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# Fostering Clusters in the Malaysian Electronics Industry.
# Comments

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# Fostering Clusters in the Malaysian Electronics Industry

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# Overview

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- **Methodological Issues**

# Summary

## Objective

The paper aims at analyzing the impact of institutional and systemic effects of **clustering** and its consequences on upgrading and differentiation and division of labor in **the electronics industry** in Malaysia.

## Methodology

The methodological approach consists of case studies. Two centers within the same country and the same sector, i.e., Penang and the Kelang Valley, are examined. **This allows abstracting from macroeconomic and sectoral considerations**. In particular, these centers are **qualitatively** characterized and their performance **quantitatively** compared.

# Summary

## Main Conclusions

The **local government coordination relationships** between the development corporation, chamber of commerce, infrastructure and security service providers and the firm contributed to **generate strong systemic linkages that favored new firm creation and inter-firms links** in Penang. In contrast, the confinement of local government instruments to basic infrastructure and security coordination reduced the appropriation of such synergies in the Kelang Valley.

Drawbacks in the development of absorptive capacity and coordination on higher value added activities has restricted upgrading and differentiation of labor. In particular, **the lack of specific human capital (i.e., engineers) has impeded the diversification into R&D**.

# Comments

## Missing Arguments?

### Agglomeration and Cluster Fostering

The paper overviews many of the **coordination failures** that may lead to sub-optimally low levels of productivity thus providing *a priori* a rationale for public intervention. There are many examples in the literature: Rosenstein-Rodan (1943), Murphy et al. (1989), and more recently Rodriguez-Clare (2005).

In doing this, agglomeration of economic activities is taken as given. From the economic theory, we know that the way these activities are organized across sites affects both the level and the distribution of overall welfare. Not surprisingly, economists have spent a long time in trying to answer the question: **Why do agglomerations emerge?**

According to the Spatial Impossibility Theorem (Starret, 1978), for economic agglomerations to develop, either the space must be heterogeneous or there must be externalities or the markets must be imperfects (see Ottaviano and Thisse, 2004). The first reason relates to natural advantages of particular areas as determined by exogenously given characteristics ("first nature"), while the remaining ones correspond to the outcome of human beings' actions ("second nature") and are thus more susceptible to be influenced by public policies.

# Comments

## Agglomeration and Cluster Fostering

Within this second set of factors, Marshall (1920) identified three main mechanisms: **labor market pooling**, **input sharing**, and **knowledge spillovers**. As a result of these forces we do observe clustering, and may be too much clustering…Ottaviano and Thisse (2002) show that for intermediate trade costs, the market yields agglomeration (equilibrium) when it is socially desired to keep activities dispersed (optimum). So, **why clustering should be fostered in the first time?**

There must be a specific market failure. Norman and Venables (2003) show that if one sector is subject to increasing returns at the regional level due to spatially concentrated **technological externalities** between producers, then **the number** (size) **of clusters will be sub-optimally large** (small) and the production of the good inefficiently low.

The reason is that increasing returns are not fully internalized as individual agents are free to enter and exit the industry, making their calculation on the basis of private costs instead of social returns.

The discrepancy between the national welfare maximizing number and size of clusters and the market outcome provides the rationale for (assessing) public intervention in favor of agglomeration of activities. Thus, agglomeration would give rise to the possibility of higher productivity potential, which might be realized by appropriate coordination (see Rodriguez-Clare, 2005). This argument could be explicitly considered.

# Comments

## Missing Arguments?

## Knowledge vs. Information

One could argue that the new Information and Communication Technologies (ICT) have have substantially facilitated the transmission and exchange of information thus weakening the associated technological externalities. Is this the case? Not necessarily.

Von Hipple (1994) demonstrates that high context, uncertain knowledge ("sticky knowledge") is best transmitted via face-to-face interaction and repeated contact.

Audretsch (1998) and Audretsch and Feldman (2004) distinguish between *information*, as being easily codified and having singular meaning and interpretation, and *knowledge*, which is vague and difficult to codify. The marginal cost of transmitting *information* across geographical space has been rendered invariant by the new ICT, whereas the marginal cost of transmitting *knowledge*, especially *tacit knowledge*, is lowest with frequent social interaction, observation, and communication, and thus with proximity.

Similarly, Venables (2003) and Storper and Venables (2004) stress that face-to-face contacts are an efficient technology to coordinate economic activities when uncodifable information (i.e., information that is only loosely related to the symbol system in which it is expressed) is involved, by permitting depth and speed of feedbacks impossible in other forms of communication, ameliorating incentive problems and screening of agents.

This distinction between **information** and **knowledge** could be explored more in assessing the dynamics of clusters.
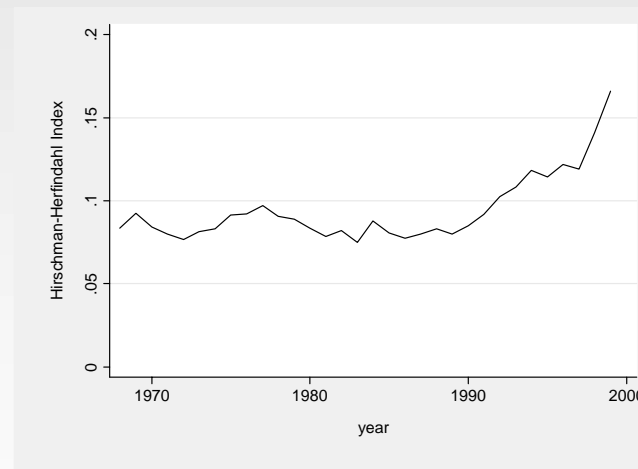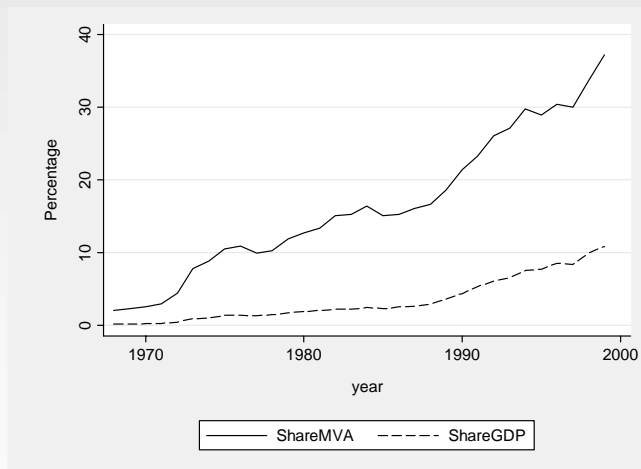
# Comments

## Missing Arguments?

## Why Electronics is an Interesting Case Study?

Electronics is likely a sector with economies of scale where technological externalities in the form of knowledge spillovers lead to increasing returns at the regional level.

Furthermore , in the case of Malaysia:



Source: Own estimations based on UNCTAD (2005)

This leads, of course, to new questions:

➢Does this increasing specialization entail risks?

➢If value added and employment is sectorally concentrated and sectors are spatially concentrated: What are the regional implications?

➢How did the electronics clusters affect related activities in other sectors of the economy?

# Comments

## Understated Arguments?

### The Role of Financial Incentives

The author acknowledges that financial incentives have been an important element in attracting the Transnational Corporations (TNCs) operating in the sector in Malaysia (see also UNCTAD, 2002), but confines their discussion to the Appendix. This is not a minor point. As stated in OECD (2004):

*The list of promoted activities and products eligible for "pioneer" status (and hence tax allowances) compiled by the Malaysian Industrial Development Authority (MIDA) runs up to 21 pages.Overall, incentives appear to be highly generous in terms of tax holidays and allowances.*

The starting of the process under examination could be then traced back to classical industrial promotion upon which clustering policies discussed in this paper would have acted as fine tuning.  The empirical evidence suggest that:

➢This strategy is risky. It could be associated with incentives competition and likely a "race to the bottom". In particular, the use of these instruments has proliferated in the region (see OECD, 2004). Moreover, vulnerability to rent-seeking behavior may increase.

➢This strategy is costly. When targeting and thus discriminating among sectors, these policies may originate inefficiencies. Further, the potential revenue foregone in the late 1980s has been estimated in the order of 1.7% of GDP (see Doraisami and Rasiah, 2001). Finally, government resources must be withdrawn from other uses to monitor firms' actual performance in fulfilling the conditions for investment promotion.

# Comments

## Understated Arguments?

### The Role of "Traditional" Locational Factors

Comparing two clusters within the same country allows abstracting from macroeconomic considerations. However, more traditional locational factors (labor costs, market potential) and thus relative costs are likely to differ across regions and to exert a non-negligible influence. What kind of role did these factors play in explaining the patterns and dynamics of performance differential between centers?

# Comments

## Understated Arguments?

## The Shortage of Engineers as Limiting Factor

The shortage of engineers is a symptom of a more general problem. The relative endowment of human capital in Malaysia is relatively small and accordingly so are the chances to diversify across all sectors (not just electronics) into activities with higher value added such as R&D. Further, human capital is not only required in the manufacturing activities themselves but also in important complementary services.

| Share of Population Oider than 25 Years with Complete Post-Secondary Education | | | |
|---|---|---|---|
| Country | 1960 | 2000 | Variation |
| United States | 10.00 | 30.30 | 20.30 |
| Korea | 1.90 | 19.10 | 17.20 |
| Costa Rica | 1.80 | 12.70 | 10.90 |
| Thailand | 0.60 | 11.20 | 10.60 |
| Philippines | 4.00 | 14.40 | 10.40 |
| Argentina | 1.80 | 11.90 | 10.10 |
| Chile | 1.40 | 10.70 | 9.30 |
| Taiwan | 2.20 | 9.70 | 7.50 |
| Singapore | 0.00 | 7.20 | 7.20 |
| Mexico | 0.80 | 6.60 | 5.80 |
| Colombia | 1.30 | 6.70 | 5.40 |
| Malaysia | 1.30 | 6.30 | 5.00 |
| Brazil | 1.40 | 5.70 | 4.30 |

Source: Barro and Lee (2000)

The deep roots of the problem are likely to go well beyond collective action problems for specific skills in specific regions…Overall relative factor endowments are fundamental to understand how a country participates in the increasingly fragmented international production chains (see, e.g., Dixit and Grossman, 1982, Deardorff, 1998).

# Comments

## Methodological Issues

### The Metrics of Cluster

The analysis uses a *"subjective"* *qualitative* assessment of the several dimensions along which a cluster can be characterized to explain different performance across centers as measured by *"objective"* *quantitative* indicators. Would it be possible to develop some indicators to quantitatively characterize these clusters? For instance:

➢Using a disaggregated regional input-output matrix would allow to measure the intensity of production linkages within the sector and related activities.

➢The author finds that differences in local industrial organization and culture are fundamental sources of the differences in performance between clusters. Various attempts have been made in the literature to quantify the relative importance of these factors: e.g., Florida-Gates (2001), Rosenthal-Strange (2002, 2003), and Henderson (2003).

### Benchmarks and "Extrapolability"

The study focuses on the electronics industry within Malaysia thus controlling for sectoral and national factors. The implied absence of a benchmark, however, impedes to assess to what extent the inferences are sector-specific. There is no reason why the particular relationship between geography and industrial organization observed in this case should be systematically superior to alternative arrangements (see Gordon and McCann, 2005). Further, we have no solid basis to say whether the lessons can be directly extrapolated to other countries as suggested by the author (e.g., implementation).