Service with a Smile

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Can service be a growth escalator? The world is experiencing its third industrial revolution, and services are at the forefront of this revolution. Services have already surpassed industry as a source of economic growth and job creation, in both developed and developing economies. In the industrial sector, technologies have matured and employment is shrinking. However, services are getting more sophisticated and jobs are expanding. Services growth is also more inclusive and sustainable. It increases the participation of women in the labor force and places a lighter burden on natural resources. The promise of the services revolution is that countries do not need to wait to get started with rapid development. There is a new boat that development latecomers can take.

Fundamentals

For more than 200 years, it was argued that economic development and growth were associated with growth of the manufacturing sector (Baumol 1967; Kaldor 1966). Services were considered as menial, low skilled, and not very innovative (McCredie and Bubner 2010). But today, services can be among the most dynamic sectors. The range of services that can be digitized and traded globally is exploding—processing insurance claims; call centers; desktop publishing; compiling audits; completing tax returns; transcribing medical records; providing online education; and many more. Labor market matching is increasingly conducted online, and platforms like Odesk can connect employers and employees electronically across national boundaries. The old idea of services being nontransportable, nontradable, and nonscalable no longer holds. Services can be unbundled and splintered in a value chain just like goods, and exported at low cost (Bhagwati 1984).

But can developing countries benefit from the services revolution? Figure 1 compares the contribution of services and industry to gross domestic product (GDP) growth in the last 30 years for developed and developing countries. In both cases, the contribution of services to total growth is higher than industry’s contribution. In developing countries, services (and industry) contributed more to growth than in developed countries. The average growth of services exports from developing countries has exceeded that of developed countries (Ghani 2010). Their services exports are growing faster than goods exports. In brief, the globalization of services has enabled developing countries to tap into a new, dynamic source of growth.

What about jobs? Although the conventional wisdom is that the manufacturing sector creates more jobs, recent data suggest otherwise. Employment growth has been most rapid in the services sector in developed and developing economies (figure 1b). And in developed and developing countries alike, labor is being shed from both agriculture and manufacturing. The services sector is also more gender inclusive. Internationally, countries with high employment in services tend to have the highest participation of women in the labor market (figure 1c).
Two things stand out: first, the tradability of services has risen over time for both developing and developed countries. Second, this ratio is higher for developing countries. The figure also shows that a growing fraction of total services trade is now accounted for by modern services (Ghani 2010). For developed countries, the share of modern services in total service exports is now around 55 percent, while for poor countries the figure is 40 percent. Developing-country services exports are no longer just tourism, but are increasingly linked to modern services exported through the Internet.

Are these good jobs? Figure 2 shows that the rise in services’ contribution to growth is linked to a rise in productivity growth in that sector. Labor productivity growth in developed countries has been higher in services than in industry, and it remains positive. That implies that the global technology frontier for services is still shifting out, while industry has stagnated. At the same time, productivity growth in developing countries in services is accelerating and appears to have outstripped productivity growth in industry. In 58 out of 94 countries for which data are available, productivity growth in services exceeded that in industry.

Figure 3 plots the difference between average labor productivity growth in services and industry against the log of real per capita incomes. There appears to be no tendency for this differential to be associated with per capita income levels. Developing countries like Ethiopia, Moldova, and Lesotho are just as likely to excel in services, compared to industry, as developed economies like Hong Kong SAR, China.

Figure 4a plots services exports as a ratio of services value added on the left vertical axis for developing and developed countries. Two things stand out: first, the tradability of services has risen over time for both developing and developed countries. Second, this ratio is higher for developing countries. The figure also shows that a growing fraction of total services trade is now accounted for by modern services (Ghani 2010). For developed countries, the share of modern services in total service exports is now around 55 percent, while for poor countries the figure is 40 percent. Developing-country services exports are no longer just tourism, but are increasingly linked to modern services exported through the Internet.

**Export and Growth: PRODYs across Sectors and Time**

Economic growth can result from specialization and trade, but the size of the growth dividend from specialization depends on the technological sophistication of exports (Dalum, Laursen, and Verspagen 1999; Feenstra and Rose 2000). Empirically, an advanced export structure, higher productivity levels, and faster growth rates are linked.
Hausmann, Hwang, and Rodrik (2007) have introduced a method that gauges export sophistication in quantitative terms and have shown that their measure is positively correlated with economic growth across countries. This metric, called PRODY, is defined as a weighted average of the per capita incomes of all countries exporting a particular product, with the weights given by the revealed comparative advantage (RCA) of the exporting country. PRODY is therefore an alternative to the engineering approach to technological sophistication (Lall 2000) that tries to assign each sector to a technological category based on its content.

Hausmann and others only focused on trade in goods, a significant omission considering that services are the fastest growing component of international trade and global growth, and services are the most important and possibly most sophisticated products being traded today. Recently, Mishra, Lundstrom, and Anand (2011) have extended the analysis to cover services. Like earlier studies, their analysis also suggests that services export sophistication is strongly associated with growth in per capita income. This analysis goes deeper and shows that (i) services are becoming more sophisticated over time; (ii) modern services are the most sophisticated component of trade; and (iii) developing countries now have higher RCA in modern services exports than do developed countries.

**Measuring Sophistication: PRODY**

The starting point is the PRODY measure of sophistication developed by Hausmann, Hwang, and Rodrik (2007). Formally, the PRODY value for a product $j$ is defined as

$$ PRODY_j = \sum_{i=1}^{N} s_{i,j} y_i $$

where $y_i$ stands for the real per capita GDP of the $i$-th ($i = 1, 2, ..., N$) country exporting in sector $j$, while the weight

$$ s_{i,j} = \frac{RCA_{i,j}}{\sum_{i=1}^{N} RCA_{i,j}} $$

normalizes country $i$’s Balassa index of RCA with respect to those of all the countries exporting in the same sector.

By construction, products with high values of PRODY are those where high-income countries play a major role in world exports of that product. If one assumes that high-income/high-wage countries primarily export products with significant practical knowledge or technological content, the

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**Figure 2. Comparing Labor Productivity across Services and Manufacturing Sectors**

![Figure 2](image1.png)

Source: Authors’ calculation based on World Development Indicators, World Bank. Note: Labor productivity is calculated as the sector value added per employee. Line shown is the best-fit quadratic function.

**Figure 3. Differences in Labor Productivity Growth across Services and Manufacturing Sectors (1990-2009)**

![Figure 3](image2.png)

Source: Authors’ calculation from World Development Indicators, World Bank.

**Figure 4a. Tradability of Services Is Higher for Developing Countries (1990–2007)**

![Figure 4a](image3.png)

Source: Author’s calculation from World Development Indicators, World Bank.

**Figure 4b. Modern Services Exported through Internet Are Increasing from Both Developing and Developed Countries (1990–2007)**

![Figure 4b](image4.png)

Source: Authors’ calculation from World Development Indicators, World Bank.
PRODY index is bound to be correlated with the unobservable degree of technological sophistication of the product. The intuition is simple: products like airplanes are highly sophisticated and so are only produced in rich countries. These countries also have a high degree of RCA in the export of airplanes, and so the PRODY for airplanes is high. Over time, the PRODY can grow because the income levels of the main exporting countries grow, or because the RCA (the weights) of richer countries grows.

The database for services exports comes from the balance of payments (rather than customs data, as is the case for goods) and is disaggregated by sector rather than product. These sectors are divided into two aggregates: modern services and traditional services. Modern services are found in information and communication technology (ICT), business and finance, and other commercial services. Traditional services typically require more face-to-face interaction: for example, sectors such as government and community services, transport, trade, hotel, restaurant, and beauty shops and barbers.

In 1990, modern services had a PRODY that was 10 percent higher than traditional services, but about 8 percent lower than that of goods. By 2007, the PRODY for modern services was 70 percent higher than for traditional services, and 40 percent higher than for goods (figure 5). All sectors had increased the degree of technological sophistication over this period.

What Explains the Rising PRODY in Services?

A simple decomposition exercise explains the forces behind the rise in PRODY. Recall that the PRODY is calculated as the product of two variables, an exporting-country income level and the weight of that country as given by its RCA. Accordingly, the PRODY can change over time either because the weights shift for each exporting country (the RCA gets more marked) or because the income levels of the exporting country rise. The decomposition of the change over time of the PRODY is given by the following identity:

\[
PRODY_{t2} - PRODY_{t1} = \sum N_i \left( \sum y_{it2} - y_{it1} \right) + \sum N_i \left( \sum \psi_{it2} - \psi_{it1} \right)
\]

This formula is applied to the change in PRODY for three sectors, modern services, traditional services and goods, and then the change between 1987–89 and 1997–99 is compared with the change from 1997–99 to 2007–9 (figure 6).

The decomposition exercise shows the following trends.

- First, all products have experienced a higher degree of sophistication over time as the per capita incomes of countries have grown.
- Second, the RCA term is negative for five of the six calculations, implying that developed countries are losing their comparative advantage and developing countries are becoming more important exporters.
- Third, the exception to this trend is for modern services exports in this century. Despite the tremendous growth in modern services exports from developing countries, exemplified by business-process outsourcing, there has been even more rapid growth in modern services exports in developed countries (relative to their goods exports).

The PRODY decomposition assumes that the number of countries reporting/participating in a sector’s exports remains the same throughout all periods. Since this does not hold in this case, the decomposition is inexact. To check robustness, the analysis also applied the decomposition with a balanced panel and for a different time period (change in PRODY from 1995–97 to 2001–3 and from 2001–3 to 2007–9) with minimal change in results.

Conclusion

The pace of growth in developing countries has increased. But the potential for explosive growth was usually only seen in the manufacturing sector: this is no longer the case. Countries
with high growth in services also tend to have high overall economic growth.

However, the causal connection remains uncertain: after all, there is also a positive relationship—widely accepted in development economics—between manufacturing growth and overall growth. But what has been overlooked is that the effect of services growth on aggregate economic growth appears to be as strong, if not stronger, than the effect of manufacturing growth on overall growth.

Service-led growth is sustainable, because globalization of services is still in its infancy. Moreover, the long-held view that services are nontransportable, nontradable, and nonscalable no longer holds for a host of modern impersonal services, which can now be produced and exported at low cost. Developing countries can thus sustain service-led growth, given the huge room they have for catch-up and convergence.

The process of globalization in the late 20th century led to a sharp divergence of incomes between those who industrialized and broke into global markets and the “bottom billion” in some 60 countries where incomes stagnated for 20 years. It seemed as if the “bottom billion” would have to wait their turn for development, until giant industrializers like China became rich and uncompetitive in labor-intensive manufacturing.

The globalization of services, however, provides alternative opportunities for developing countries to find niches, beyond manufacturing, where they can specialize, scale up and achieve explosive growth, just like the industrializers. As the services produced and traded across the world expand with globalization, the possibilities for all countries to develop based on their comparative advantage expand—and that comparative advantage can just as easily be in services as in manufacturing or agriculture. The promise of the services revolution is that countries do not have to wait to get on the path to rapid development. There is a new way ahead.

Acknowledgment

This article draws upon The Service Revolution in South Asia (Ghani 2010), and columns in Project Syndicate and VOX EU.

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Note

1. For an account of the differences between trade in goods and services, see Copeland and Mattoo (2008), Hoekman and Mattoo (2008), and Francois and Hoekman (2010).

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