

Quality Upgrading in Developing Countries

**Christian Henn
Chris Papageorgiou
Nikola Spatafora**



**IMF-DFID Conference
Washington, DC
February 21, 2013**

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.
 - e.g. Schott (2004 QJE), Hallak (2006 JIE), Khandelwal (2010 REStud), Sutton and Trefler (2011 QJE), Feenstra and Romalis (2012)
- 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

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

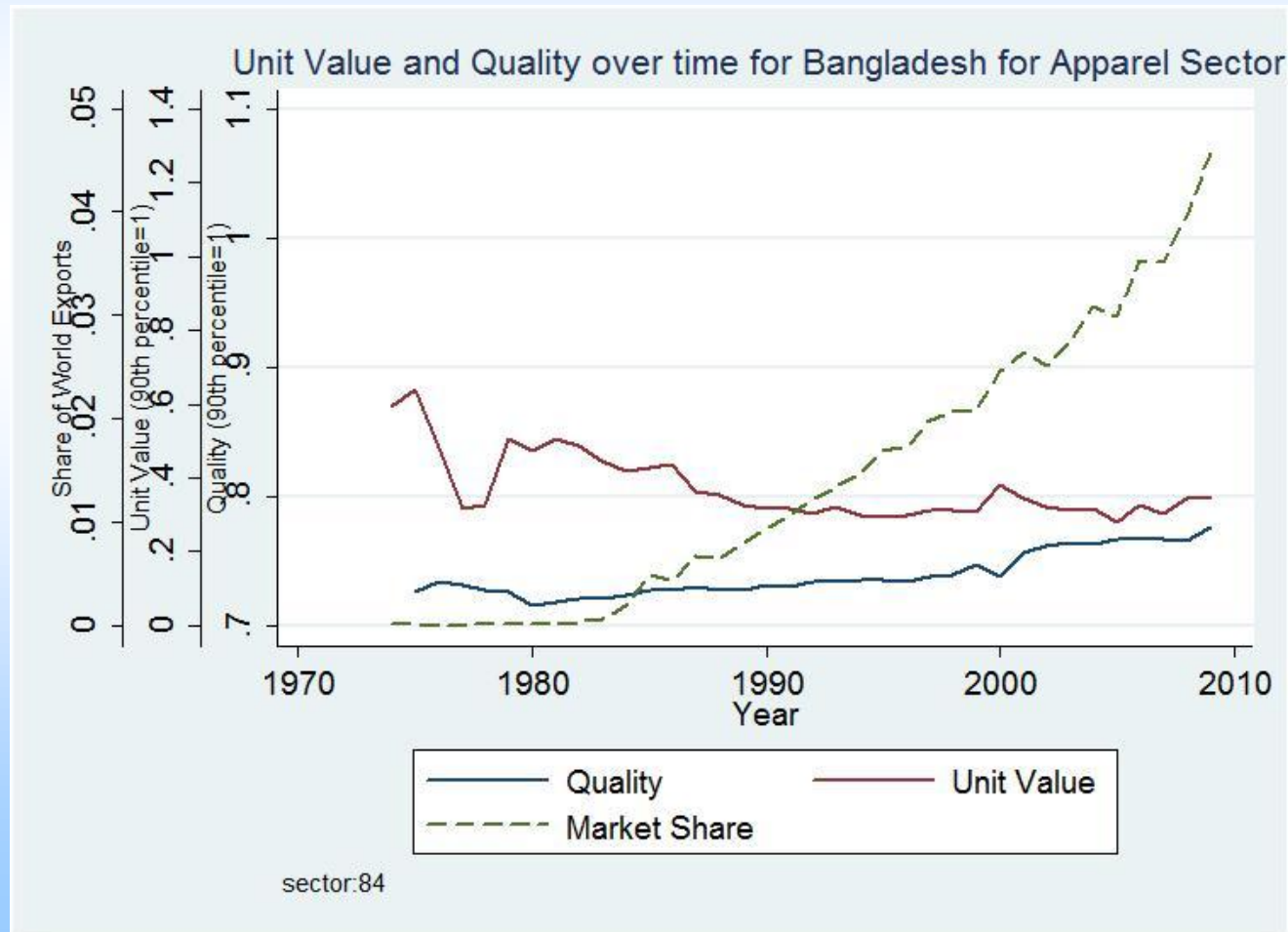
- Rising quality and rising—but still low—prices.



Bangladesh apparel exports

SITC 84

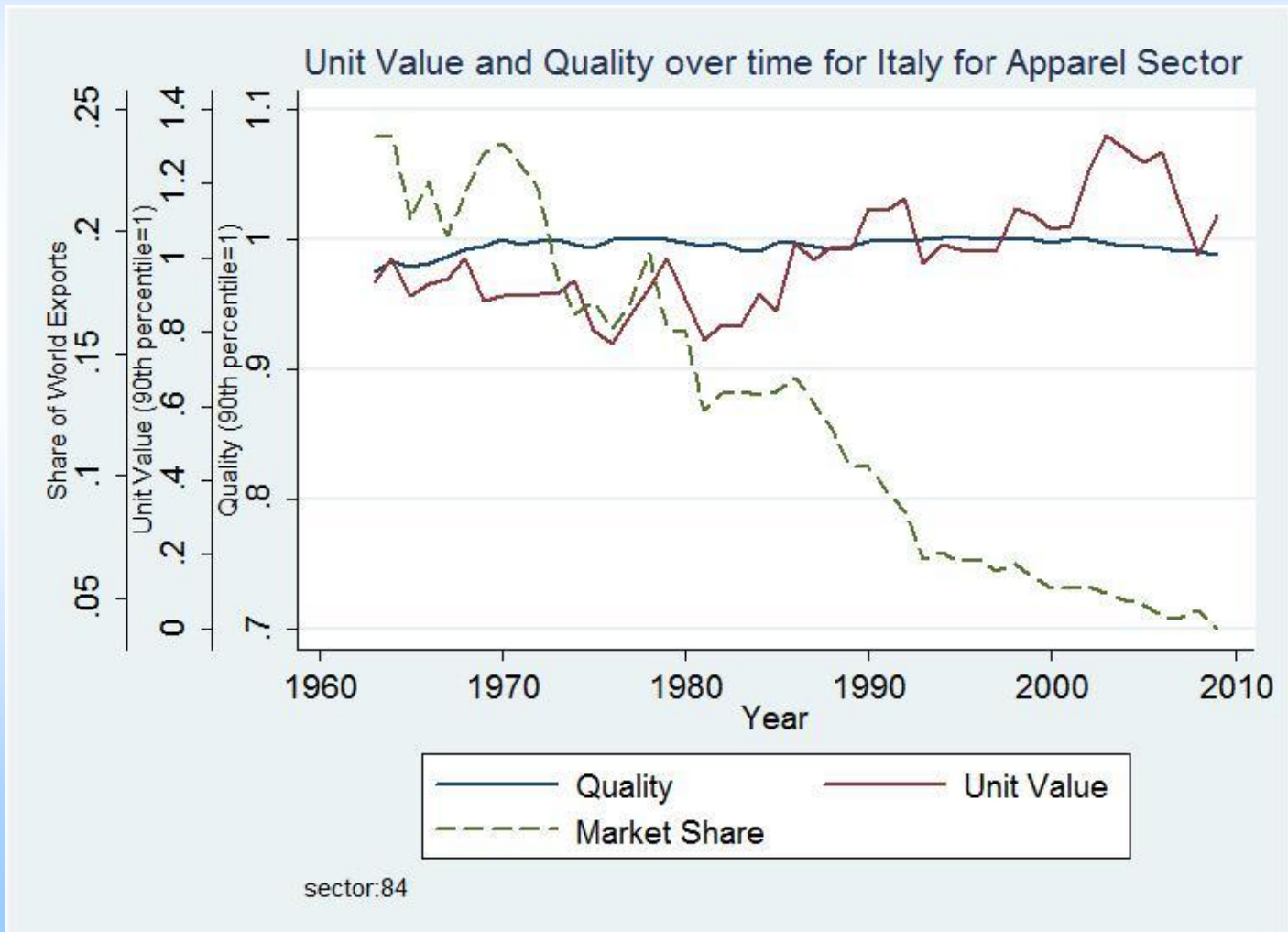
- Prices remain low. Quality—although increasing—lags behind China.



Italy apparel exports

SITC 84

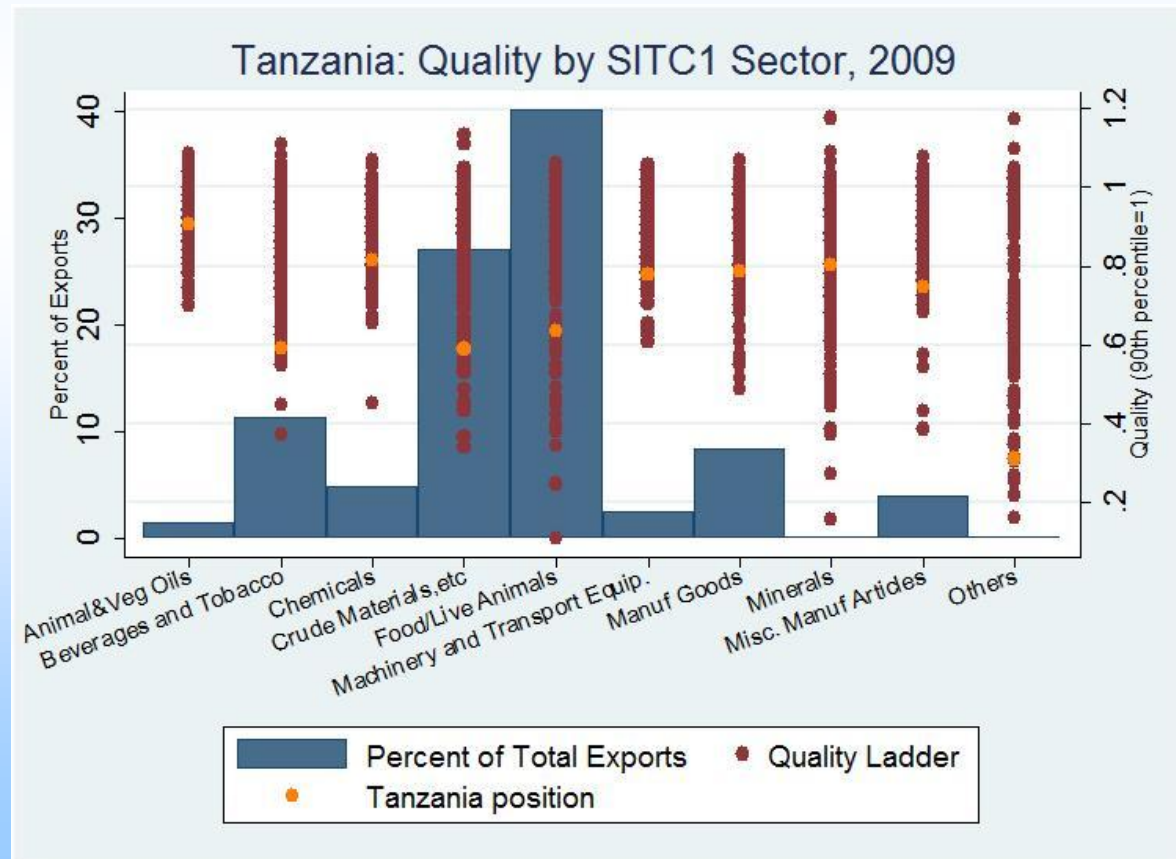
- High quality, but rising prices have undermined market share.



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

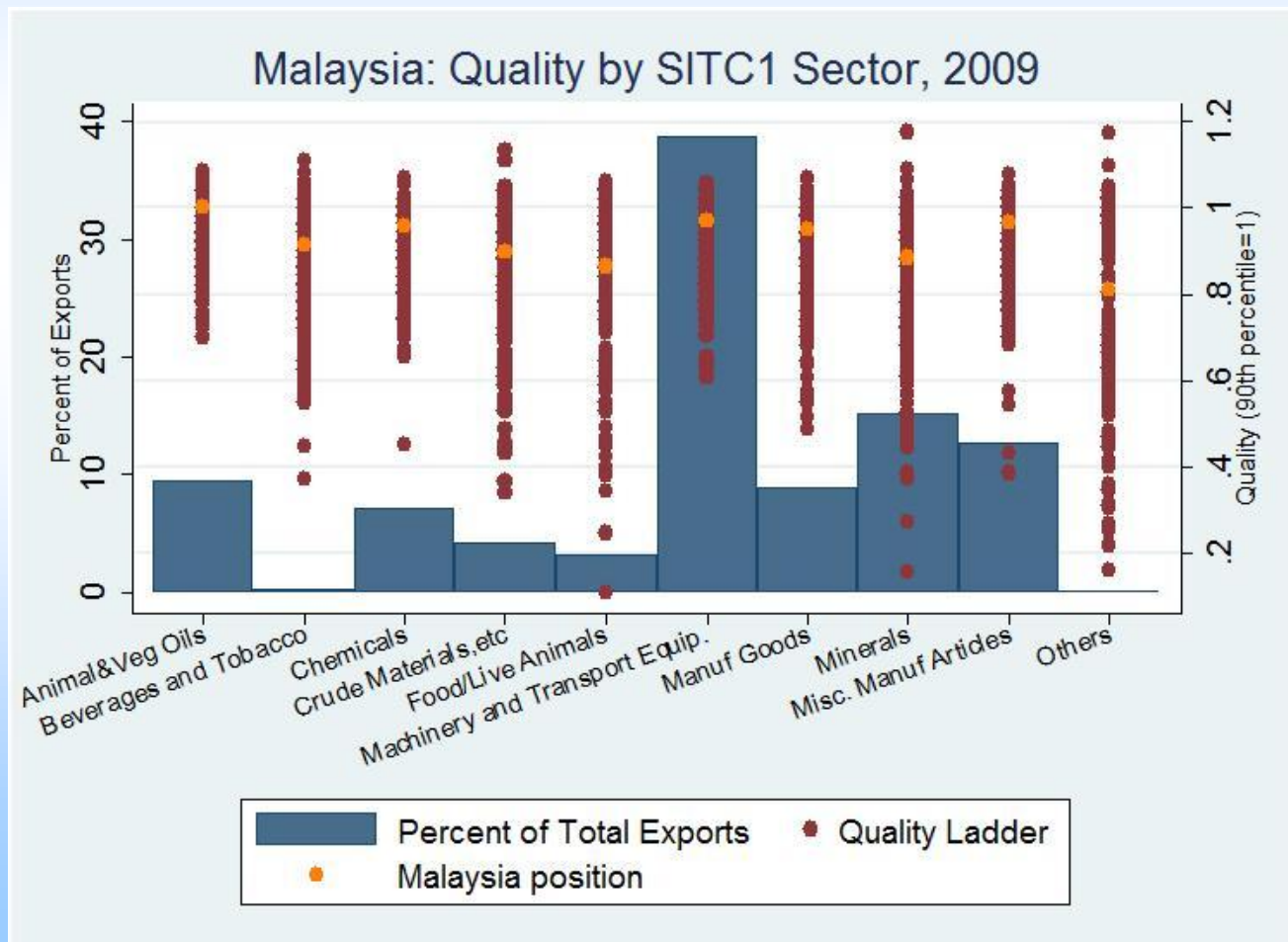
- Vietnam has a good amount of room to quality upgrade in various sectors, particularly its largest, misc. manufactures (includes garments/footwear).



Need for horizontal diversification

Malaysia

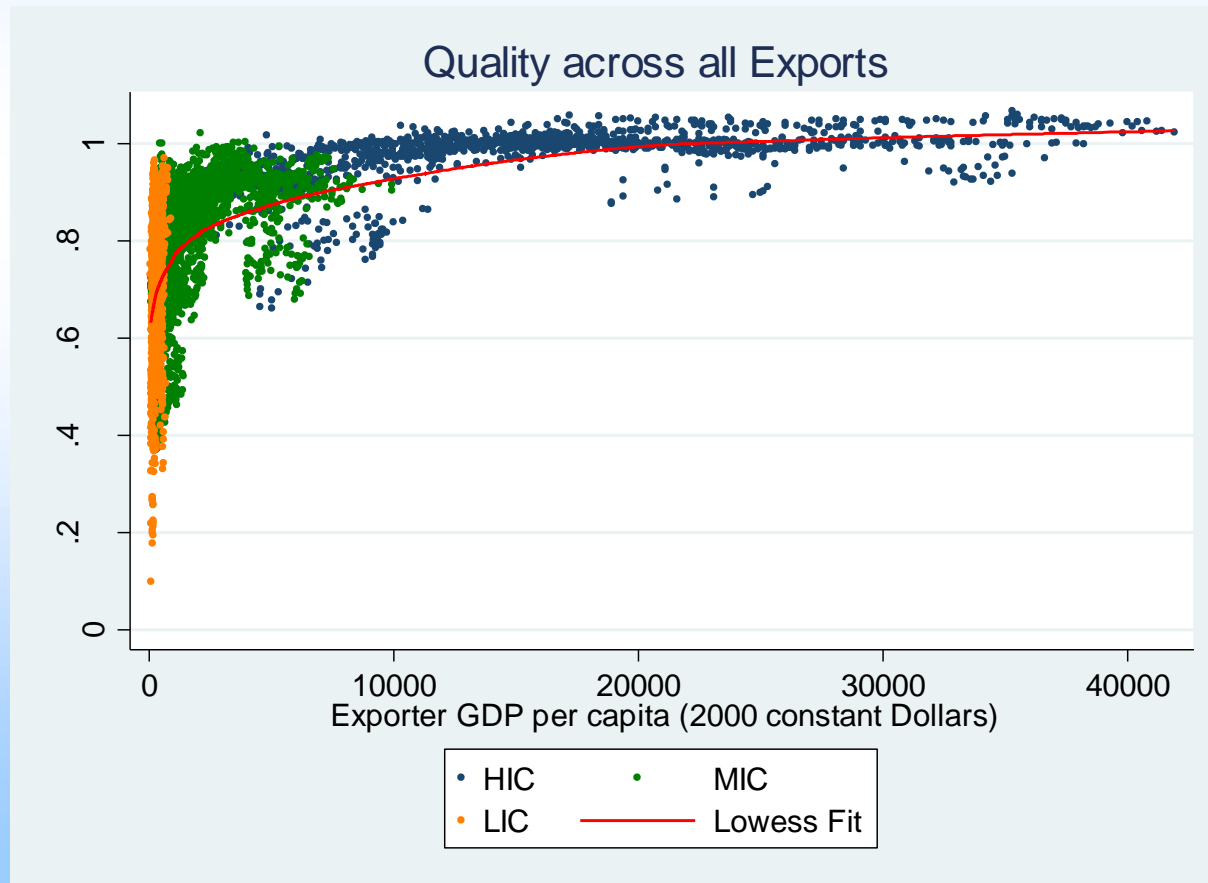
- Malaysia is highly specialized in electronics and is close to the top of the quality ladder. Diversification to higher value-added products could be useful.



Quality Upgrading
Stylized Facts

Export Quality and Development

- 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.

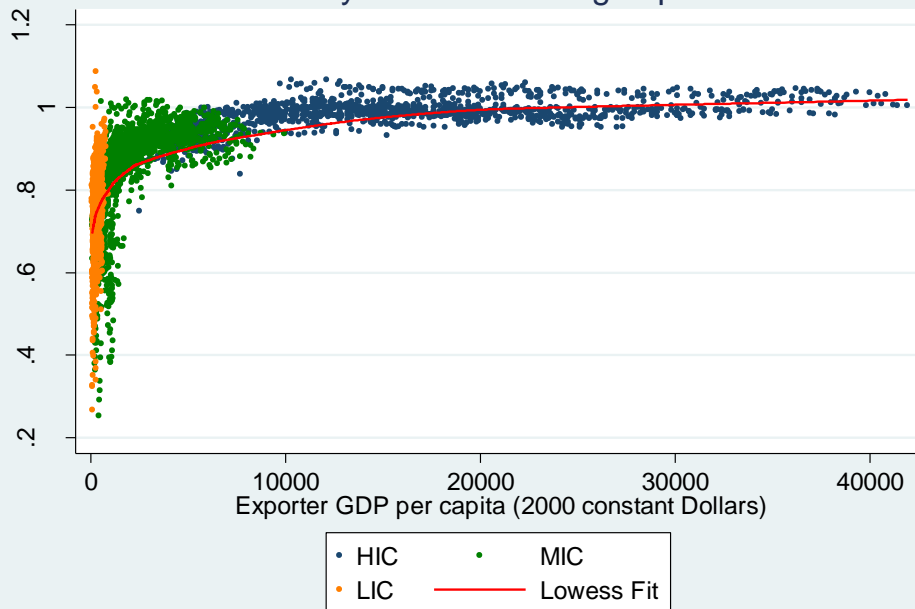


Export Quality and Development

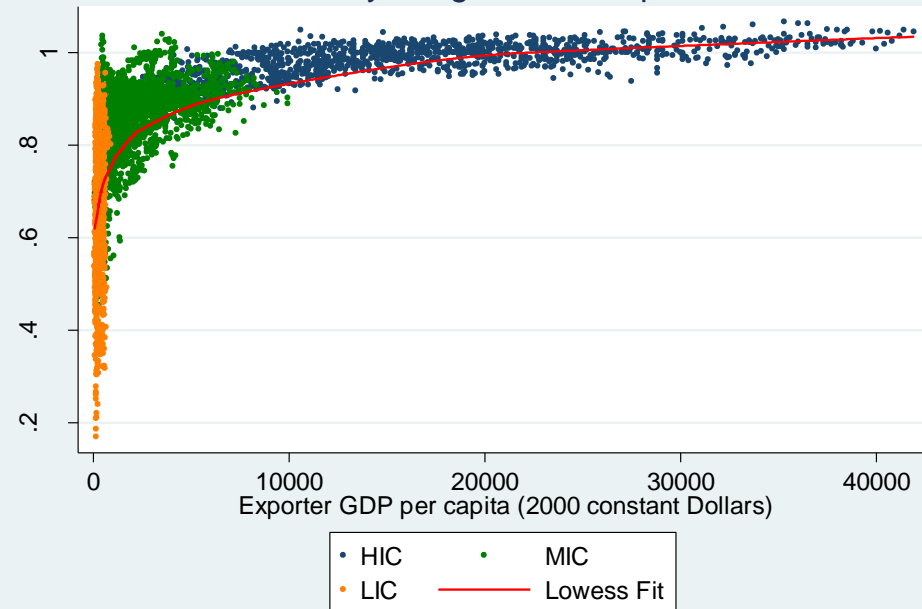
Manufacturing and Agriculture

- There seems to be potential to also quality upgrade in agriculture, though it may be more constrained by soil and climate conditions.

Quality in Manufacturing Exports

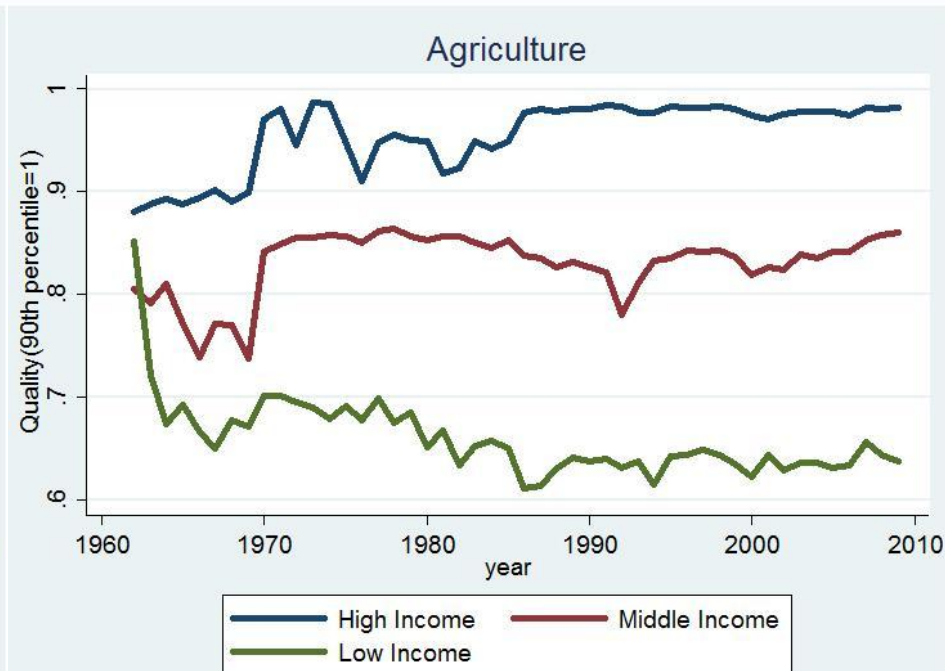
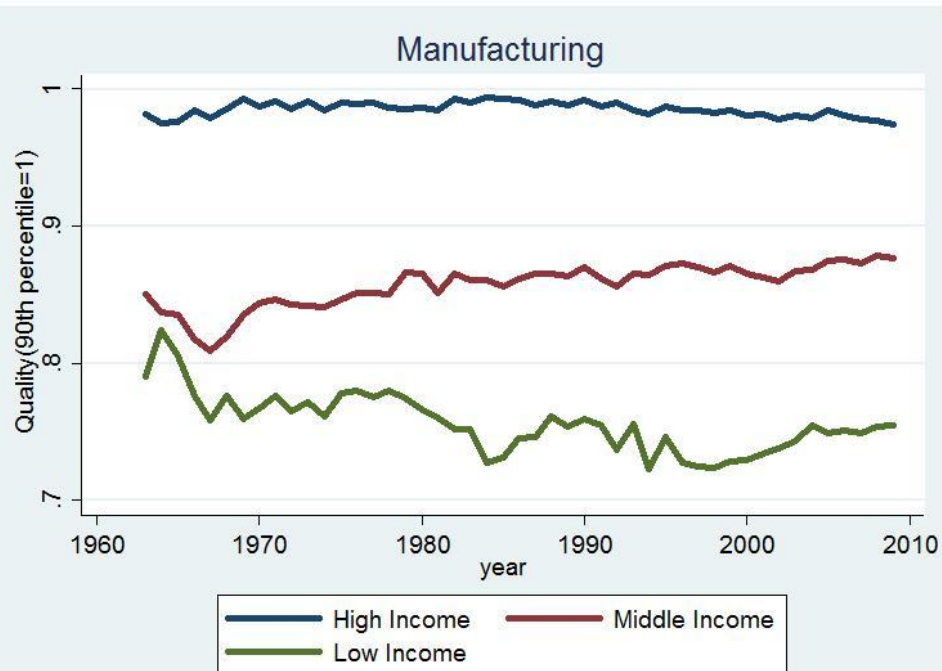


Quality in Agricultural Exports



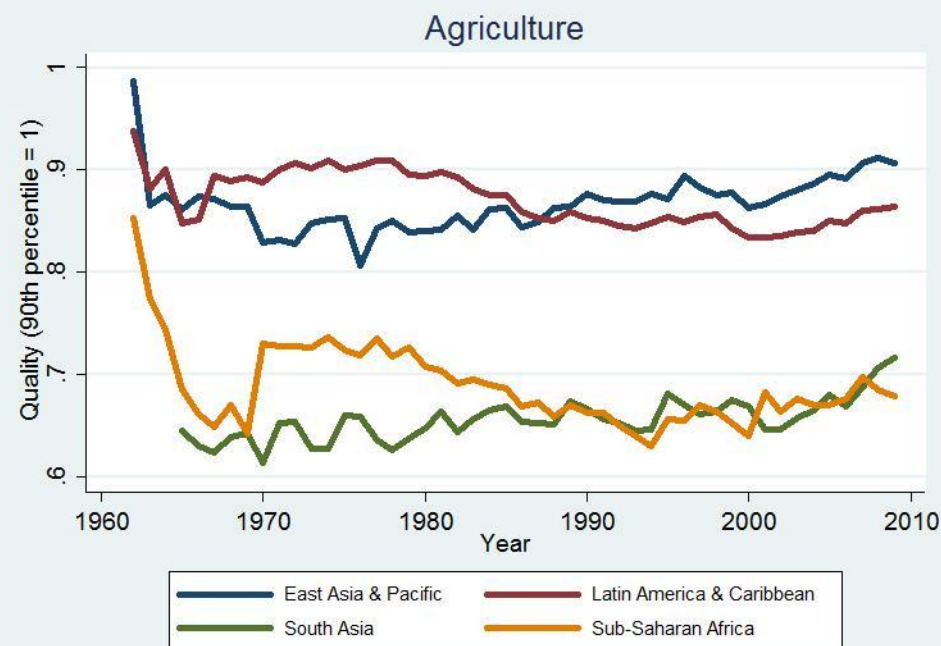
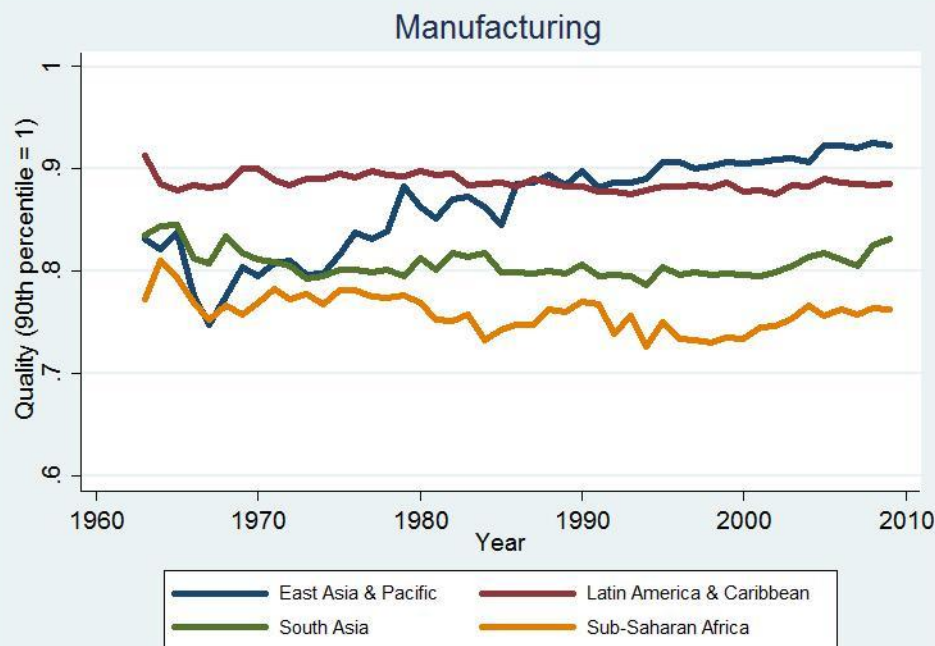
Quality by Income Group

- 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.

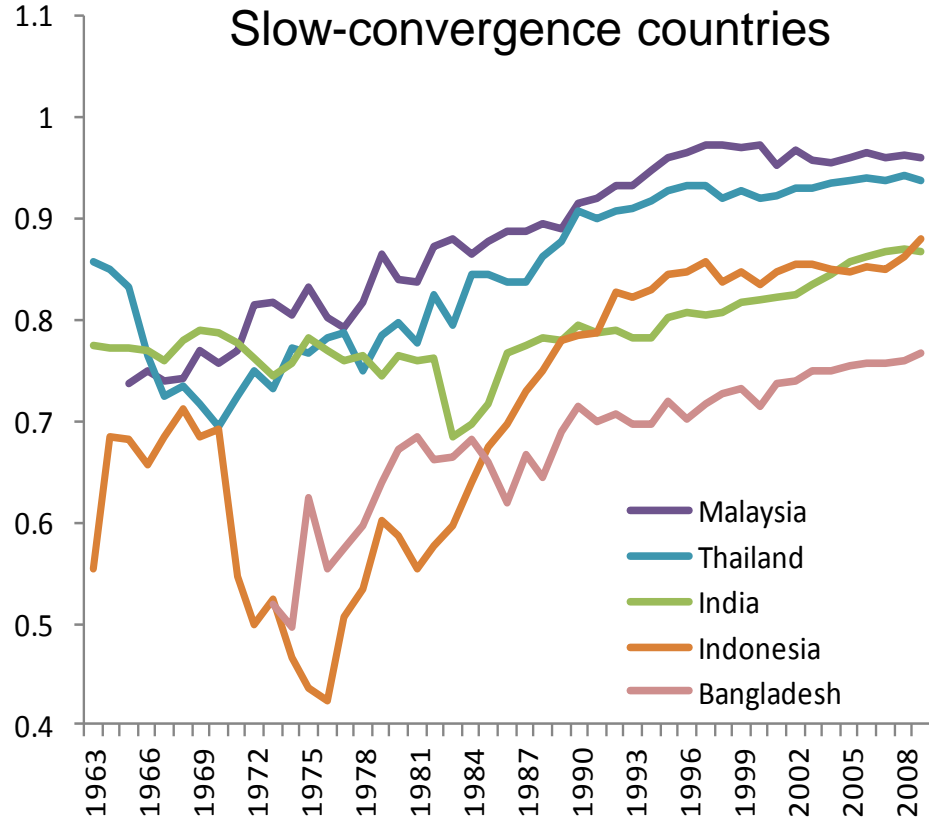
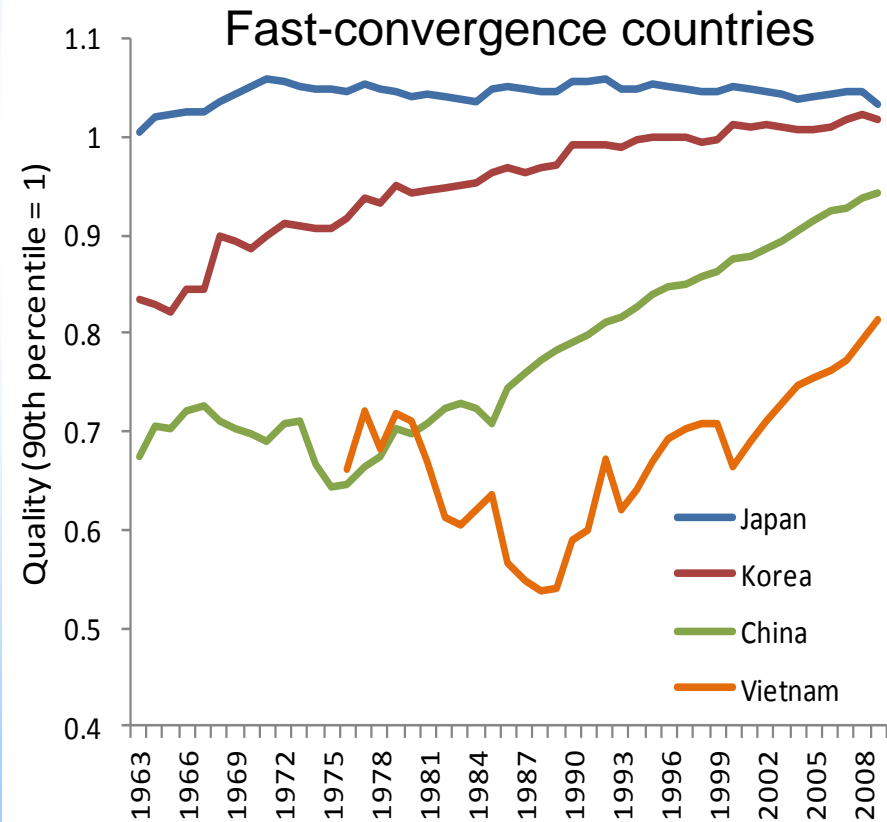


Quality Upgrading in Asia

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.



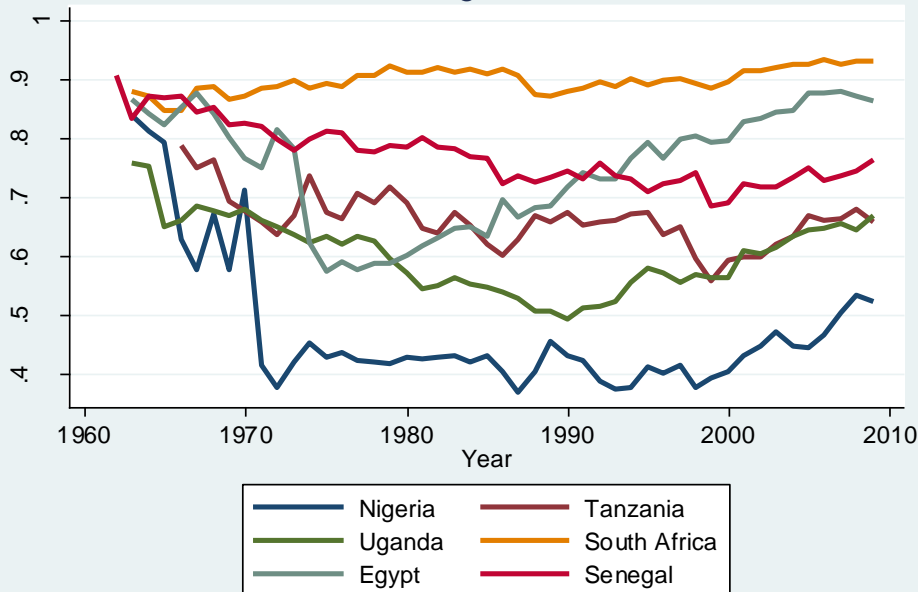
Quality Upgrading in Africa

Considerable cross-country heterogeneity

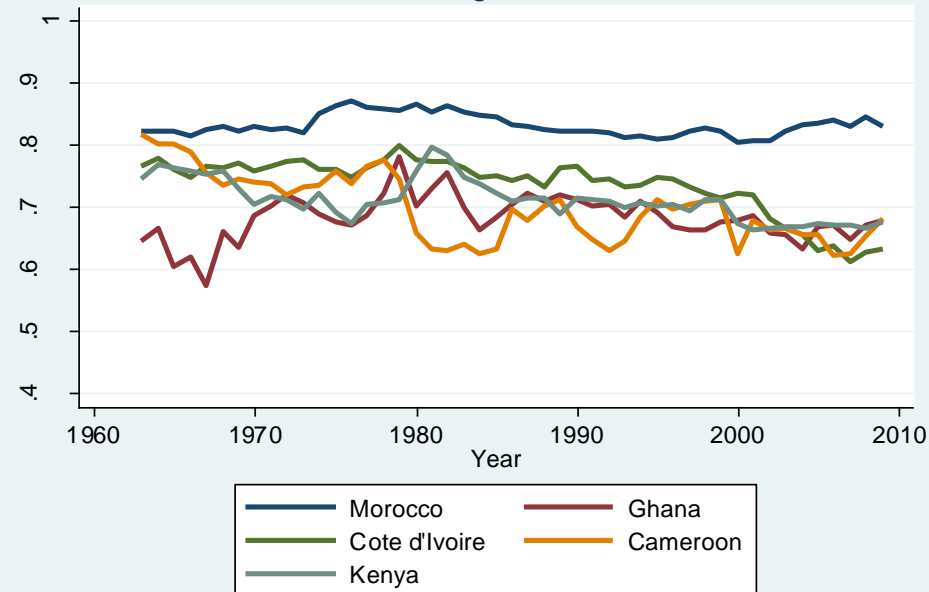
➤ In Africa, some countries are taking off—or have taken off.

➤ Other countries' export quality has continued to stagnate.

Fast-convergence countries

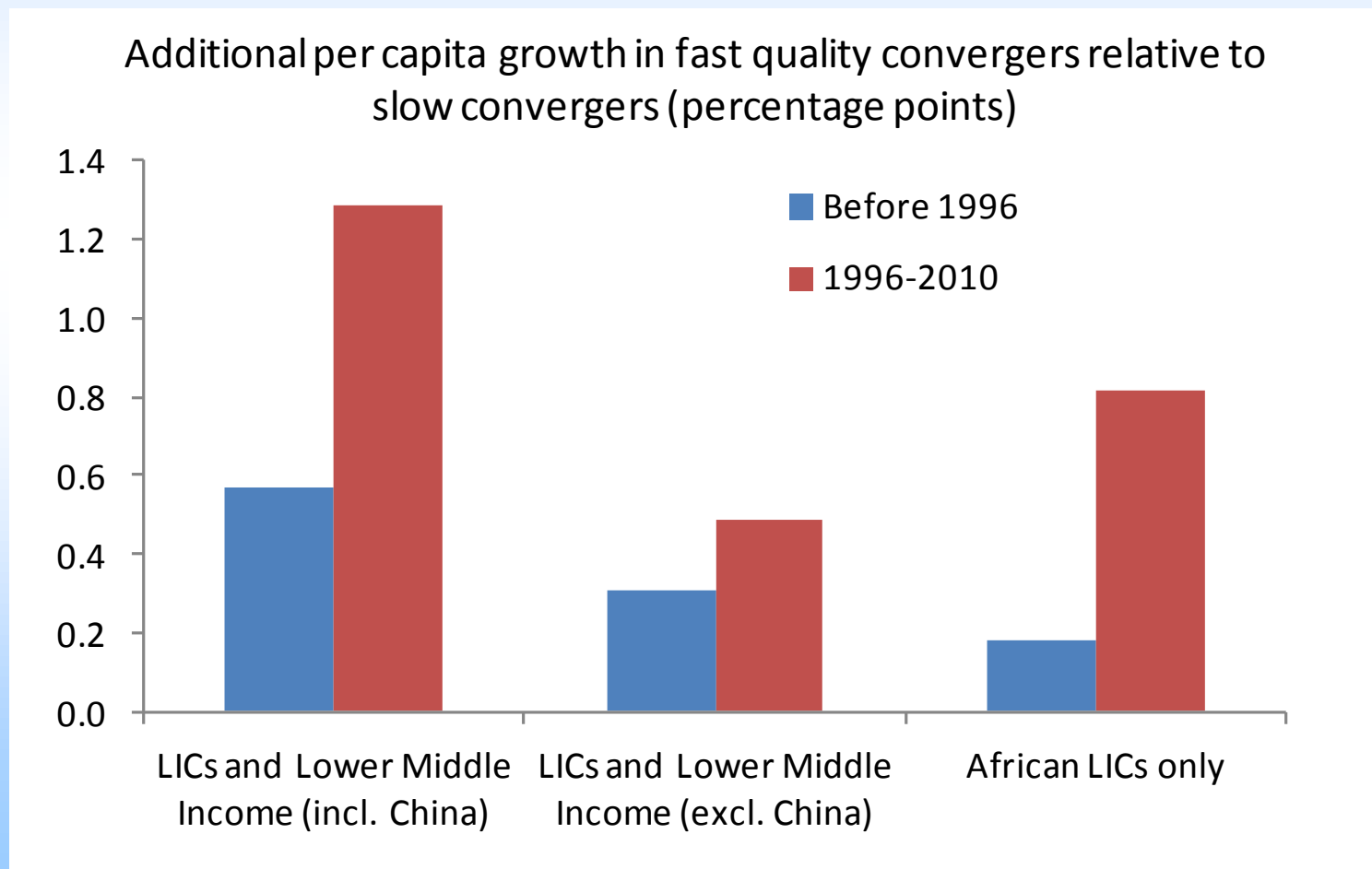


Slow-convergence countries



Quality Upgrading and Growth

- Countries experiencing faster quality convergence since 1995 may also have experienced faster growth in GDP per capita.

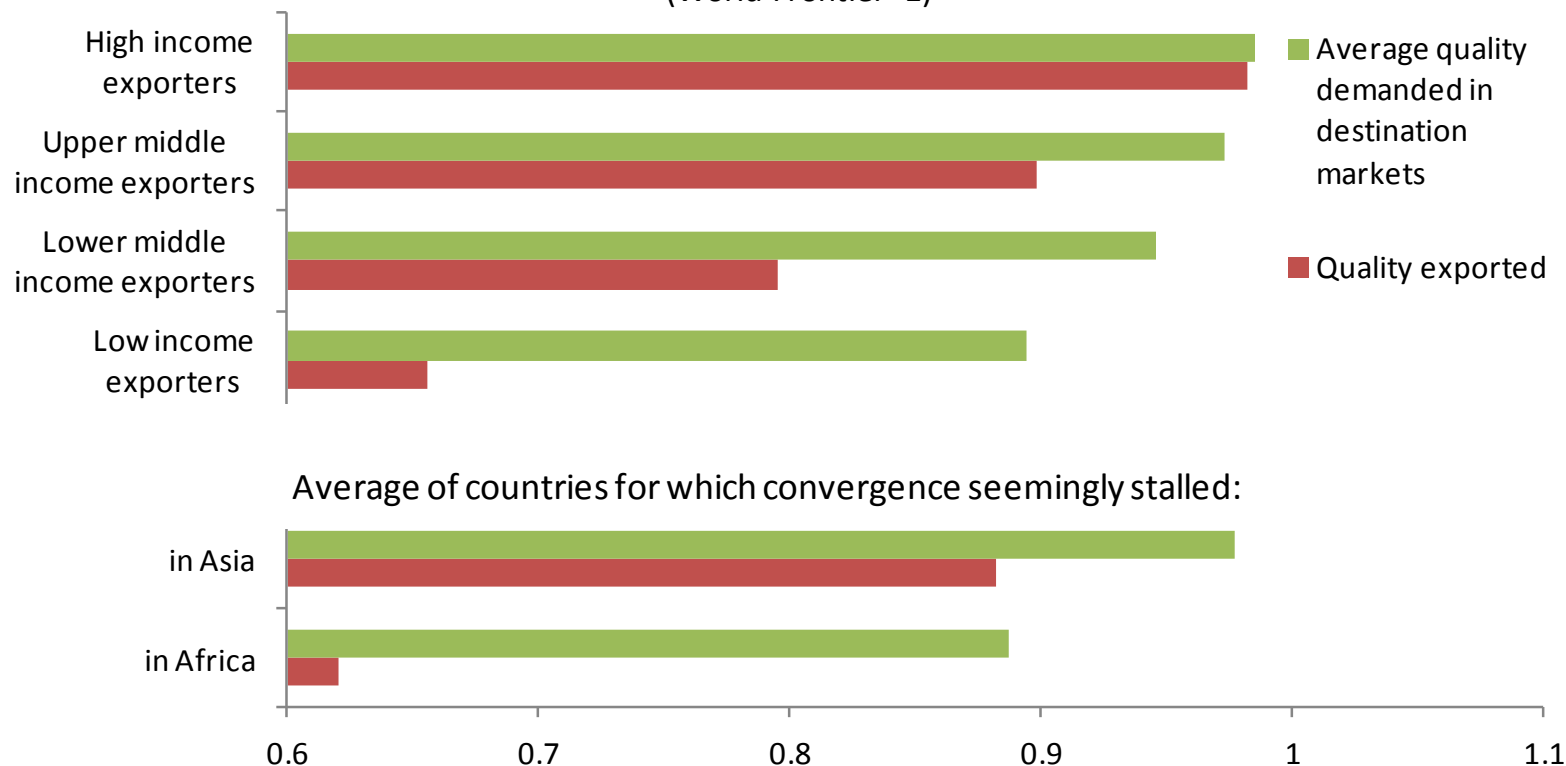


Potential for quality upgrading

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.

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



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.