KSC framework and toolkit to access the industry & trade structure and competitiveness in the partner countries

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KDI

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01

Why KSC Framework?



Motivation

" KSP consultation reports on industrial & trade didn't properly utilize the **diagnostic analysis**….."

" Although we agree on the need for trade competitiveness diagnosis (TCD) and product space analysis (PSA), we need an **comprehensive analysis** based on indices published by a number of international organizations……"

" We need to derive specific and convincing policy suggestions on industrial development, economic structure transformation, and structural environmental factors, the use of **quantitative methodologies** such as TCD and PSA can be a shortcut **to enhancing the acceptability of cooperative countries and the effectiveness of related research and projects**….."

" Still, when applying **quantitative analysis to policy consulting** in the field of knowledge sharing or development cooperation, we must have to make **our efforts to collect the credible and reliable data** since there exists constraint and barriers in terms of data deficiency or reliability….."

Daeyong Kim et al.,
"Analysis of Industrial & Trade Structures for the Effectiveness of International Development Cooperation"
Research Manuscript, IDC Series 2021-01, *KDI*(pp. 239-250)

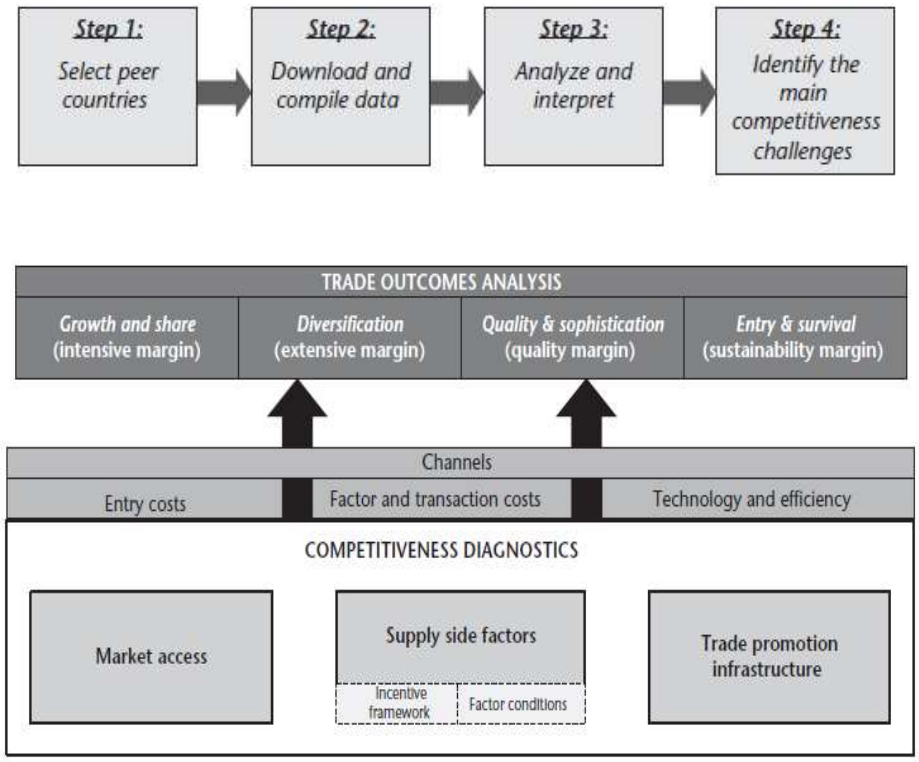
Topics and Changes in KSP Demand and Method

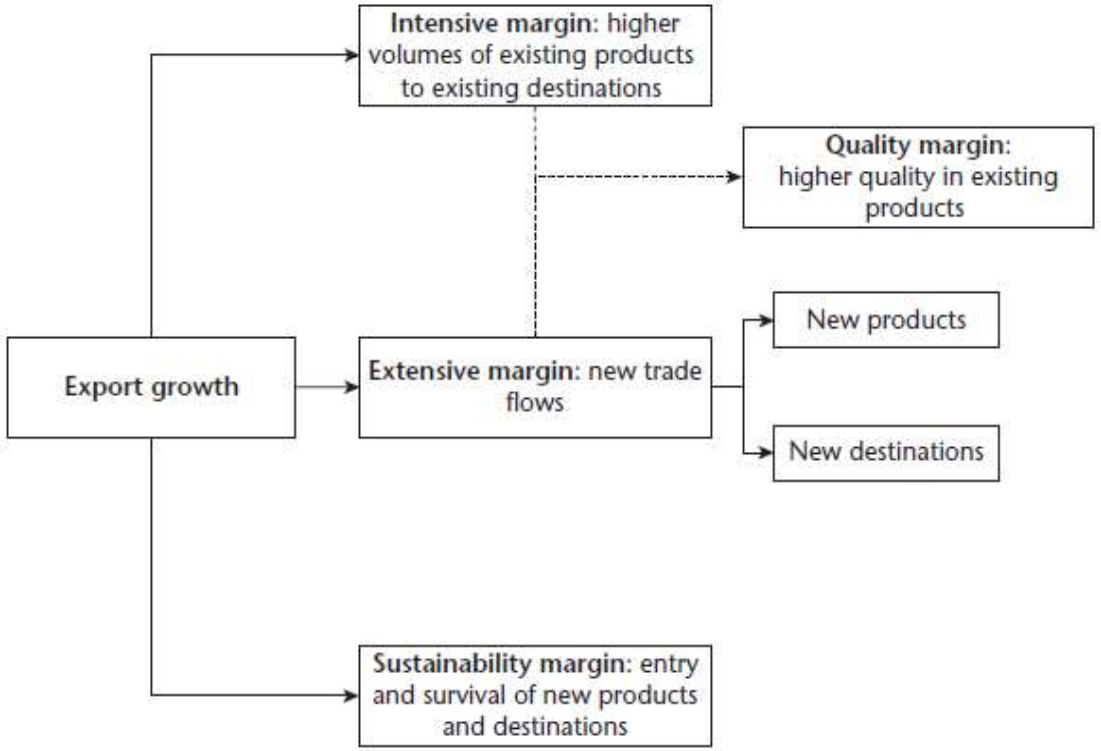
Rank	2016	2017	2018	2019
1	Industry & Trade (32%)	Industry & Trade (16%)	Industry & Trade(16%)	Regional Development (18%)
2	Human Resource Development (12%)	STI Policy (11%)	Regional Development (10%)	Industry & Trade(16%)
3	Public Administration (11%)	Regional Development (11%)	STI Policy (9%)	Public Finance (12%)
4	Regional Development (11%)	Human Resource Development (9%)	Public Administration (8%)	Public Administration (12%)
5	Public Finance(8%)	Public Administration (9%)	Environment (8%)	Environment (9%)

Category	Topics	Methodology				Etc.
		Sub-total	Basic Stat.	Index	Analysis	
Structural Transformation & Economic Diversification	14	14	12	2		
Industrial & Corporate Policies	17	12	11	1		5
Trade and Export Promotion	16	12	9		3	4
Industrial Complex & Cluster	31	30	26	4		1
SMEs Policy	26	22	16	6		4
Direct Investment	16	16	14		2	
Total (Topics)	120	88		13		

Background : *WB Trade Competitiveness Diagnostic Toolkit*

World Bank's TCD Framework and Toolkit





02

How We Do



Knowledge Sharing Consultation (KSC) Framework

KSC Framework for Policy consultation on Industry & Trade

Our Components – practical and effective

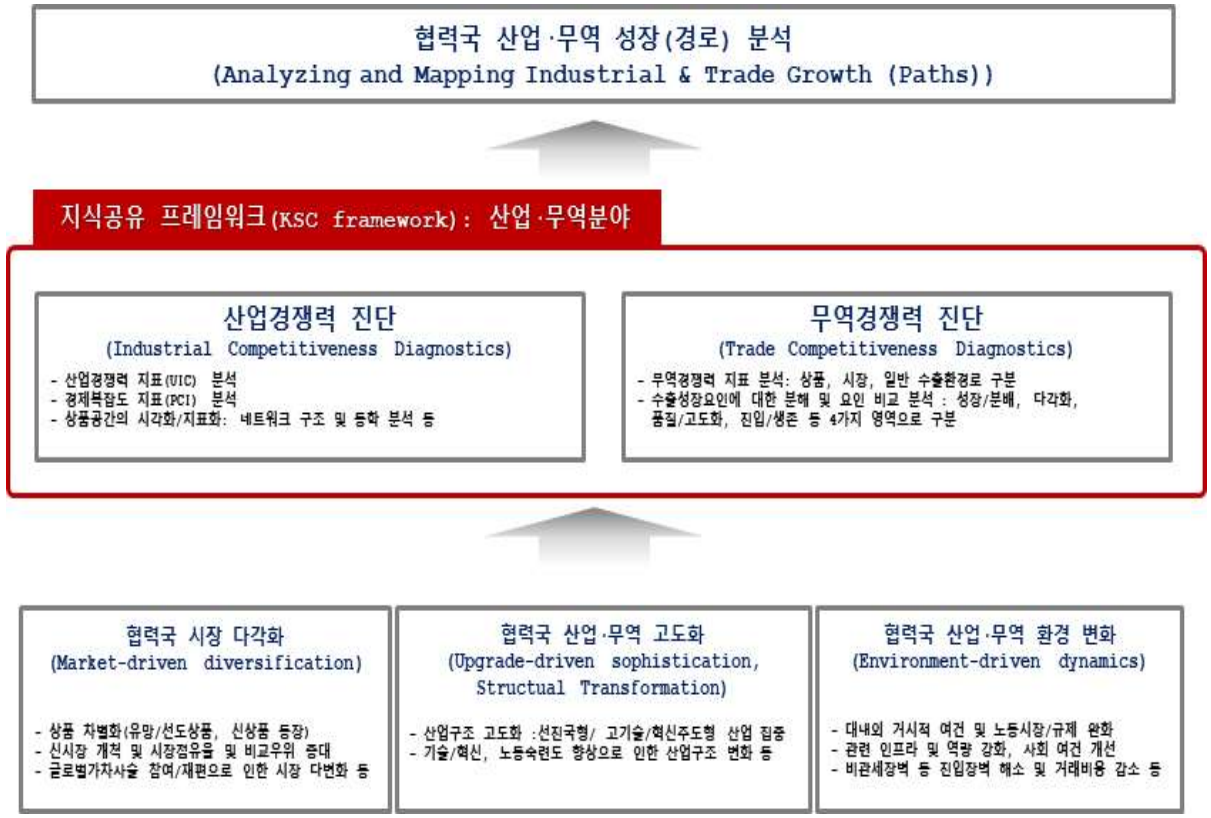
1) **Trade Competitiveness Diagnostic**
   - WB Toolkit and its method;

2) **Product Space Analysis**
   - Harvard CID research;

3) **Competitive Industrial Performance Index**
   - UNIDO ;

4) **Other Indicators**

.....



Key Indicators and Description on our Toolkit – TCD module

Key Indicators and Description - TCD

	Variable and Definition	Unit	Source
Openness	Openness (OPEN, Trade (=Export + Import)/GDP)	%	Harvard's ATLAS-DB , WDI
Growth	Total Export (EXP)	USD mil.	
	Growth rate of Export (EXP_GR)	%	
	Ratio of Export per GDP (EXP_pGDP, Export/GDP)	%	
Volume (Market)	Country Export – Commodities, Services, by Sector	USD mil.	Harvard's ATLAS-DB , CEPII-BACI
	Growth rate of country Export – Commodities, Services, by Sector	%	
Structure	Grubel-Lloyd Index (GLI)	-	
	World Trade ratio (EXP_R)	%	
Dependency	Trade Intensity Index (TII)	-	
	Trade Complementarity Index (TCI)	-	
Concentration	Hirschman-Herfindahl Index (HHI)	-	
	Theil's Entropy (TE)	-	
Intensity & Diversification	Hummels-Klenow's Intensive and extensive margins (IMEM)	-	
	Index of Export Market Penetration (IEMP)	-	
Price	Unit Price (PRC, Index)	-	

✓ **Product Space (Harvard CID), CIP index (UNIDO), etc.**

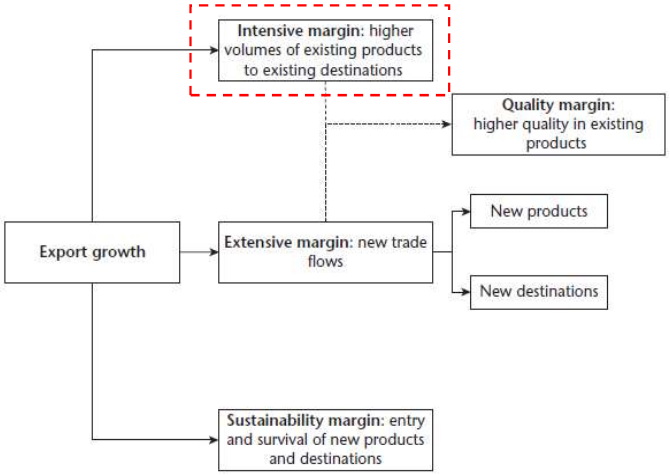
03

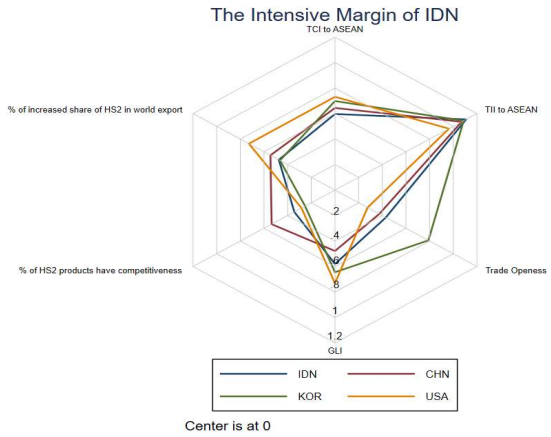
What We Do

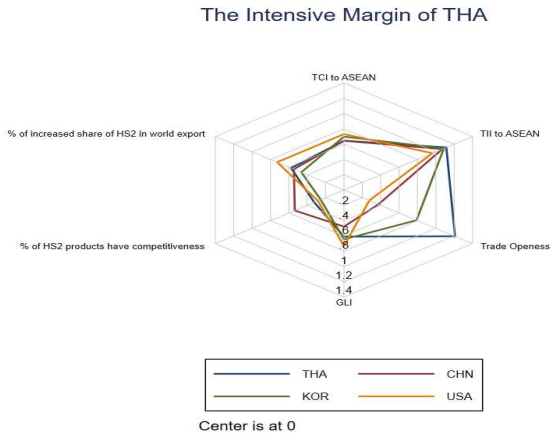


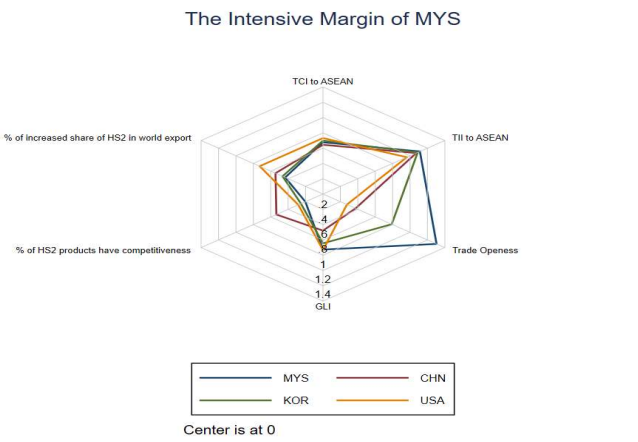
ASEAN Countries' Case with TCD Module – Intensive Margin

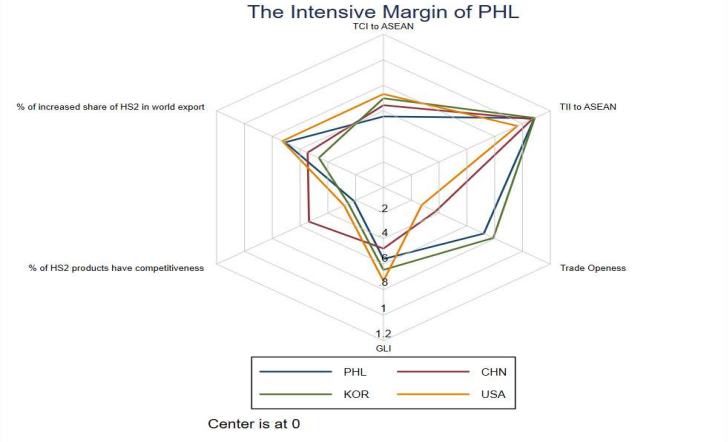
Mapping with Key Indicators - Intensive Margin

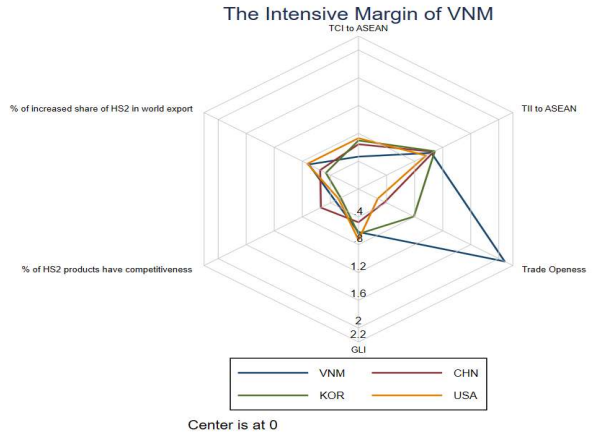






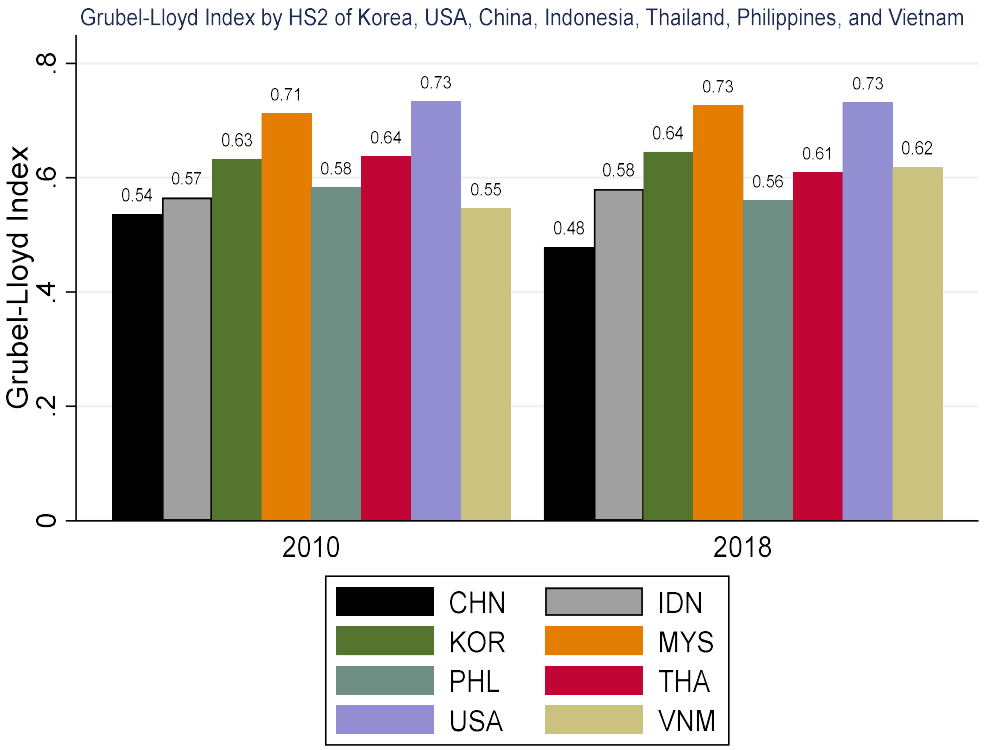


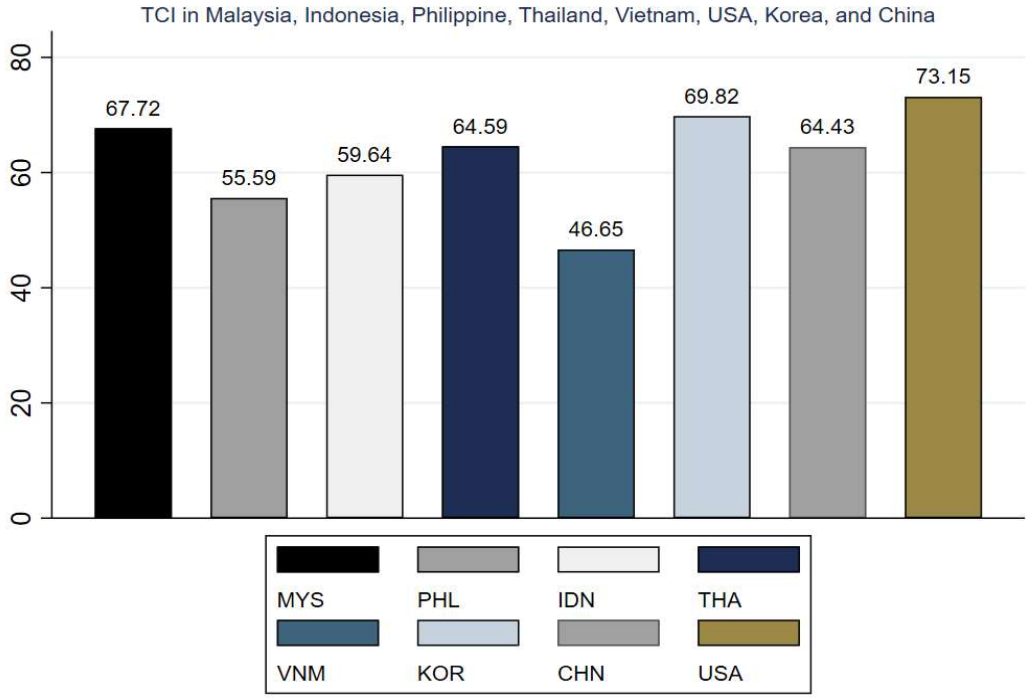




ASEAN Countries' Case with TCD Module – Intensive Margin

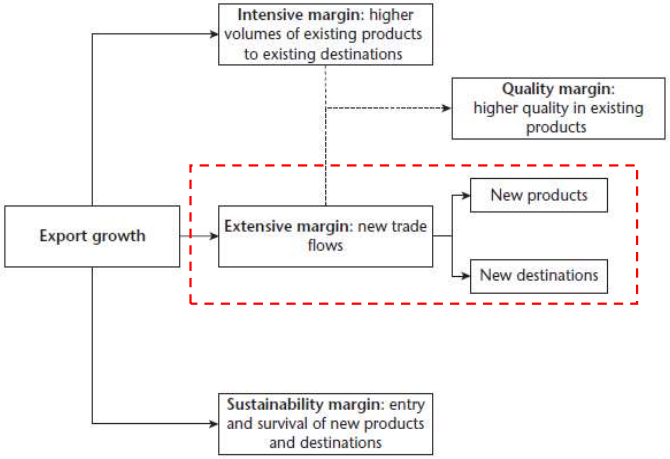
Comparative Analysis with Korea, China, and U.S. - GL, TCI

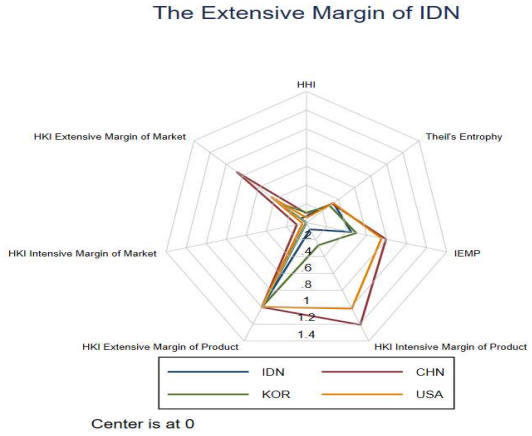


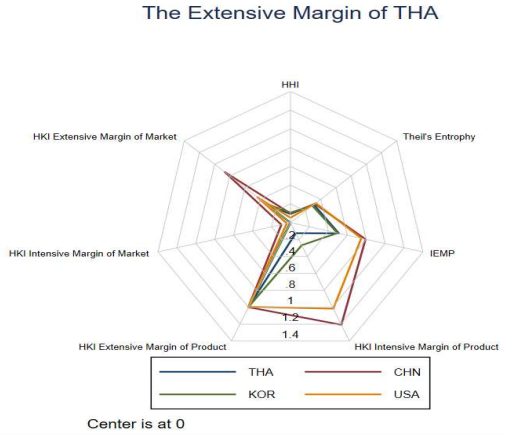


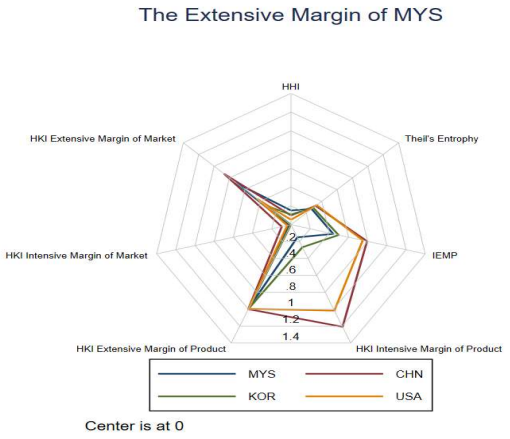
ASEAN Countries' Case with TCD Module – Extensive Margin

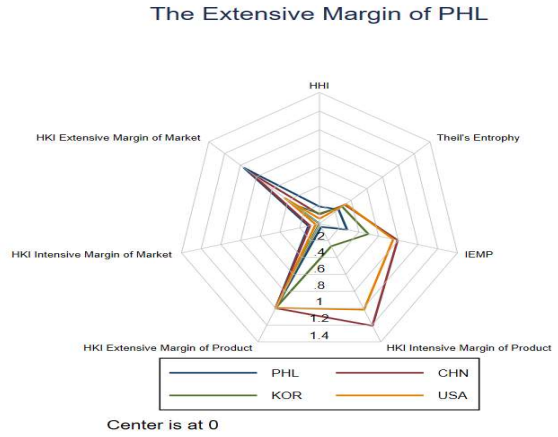
Mapping with Key Indicators - Extensive Margin

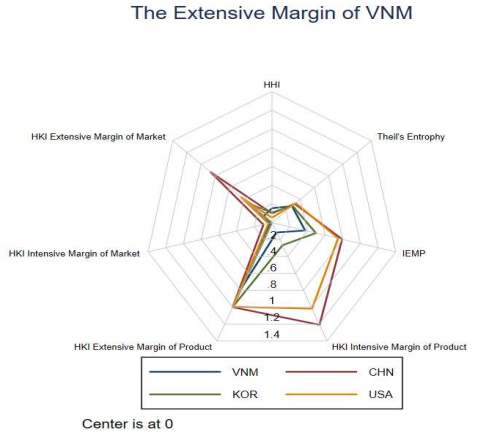




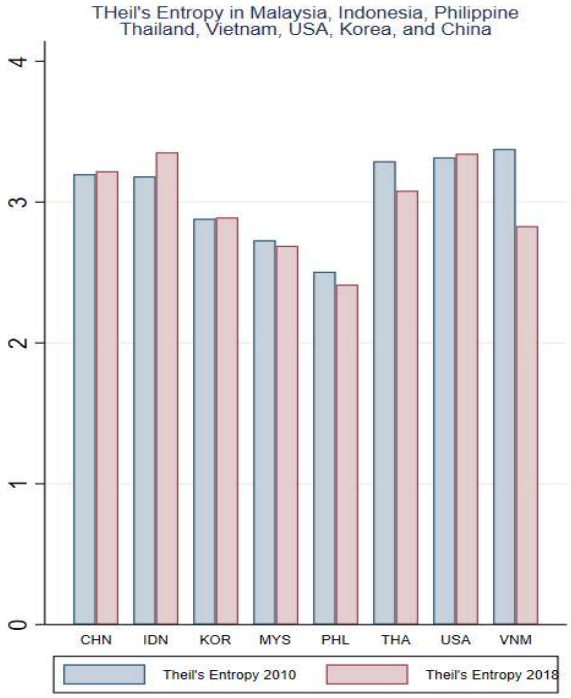


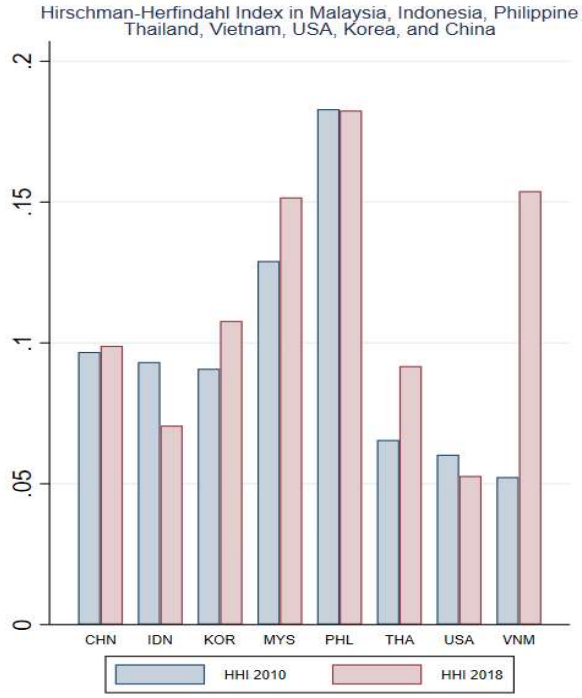


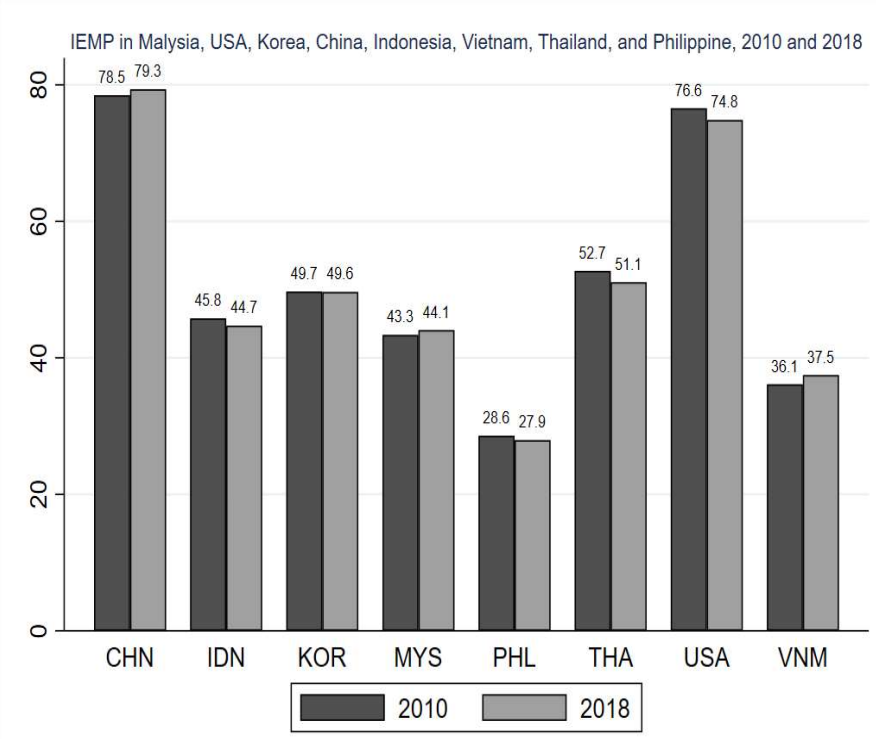




Comparative Analysis with Korea, China, and U.S. – HHI, TE and IEMP

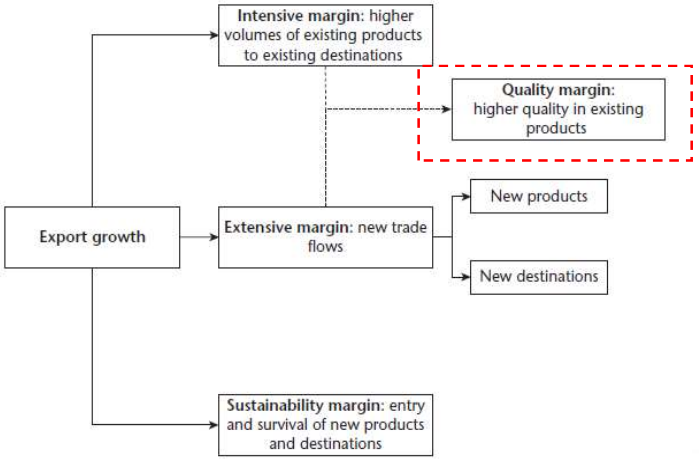


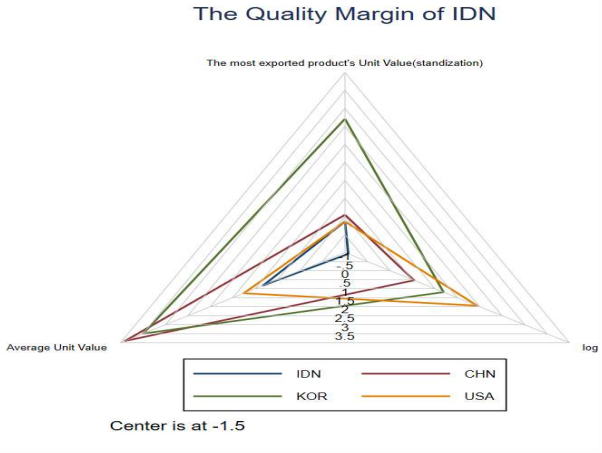


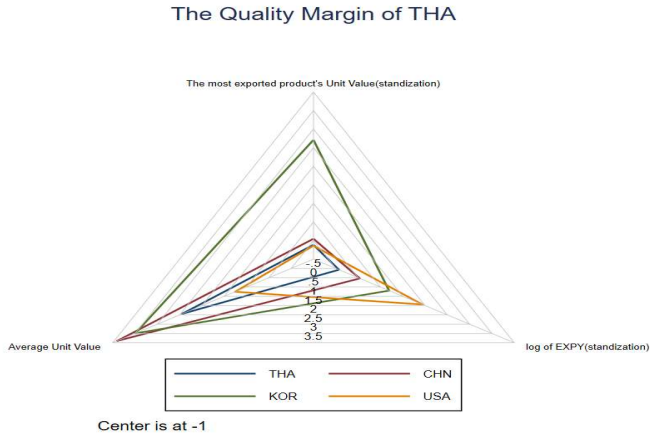


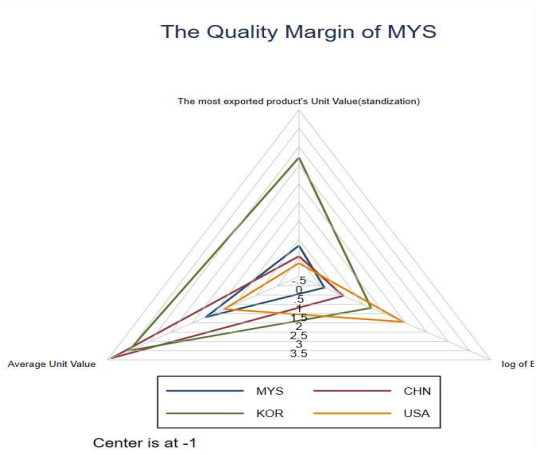
ASEAN Countries' Case with TCD Module – Quality Margin

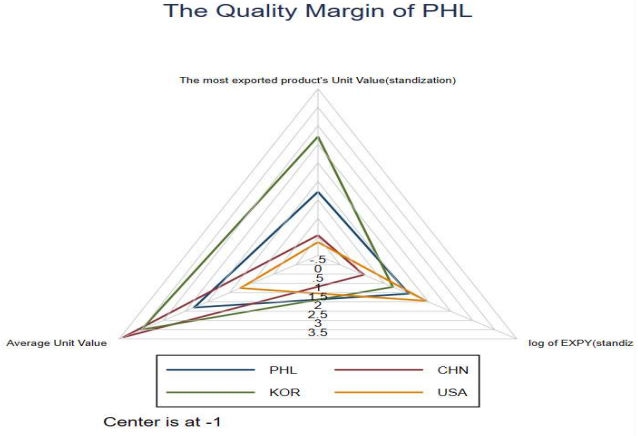
Mapping with Key Indicators - Quality Margin

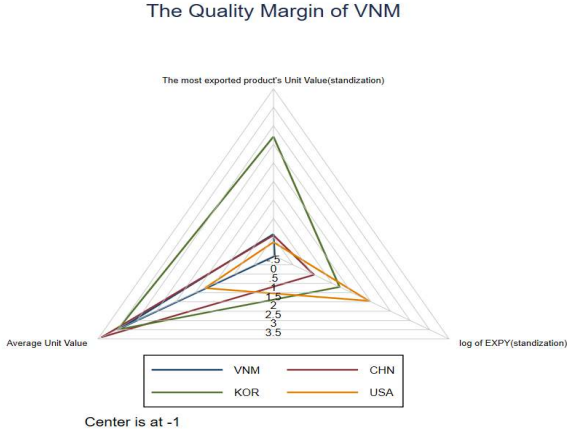




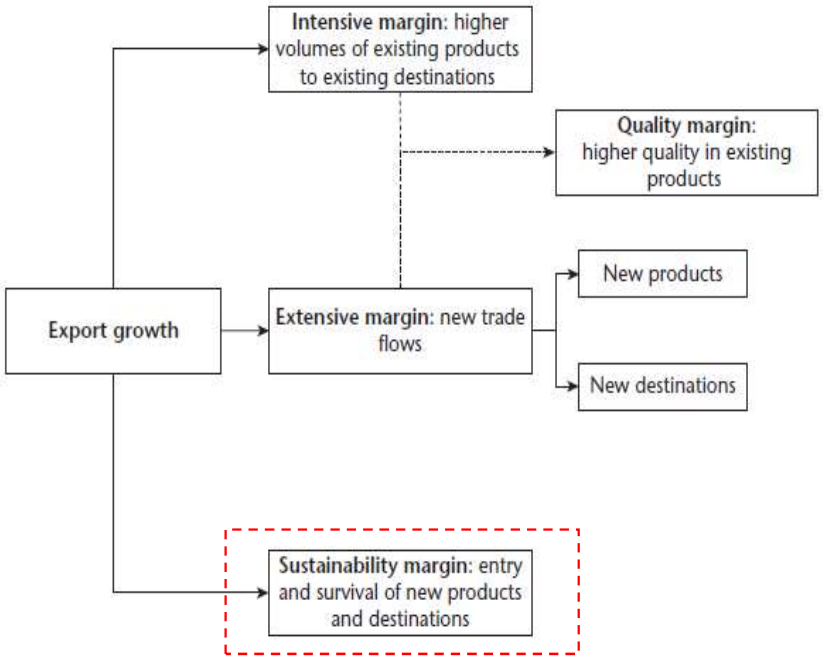


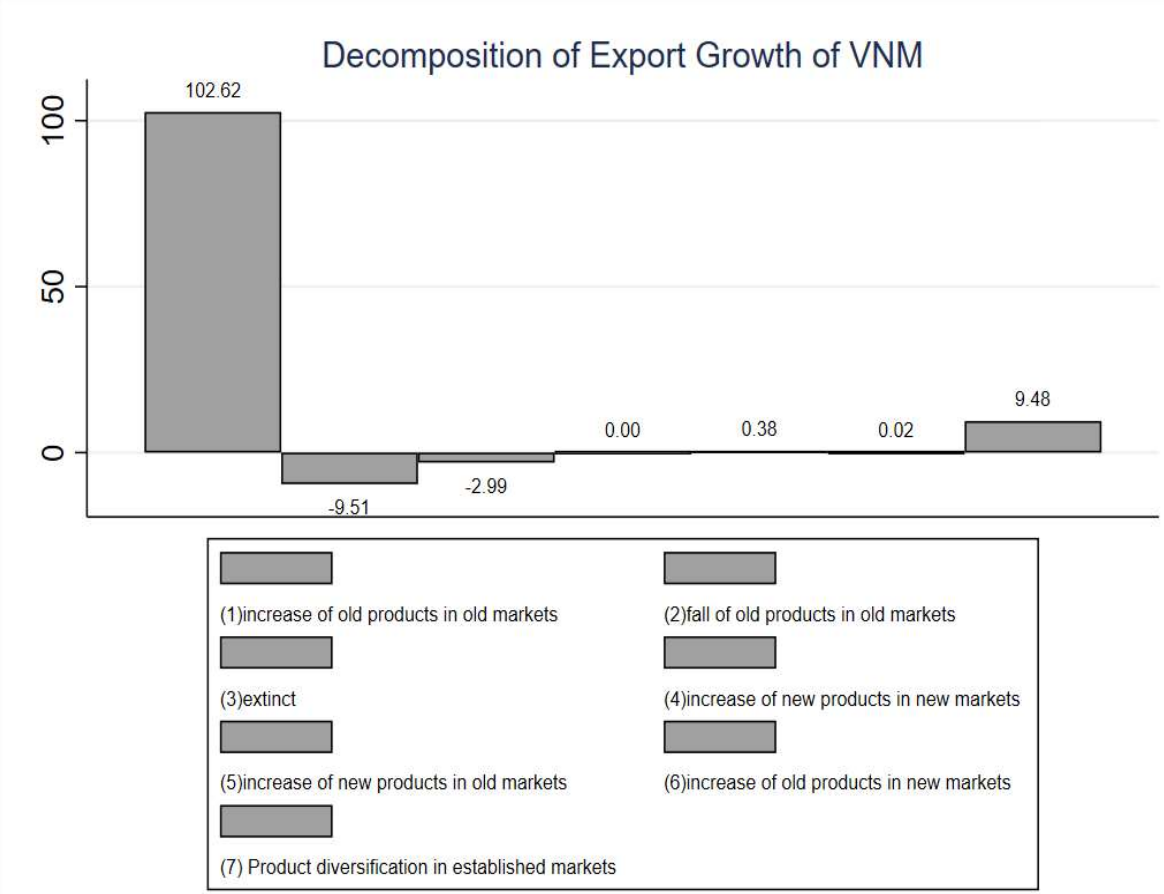






Decomposition of Export Growth (DEG) – Viet Nam vs. Indonesia



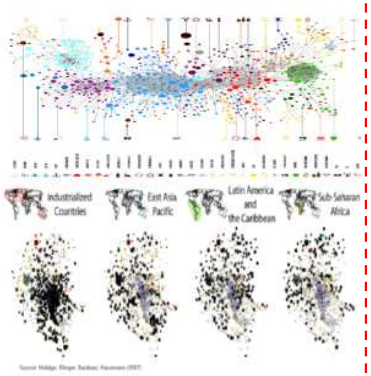


ASEAN Countries' Case with PS-CIP Module

Mapping with Key Indicators – PS & CIP

Product Space

Visual Representation



Network-based Index Analysis

$$\phi_{i,j,t} = \min\left\{P(x_{c,i,t}=1|x_{c,j,t}=1), P(x_{c,j,t}=1|x_{c,i,t}=1)\right\}$$

$$PA_{i,t} = \sum_j \phi_{i,j,t} \qquad CL_{i,t} = \frac{\sum_j \phi_{i,j,t}}{J}$$

$$CL_{c,t} = \sum_i \frac{e^c_{i,t}}{\sum_{i \in I_c} e^c_{i,t}} c_{i,t} \quad \text{where} \quad c_{i,t} = CL_{i,t}$$

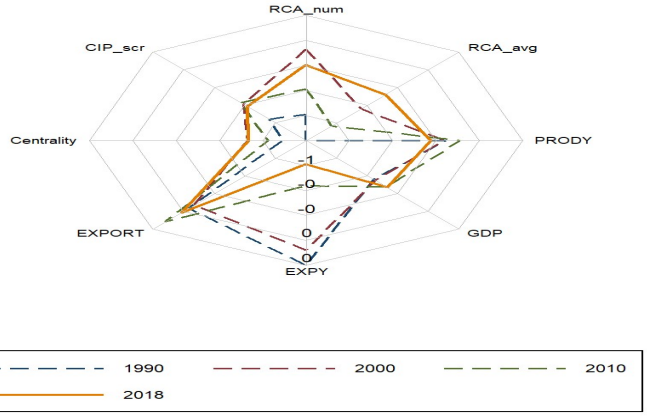
$$d_{cp} = \frac{\sum_{p'}(1 - M_{cp'})\theta_{p,p'}}{\sum_{p'} \theta_{p,p'}} \quad \text{s.t.} \quad M_{cp} = \begin{cases} 1 & RCA_{cp} \geq 1 \\ 0 & \text{otherwise} \end{cases}$$

$$density_{i,c,t} = \left(\frac{\sum_j \varphi_{i,k,t} x_{c,k,t}}{\sum_k \varphi_{i,k,t}}\right) \cdot \qquad \tilde{M}^P_{p,p'} \equiv \sum_c \frac{M_{cp} M_{cp'}}{k_{c,0} k_{p,0}}$$

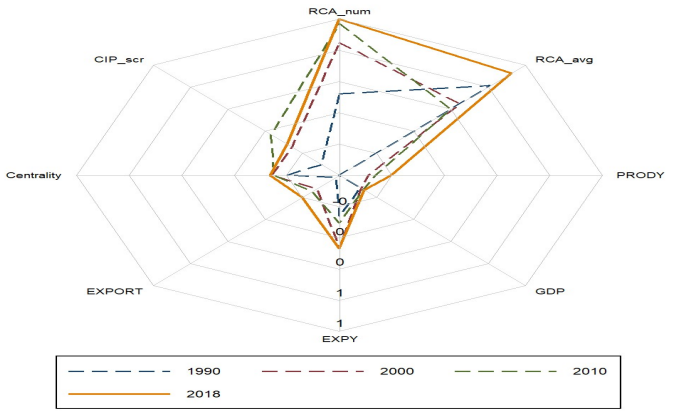
$$\text{Ubiquity} = k_{p,0} = \sum_c M_{cp}$$

$$\text{Diversity} = k_{c,0} = \sum_p M_{cp}$$

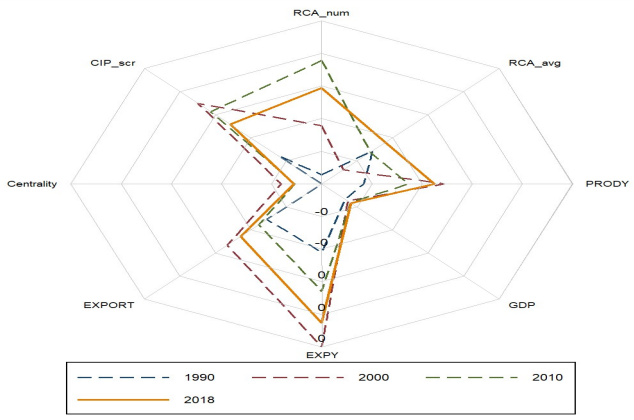
Indonesia



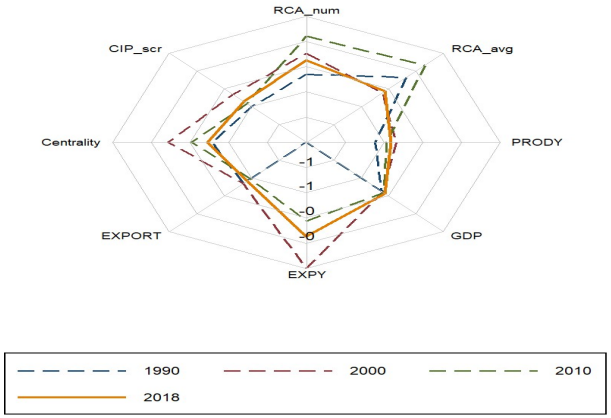
Thailand



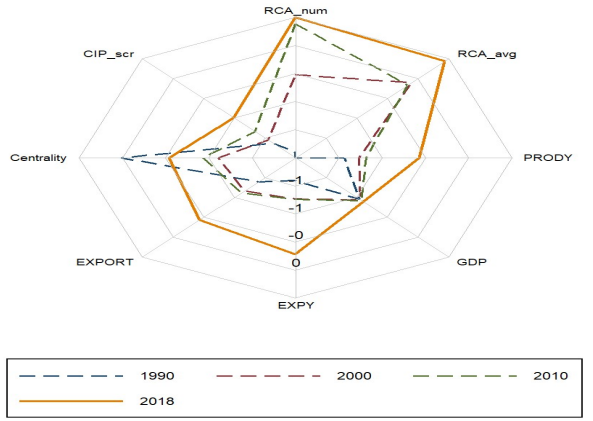
Malaysia



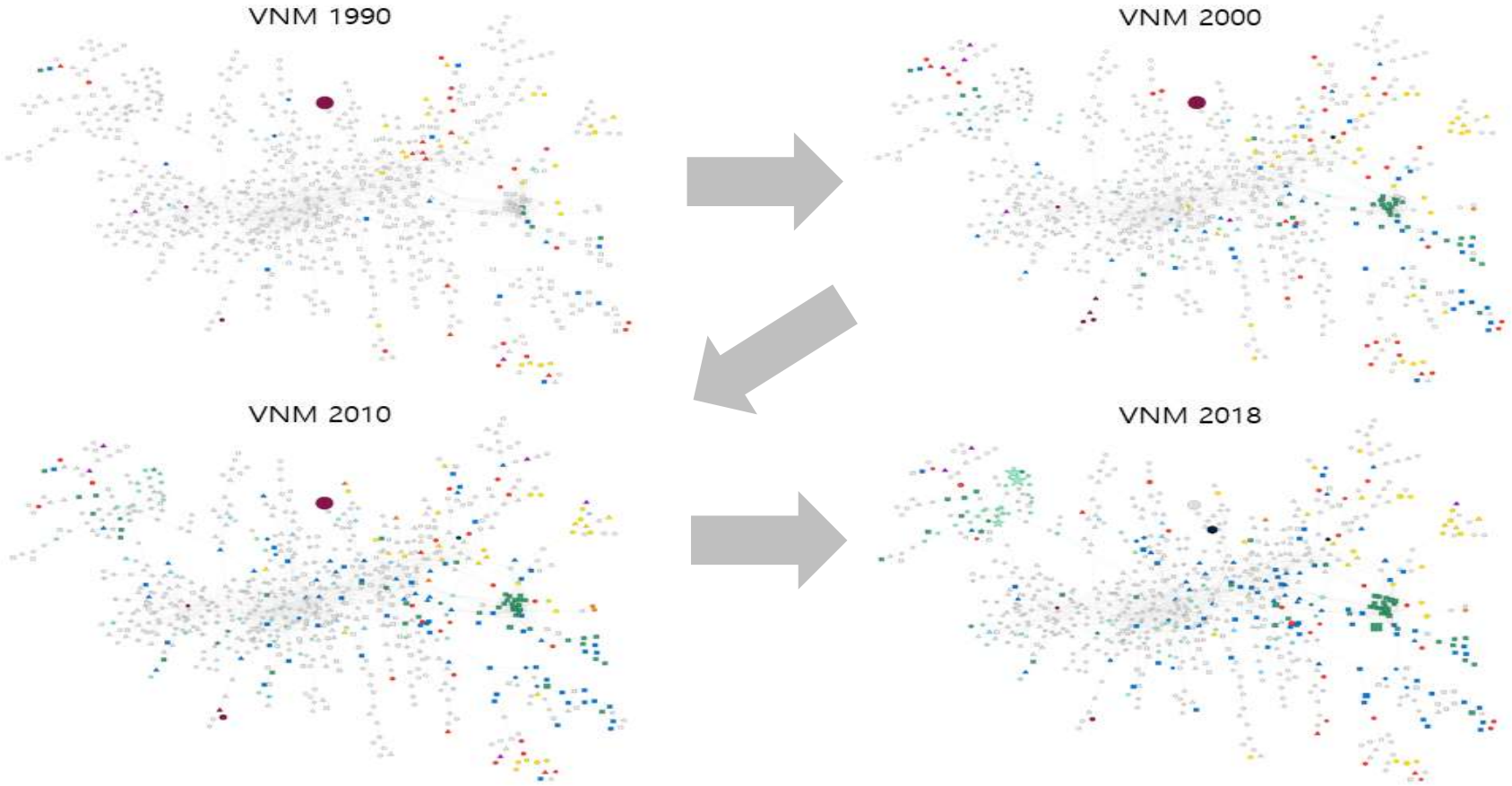
Philippines



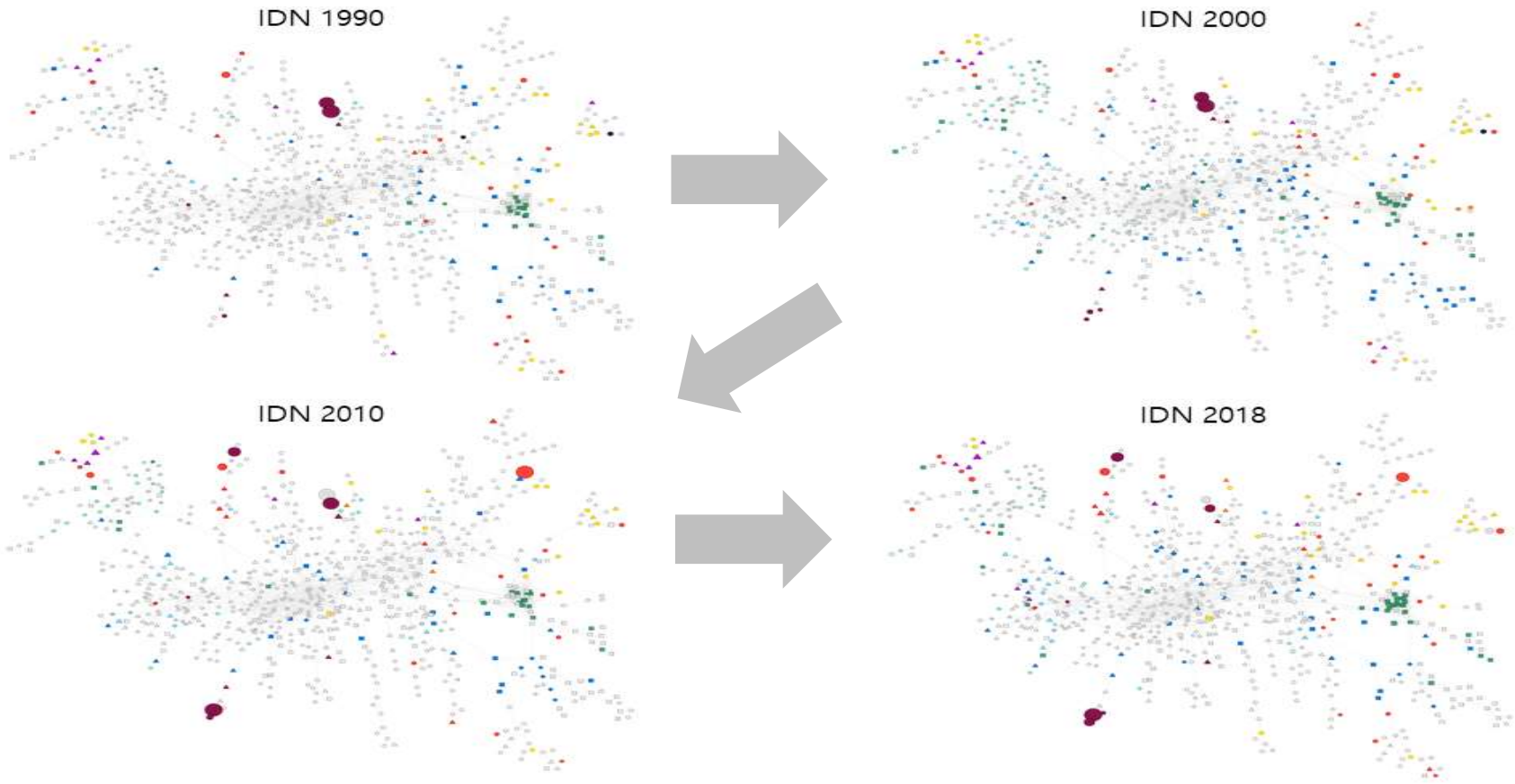
Viet Nam



Visualization for Product Space – Viet Nam



Visualization for Product Space – Indonesia



04

Lesson Learned

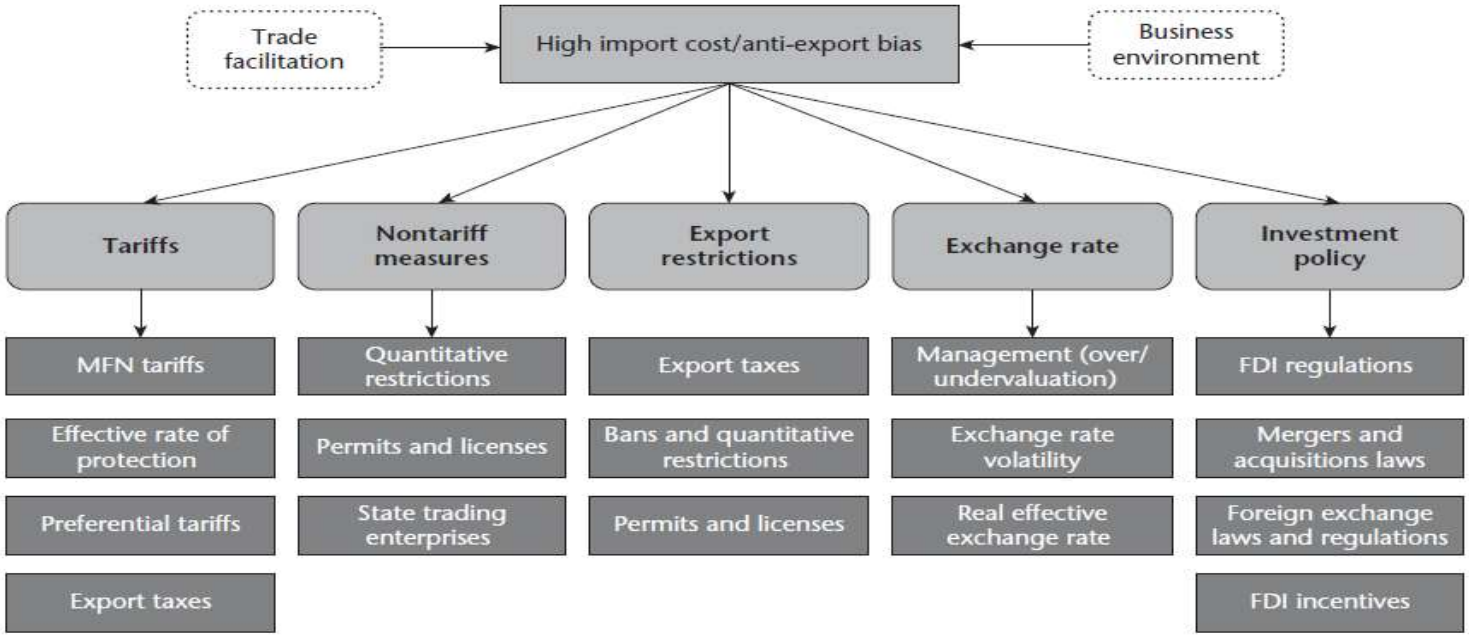


Diagnostics and Recommendation from KSC framework – Viet Nam

		Constraints & Issues	Diagnostics & Recommendation
Viet Nam	TCD	- Decline in exports of existing products and markets - Decrease in exports toward new markets - Lower unit price compared to China - Low export diversification - Decrease in exports of the products sold in existing markets - Exit on the products sold in existing markets	- Revitalization of intra-regional trade to acheive the trade suitability in ASEAN region - Establishment of strategies and supportive policies for expanding the existing export markets and entry into new markets - Preparing and supporting to strengthen export quality competitiveness - Establishment of strategies to expand export diversification - Establishment of supportive policies enhancing the promising manufacturing industries
	PS-CIP	- Good industrial competitiveness - Good product and export sophistication - Good product-centerality and industrial advancement - Identifying promising sector, such as “other manufactured products”	

Lesson learned – Evidence-based policy consultation

Diagnostic Outcome ☞ Policy Measure



What's the Next?

With Whom?

- ✓ **Followed the evidence-based policy consultation**
- ✓ **Actively integrated into the action & Implementation**



THANK YOU

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