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Engaging Small and Medium Enterprises in Production Networks

Firm-level Analysis of Five ASEAN Economies

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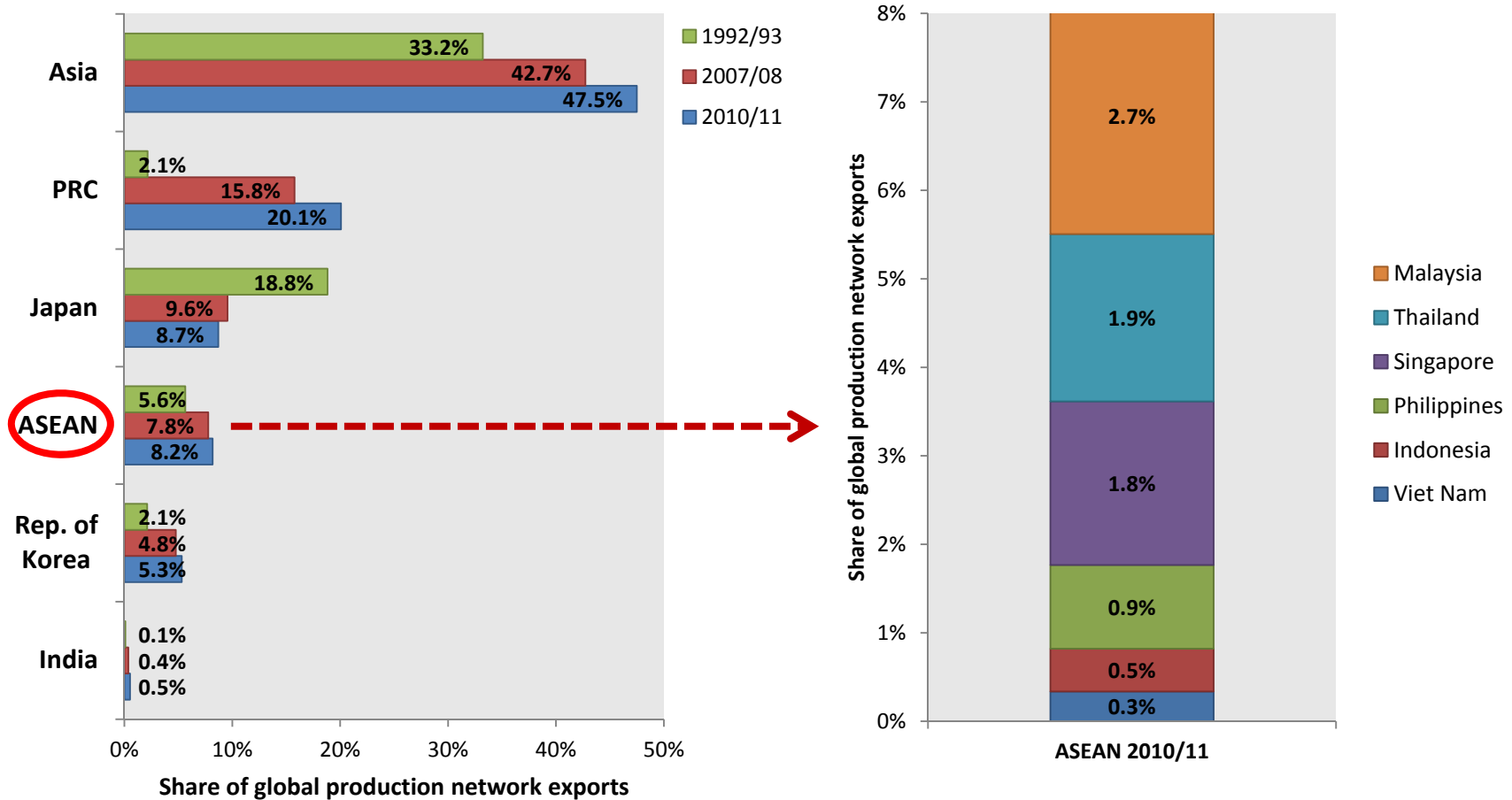
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1. Background, motivation and outline

Global Production Networks are Expanding in ASEAN

Share of World Production Network Exports, (%) 1992-2011



Source: Compiled from UN Comtrade database using a methodology from Athukorala (2011) - Gross Trade Approach

Background and Motivation

- ASEAN's rapid trade-led growth linked to spread of production networks and regional division of labour
- SMEs are the economic backbone of ASEAN economies and more SME engagement in production networks can bring welfare gains (Harvie, 2010; Lim and Kimura, 2010)
- Little is known on whether SMEs are active in production networks in ASEAN and determinants
- Empirical work on SME's role in ASEAN constrained by absence of published data at industry level
 - available national/industry studies rudimentary

Firm-level Econometric Studies

- Approach useful to shed light on determinants of SMEs in production networks in ASEAN economies
- But few firm studies exist of SMEs in production networks (or exporting) in ASEAN (Harvie *et al.* 2010; Kyophilavong, 2010; Rasiah *et al.* 2010)
- Difficult to draw conclusions from studies due to:
 1. limited coverage of countries and sectors;
 2. small samples of enterprises; and
 3. insufficient comparative firm-level analysis.

Outline of the Research

- Paper tries to remedy gaps in previous work by:
 - drawing on an established body of trade, industrial organization and technology literature emphasizing the notion of firm heterogeneity
 - covering five ASEAN economies (Malaysia, Thailand, Philippines, Indonesia and Vietnam) and wide range of industrial sectors;
 - using large Randomly selected data set from the World Bank of 5,900 firms for late-2000s along with other data;
 - using two alternative econometrics models, one for all firms in production networks and one for sustained exporters only

Key Research Questions

- Research on ASEAN economies informed by 3 overarching questions:
 1. How much do SMEs engage in production networks?
 2. What enterprise-level and policy factors influence SME participation in production networks?
 3. What implications can be drawn for SME support?
- Following OECD (1997) definition, an SME has less than 100 employees

2. Literature and methodology

Theory

- Four main strands of theory can explain trade and production network activity of firms which is the focus of research:
 - Neo-Heckscher-Ohlin model & Vernon’s product cycle
 - Fragmentation of production approach (Jones and Kierzkowski, 1990; Arndt and Kierzkowski, 2001)
 - “New new” trade theory (Melitz 2003 & Helpman et al. 2004)
 - Technological capability and national innovation systems approach (Bell and Pavitt, 1993; Lall, 1992, Iammarino *et al* 2008)
- Theory and available empirical work suggest various hypotheses

Hypotheses (1/2)

1. **Firm size** expected to have positive effect on participation in production networks up to given threshold, but may not matter later
2. **Foreign ownership** positively related to participation in production networks as provides access to superior marketing, technology etc.
3. **Human capital** at higher levels positively related to participation in production networks

Hypotheses (2/2)

- 4. Technological capabilities** – SMEs that have acquired high levels more likely to succeed in production networks
- 5. Firm age** needs to be controlled for when looking for relationships between factors affecting firm-level participation in production networks
- 6. Access to credit** – SMES with access more likely to join production networks

Empirical Methodology

$$Y = bX + e$$

- where Y is vector denoting participation in production networks at firm-level, X is the matrix of explanatory variables b is the matrix of coefficients, and e is the matrix of error terms
- Probit estimation using explanatory variables X : 1) Firm size; 2) Foreign ownership; 3) Human capital; 4) Technological capabilities; 5) Age; 6) Access to credit

3.

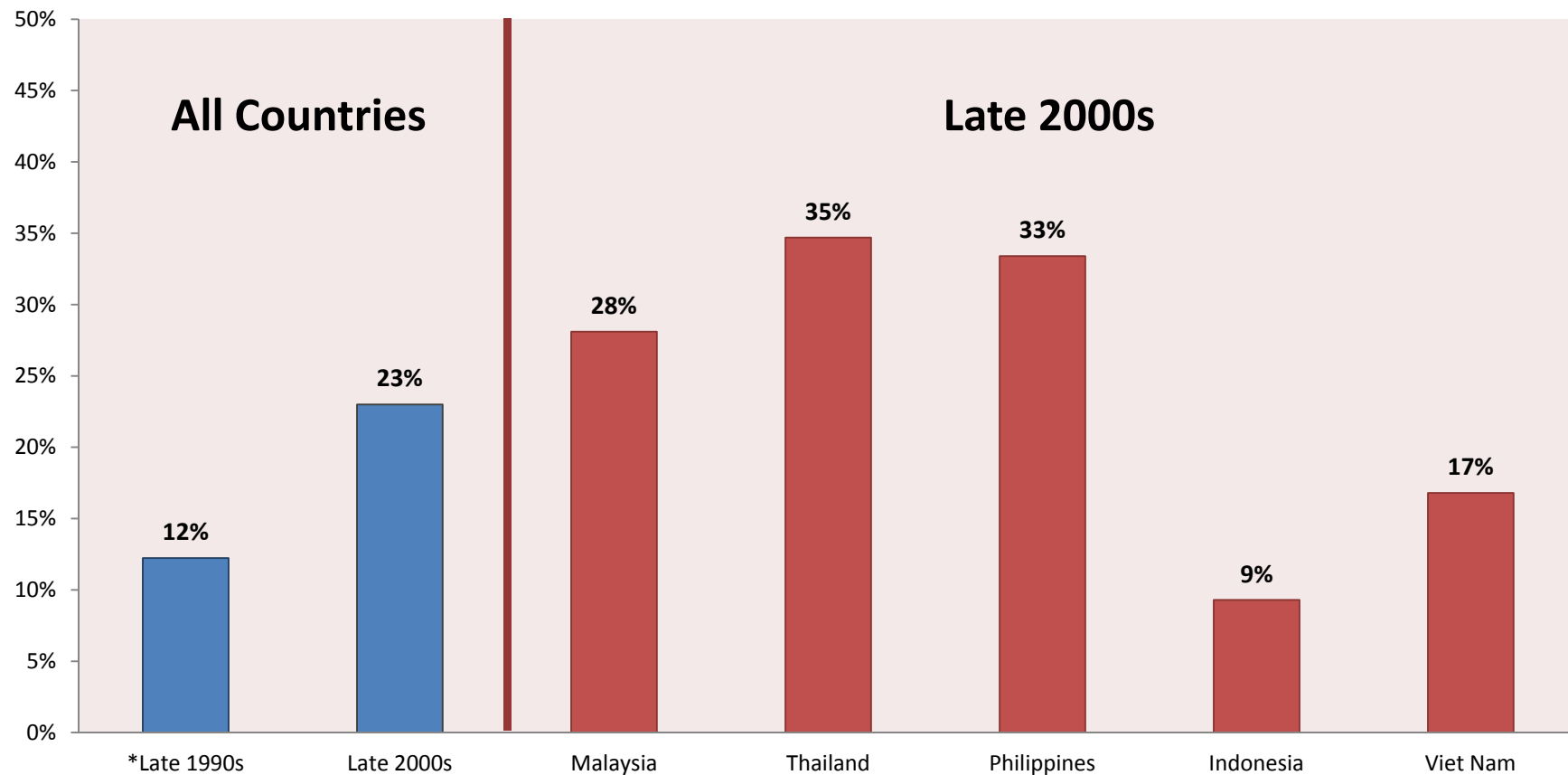
Findings and implications

Are SMEs in Production Networks?

- Large firms are the leading players but a reasonable base of SMEs exist (as direct exporters or suppliers to MNCs)
 - 22% of SMEs as a % of all sample SMEs in production networks compared with 72% for large firms.
- Higher SME participation in more industrially developed ASEAN economies with more FDI and exposure to production networks
 - Malaysia (28%), Thailand (34%)
- SMEs do export directly but less than large firms.

SME Export Shares Rising, but Differences Remain in ASEAN

Share of SMEs in total exports (%)



Source: ^aHarvie and Lee (2002) and ^bWignaraja (2012)

Most Exports are Concentrated in Some Firms

Figure 2: Share of Top 25% SME Exporters



Source: Wignaraja (2012)

Key Drivers of SME Participation in Production Networks in ASEAN

T-Test: Mean(SMEs in Production Networks)
Minus Mean (SMEs Outside Production Networks)

	All Countries	Malaysia	Thailand	Philippines	Indonesia	Viet Nam
Size (mean)	+***	+***	+***	+***	+***	+***
Foreign ownership, (mean %)	+***	+***	+***	+***	+***	+***
ISO, dummy (%)	+***	+***	+***	+***	+***	+***
Workers HS, dummy (%)	+***	+	+***	+***	+***	+***
Age (mean)	+	-	-	-	+	+**

Note: *** Significance at 1%, ** at 5%, * at 10%

- Larger firms more likely to participate in PNs; Size effect shows across all and within each country -- Size of **Malaysia** SMEs largest in ASEAN and most likely to participate in PN
- Foreign ownership and ISO significant in all countries
- High school education significant for **Philippines, Indonesia & Viet Nam**, but not significant for **Malaysia**; Average for not in PN **Malaysia** higher than the former three (72% vs. 4-33%)
- Firm age significant for **Viet Nam**, but difference for SME in & not in PN narrow (9 vs. 8 years)

Econometrics Results

Variable	SMEs in PN		All firms in PN	
	Sign	Significance	Sign	Significance
Firm Size	+	1%	+	1%
Firm Size squared			-	1%
Foreign Ownership	+	1%	+	1%
GM has degree	+		+	5%
GM's experience	+		+	
Firm ISO certified	+	1%	+	1%
Firm has Patents	+	1%	+	1%
Access to Credit	+	10%	+	1%
Firm Age	-	10%	-	10%
Philippines	+	5%	-	5%
Indonesia	-		-	1%
Viet Nam	+	1%	+	10%
Malaysia	+	1%	+	1%

*Dependent variable is binary: 1 if part of production network, 0 otherwise

Policy Influences (Obstacles)

Perceived Major Obstacles to Conducting Business, SME firms (% of SME firms)

	All countries	Malaysia	Thailand	Philippines	Indonesia	Viet Nam
Major Obstacles	1. Trust deficit (39%)	1. Tax rates (31%)	1. Skills Gap (60%)	1. Trust deficit (45%)	1. Access to credit (39%)	1. Access to credit (39%)
	2. Access to credit (35%)	2. Crime etc. (25%)	2. Trust deficit (56%)	2. Tax rates (43%)	2. Trust deficit (37%)	2. Trust deficit (35%)
	3. Electricity (30%)	3. Skills Gap (24%)	3. Tax rates (55%)	3. Electricity (37%)	3. Electricity (31%)	3. Access to land (25%)

- **“Other” obstacles** – trust deficit hampers intra-firm cooperation; smuggling also disincentive
- **Supply-side factors** – Lack of access to finance; inadequate worker skills; high electricity costs; poor transport systems
- **Policy incentives** – high corporate tax rates; economic uncertainty; cumbersome customs and corruption

FTA Use and Firm Size – Large Firms Use FTAs More

T-test: Mean (FTA user) – Mean (FTA non-user)

	Thailand	Philippines	Malaysia
Firm size	+***	+*	+**
Years of establishment	+*	+***	+**
Foreign ownership	+***		+***
Knowledge about FTA provisions	+*		+***
Change/may change business plans	+***	+*	+***
Total number of firms surveyed	221	155	234

*** Significance at 1%, ** at 5%, * at 10%

Source: Kawai and Wignaraja (2011), ADBI FTA Survey Malaysia (2012)

- Relationship between firm size and FTA use is significant across all countries.
Potential reasons:
 - larger firms have greater resources that can be put to use in claiming preferences – e.g. dedicated export departments
 - greater incentive to use FTAs - have more to gain
 - more likely to be part of a production network

Summary

- Global production networks are expanding in ASEAN countries
- The role of SMEs in production networks in ASEAN is an under-researched area, but of growing policy interest
- Micro-level study undertaken in the research was useful
 - It is found that although large firms dominate production networks engagement, there are signs that SMEs have modestly increased their participation over time
 - SME participation is linked to firm-specific factors (e.g. firm size, foreign ownership, skills, technological capabilities, and access to credit) as well as a supportive business environment
 - Tackling residual supply-side and policy constraints can further the participation of ASEAN SMEs in production networks
 - Large firms use FTAs more than SMEs. Integrated business support for SMEs to use FTAs essential