Quality Upgrading in Developing Countries

Christian Henn
Chris Papageorgiou
Nikola Spatafora

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Quality Upgrading
The second dimension of diversification

• LICs can increase value added in their exports in two ways: (1) through diversification towards new higher-value products; or (2) through quality upgrading of existing products.
Quality Upgrading
Overview

- Literature on quality upgrading small, but expanding.

- Our work supplies the broadest set of quality estimates to date covering 178 countries during 1962-2010, based on which we ...
  - … illustrate toolkit.
    - Quality and unit values at the industry level.
    - Countries’ potential for quality upgrading and potential need for horizontal diversification.
  - … derive global stylized facts on quality.
  - … explore determinants of quality upgrading.
    - Important—and somewhat neglected—policy question.
How to measure quality
Unit values as a first proxy

• Price is a good first proxy for quality and is observable.
• Unit values are *average* prices in any SITC 4-digit category.
• Variation in Unit Values is large:
How to measure quality
Deriving quality measures

• **Motivation:** Need to adjust unit values, because they are also affected by factors other than quality.

• **Estimation:** A quality-augmented gravity equation, adapted from Hallak (2006), is estimated separately for 851 sectors to account for:
  - High prices may also be an indicator of high production costs. Quality is high when high prices are accompanied by high market shares.
  - Selection bias: only higher priced items shipped to far-away destinations.

• **Calculating quality estimates:** Resulting coefficients from gravity equation are used to derive quality estimate.

• **Normalization:** After we have obtained the quality estimates, we normalize them to be able to aggregate across sectors. For each sector we set the world frontier (=90th percentile) equal to 1.
Quality Upgrading
Illustrating the Toolkit
The Toolkit
Overview

• Toolkit (and underlying data) will be made publicly available.
• Underlying data contains >21 million quality estimates at ‘importer-exporter-year-product-unit of measurement’ level
• Toolkit will contain exporter country totals and 3 different breakdowns:
  – **SITC 4, 3, 2, 1 digit**
    • Over 1.5 million quality estimates available at the SITC 4-digit level (after aggregating over importers and units of measurement)
  – **BEC 3, 2, 1 digit**
    • BEC1: Useful breakdown into intermediate products, capital goods and consumer goods
    • BEC2: Distinguishes e.g. (i) between primary and processed varieties and (ii) consumer durables and non-durables.
  – **3 broad custom categories**
    • Manufactures, Agriculture, and Non-Agricultural Commodities
China apparel exports
SITC 84

- Rising quality and rising—but still low—prices.
Bangladesh apparel exports
SITC 84

- Prices remain low. Quality—although increasing—lags behind China.
High quality, but rising prices have undermined market share.

Unit Value and Quality over time for Italy for Apparel Sector

- Quality
- Unit Value
- Market Share

Year

Unit Value and Quality (90th percentile=1)
Share of World Exports (90th percentile=1)
Potential for both quality upgrading and horizontal diversification

Tanzania

- Given its concentration in agricultural products and crude materials, Tanzania has potential for horizontal diversification but also for quality upgrading in agriculture.
Potential for further quality upgrading
Vietnam

- Vietnam has a good amount of room to quality upgrade in various sectors, particularly its largest, misc. manufactures (includes garments/footwear).
Need for horizontal diversification
Malaysia

- Malaysia is highly specialized in electronics and is close to the top of the quality ladder. Diversification to higher value-added products could be useful.
Quality Upgrading
Stylized Facts
Quality upgrading is a crucial component of development, particularly when trying to move to upper middle-income status.
Some LICs need diversification, others need quality upgrading.
There seems to be potential to also quality upgrade in agriculture, though it may be more constrained by soil and climate conditions.
Quality by Income Group

- Quality upgrading particularly visible for middle income countries.
- But there seems to be a lag between quality takeoffs in manufacturing and agriculture.
Quality by Region

- Lag between Manufacturing and agriculture for East Asia.
- Sub-Saharan Africa and South Asia still lagging behind, but some tentative signs of convergence now, including in agriculture.
Considerable cross-country heterogeneity

- Some countries have converged or are continuing to converge to the world frontier.
- In other countries, convergence seem to have slowed since the mid-1990s.
Quality Upgrading in Africa
Considerable cross-country heterogeneity

- In Africa, some countries are taking off—or have taken off.
- Other countries’ export quality has continued to stagnate.

![Chart showing fast-convergence and slow-convergence countries](chart.png)
Countries experiencing faster quality convergence since 1995 may also have experienced faster growth in GDP per capita.

![Diagram showing additional per capita growth in fast quality convergers relative to slow convergers (percentage points)].
Potential for quality upgrading

Destination markets are no constraint for LICs

- Quality demanded in destination markets is not an apparent constraint. Policy may thus aim at encouraging domestic quality upgrading itself, rather than on helping domestic firms enter higher quality export markets.

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Export quality relative to destination markets in 2009
(World Frontier=1)

- High income exporters
- Upper middle income exporters
- Lower middle income exporters
- Low income exporters

Average of countries for which convergence seemingly stalled:
- in Asia
- in Africa

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Average of countries for which convergence seemingly stalled:
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Determinants of Quality Upgrading
Determinants of Quality Upgrading (I)

Exploratory panel analysis, to investigate drivers of quality upgrading.

Dependent variable: Growth Rate of Quality.

One observation per exporter-4 digit product-time period. Focus on 5-year averages.

Independent variables:
- Initial Quality Levels
- GDP per Capita
- Institutional Quality
- Human Capital
- Efficiency of Public Investment
- Country, product, and time-period fixed effects.
Determinants of Quality Upgrading (II)

Significant evidence of within-product quality convergence, both conditional and unconditional.

Both growth rates of quality, and speed of convergence, are on average higher in manufacturing than in primary sector.

In addition, speed of quality upgrading positively associated with:

- GDP per Capita
- Institutional Quality
- Human Capital
Conclusions

• Export quality seems to be related to both income levels and growth performance.

• Exploiting the quality margin may be as important for LICs’ development as moving into new higher-value-added products:
  • Quality improvements are strongest in the initial phases of development.
  • However, large heterogeneity implies that some countries should focus more on horizontal diversification and others more on quality upgrading.
  • Importantly for inclusive growth in LICs, there seems to be quality upgrading potential also in agriculture.
  • Absorption potential of destination markets for higher quality products is generally not a constraint.

• Initial regression results suggest:
  – Within-product quality convergence (conditional and unconditional)
  – Faster convergence in manufacturing than in primary sector.
  – Institutional development and education favor quality upgrading.