

## ADB Working Paper Series on Regional Economic Integration



### Can Global Value Chains Effectively Serve Regional Economic Development in Asia?

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Hans-Peter Brunner

No. 110 | March 2013





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This paper summarizes some results as presented in Aid for Trade—An Investment Benefit Roadmap from South Asia. Manila: ADB. Forthcoming. (Team leader Hans-Peter Brunner, in conjunction with Global Development Solutions LLC. and Applied Agents, and funded by the Investment Climate Facilitation Fund under the Regional Cooperation and Integration Financing Partnership Facility established by the Government of Japan).

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## **Abstract**

Regional economic integration through logistics, information network and connectivity improvement can increase the 'virtual size' of an economy as trade with neighboring countries increases. This leads to substantial benefits from scale, network, coordination and agglomeration economies. As is shown, especially in small economies and LDCs, regional economic integration induces the necessary rebalancing needed for integration of the regional portions of Global Value Chains (GVCs) to the global portions of GVCs. This paper demonstrates this with South Asian case studies in GVC development and with the related mapping methodology. This methodology traces a product through an entire channel across a region, from the point of product conception to the point of consumption. As an appropriate set of investment and policy measures is undertaken across a region, it can as we show in the paper, lead to a substantially 'rebalanced' way of income growth.

*Keywords:* Rebalancing, spatial distribution of growth, regional economic integration, South Asia, value chains

*JEL Classification:* C15, F12, F15, O18, R12

## 1. Introduction

This short paper features South Asian case studies in a Global Value Chain (GVC) development and related-mapping methodology, which is a process of tracing a product flow through an entire channel across a region, from the point of product conception to the point of consumption. This process highlights the underlying patterns of inputs, constraints, and competitive advantages that a producer has. It also traces the path of all value-adding and non-value-adding activities associated with the production of a good and approximates the costs involved at each stage.

Transaction productivity is low in poor and small economies that are remote from key markets. The high cost of market access makes integration into GVCs difficult, lowering incomes and growth. Regional integration through logistics, information network, and connectivity improvements can increase the “virtual” size of an economy as trade with neighboring countries increases. This leads to substantial benefits from scale, network, and agglomeration economies (Winters 2009). Further, this leads to a rise of unit values in exports, and thus to increased income and gross domestic product (GDP) growth. As export unit values increase, the cost of transportation per weight unit decreases relative to its value.

High quality products are also highly networked (Kali and Reyes 2007) as they come with many additional features; that is, these are complex goods that require equally complex GVCs. With the lowering of transport and transaction costs due to technological advances in the transport and communications sectors, and due to infrastructure investment, GVCs have increasingly evolved geographically. Conversely, studies have shown that inadequate infrastructure impedes horizontal diversification as market access remains difficult and the costs of exploring new markets stay high (Cadot et al. 2008). For regions and countries that produce lower quality goods, structural change entails moving into product components (and services) that are incorporated into higher quality products in sectors with high vertical product differentiation. However, such a move is only possible if entry into GVCs is easy and can occur with low transport and transaction costs. Thus, structural change also means the integration of GVCs in the region and the linkage of the regional part of GVCs to the global portion(s) of GVCs.

Harding (2009) is the only study linking integration in a geographic space through improved connectivity of infrastructure to increased export unit values from improved quality of existing products (vertical integration), or in terms of moving horizontally into new products. Harding uses changes in transaction costs due to reforms and investment in 10 Eastern European counties to evaluate the impact on export unit values at the 4-digit product level. The study finds that reform of and investment in the financial, communications, power, and road infrastructure sectors significantly increase export unit values. An additional interesting finding in the Harding study is that roads matter more for vertically differentiated products than for other products.

If an appropriate set of investment measures is undertaken across a region, it can, as shown in this paper, lead to substantially rebalanced growth in terms of income brackets and geography. Regional economic integration, when combined with measures to help

economies move into higher centrality in a product space<sup>1</sup> and when seen and examined through the prism of a stylized growth feedback model, is a very effective and powerful driver of a regional economy. Efforts to raise productivities, including transaction productivities in trade, with the levers of network, agglomeration, and scale economies, are likely to substantially propel economic growth upward.

To address the perceived trade account deficit, especially among the smaller, less developed countries (LDCs) of South Asia, it is necessary to upgrade and diversify the supply and sector structures in these economies. This is tantamount to both diversifying and integrating within a product group, but also to branching out into nearby product groups in the global product space. The GVC development and mapping methodology can facilitate investment in such rebalancing efforts.

A feedback cycle (Figure 1) of structural change needs detailed scrutiny. Structural change is about the establishment of economic measures and conditions that allow movement into those areas of product space in which firms can exploit markets through product differentiation at the high quality and price spectrum. This change is reliant on productivity growth. Such movement in product space can occur in developing economies through integration into GVCs that are anchored to a lead firm that ultimately assembles a vertically integrated and differentiated product at the high quality and price spectrum in a high income consumer market. I refer this strategy leading to structural change in product space as the vertical transformation of product space.

Another facet of a response strategy to the challenge of regional economic integration is for economies to diversify horizontally within the product space—an increase in the variety of trade. Diversification in product space leads to increased opportunities for growth, less vulnerability to economic disruptions (Baccetta et al. 2009), and is shown to increase average unit values in exports and, hence, induce positive feedback in the growth model (Feenstra and Kee 2004).

When model representations of change are used that are not inclusive of these powerful levers, then policy- and decision-makers are not sufficiently incentivized to induce structural change in product and geographic space; the large, potential gains from action are not made visible. The economic geography strongly determines the productivity, wage, and trade cost structure of heterogeneous firms embedded in networks, and this reality has to be represented effectively in models. This paper argues that there exist conceptual representations of change and rebalancing in economic structure that, while being sufficiently simple to be understood, remain sufficiently representative of reality and therefore yield significant added power to impact regional economic development in South Asia when compared to other less useful or crude representations.

This paper proceeds as follows. The next section illustrates the development of specific product case studies, as representatives of product groups located in product space. In the third section, a specific model representation is summarized that follows the frame of the stylized growth feedback as presented in Figure 1. It effectively and visually shows

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<sup>1</sup> There is an extensive recent literature on the nature of product space. See Hausmann et al. (2008) and Felipe et al. (2012).



the rebalancing nature of GVC restructuring on a regional basis. The last section concludes.

## **2. Development of Product-Specific GVCs (Based on Case Studies)**

Creating a GVC requires products to be defined and categorized according to various production processes and procedures that capture all value-adding and non-value-adding activities associated with a final product. Depending on the complexity of the product and the level of detail required for an analysis, the number of categories of activity along a value chain can range from as few as five to as many as 25 or more. For example, a value chain for coffee has nine process categories clustered under three major value-adding activities: land preparation, fertilizing, and plant maintenance. A sample of the process segmentation along a coffee value chain is presented in Table 1.

Each of the process segmentations represents important value adding and non-value-adding activities, relevant for tracing a product from its very beginning until it reaches the final consumer.

The selection of a specific product group for analysis is an important aspect of a successful GVC analysis. The reason is simply that the product chosen is really a proxy for the entire sector. Although the results for different products within a product cluster will often vary, experience suggests that the policy, legal, and market distortions a product cluster faces and the impact these distortions have on the competitiveness of players along the GVC vary only marginally. Therefore, the final value chain analysis will look very similar for major products across the spectrum of a product cluster.

When undertaking the scoping mission, the team looks at a number of factors related to the selection of the product and product clusters in order to confirm that the product and product clusters are the ones that should be analyzed. In confirming the product and product clusters, the following issues are taken into consideration.

- (i) An initial, rapid global market analysis is undertaken at the start of the scoping mission to determine the product and product cluster's position in the product space.
- (ii) It is important to understand whether or not the general demand for the product is growing and why. For instance, in the case of bamboo, the global demand is increasing due to the "green" nature of bamboo, while the supply capability is also increasing.
- (iii) The cost and availability of transportation is one of the major cost items in a GVC. This can relate to the transport of goods from farm (or factory) to port, and to the cost of bringing imported inputs from the port to the farm (or factory). In the case of northeast India, where infrastructure is spotty at best, the costs can be extraordinarily high. The costs and trouble of accessing imported inputs (e.g., specialized fertilizers) for a number of product and product clusters is high, resulting in a higher cost basis for landlocked areas.

- (iv) Although labor costs (and labor-related issues) are usually a minor part of the overall value chain, for products that require significant labor inputs, problems usually rest with labor productivity. The problem is not so much one based on individual output, but one that is more related to absenteeism, idle labor, and other productivity distortions resulting from deficient labor laws.

## 2.1 Indian Bamboo Floor Tiles: A GVC Analysis

Bamboo is a fast-growing grass that occurs naturally on every major continent except Europe. India is uniquely endowed, yielding a large and diverse resource of raw material. Of the nearly 1,200 species of bamboo in the world, India is home to 130 species, belonging to 18 genera. Although most are indigenous to the country, some have been brought to India from other countries.

Bamboo cultivation in India can draw upon a legacy of traditional skills and usage. The country's bamboo resources are the second largest in the world. Most varieties grow naturally at elevations ranging from sea level to more than 3,000 meters, and they do so in an extraordinary range of habitats on almost 10 million hectares—on forested land, on small family farms, and in private and government plantations.

For the purpose of this analysis, a GVC for export-quality bamboo parquet floor tiles was prepared. Although the product analyzed is categorized as export quality, the producers also sold the product domestically to builders and homeowners.

The value chain for export-quality bamboo parquet floor tiles can be divided into at least six levels of value-adding activities:

- (i) Sourcing the raw material;
- (ii) Cross-cutting and treatment;
- (iii) Drying;
- (iv) Planning and sorting;
- (v) Cutting and sizing; and
- (vi) Finishing and packing.

Key identified GVC barriers were the lack of commercial plantations able to apply scientific practices, a weak supply chain of bamboo raw material inputs into tile production, and a high level of waste of raw material due to outdated production technologies. Further weaknesses were inadequate quality control, testing, and certification of tile exports, and rent-seeking along the GVC, which added significantly to import and export transaction costs. Investment capital shortages and inadequate market access also hamper the export of bamboo floor tiles.

Based on the analysis of the market size for bamboo flooring (estimated at close to \$300 million over the next 10 years) and the potential of the northeastern region in India, it has been estimated that the region can capture around 10% of the global bamboo flooring market in the next 10 years, which translates to around 2 million square meters (m<sup>2</sup>) of floor tiles priced at around \$16–\$20 per m<sup>2</sup>.

The GVC projects considered for investment fall into two categories:

- (i) Bamboo value-chain-specific projects such as commercial plantations and strip-making units. These projects are specific to one value chain and are funded as private investments under a trade finance facility component. We assume that many value chains—such as organic pineapples and other fruits and vegetables—will develop in parallel in the northeast of India and would require similar investments.
- (ii) Common infrastructure. This includes items such as inland container depots and trade facilitation centers, which would be utilized by various value chains, developed under a sovereign loan component, and suitably leverage resources through public private partnerships.

## **2.2 Ceramic Table Ware in Bangladesh: A GVC Analysis**

The ceramics manufacturing industry in Bangladesh started in the 1960s with the establishment of the first porcelain tableware production plant. By the mid-1970s, the country also had a sanitary ware production firm. By 1991, the country exported approximately only \$1 million of ceramics ware, as the bulk of the production was destined for the local market. It was not until the late 1990s that the sector began to show significant export growth and contribute to employment. By 2008, some 40 years after its inception, ceramics manufacturing had emerged as a viable industry in Bangladesh.

Notwithstanding the fact that it remains focused solely on household applications and has not developed products for the increasingly important industrial ceramics market, the sector provides jobs for over 13,000 people and generates \$35 million–\$45 million in export revenues annually.

The Bangladeshi ceramics industry can generally be divided into two categories:

- (i) The tableware industry, which focuses mostly on the export market; and
- (ii) The tiles and sanitary ware industry, which focuses almost exclusively on the local market.

The export prospects and the competitiveness of the ceramics tableware industry are challenged by a range of public sector failures, which are examined in detail in the GVC analysis that follows.

For the purpose of this paper, a GVC analysis for export-quality Bangladesh ceramics, especially tableware, was prepared. Broadly, ceramics denote the manufacture of any product made from a non-metallic mineral hardened at high temperatures, including glass, earthenware, porcelain, and white-ware (non-decorated tableware). Ceramics also denote porcelain enamels, brick tiles and terracotta, refractories, cement, lime and gypsum, and certain abrasives.

Household ceramic applications generally fall within the definition of pottery, with applications in tableware and kitchenware, sanitary ware (sinks and toilets), and tiles. The focus of this GVC analysis is tableware made of porcelain.

The value chain for decorated porcelain tableware can be divided into eight key value-adding activities:

- (i) Raw material intake, inspection, and mixture preparation;
- (ii) Molding or casting, depending on tableware product;
- (iii) Biscuit drying and firing;
- (iv) Glazing and gloss firing;
- (v) Decorating and firing (decorating may not be performed, depending on tableware, in which case ceramics are moved from gloss kiln to finishing and packing);
- (vi) Finishing and packing;
- (vii) Transport to market; and
- (viii) Administration and overhead.

Typically, the process starts with the intake of imported raw materials that are inspected at the stone yard and moved to the mixture preparation stages of production.<sup>2</sup> The primary materials for ceramic products are white clay and sand. The largest deposit of white clay in Bangladesh was discovered in 1957 in Bijoypur (of Mymensingh). The total reserve of white clay from this region is estimated to be 2.57 million tons. Clay was also found at different locations in Jaflong (of Sylhet), but there is no clay or sand treatment plant at these locations. This is why about 95% of raw materials for making quality and exportable ceramic products in Bangladesh are imported from abroad, mainly from the People's Republic of China (PRC), India, Japan, Germany, New Zealand, Republic of Korea, and Thailand.

The inspected raw material mixtures are put in molds or casts, depending on specifications provided by the customer. After quality control inspections, the ceramic pieces are placed on a conveyor belt that directs the pieces into a dryer. Following the drying period, the ceramic pieces are placed on yet another conveyor belt leading to a finishing machine where edges and surface are smoothed out. The ceramic pieces are then ready for “biscuit” firing in a kiln.

Once the pieces, which are referred to as “biscuit ware,” have been glazed, they must be fired again, which is commonly referred to as gloss firing. Depending on specifications provided by the customer, the fired-glazed biscuit ware may end up directly in the finishing department or be channeled to a decorating unit where decorations and/or artwork such as paintings and decals are introduced—after which they are fired again.

Once cleaning, polishing, and inspections are completed, the finished porcelain is sent to the packing department where export products are packaged and loaded onto trucks for shipments via Chittagong Port.

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<sup>2</sup> Mixture preparation is considered one of the key elements of pottery making and is generally guarded with the highest degree of secrecy among producers.

According to the GVC analysis, key constraints include political instability, unreliable gas pressure from public utilities, and import and export transportation costs.

Notwithstanding its low price, the quality of the gas supply is reported by some observers of the industry as a significant bottleneck. Due to high demand and poor infrastructure, gas pressure in the pipeline is extremely volatile. According to interviews, most tableware exporters are lucky enough to have plants in areas around Dhaka, where gas pressure is steady most of the time; but gas pressure remains volatile to a degree and all factories retain costly industrial back-up generators.

At any given time on the factory floor, multiple kilns run simultaneously firing biscuit, gloss, and decorations. Unlike printing presses that are powered by generators that can be turned on and off at any time, decoration, biscuit, and gloss firing kilns need to run constantly during production cycles. They also cannot be shut down quickly and need to cool off gradually (by loading empty carts) until pressure levels return to normal. As a result, major losses are incurred in the short-term (wasted materials) and long-term (rapid kiln and cart amortization). Improvements in the gas distribution network are therefore anticipated to improve the competitiveness of the industry.

A closer look at transportation costs suggest that importing raw materials via land (from India) or sea (from other Asian countries) is hindered by significant transaction and handling costs. When raw materials are imported from neighboring India via overland freight, transportation and handling charges increase the raw material prices by an average of 17%. Since India and Bangladesh do not have transit arrangements, Indian shipments must be offloaded and then reloaded onto Bangladeshi trucks at crossing points such as Benapol. This inefficiency increases the price of raw materials—freight on board (FOB) at the border crossing—by an average of 7%, which is nearly the same additional cost required for overland transport from the border to Dhaka (approximately 300 km) (Table 2).

When raw materials are imported from Southeast Asian and other countries via sea freight, supply chain inefficiencies still exist, but they revolve around under-handling rather than over-handling. Table 3 illustrates a cost and freight (C&F) bill for a shipment of plaster of Paris from Thailand via Chittagong Port. It can be seen that this particular shipment was stuck at the port for 39 days. At the time of shipment, a 5-day holiday was in effect, which resulted in backlogs and clearance and processing delays. The port charges associated with these delays cost firms an estimated \$38 per ton—a full quarter of all costs associated with moving a TEU from Chittagong to Dhaka.<sup>3</sup> Importers admit that delays of this magnitude occur less frequently than in the past and now only occur a few times every year, but shorter delays of a few days are still pervasive and Chittagong Port's operations continue to disrupt firm supply chains. Table 4 highlights additional GVC barriers in Bangladesh. The interventions identified for Bangladesh are presented in Figure 3.

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<sup>3</sup> Twenty-foot equivalent unit (TEU) is the standard unit for describing a ship's cargo carrying capacity, or a shipping terminal's cargo handling capacity

### **3. A Geographic Agent-Based Model with Built-in Feedback among Economic Tiles**

The GVCs for bamboo floor tiles and sea buckthorn plants have been traced through “economic tiles” in the study area in Figure 4. Each tile is mapped with coordinates A to O from North to South, and 1 to 23 from West to East.

Investments are normally strung along production and value chains for tradables. Therefore, tiles present a way to trace how changes in economic activity or infrastructure in one area reverberate along the value chain to other areas linked by an investment corridor.

With the help of GVC development and analysis across an economic region, the potential growth for existing and future export production sites can be analyzed. Being an independent economy, production, consumption, and trade can take place within geographic tiles. Trade can also occur between tiles. However, the costs of transportation and connectivity need to be taken into account for inter-tile trade.

The features of tiles allow us to represent all phases of GVCs, from inbound logistics to operations, outbound logistics, marketing, and sales. Production can be dispersed geographically, as well as over time. The model also allows direct assessment of the potential impact of infrastructure investments that affect the cost of transportation across tiles.

The use of tiles to conceptualize the real world—and the effect of changes in one location of the economy on another location—is illustrated in Figure 4, which zeroes in on two value chains as they relate to regional priority corridors. ADB’s focus for investment in the northeastern region of South Asia corresponds with these corridors and with potential trade-related infrastructure investments to enhance three GVCs in the region that have been identified for their export potential: bamboo floor tiles, ceramics, and the seabuckthorn medicinal plant.

Goods transport, travel times, and cost matrices are computed using data collected from the field in cases with and without future project investment. Thus, different investment scenarios can be compared; for instance, a scenario could focus on one particular regional trade and transit corridor to see how the result is different over time, and how it compares with alternative corridor investments. By locating the comparative advantage of the northeastern region of South Asia, it becomes empirically possible to locate further production possibilities nearby and to map their value chain to potential export markets.

We establish a benchmark and then examine the gains in the linear economy that arise from two kinds of infrastructure investments. The experiment described here is driven by the two varieties. The focus of both is on incomes, geographic distribution, and the dispersion of prices as a measure of the benefits of infrastructure investments and on gains in trade flows.

## 4. Investment Scenarios

Three specific scenarios are simulated in accordance with the need for a benchmark in which changes with no additional infrastructure are described. The benchmark is a starting point in the computational methodology for assessing the potential effects of project and policy investments on data tiles across a value chain.

The three scenarios are as follows:

**(S1)** The existing (present day) network logistics of roads and trains—the benchmark case.

**(S2)** The transport network in S1 is enhanced by a set of non-perishable road and/or rail infrastructure investment (e.g., additional road lanes alongside precise digital locations), the cost of investments, and a “guestimate” of their impact in reducing travel times.

**(S3)** The transport network in S2 is enhanced by a set of infrastructure improvements in perishable trade supporting infrastructure improvements (e.g., refrigerated or automated warehouses or stockpile storage locations).

The results of the comparisons between the three scenarios are described for administrative districts, at the level of individual tiles, and in aggregate for the entire region affected by the investments. They can be visualized both in final equilibrium outcomes (e.g., costs and welfare) and in the dynamics leading up to equilibrium. For reasons of brevity, only one computational output is shown here in Figure 5, which compares scenario S3 with the baseline S1 in terms of income distribution and differentials over time.

## 5. Concluding Remarks

It is clear from the trade issues facing South Asia that a region’s competitive advantage in both regional and international trade rests on how effectively it can improve and invest in its logistics infrastructure, and in GVCs that link suppliers (via vertically integrated trade networks) to customer demand. The competitive advantage from traditional proximity to raw materials or cheap labor has increasingly been replaced in recent decades by proximity to markets. The business capacity to produce time- and quality-sensitive consumer goods and services has to be raised in order to move the region more to the center of the global product space.

One general strategy of development and growth is to diversify trade in terms of sectors and markets by branching out into new products in close proximity in product space (horizontal integration). It requires, for instance, the introduction of GVCs and complementary improvements in logistics and infrastructure. A second and possibly parallel strategy is to move into higher value-added market segments within established sectors with increasing labor costs, as is the case with India. Another strategy for smaller and landlocked LDCs is to move into niche markets, possibly with higher value-added,

and to make use of subcontracting (vertical integration) in cases of proximity to larger markets such as India. A fourth strategy is pushing processing activities down the value chain, in order to allow greater differentiation in product characteristics closer to the customer, and offering greater flexibility in serving small orders. All of this requires the necessary investment in capacity building in functioning GVCs, together with the necessary logistics and infrastructure investment.

Each of these strategies requires development of new and better GVCs. For new products, there are new sources for inputs, different processing sequences, and different handling requirements. For new markets, there are differences in product standards and order cycle requirements. In some cases, the introduction of a new GVC is itself the new product—such as the introduction of ready-to-eat meals or on-the-rack garments. In others, the value chain generates additional trade—such as the trade in intermediate goods as a result of rebalancing of the production process along a GVC.

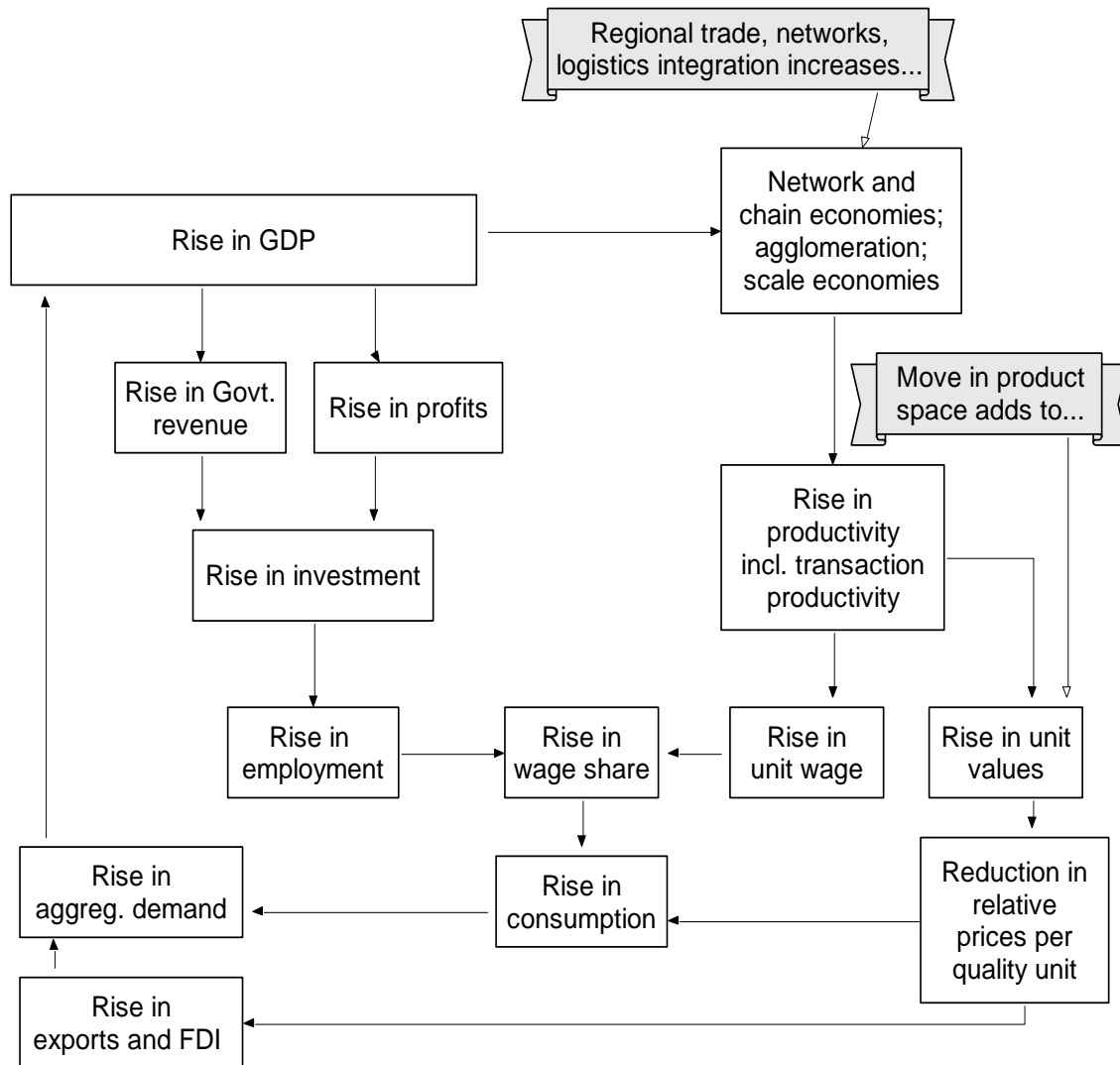
This report has mapped the economic space in the modeling area and then used channel-mapping methodology in tracing product flows and transfers through entire GVCs, from the point of product conception to the point of consumption. The methodology has thus measured and quantified costs of trade and the respective distortions that hinder the competitiveness of products and industries in the area. The model as summarized provides a novel methodology and accompanying software platform, giving policymakers a framework in which to evaluate the potential of real projects to bring investment gains to people in the economic periphery. It is embedded in real GVCs and geographies, and able to capture sophisticated spatial economic dynamics, explicitly representing both space and time to adequately project the complexity and consequences of rebalancing within product-specific value chains. Overall, the potential for substantial regional economic rebalancing emerges.



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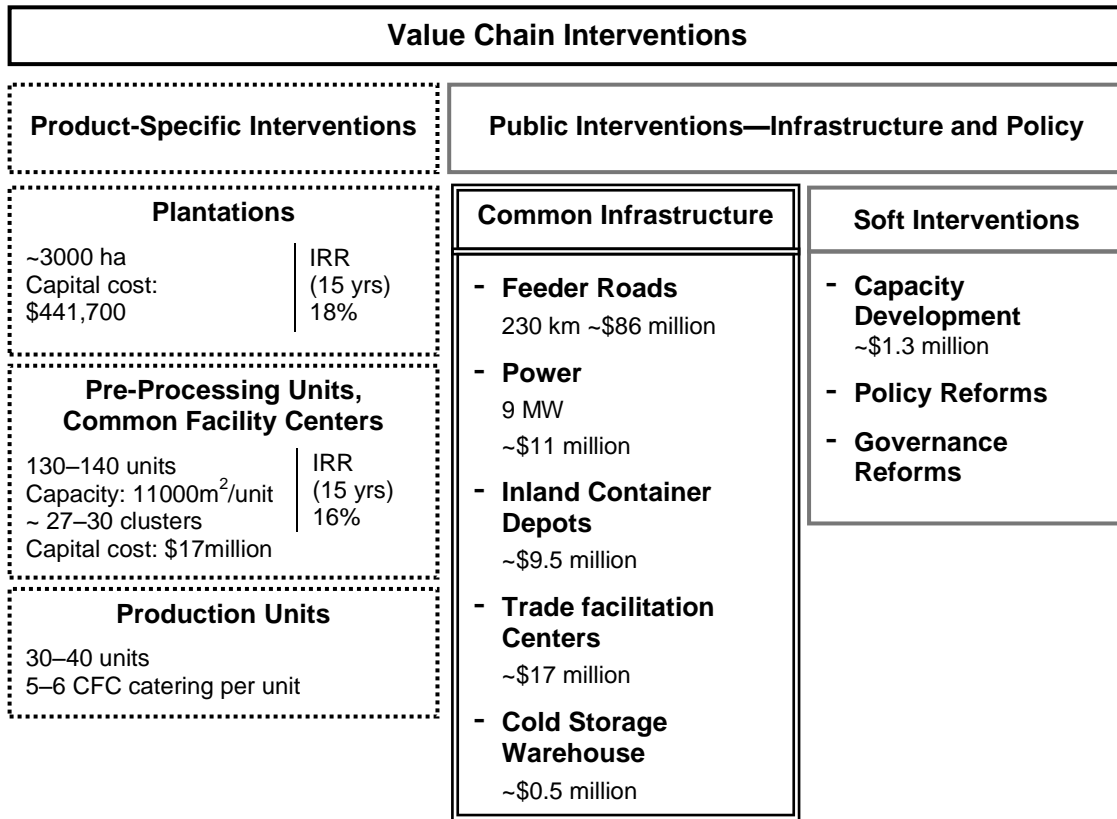
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**Figure 1: Regional Economic Integration Feedback**



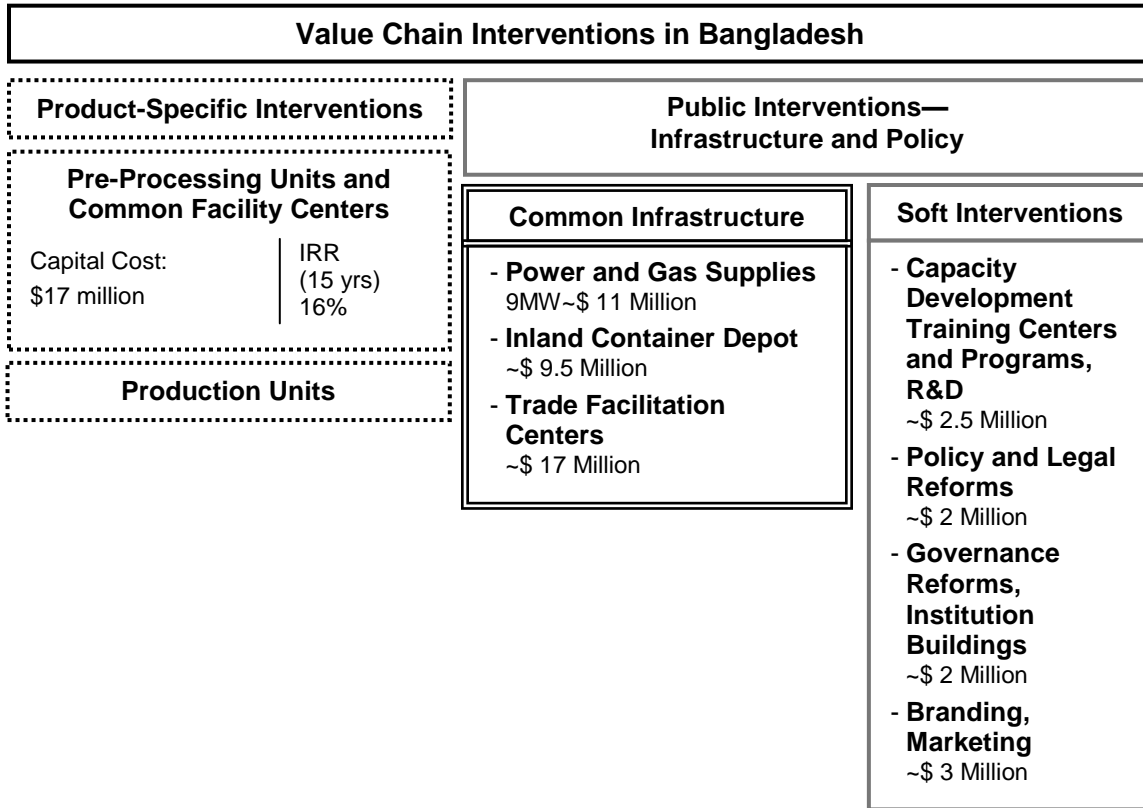
FDI = Foreign direct investment, GDP = Gross domestic product.  
 Source: Author's illustration.

**Figure 2: Preliminary Business Plan Scenario:  
GVC Interventions in Bamboo Floor Tiles**



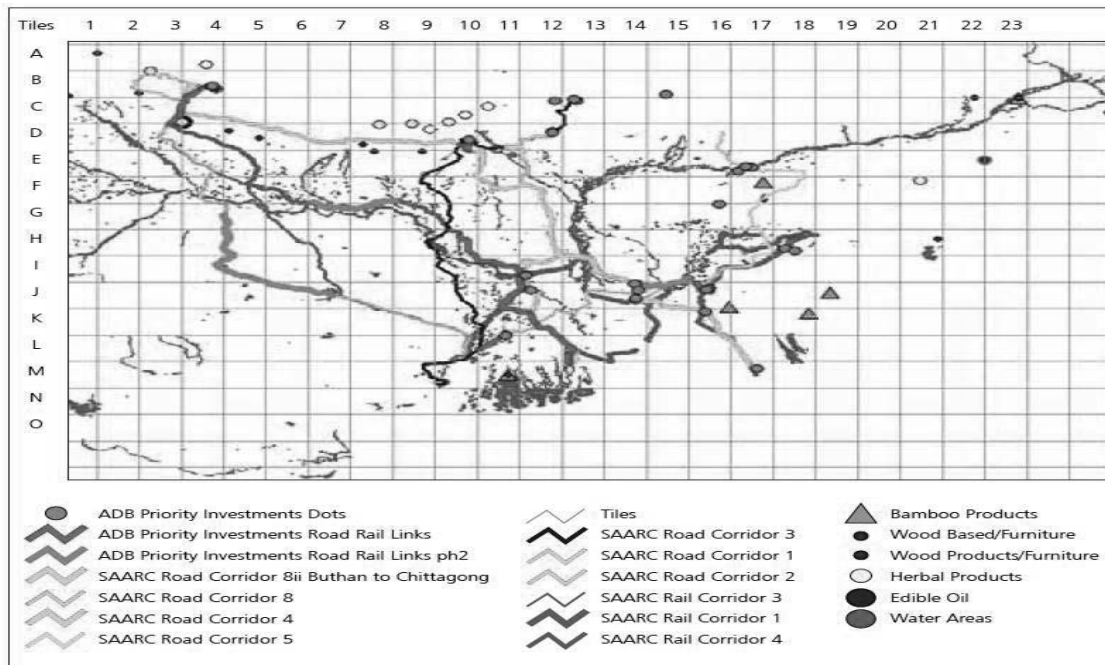
CFC = Common facility centers, GVC = Global value chains, ha = Hectares, IRR = Internal rate of return, km = Kilometers, m = Meters, yrs = Years.  
Source: Author's compilation.

**Figure 3: GVC Interventions Bangladesh Ceramic Tableware**



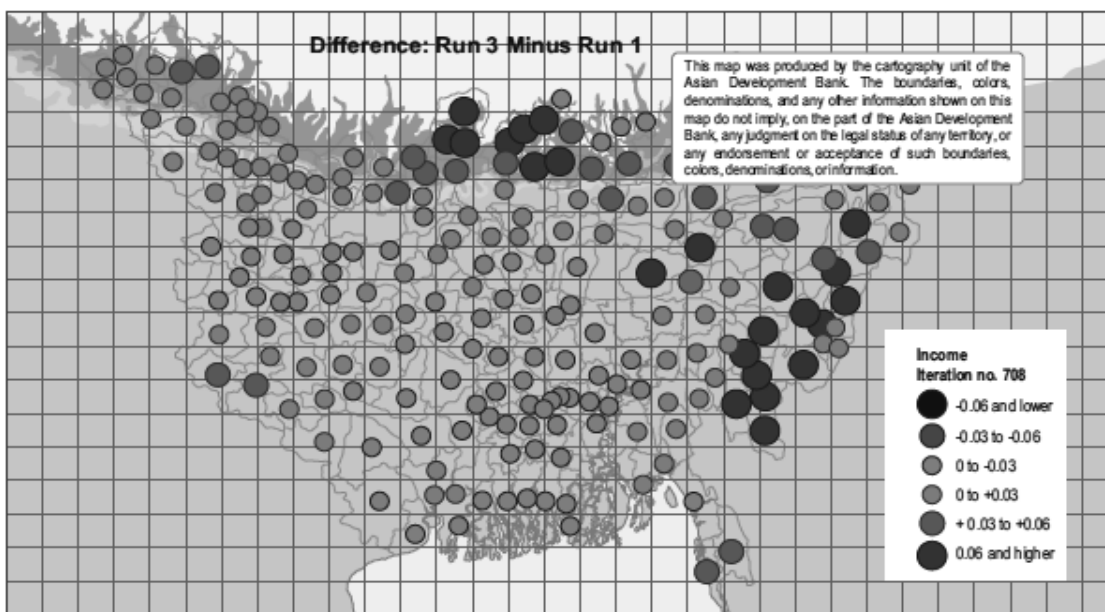
IRR = Implementing rules and regulations, MW = Megawatt, R&D = Research and development.  
 Source: Author's compilation

**Figure 4: GVC Tracing for Bamboo Floor Tiling and Sea Buckthorn Plants**



Source: Author's Illustration.

**Figure 5: District Income Growth above Baseline from Full GVC Investment Package**



Source: Asian Development Bank.

**Table 1: An Example of a Value Chain for Coffee**

<b>Farming</b>	<b>Post Harvest</b>	<b>Transport, Shipping, Customs Clearance</b>
Land preparation	Transport to processor	Fumigation
Fertilizer, Manure	Drying	Phytosanitary Certification
Pesticides	Hulling and grading	Transportation
Plant Maintenance	Bagging	Port Charges
Harvesting		THC
		Customs Clearance
		Shipping
		Bank Interest
		Miscellaneous

Source: Global Development Solutions, LLC.

**Table 2: Raw Material Imports from India—Transaction Costs, 2009**

<b>Item</b>	<b>\$/ton</b>	<b>% of Raw Material Price</b>	<b>% of Total Price</b>
Raw Material Price (Weighted Average), FOB Benapol	200.46	100	79
Duties/Fees		9	7
Customs Duty	15.36		6
Value Added Tax (VAT) <sup>a</sup>	1.80		1
Advanced Income Tax (AIT) <sup>b</sup>			0
Per Shipment Inspection (PSI)	2.61	1	1
Handling/Transport Benapol-Factory		17	13
Offloading/Loading Charges, Benapol/Bumra	13.60	7	5
Overland Transport	14.00	7	6
Offloading, Factory	6.52	3	3
<b>Total</b>	<b>254.35</b>	<b>144</b>	<b>100</b>

<sup>a</sup> This VAT figure represents carrying cost 6 months (delayed) refund at 12% approximately. Actual VAT at 15% paid upon import of raw materials.

<sup>b</sup> AIT counts towards tax payment - not included in VCA hence left out. Actual AIT at 3% paid upon import of raw materials.

Source: Global Development Solutions, LLC.

**Table 3: Plaster of Paris Imports from Thailand—Transaction Costs, 2009**

Jan-09 \$ FOREX	70.8				
Net weight	21,488				
Gross weight	21,000				
Pkgs	840				
Container 1x20"					
<b>C&amp;F Bill</b>		<b>Taka</b>	<b>\$</b>	<b>\$/ton</b>	<b>% of Total</b>
Bank Verify		100	1	0.07	0
Customs Duty, Deferred VAT, Charges as per B/E & Assessment Notice		123,368	1,742	82.98	58
Customs Development Charge		70	1	0.05	0
River Dues & Port Charges (Shed Bill) 39 days demurrage		56,265	795	37.84	26
NOC Charges:					
Shipping Charges		23,964	338	16.12	11
Noting, Assessment, Examination, Delivery etc, Customs		5,000	71	3.36	2
Port Expense for Delivery					
Merchant Labor		2,000	28	1.35	1
Agency Commission @0.25% on Assessable Value (Minimum)		3,000	42	2.02	1
		213,767	3,019	144	100

B/E = Bill of export, FOREX = Foreign exchange rate, NOC = Non-operator charges, Pkgs = Price per kilogram, VAT = Value-added tax.

Note: Blank space = unknown data.

Source: Interviews, Global Development Solutions, LLC (January 2009).

**Table 4: Summary of Barriers to Competitiveness in Bangladesh**

<b>Issues</b>	<b>Public Sector</b>	<b>Private Sector</b>
Political instability	X	
Delayed VAT refunds	X	
Unreliable gas pressure from utilities	X	
Inadequate testing and accreditation regime	X	
Missing transit arrangements with India; high cross-border transaction and handling costs for raw materials	X	
Exorbitant commissions and fees on finance	X	X
Inadequate foreign commercial trade office support; limited to no presence in growing markets of South America, India, and East Asia	X	X
Extremely weak cooperation and coordination within industry (industry association only in name); race-to-the-bottom pricing between producers		X
Porcelain and china tableware market positioning potentially weak		X

Source: Global Development Solutions, LLC.

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