domestic preference for new and higher-quality products. Likewise, a stronger earning power of these traditional export sectors will help support a healthy current account position that can finance the country's import requirements.

To sustain the country's domestic industrial base, Route 3 targets the biggest export earners that have experienced increasing competitive pressures as reflected by their falling RCA indices and /or gross revenues over time (see Table 8). While these sectors are very low on the product complexity scale, our econometric results suggest that diversification along this route is still beneficial since it targets the export sectors that are emptied out by extreme competitive pressures. These sectors are traditionally large employers and have strong linkages to local value chains, especially upstream agricultural industries. There is a tendency to regard established exporters of traditional products (e.g., bananas, coconut oil) as already

big enough to be receiving policy support. However, the heightened global competition has exposed local exporters to substantial market share pressures. Banana exports, for instance, have been experiencing market share challenges from countries like Ecuador, which has been aggressively expanding their reach through active government policies. Electronics exporters have likewise been facing growing competition from countries such as Vietnam, which registered a 39 percent growth in that sector in the last decade. Garment exports such as men's and babies' garments saw more than a 50 percent drop in earnings between 2013 and 2018, as RCAs fell below one, turning them into products of comparative disadvantage.

TABLE 8. Profile of Route 3 products with falling competitiveness

Product description	1992 HS4 Code	RCA 1995	RCA 2013	RCA 2021	PHL Exports in 2021 (million USD)	PCI 2021
1) Bananas and plantains	0803	22.7	27.8	19.9	1,320	-1.921
2) Coconut & palm kernel oil	1513	130	48.1	42	1,580	-2.059
3) Electronic integrated circuits	8542	6.51	12.2	8.29	27,400	1.133
4) Cashew nuts & coconuts	0801	16.2	10.6	8.1	388	-2.395
5) Seaweeds & edible vegetable products	1212	12.5	6.23	0.08	14.7	-1.719
6) Fruits and nuts, otherwise prepared	2008	13	6.47	5.93	534	-1.197
7) Solid vegetable oil and fat residues	2306	14.7	5.55	1.63	74.9	-1.082
8) Wood marquetry, ornaments, etc.	4420	12.9	2.34	1.13	13.4	-0.861
9) Basketwork	4602	34.9	6.7	4.52	58.8	-1.505
10) Men's shirts, knit	6105	10.5	1.88	1.01	33.6	-1.534
11) Babies' garments, knit	6111	15.9	1.15	0.27	5.8	-1.591
12) Babies' garments	6209	31.2	2.31	0.82	8.1	-1.521
13) Hats, knit	6505	13	0.676	1.12	34.4	-1.021
14) Unrefined copper	7402	17.2	0.0009	1.81	131	-2.515
15) Cigarette lighters	9613	10.4	4.49	2.55	24.8	0.328

Sources of data: UN Comtrade and Growth Lab [2024].

4. Concluding remarks

Philippine policymakers have long recognized the need to move away from a one-size-fits-all strategy for industrial development. In some sectors, a liberal foreign sourcing approach is warranted; while in others, policymakers might need to exercise more proactive interventions to support growth. Active accumulation of skills and productive knowledge are crucial for leapfrogging policies; building long-run collaborative relationships with local and foreign lead

firms is key in exploring feasible trajectories for GVC upgrading; and context-dependent strategies must be developed in an environment of constant policy learning and experimentation with various stakeholders. Table 9 lists the most urgent vertical policies identified by Balaoing-Pelkmans and Mendoza [2021] for each diversification route. Given the complexity of issues in domestic industries, a cohesive overarching policy strategy is necessary to avoid fragmented, duplicating, and potentially conflicting interventions, programs, and projects. Vertical policies focus on targeted interventions within specific sectors. For leapfrogging, this includes technology development, skilled labor attraction, and strategic collaborations; for GVC integration, it involves direct engagement with lead firms and enhancing local suppliers' bargaining power; and for sustaining the local industrial base, vertical support includes promoting SMEs, shared services, and innovation.

Horizontal policies, on the other hand, are important in addressing economy-wide challenges and laying down the pillars of broad-based industrialization. Horizontal policies create a supportive environment across the economy. These policies include enhancing the country's locational advantages (e.g., infrastructure, ease of doing business, upskilling) to improve the bargaining position of local firms, establishing a cohesive overarching policy strategy, and fostering collaboration among various stakeholders to avoid conflicting interventions. The most critical of these is a robust educational system and skills buildup that are indispensable prerequisites for industrial catch-up. This is perhaps the most challenging area of industrial policy because of the quiescence trap where the paucity of high-skilled jobs discourages households, workers, and firms to invest in skills. The lack of diversification and upgrading therefore creates the kind of conditions that perpetuate low-trajectory growth. Escaping this trap would require a clear long-term vision that aligns public and private investment incentives. The chicken-and-the-egg problem of higher wages and higher skills and productivity cannot be solved simply by increased investments in upskilling. The large gap between foreign and local wages will continue to draw trained Filipino workers towards overseas job opportunities, so that the rise in expenditures for training and education will translate into de facto subsidies for firms abroad. This highlights the need for increased prospects for higher paying local jobs on one hand, and simultaneously, a credible commitment to build up the quality of the local workforce in order to attract investments in higher-skilled industries.

TABLE 9. Possible policy interventions for each route

	Route 1	Route 2	Route 3
Vertical policies	• Technology access and buildup (reverse engineering; patents; R&D) • Need for a strong coordinating agency (with mandate to ensure implementation) • Active labor policies to attract highly-competent engineers & technicians • Proactive collaboration with engineering & technical knowledge institutions for patent development & commercialization • Explore policy space for (time-bound) use of local content & trade policy instruments	•Identify GVC and local lead firms for direct and strategic engagement; customize incentives to attract GVC lead firms with large impact for upgrading and generation of productive employment • Proactive measures to help local suppliers increase bargaining position with GVC lead firms • Establish Linkage (and supplier search) Program • Facilitate setting of concrete (social, process) upgrading in collaboration with stakeholders, esp. workers and employers' groups	• Profiling of key Filipino-owned SMEs; target strategic firms for close collaboration • Strengthen and customize shared services facilities • Incentivize frugal innovation in green tech /products • Use EPZ benchmarks in strategies to lower production costs for local firms • Surveillance mechanism to monitor survival, exit, new entry rates of local SMEs (especially in export markets); assistance for distressed local firms
Horizontal policies	• Identify strategic firms & societal partners (e.g., workers and employers' associations, knowledge associations) for collaborative action; regularly review sector & firm selection • Big-push in R&D spending (towards tripling of current expenditures) and investments in skilling and re-skilling (target technical professions) • Facilitate workers' access to labor market, as unemployed and new labor market entrants will need to be effectively (re-)integrated • Targeted financing strategies in collaboration with selected public & private financing institutions • Review tariff structure (bound vs. applied) for possible temporary adjustments • Set concrete 'ease of doing business' targets that can be evaluated and monitored by stakeholders • Facilitate integration of green technology/products strategies in firm business models • Fast-track establishment of standard certification bodies & implement plans to enable compliance of local SMEs		

Source: Balaoing-Pelkmans and Mendoza [2021]

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