



# IMF STAFF DISCUSSION NOTE

December 14, 2012  
SDN/12/13

## **Economic Diversification in LICs: Stylized Facts and Macroeconomic Implications**

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INTERNATIONAL MONETARY FUND

**Economic Diversification in LICs:  
Stylized Facts and Macroeconomic Implications**

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Authorized for distribution by Siddharth Tiwari

December 14, 2012

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JEL Classification Numbers: F1; F14; O11; O40.

Keywords: Trade and real-sector diversification; quality upgrading; volatility; growth; LICs.

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## EXECUTIVE SUMMARY

Limited diversification in exports and the broader structure of the economy has been an underlying characteristic of many low-income countries (LICs). Concentration in sectors with limited scope for productivity growth and quality upgrading, such as primary commodities, may result in less broad-based and sustainable growth. Moreover, lack of diversification may increase exposure to adverse external shocks and macroeconomic instability.

This note sheds more light on the role of diversification in the macroeconomic performance of LICs by considering diversification not just in trade, but also in the broader domestic economy. Using cross-country data and case studies, the note reviews and extends the evidence from the existing literature and ongoing IMF work that point to diversification as a crucial aspect of the development process. Diversification involves significant changes in both the type and quality of goods produced and exported. However, there are major differences across regions and countries in the degree to which they have succeeded in carrying out such economic transformation. Increases in diversification have been associated with lower volatility and higher growth, especially since 1995 and in LICs with better institutions.

This evidence makes the case for further analytical work to inform the policy debate over how diversification can help LICs enhance their macroeconomic performance, and on what factors can spur or, alternatively, impede diversification in LICs.

## I. INTRODUCTION

**Little is known about how diversification is linked to growth and macroeconomic stability in low-income countries (LICs)<sup>2</sup>.** Most LICs have historically been heavily dependent for the bulk of their export earnings on a narrow range of traditional primary products and few export markets. A key concern is that such limited diversification, reflecting a broad range of market and government failures, may result in less broad-based and sustainable growth, with production and exports concentrated in sectors characterized by low technology spillovers and limited opportunities for productivity growth or quality upgrading. Moreover, lack of diversification may increase exposure to adverse external shocks and vulnerability to macroeconomic instability. Although diversification is a longstanding ambition of many LICs, experience is limited with regard to which aspects of diversification are important, what drives it, and how to promote it without resorting to the risky and often counterproductive practice of ‘picking winners’.

**Recent analytical work suggests diversification is closely related to the early stages of the development process.** This work is primarily based on case studies and suggests that the early stages of development are accompanied by significant changes in the nature of LICs’ trade, in terms of both their traded products and their trading partners (Gaertner and Papageorgiou, 2011; and IMF, 2011). In addition, Imbs and Wacziarg (2003) document that higher incomes per capita are associated first with diversification, and then with reconcentration, in production and employment. Cadot and others (2011) argue that this pattern “... is an inherent feature of the economic development process”. This nonlinearity in the diversification process suggests that it is important not only to examine the process as a whole, but also to consider separately LICs, middle-income countries (MICs), and advanced economies.

**In the early stages of development, diversification is also intimately related to structural transformation.** Both theory and evidence indicate that economic development ultimately involves structural transformation—that is, the continued, dynamic reallocation of resources from less productive to more productive sectors and activities (this literature has recently been reignited by McMillan and Rodrik, 2011, and Lin, 2012). Prime examples are the development experiences of the East Asian Tigers and Tiger Cubs in the 1970s and 1980s, and many ex-Soviet bloc economies in the 1990s, as they transformed from relatively agrarian economies toward manufacturing. LICs still remain largely specialized in agriculture and other resource-based activities with limited potential for quality upgrading. In their case, structural transformation will inevitably involve diversification, both in terms of domestic production and, given small domestic market size, external trade.

**The two main goals of this note are to review and extend existing work on diversification and motivate further analysis from a macroeconomic perspective.** First, the note reviews the evidence from both the existing literature and ongoing IMF work that points to diversification as an important aspect of the development process in developing countries. It extends existing analysis by considering diversification not just in external trade, but also in the broader domestic economy, using a new internal IMF database. Second, the note argues that further analytical work on diversification is needed to inform the policy debate over how diversification can help LICs enhance their macroeconomic stability and resilience to shocks, and promote a transition to higher and more sustained growth. Although the note touches on some of the possible policy

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<sup>2</sup> Throughout, we use the World Bank classification for LICs.

implications, its primary focus is to establish a set of stylized facts that can underpin future analytical and policy work.

## II. HOW IS DIVERSIFICATION MEASURED?

**Measures of economic diversification need to look beyond trade, to capture domestic sector diversification and the underlying dynamic process of structural transformation.** *Trade diversification* and *domestic diversification* are in principle interlinked, the former reflecting diversification in the external sector, and the latter capturing diversification in the domestic production process across sectors. An underlying theme of this note is that focusing on the entire structure of production paints a more comprehensive and illuminating picture. Therefore, the two dimensions of diversification are evaluated simultaneously, thus filling a gap in the existing literature, which has treated them independently. In addition, the analysis focuses on “diversification spurts”, that is, rapid, sustained, significant spells of diversification.

**Trade diversification can be achieved along several dimensions.** First, diversification may occur across either products or trading partners. Second, product diversification may occur through the introduction of new product lines (the *extensive* margin), or a more balanced mix of existing exports (*intensive* margin). Finally, product-quality upgrading represents a slightly different notion and is evidenced by higher prices for existing exports. The main data source is an updated version of the UN–NBER dataset, which harmonizes COMTRADE bilateral trade flow data at the 4-digit SITC (Rev. 1) level.<sup>3</sup> However, while the existing literature typically focuses on the post–1988 period, this note uses data extending back to 1962. The extended time dimension turns out to be greatly helpful in examining relationships more comprehensively.

**Analysis of LICs’ domestic diversification required construction of a new IMF dataset.** This note examines diversification in sectoral output and the sectoral allocation of labor using data from existing and new sources. Existing datasets include measures of value added for 28 manufacturing sectors, during 1985–2010 (from UNIDO, 2011; 3-digit ISIC classification); and labor employment shares in 9 economy-wide sectors, during 1969–2008 (from ILO, 2011; 1-digit classification). It is well known, however, that both of these datasets are quite limited in their coverage of LICs. For this reason, a new dataset was constructed, covering 12 economy-wide sectors during 2000–2010, using country data compiled from IMF desk inputs (see below for further discussion).<sup>4</sup>

## III. PATTERNS OF DIVERSIFICATION

### Trade Diversification

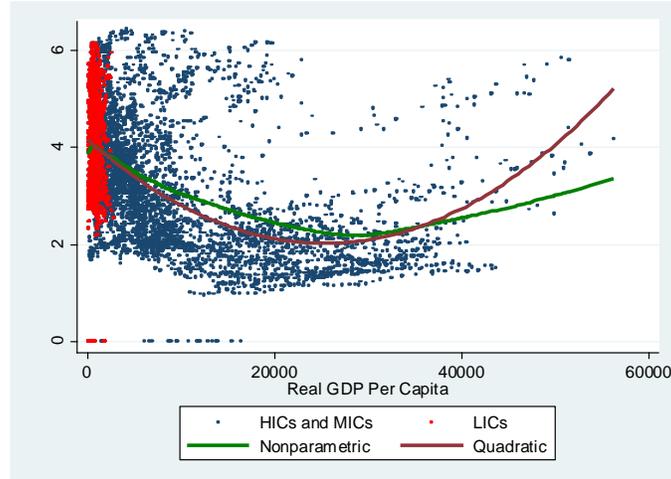
**Higher per capita income is broadly associated with greater trade diversification.** This general relationship holds true at least until an economy reaches advanced-economy status (with GDP per capita of \$25,000–\$30,000; see also Cadot and others, 2011). The relationship is evident in Figure 1, which plots country-year observations, with a lower value of the Theil index

<sup>3</sup> The dataset combines importer- and exporter-reported data from COMTRADE to maximize comprehensiveness, while ensuring internal consistency, using the methodology of Asmundson (forthcoming).

<sup>4</sup> The analysis considers two main indices: the Herfindahl index and the Theil index. The Theil index has the advantage of being decomposable into diversification along the extensive and intensive margins. For both indices, lower values indicate higher diversification.

signaling higher diversification. It also holds true when the figure is restricted to show the pure cross-sectional or time-series variation; in the latter case, the dataset's extended time dimension is critical to confirming the relationship.

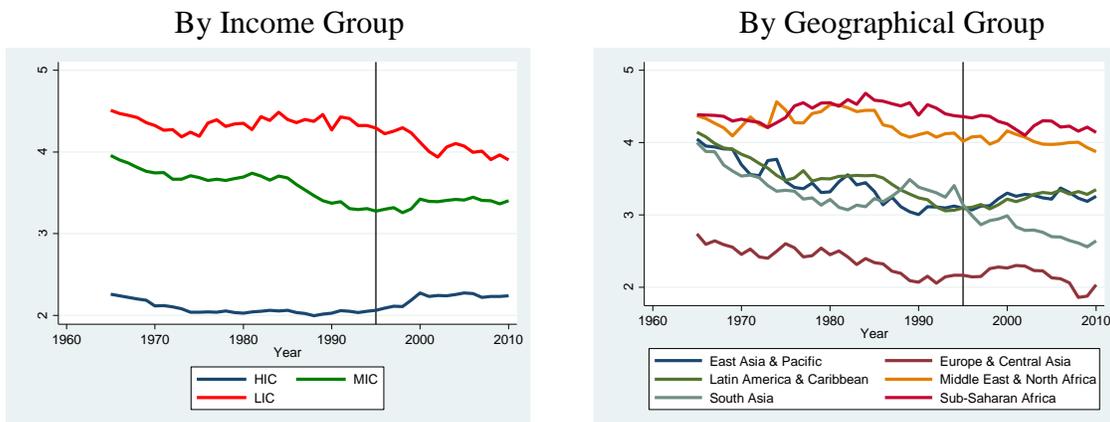
**Figure 1. Diversification and Real GDP Per Capita**



Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

**LICs' diversification took off in the mid-1990s.** For an extended period, many LICs, in particular in sub-Saharan Africa, enjoyed little success in diversifying their exports even when controlling for size, and commodity-exporting status (Figure 2; see also IMF, 2012, for the recent sub-Saharan African experience with structural transformation). Around 1995, the situation started to change. Much of the progress has occurred through diversification along the 'extensive margin', that is, through entry into completely new products.

**Figure 2. Diversification over Time**

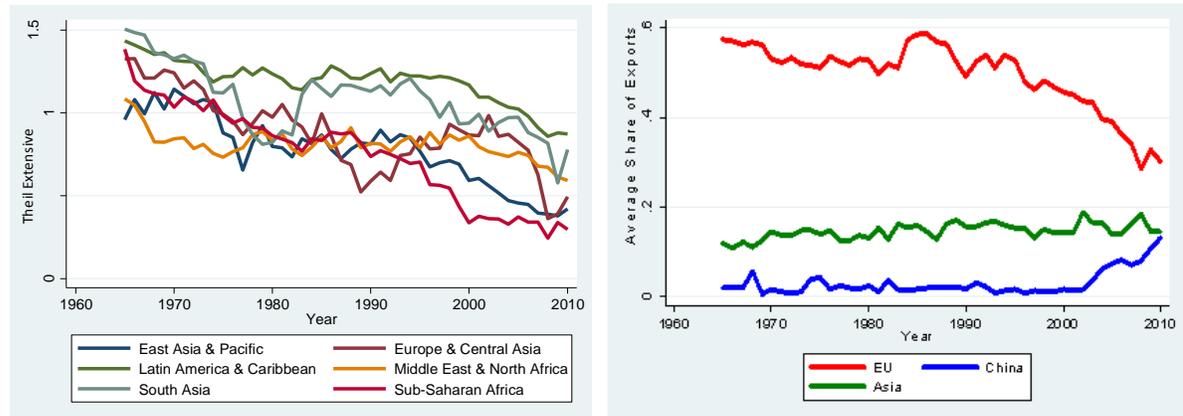


Sources: COMTRADE; and IMF staff calculations.

**Higher income levels are also associated with increasing diversification across trade partners—at least until advanced-economy status is reached.** After 1995, LICs in general, and sub-Saharan Africa in particular, have made significant progress in diversifying their exports across partners (Figure 3). The trend is especially clear when considering the extensive margin, with a significant increase in exports to completely new partners. This is related to the ongoing

process of globalization and a clear shift in trade away from the European Union (EU) and toward Asia, and China in particular (see also Samake and Yang, 2011).

**Figure 3. Diversification Across Partners over Time, and Share of LIC Exports to China**



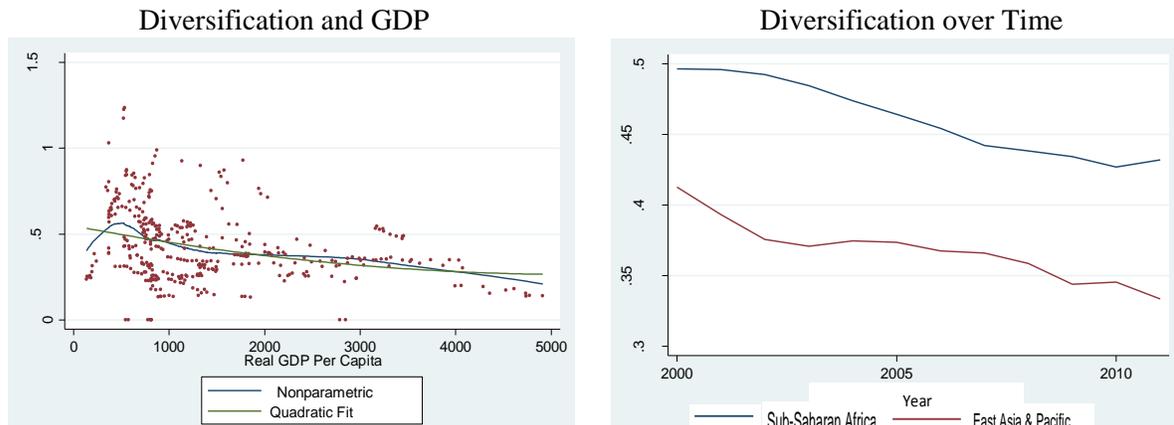
Sources: COMTRADE; and IMF staff calculations.

### Real-Sector Diversification

**Existing measures of real-sector diversification suffer from significant problems.** Those based on UNIDO output data cover only agriculture and manufacturing, disregarding services. Measures based on ILO employment data often cover only a small fraction of the workforce and relatively few LICs; in addition, employment data for LICs suffer from serious quality issues.<sup>5</sup>

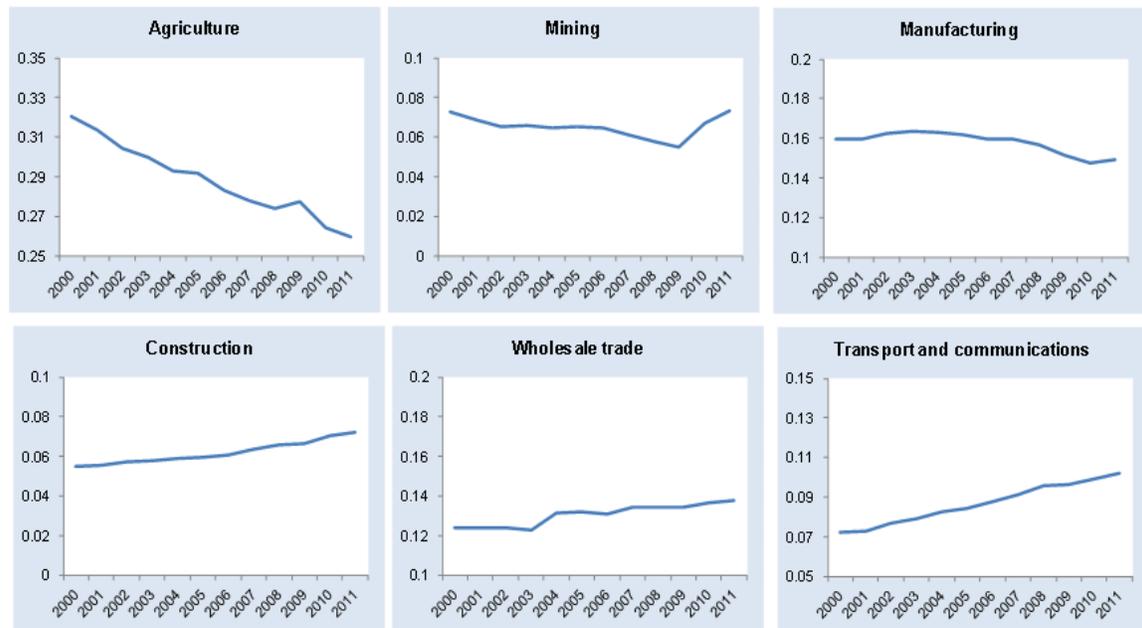
**To redress these gaps in sectoral and LIC coverage, a new IMF dataset was built.** The dataset is based on IMF desk inputs, providing information on value added in 12 economy-wide sectors in more than 50 LICs and MICs, in Africa and East Asia and the Pacific, during 2000–2010. This new dataset again underpins the notion that, within developing countries, greater income per capita is associated with greater real-sector diversification (Figure 4). During the 2000s, both sub-Saharan Africa and Asia witnessed significant diversification, although Asia started from a higher level.

<sup>5</sup> In particular, reported employment changes considerably over time as different types of surveys are merged.

**Figure 4. Real-Sector Diversification**

Sources: IMF internal data; and IMF staff calculations.

**Over the past decade the share of agriculture in output has declined significantly.** This result holds both across all countries and (not shown) in LICs alone. Analysis of six key sectors shows that the gap has been filled largely by nontradables such as construction, wholesale trade, and transportation, rather than by manufacturing (Figure 5).

**Figure 5. Share of GDP in Six Real Sectors**

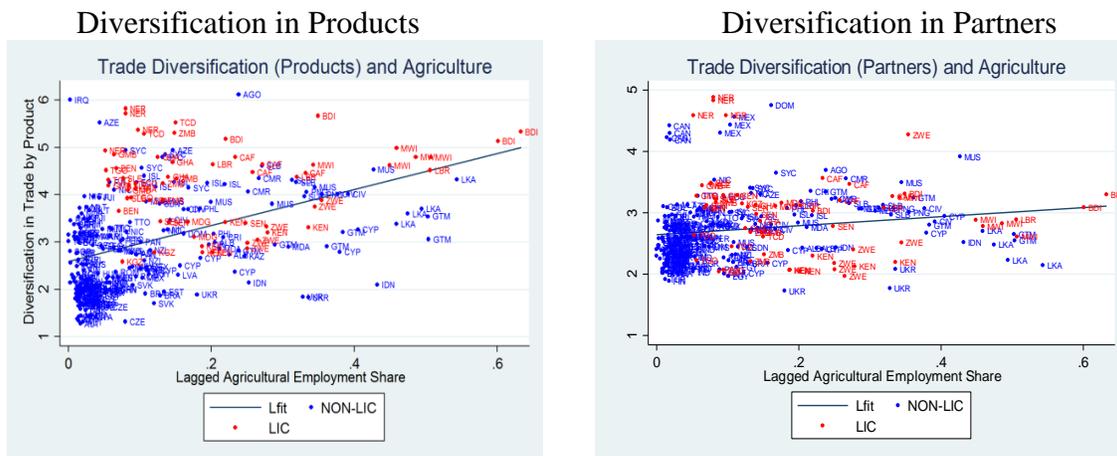
Sources: IMF internal data; and IMF staff calculations.

Again, **there is significant cross-country variation, both in the magnitude of the resource shift out of agriculture and in the precise identity of the sectors that have expanded in its place.** Related to this, Ndulu and others (2007) have argued that geography matters significantly, and that in sub-Saharan Africa the resource-rich countries, the coastal non-resource-rich countries, and the land-locked non-resource-rich countries may all need different growth models. In particular, coastal countries have more potential to expand manufactured exports to partners outside the region, provided there is sufficient policy support. Other countries may be able to move directly from agriculture to services, without focusing on manufacturing, as occurred in

India. Put differently, one size may not fit all. The case studies below highlight the role of such heterogeneities.

**Trade diversification increases as economies diversify their production out of agriculture.** This result holds for both LICs and other developing countries, and regardless of whether one focuses on the agricultural share in employment or in output. However, the relationship is much stronger for diversification in traded products than in trading partners (Figure 6). This link between trade diversification and broader structural transformation is what would be expected in a world where most goods are tradable. That said, the case studies below illustrate that, when significant production diversification occurs within nontradables, it is also possible to observe significant structural transformation with little change in export baskets.

**Figure 6. Trade Diversification and Lagged Agricultural Employment Share**



Sources: IMF internal data; and IMF staff calculations.

#### IV. QUALITY UPGRADING

**Development and structural transformation crucially involves changes in the quality levels of goods produced,** in addition to those in the product mix. Producing higher quality varieties of existing products can constitute a way of building on existing comparative advantages. It can boost countries' export revenue potential through the use of more physical- and human-capital intensive production techniques.<sup>6</sup> Yet the potential for quality upgrading, that is, the length of a product's quality ladder, varies by product (Khandelwal, 2010; Schott, 2004). Agricultural and natural resources tend to have lower potential for quality upgrading than manufactures.

Therefore, for LICs at early stages of development, diversification into products with longer quality ladders may be a necessary first step before large gains from quality improvement can be reaped. On the other hand, LICs' small economic size and limited potential to exploit economies of scale may result in a high cost of moving into many new products, making quality upgrading within existing products all the more important.

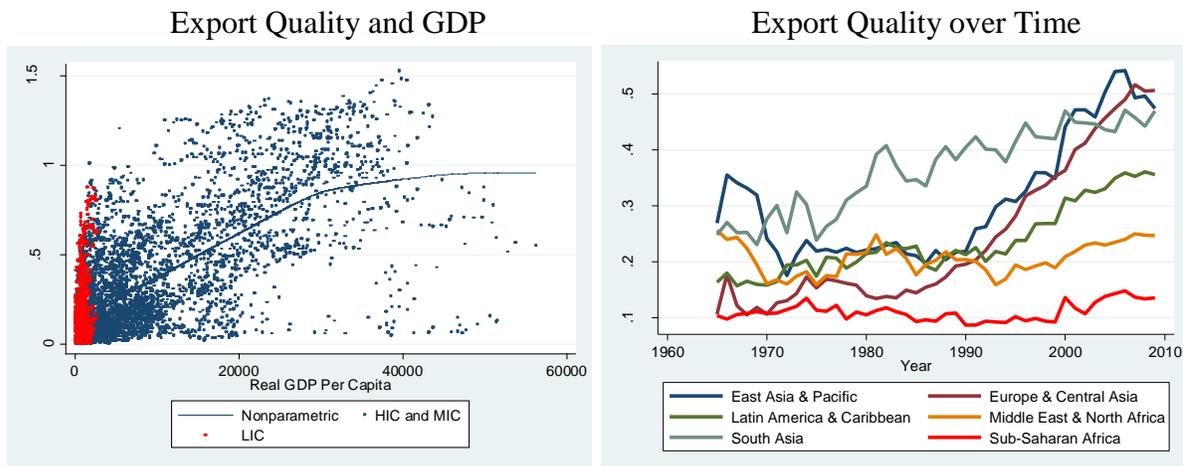
**Quality is proxied by the unit values of exports.** Unit values can readily be calculated from the bilateral trade values and quantities in the updated UN-NBER dataset. Although unit values have

<sup>6</sup> Schott (2004) shows that within-product quality differences can be dramatic. For instance, unit values for cotton shirts imported by the United States from Japan are 30 times higher than those from the Philippines.

some drawbacks, they constitute an easily observable approximation for quality (Hallak, 2006). Individual product unit values are then normalized by the world average, and country-average unit values are constructed as a geometric value-weighted mean of the individual product unit values.<sup>7</sup> These data suggest some clear patterns.

**Higher incomes per capita are broadly associated with greater export quality at the country level.** The relationship holds both across all goods, and (even more clearly) within manufacturing, which has greater scope for differentiation (Figure 7). The general relationship holds true in both the cross-sectional dimension and the time-series dimension. Again, there is much heterogeneity in quality levels, even when controlling for income per capita. In particular, sub-Saharan Africa stands out as producing relatively low quality goods. Only since 2000 has there been some indication of quality upgrading in sub-Saharan Africa.

**Figure 7. Export Quality and GDP, within Manufacturing**



Sources: COMTRADE; and IMF staff calculations.

**Exposure to industries with potential for quality upgrading could speed convergence.**

Within manufacturing, unit values appear to converge unconditionally to the world's quality frontier, closing the gap at a speed of about 2 percent per year (Rodrik, 2011). Put differently, once a country establishes a beachhead in manufacturing, there may be strong tendencies toward quality upgrading, irrespective of other country-specific factors.

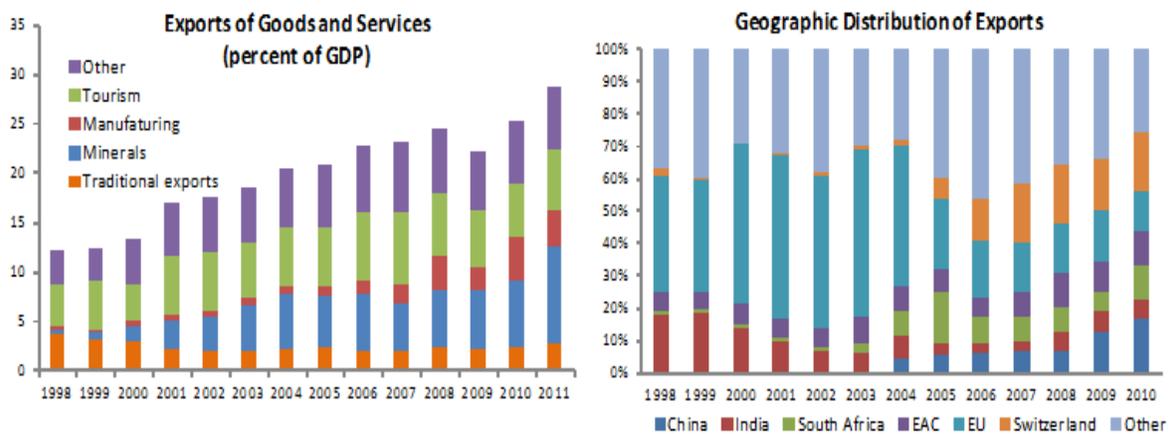
**V. CASE STUDIES: DIVERSIFICATION IN TANZANIA, BANGLADESH, VIETNAM, AND MALAYSIA**

**Case studies illustrate lessons from structural transformation at different stages of development.** The four case studies of this section are carefully selected from LICs and MICs in sub-Saharan Africa and East Asia over the past three decades. The countries considered include: *Tanzania* and *Bangladesh*, two LICs with income per capita well below \$1,000; *Vietnam*, a country well on its way to emerging market status; and *Malaysia*, a dynamic east Asian economy, whose income per capita has grown five-fold over the past 40 years. The latter two cases illustrate lessons from the experiences of countries that have successfully diversified or are successfully diversifying their economies.

<sup>7</sup> Note that changes in the prices of individual commodities will not affect a country's measured export quality.

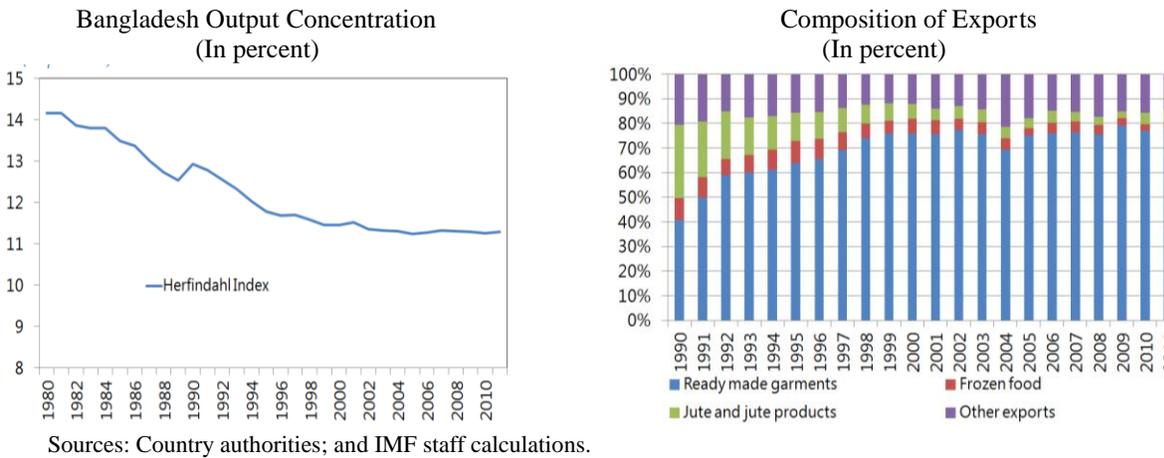
**Tanzania represents a prime example of a LIC witnessing major changes in its economic structure since the 1990s.** Available data show that the late 1990s and early 2000s saw major increases in, and diversification of, output and exports (Figure 8). Growth was particularly strong in mining, manufacturing, construction, and services—the areas that benefitted the most from market-oriented reforms. At the same time, production and exports of traditional agricultural cash crops (such as cotton, coffee, tea, sisal, cashew nuts, and tobacco), which were the basis of the colonial economy, declined considerably in importance. As a result, output concentration decreased quickly. The geographical distribution of Tanzania’s exports also changed considerably over the past decade. The EU decreased in importance, while regional trade, especially with the East African Community (EAC) and South Africa, increased. In addition, the emergence of gold as a significant export was reflected in a rising share of trade with China and Switzerland.

**Figure 8. Tanzania: Composition of Output and Exports**

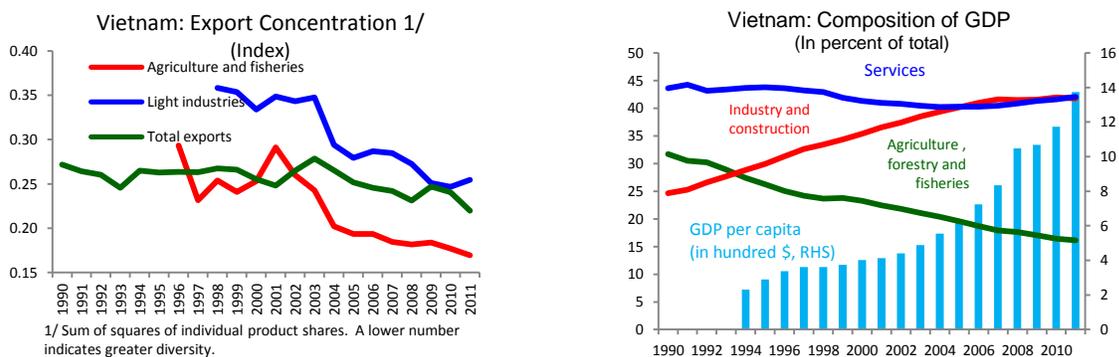


Sources: Country authorities; and IMF staff calculations.

**Bangladesh illustrates that initial diversification success, to be sustained, requires a combination of further reforms.** Its diversification was largely triggered by external factors such as the introductions of the multi-fiber agreement (MFA) and the generalized system of preferences in the 1970s. These factors spurred development of the ready-made garments industry. As a result, Bangladesh shifted rapidly away from traditional agricultural and jute products toward manufacturing (Figure 9). Combined with the rise in output from wholesale and retail trade, this contributed to a steady increase in output diversification. Subsequently, Bangladesh’s output diversification has seemingly peaked. Attempts to move beyond garments or to increase their quality have been hindered by a lack of supportive reforms. Challenges include poor governance, scarce electricity, infrastructure bottlenecks, weak contract enforcement, and expensive credit.

**Figure 9. Bangladesh: Concentration of Output and Composition of Exports**

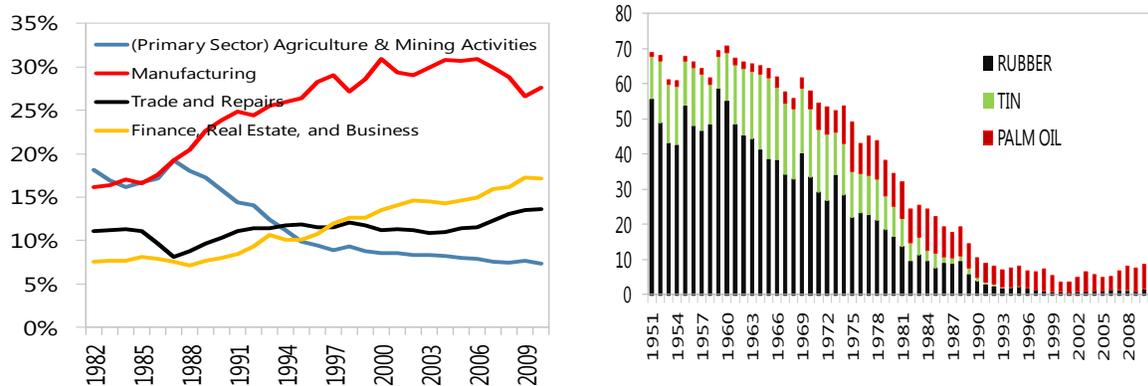
**In contrast, Vietnam’s experience shows that “waves” of supportive reforms can sustain diversification and structural transformation.** The first wave of reforms during the 1980s opened new areas of activity to the private sector by reducing barriers to entry and expansion. Domestic prices, external trade, and access to foreign exchange were liberalized; the rationing system largely abolished; subsidies significantly cut back; and inflation reduced. In agriculture, individual land-use rights were recognized, production freed from quotas, and collective assets privatized. As a result, agriculture expanded, rising to almost half of total exports in 1995, and also diversified into cash crops, such as coffee and marine and forestry products (Figure 10). In a second wave of reforms, during the 1990s, liberalization of FDI helped develop other sectors. Initially, FDI was concentrated in the oil sector, but real estate (including hotels), food processing, and heavy and light industry gained importance. FDI helped Vietnam integrate into emerging global supply chains, and gradually diversify its output and exports from textiles to footwear and electronics. This product diversification was accompanied by a diversification of trade partners, first from the Soviet Union to Asia, and then toward Europe and the United States.

**Figure 10. Vietnam: Diversification of Exports and Composition of GDP**

**Malaysia has been a great diversification success, but now it also shows that MICs face different challenges in their pursuit of advanced-economy status.** Over the past four decades, Malaysia witnessed rapid economic growth accompanied by significant transformation in its economic and trade structures. Primary commodities accounted for about 70 percent of total exports during the 1960s (Figure 11). But since 1970, manufacturing has surged from 5 percent

to almost 70 percent of merchandise exports, and its composition has shifted toward higher value-added products, such as machinery. Malaysia's structural transformation was underpinned by political stability and sound macroeconomic management. It was also helped by microeconomic deregulation, relatively liberal trade policies, export promotion through tax incentives, and the establishment of free trade zones. Over time, however, Malaysia has seen far slower progress in terms of moving into new sectors, or of continuing to upgrade product quality.

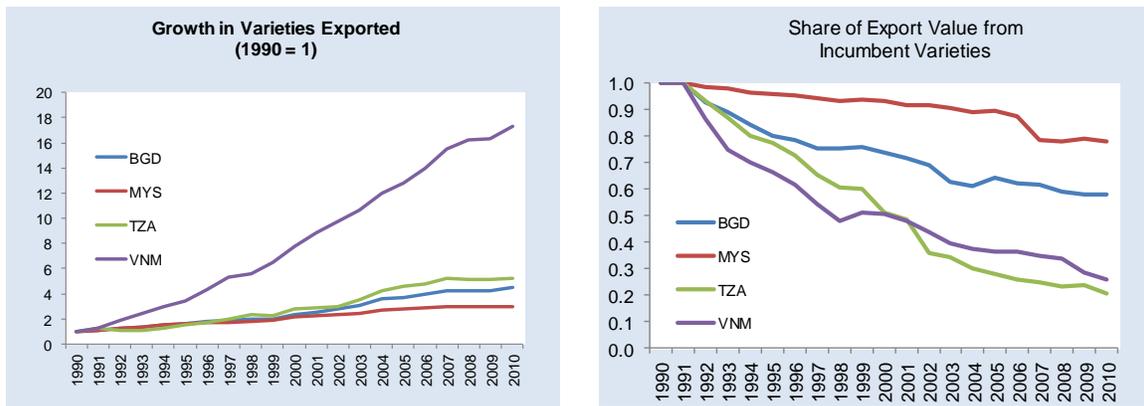
**Figure 11. Malaysia: Composition of Output and Commodities as Percent of Total Exports**



Sources: IMF IFTS Database; CEIC Data Company Ltd.; and IMF staff calculations.

**Diversification in LICs depends crucially on the frequency with which new products are introduced, the likelihood that they will survive, and their growth prospects.** Initial trade diversification in LICs is mainly driven by entry into new products (the extensive margin). In the above four countries, over 1990–2011, there were significant differences (over time and across countries) in three key measures of the extensive margin: (i) the number of new product varieties introduced, (ii) the survival rates of new varieties, (iii) and the growth rates of surviving varieties. Over time, such differences can cumulate into large differences in overall exports.

**Differences in these measures underline the case studies' different experiences.** Malaysia showed the least growth over time in product varieties and, conversely, had the greatest share of exports accounted for by incumbent varieties (Figure 12). Although relatively natural for a more mature market, Malaysia's low rates of experimentation may lie behind its recent and possibly premature reconcentration. In contrast, Tanzania and Vietnam showed significant new entry and reductions over time in the relative importance of incumbent varieties. Vietnam in particular stood out as having a high probability of survival of new varieties. In Tanzania, there was less growth in varieties, but surviving varieties grew more, so that it managed a similar reduction in the share of incumbent varieties. Bangladesh had less experimentation than Tanzania and also less growth in surviving varieties, accounting for its current, unusually high concentration.

**Figure 12. Export Experimentation**

Sources: COMTRADE; and IMF staff calculations.

Overall, these case studies provide some tentative evidence in favor of four main themes:

- **Analyzing the entire structure of production paints a more comprehensive and illuminating picture than focusing purely on external trade.** Structural transformation may well be associated with significant diversification of domestic production, including of nontradables. Analyzing this may shed light on the underlying mechanisms and barriers to further transformation.
- **Diversification and structural transformation are often underpinned by reforms and policy measures that are general in scope.** Macroeconomic stabilization is a clear example. But even microeconomic measures are often broad-based, focusing on improving the quantity and quality of infrastructure or essential business services, or on setting up a welcoming environment for foreign investors. It remains an open issue to what extent industry-focused and narrowly targeted measures have historically helped underpin diversification efforts.
- **Effective policy measures come in “waves” and aim at exploiting the evolving comparative advantages of the economy in changing external conditions.** The types of reforms underpinning diversification and structural transformation in the early stages of development are different from those required later on and need to be adapted to the external environment faced by the economy.
- **The frequency with which new products are introduced and the rate at which they grow can indicate potential policy-driven bottlenecks.** Little entry may indicate that barriers deter firms from exporting or experimenting. If survival rates are low, firms may face more obstacles than expected. If surviving firms cannot expand, they may have inadequate access to finance. This type of analysis suggests directions for further study.

## VI. MACROECONOMIC STABILITY THROUGH DIVERSIFICATION

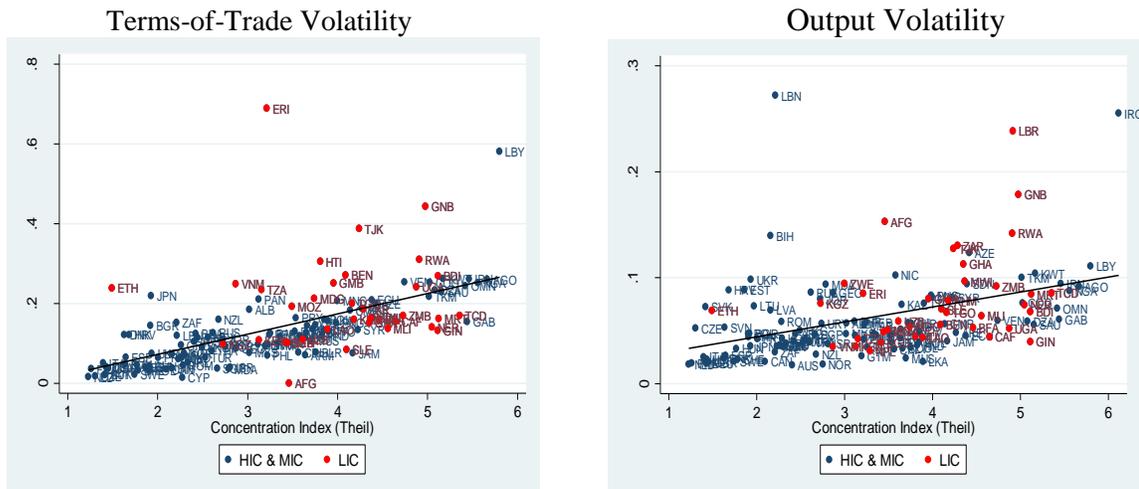
**Do trade and real-sector diversification serve as buffers against external shocks?** Related, are episodes of rapid, significant, and sustained diversification—so called “diversification spurts”—associated with increased macroeconomic stability? The existing literature provides some evidence that countries with more diversified production structures tend to have lower volatility of output, consumption, and investment (Mobarak, 2005; Moore and Walkes, 2010). Further, product diversification can increase the resilience of LICs to external shocks (Koren and Tenreyro, 2007). A key channel is that diversification involves LICs shifting resources from

sectors where prices are highly volatile and correlated, such as mining and agriculture, to less volatile and correlated sectors, such as manufacturing, resulting in greater stability.

**Geographic diversification also helps reduce volatility.** Countries whose exports are geographically concentrated are more likely to import volatility from their trading partners and be exposed to external shocks. Conversely, if there is low correlation between fluctuations in different countries, geographical diversification will reduce exposure to external shocks (Jansen and others, 2009; Farshbaf, 2012). The relationship is nonlinear, with the beneficial effect of diversification decreasing as a country becomes more diversified.

**Export diversification is in general associated with lower terms-of-trade volatility** (Figure 13). As a result, export diversification is also associated with lower output volatility. These results continue to hold even after controlling for other determinants of output volatility (Lederman and Maloney, 2012). Indeed, recent evidence suggests that industry diversification helped attenuate the impact of the global financial crisis (da Costa Neto and Romeu, 2011).

**Figure 13. Volatility and Export Diversification**

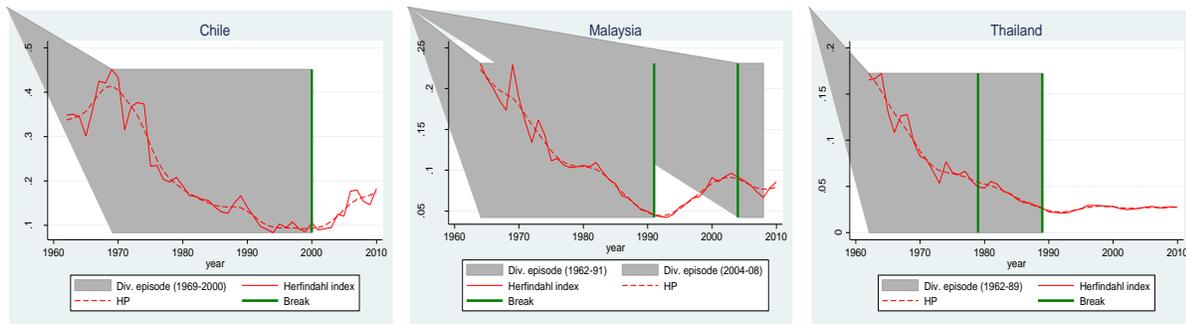


Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

**The link between diversification and volatility is easiest to observe in the context of large diversification spurts.** A total of 61 diversification spurts were identified in the post-1962 period, involving 51 developing countries.<sup>8</sup> Diversification spurts occurred more frequently in the 1960s and 1990s, and are evenly distributed across regions (after controlling for the relative number of countries). The spurts last 13 years, on average, rising to 20 years in the East Asia and Pacific region.

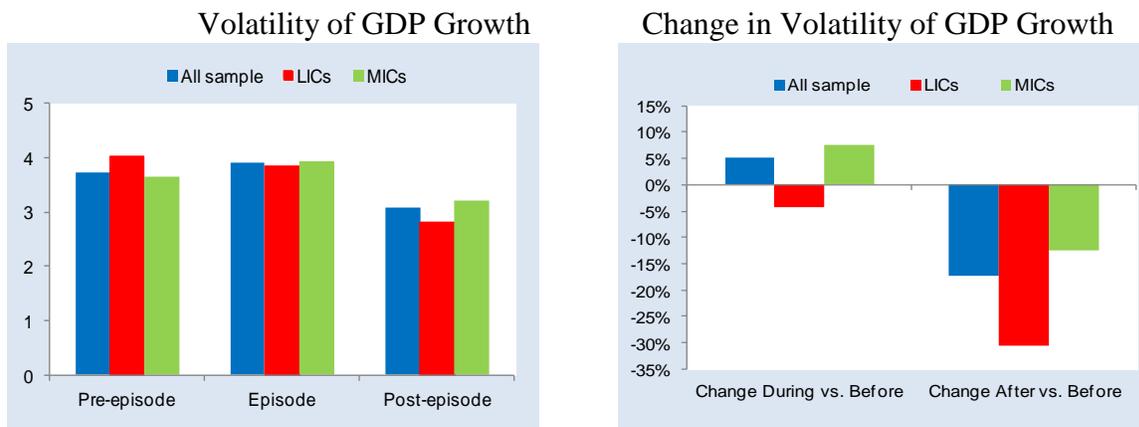
**Examples of rapid diversification spurts include Chile, Malaysia, and Thailand in the 1970s and 1980s** (Figure 14). The diversification spurts identified by our procedure accord well with the country-specific literature. For instance, as discussed in the case studies, it is broadly accepted that Malaysia underwent rapid and significant diversification in the 1970s and 1980s, but the process came to a halt in the 1990s. A similar procedure can be carried out to identify episodes of rapid and significant diversification across trade partners. Generally, these are concentrated after 1990 and may relate to drops in shipping and communication costs.

<sup>8</sup> Diversification spurts are identified based on the Berg and others (2012) procedure for identifying “growth spells”.

**Figure 14. Diversification Episodes in Selected Countries**

Sources: COMTRADE; and IMF staff calculations.

**Diversification spurts are associated with a 17 percent average reduction in the volatility of output growth in developing countries** (Figure 15). The decrease is especially pronounced in LICs, where volatility diminishes by 30 percent in the wake of diversification spurts. In MICs, volatility falls by a still significant 12 percent.

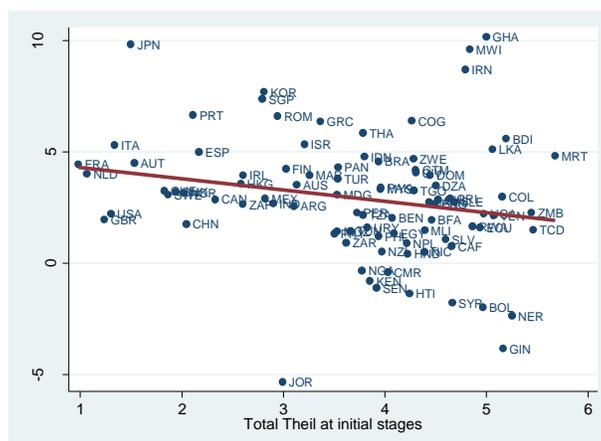
**Figure 15. Diversification Episodes and Output Volatility (1962–2010)**

Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

Note: Volatility is calculated as the standard deviation of real GDP growth using a 5-year moving window.

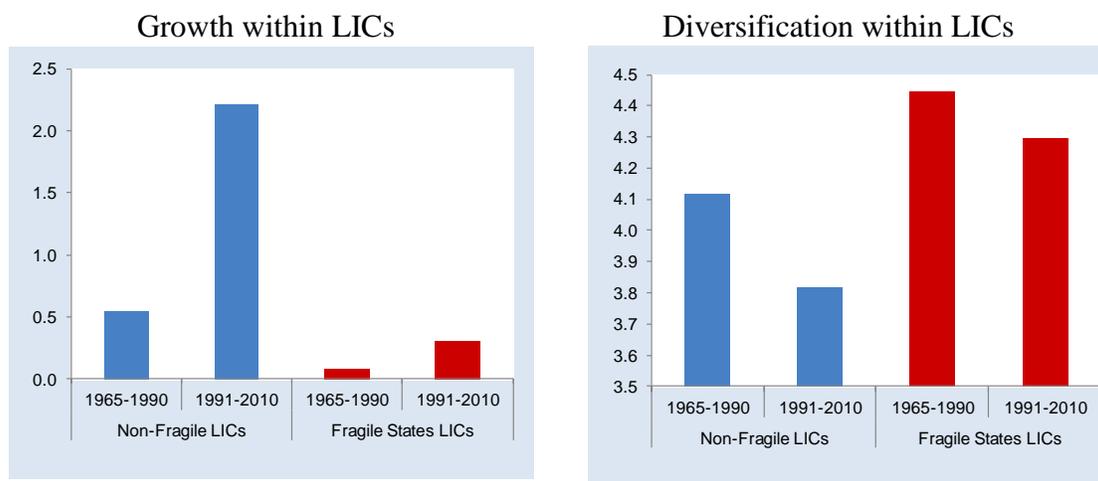
## VII. GROWTH THROUGH DIVERSIFICATION

**Growth and diversification patterns are clearly related, although the relationship displays much heterogeneity.** Consistent with a literature that can be traced as far back as Singer (1950), initial diversification is on average positively associated with subsequent growth, although the relationship is far from precise (Figure 16). Also, in line with the stylized facts discussed earlier, fast growers have historically experienced more rapid diversification, with this trend especially clear in the post–1990 period.

**Figure 16. Trade Diversification and Growth**

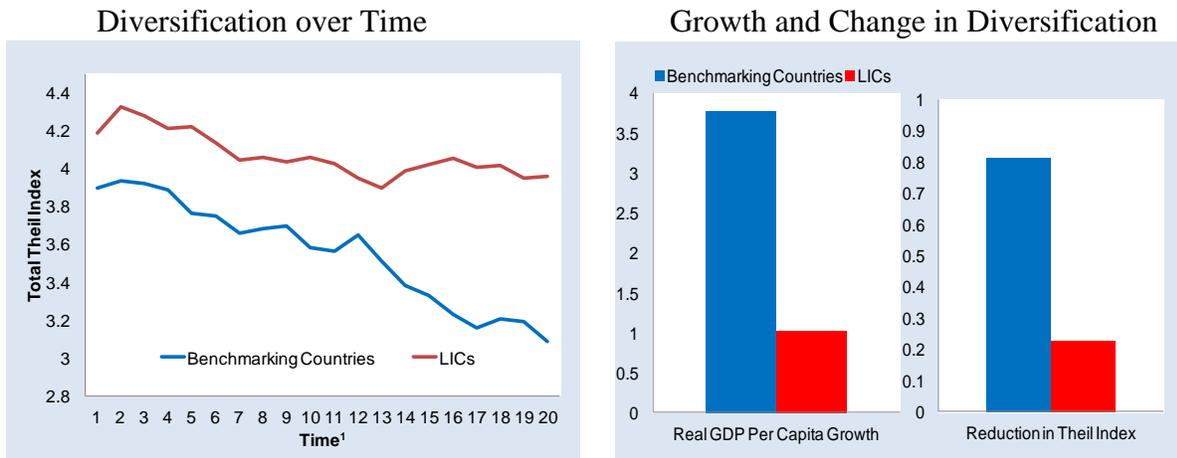
Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

**Focusing on LICs, both output growth and trade diversification picked up sharply after 1990, but again average patterns mask significant cross-country differences.** Over the past 15-20 years, many LICs have grown at unprecedented rates, after a long period of poor performance. However, the growth spurt was not universal: post-1990 growth has been far more rapid in Fragile State LICs (Figure 17). A similar heterogeneity was observed in terms-of-trade diversification; many LICs diversified rapidly, but progress in others, including in particular fragile states, was more halting.

**Figure 17. Growth and Diversification Before and After 1990 within LICs**

Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

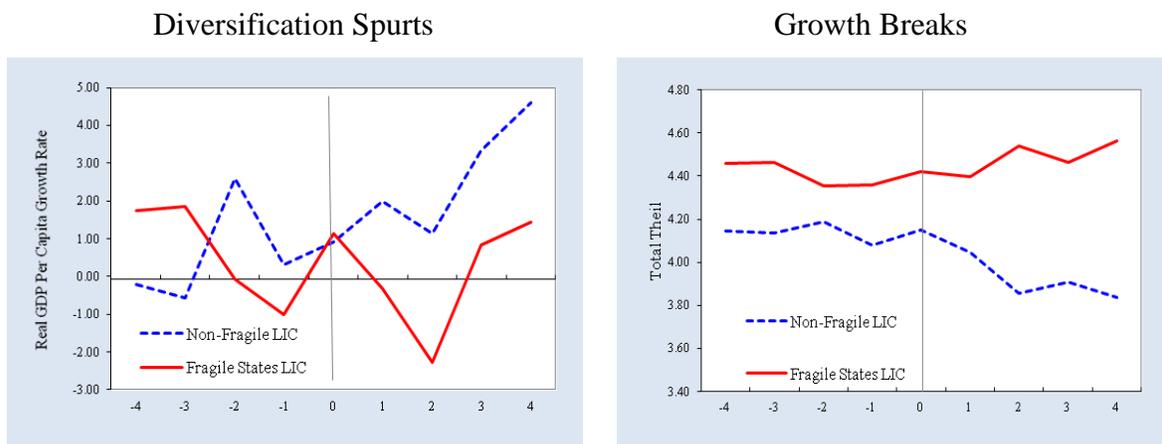
**Event studies confirm the links between growth and diversification, as well as the significant cross-country heterogeneity.** Figure 18 benchmarks growth and diversification patterns in LICs against those in more advanced economies when they stood at a similar income level. Specifically, the focus is on the 20-year period after countries first attained a real GDP per capita of \$1,200, comparable with the average for LICs in the early 1990s. Over this timeframe, the benchmarking countries experienced notably faster growth and deeper diversification than did the LICs after 1990.

**Figure 18. Trade Diversification and Growth: LICs vs. Benchmarking Countries**

Sources: COMTRADE; Penn World Table 7.0; and IMF staff calculations.

Note: For LICs, time = 0 in the year 1990. For benchmarking countries, time = 0 in the first year when PPP-adjusted income exceeds \$1,200 (specifically, 1963 for Morocco, 1964 for Thailand, 1970 for Sri Lanka and Pakistan, and 1973 for Indonesia).

**Diversification spurts and “growth accelerations” are correlated.** Most clearly, diversification spurts are associated with sharp subsequent growth accelerations (defined analogously to diversification spurts). This is especially true for non-fragile LICs (Figure 19). In a similar vein, growth accelerations are associated with subsequent increases in diversification among non-fragile LICs.

**Figure 19. Diversification Spurts and Growth Accelerations**

Sources: COMTRADE; WEO database; and IMF staff estimates.

Note: The left panel plots per capita GDP growth in fragile and non-fragile LICs during the periods leading up to, and following, a diversification spurt (year 0 on the horizontal axis). The right panel plots diversification during the periods leading up to, and following, a growth acceleration (year 0 on the horizontal axis).

**The relationship between diversification and growth may be conceptualized as reflecting more fundamental, underlying determinants.** Ongoing work is focusing on the precise nature of this relationship, and in particular on how policy and institutional factors may influence the transition to more diverse production structures, and thereby affect the pace at which growth can be sustained. For instance, policy barriers and structural rigidities in labor and product markets may hamper the process of diversification. Likewise, insufficient or low-quality public infrastructure may retard the development of those sectors that rely disproportionately upon it (Lowe and others, 2012); this factor may prove especially important in LICs, where a large

portion of investment stems from the public sector. The current literature is far from reaching a consensus; for instance, Ndulu and others (2007) emphasize the role of geography, whereas Acemoglu and Robinson (2012) stress the impact of institutions.

### VIII. CONCLUSIONS

**The process of continuous diversification and structural transformation is a key component of development.** This process involves not just external trade, but the broader economy. It features significant changes in both the type and quality of goods produced and exported. However, there are major differences across regions and countries in the degree to which they have succeeded in carrying out such transformation.

**Greater diversification has been associated with improved macroeconomic performance in LICs.** Such improvements include higher growth and reduced volatility, especially after 1990 and in non-fragile states. Such links imply that IMF policy advice must encompass strategies to increase the likelihood of successful diversification.

**All this raises a key policy question: what factors can spur or, alternatively, impede diversification in LICs?** Case studies of individual countries point to diversification being driven by “waves” of reforms, exploiting both comparative advantage and shifts in external conditions. But much remains to be understood. To what extent can weak institutions or labor and product market rigidities impede the process of structural transformation and diversification? Can public-sector inefficiencies, or the lack of financial development, also hamper diversification?

**Analytical work is now underway, aiming to further advance our understanding of these issues, and to inform the policy debate.** Many LICs have undergone substantial structural reforms since the early 1990s in an effort to promote diversification. But more measures may be needed. This research will be of special value to those LICs that experienced relatively poor performance post-1990.

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