Strategies for Structural Transformation in South Asian Countries

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Growth in South Asia has not resulted in structural transformation and increase of productive capacities. This paper presents a methodology to identify the opportunities for countries in South Asia to build their productive capacities and promote structural transformation through the emulation of the productive structure of more developed countries. The paper also discusses country-specific strategies that combine laissez-faire and strategic diversification approaches to facilitate the emergence of new economic activities that are more likely to increase the productive capacities in the country. In addition to its relevance to the formulation of inclusive development policies in South Asia, this paper contributes to the industrial policy literature by exploring the use of empirical data to verify the need for selective policies.

Keywords: Diversification, Structural Transformation, Productive Capacities, Economic Development, Industrial Policy

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I. Introduction

South Asian countries have experienced fast economic growth in the past decade.[1] For the region as a whole, the average annual growth of GDP in PPP was 7.08% during the period from 2000 to 2010, 4.5 percentage points higher than the world's average and faster than other developing regions (Table 1). Although a very heterogeneous region, for example in terms of country's population size and GDP per capita, most countries in South Asia have shared a fast increase in per capita income in PPP terms, which has contributed to the fast poverty reduction from 53.8% of the region's population living below the poverty line of $1.25 a-day in 1990 to 31% in 2010.

However, fast economic growth in South Asian countries has not resulted in structural transformation and the increase of their productive capacities. South Asia, for example, is home to almost 24% of world's population, but its shares of global GDP and manufacturing value added have remained around 3% for the past 40 years (Table 2). In addition, countries of the region have contributed only around 1% of world's high-technology exports. The region is also a marginal contributor to science and technology when measured by the share of global receipts of royalties and license fees (0.07%) and the share of scientific and technical journal articles (2.77%). Additionally, the relatively slow pace of urbanization in the region resulted in an increase in its share of world's rural population from 25% in 1970 to 34% in 2010.

A brief review of some stylized facts related to economic development and diversification shows that structural transformation and increase of productive capacities are associated with the production of an expanding range of goods and services (Section II).[2] Therefore, the question for policymakers in South Asian countries is how to facilitate the process of diversification of their economies. In the context of developing countries, economic diversification is usually associated with the move towards non-traditional and more productive economic activities. However, diversification is a path-dependent process — new economic activities tend to exploit the technologies that were previously developed for other activities. An optimum path of diversification may exist, consisting of the

[1] This paper adopts the definition for the South Asian region comprising of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
[2] Diversification is defined in this paper as an increase in product varieties (product diversification).

TABLE 1

SOUTH ASIAN COUNTRIES: BASIC STATISTICS

Country/ Area	Average annual GDP (2005 US dollars growth rate)			Population Size (thousands of people)			GDP per capita (constant 2005 PPP)			Poverty headcount (2005 PPP $1.25 a day) (b) (c)	
	1980s	1990s	2000s	1990	2000	2010	1990	2000	2010	1990s	Latest
Afghanistan	-1.59	-4.82	11.51	13,032	22,856	31,412			1,070		
Bangladesh	3.84	4.72	5.82	105,256	129,592	148,692	747	970	1,488	70.2	43.3
Bhutan	10.18	5.12	8.69	558	571	726	1,729	2,745	4,973	26.2	1.6
India	5.85	5.47	7.54	873,785	1,053,898	1,224,614	1,210	1,722	3,039	49.4	32.7
Maldives	11.47	7.55	6.16	219	273	316	3,285(a)	4,441	7,387	25.6	1.5
Nepal	4.73	5.00	4.00	19.081	24,401	29,959	712	906	1,083	68.0	24.8
Pakistan	6.18	3.94	4.55	111.845	144,522	173,593	1,620	1,845	2,397	64.7	21.0
Sri Lanka	4.23	5.25	5.19	17.337	18,745	20,860	1,992	3,063	4,555	15.0	7.0
South Asia	5.57	5.15	7.08	1,141,113	1,394,858	1,630,172	1,211	1,669	2,776	53.8	31.0
Africa (d)	2.05	2.34	5.46	635,287	811,101	1,022,234	2,053	2,148	2,670	56.5	48.5
Latin America and Carib.	1.53	3.18	3.13	443,032	521,429	590,082	7,228	8,294	10,126	12.2	5.5
South East Asia	5.57	5.05	5.20	445,361	523,831	593,415	2,603	3,505	5,060	37.7	11.3
World	3.59	2.26	2.56	5,306,425	6,122,770	6,895,889	6,895	7,939	9,859	45.0	20.0

Notes: a) 1995 data; b) Country and aggregate data from World Bank Povcalnet; c) Surveys − Bangladesh: 1990s (1991.5) and latest (2010), Bhutan: 1990s (2003) and latest (2012), India: 1990s (1993. 5) and latest (2009. 5), Maldives: 1990s (1998) and latest (2004), Nepal: 1990s (1995. 5) and latest (2010. 2), Pakistan: 1990s (1990. 5) and latest (2007. 5), Sri Lanka: 1990s (1990. 5) and latest (2009. 5); d) Poverty aggregates for Africa correspond to Sub-Saharan Africa only.

Source: Author based on data from the ESCAP Asia-Pacific database, World Bank World Development Indicators, and World Bank PovcalNet (accessed 26 June 2013).

continuous move to selected activities that are more productive and that are closely related to the existing productive capacities of the country. The literature, however, is polarized between those that suggest that selecting economic activities is a prime role for the state and those that argue that government cannot and should not pick winners because of incompetence and corruption.

This paper presents a methodology to identify the opportunities for countries in South Asia to build their productive capacities and pro-

TABLE 2

SHARE OF SOUTH ASIA REGION ON GLOBAL PRODUCTION, TRADE AND
TECHNOLOGY (PERCENTAGE)

Indicator	1970	1980	1990	2000	2008	2009	2010
Population	19.56	20.54	21.77	22.97	23.67	23.74	23.81
Rural population	25.09	26.30	28.61	31.29	33.59	33.86	34.14
GDP	3.23	2.31	1.87	1.93	2.53	2.93	3.29
Manufacturing, value added	-	2.71	2.27	1.59	2.49	2.90	3.26
High-technology exports	-	-	0.50	0.31	0.77	1.14	1.11
Receipts of royalty and license fees	-	-	0.01	0.10	0.10	0.11	0.07
Scientific and technical journal articles	-	-	2.05	1.74	2.65	2.77	-

Notes: GDP growth corresponds to the average GDP growth of the South Asian
region in the following periods: 1970 (period 1971 to 1979), 1980 (period
1980 to 1989), 1990 (period 1990-1999), and 2000 (2000 to 2009). GDP
growth is calculated using the aggregate of the GDP for the region in
constant prices in 2000 US dollars.
Source: Author based on data from the World Bank World Development
Indicators (accessed 8 April 2013).

mote structural transformation through the emulation of the productive
structure of more developed countries (Section III). It then presents the
results of that analysis (Section IV) and discusses the demand effects in
terms of export and import substitution and the incentives they create
to increasing productive capacities (Section V).

The paper also discusses under which circumstances, given the pro-
ductive capacities of countries and existing demand incentives, govern-
ments could choose between laissez-faire strategies, those in which the
market guides the identification of opportunities for diversification, and
strategic diversification approaches that nudge the private sector towards
targeted economic activities that are more likely to increase the pro-
ductive capacities in the country (Section VI). The result of that analysis
suggests that countries in South Asia cannot rely exclusively on market
incentives to drive their economies towards increasing productive capa-
cities. They have to use strategic diversification in the case of new ex-
ports (Pakistan) or in the case of diversification towards new import sub-
stitution opportunities (India) or both (Afghanistan, Bangladesh, Bhutan,
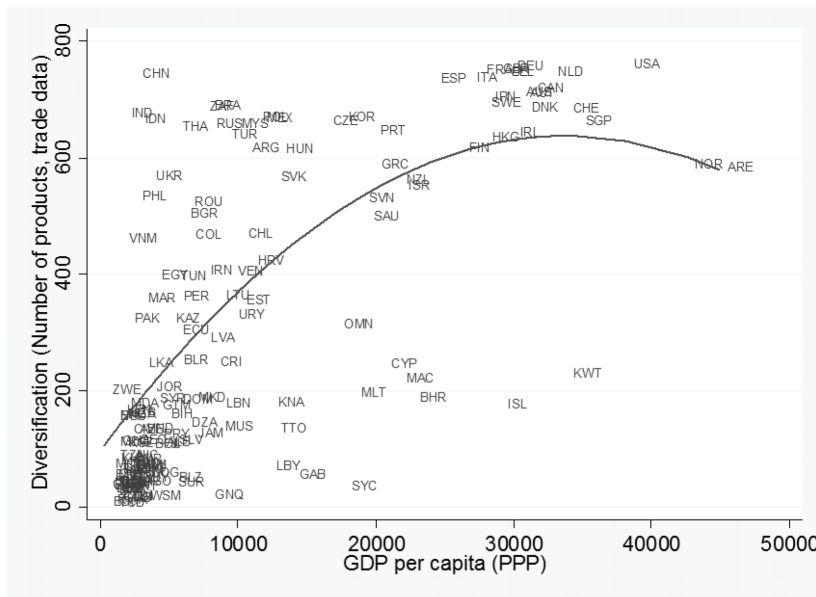
Notes: 1) Number of products exported is the number of category of products exported classified using SITC rev 2 trade data disaggregated at 4-digit level for the year 1999 from data from Feenstra *et al.* (2005); 2) The line represents the best fit of diversification as a quadratic function of GDP per capita.

Source: Author based on data from the United Nations Commodity Trade Statistics Database (COMTRADE) and from the World Bank's World Development Indicators (WDI).

FIGURE 1

HIGHER INCOME IS ASSOCIATED WITH DIVERSIFICATION

Maldives, Nepal, and Sri Lanka). The final section presents conclusions and recommendations.

II. Development, Diversification and Productive Capacities

Development, and the resulting structural transformation and increase in productive capacities, are associated with the production of an expanding range of goods and services, not simply producing more of the same (Saviotti and Pyka 2004). For example, Imbs and Wacziarg (2003) shows that economies become more diversified as incomes increase. Such a pattern holds up to a fairly high level of income above which

specialization seems to kick in. This result suggests that, for most of
their development path, countries diversify their production. Using highly
disaggregated US trade data, Schott (2004) shows that US trading part-
ners do specialize within products — when exporting the same product,
rich nation export the varieties of higher unit value while poorer nations
export the ones of lower unit value. But they do not specialize across
products — rich nations export to the US many different products, in-
cluding the products exported by poorer nations. Based on trade data
disaggregated by unit price of products, ESCAP (2011) shows that diver-
sification within and across products occur in tandem and are both
associated with an increase in total output. Figure 1 illustrates the
stylized fact regarding the association between GDP per capita and
diversification, using the number of products exported as a proxy for
product diversification.

Another stylized fact presented in ESCAP (2011) is that economies
that are more diversified tend to export products that are not very com-
mon, meaning that they are not produced by many other countries. This
empirical regularity is also presented and discussed by Hausmann and
Hidalgo (2010) using three different trade classification systems. They
argue that this stylized fact is not implied by current theories of inter-
national trade and they account for it by constructing a model that as-
sumes that, to be produced, products require a specific set of non-
tradable capabilities, and a country only make the products for which
the required set of capabilities are available in that country. Hidalgo
and Hausmann (2009) use the structure of a bipartite network connec-
ting countries to the products they export to quantify the set of capa-
bilities available in the country using a method that they called "method
of reflections."

That method can also be used to assess the complexity of a product
as a measure of how ubiquitous the product is and the level of diver-
sification of the countries that produce it. If a good is produced by few
but very diversified countries, it is assumed that this product requires
more capabilities to be produced, thus is more complex, than products
that are produced by many but less diversified countries. ESCAP (2012)
shows that rich countries produce within a wide range of complexity,
from low to high complexity products, but poorer countries production
is limited to low complexity products. Felipe *et al.* (2010) find that the
major exporters of more complex products are high-income countries and
the major exporters of less complex products are low-income countries.
In addition, export shares of the more complex products increase with

income.

Developing countries can diversify their economies by emulating the production of more developed countries. For example, empirical evidence shows that in late 1990s and early 2000s China shifted its trade patterns into the product space vacated by the Newly Industrialized Economies of East and South-East Asia (Ahearne *et al.* 2003). Reinert (2007) argues that the process of emulation, which means "imitating in order to equal or excel", is the way that rich countries got rich. Emulation is also at the core of the "Flying Geese Model" pattern of economic development (Akamatsu 1962).

However, diversification is a path-dependent process. Products that are produced in a country today affect the products that will be produced in that country in the future. Thus not all possibilities for emulation are equally available at a given point in time. A useful framework to analyze possible paths for diversification is to imagine a "product space" — a network in which products are nodes connected to each other if they are usually part of the same product-mix (Hidalgo *et al.* 2007).

Hausmann and Rodrik (2006) argue that path-dependence in the process of diversification is created because new activities tend to exploit capabilities that were previously developed for other activities. They argue that such dependence on pre-existing capabilities means that "purely market-based structural transformations will be too slow as it will involve jumps that are fewer in number and shorter in distance than would be socially optimal." They argue that there may not be incentives to accumulate the required capabilities for new activities because of coordination failures, and therefore industrial policy is a central part of any development strategy.

The literature on Developmental state suggests that such approach of selecting economic activities is a prime role for the state where government picks winners in consultation with business (Johnson 1982; Amsden 1989; Wade 1990). On the other hand, the rent-seeking view of the selection process states that government cannot and should not pick winners because the process of economic activity identification and promotion is full of self-fulfilling incompetence and corruption (Krueger 1974).

Lin and Monga (2011) suggests that latecomers can pick winners in mature industries by benchmarking early movers based on their comparative advantage. It also proposes a practical procedure in which the first step is for latecomers to "identify the list of tradable goods and services that have been produced for about 20 years in dynamically

growing countries with similar endowment structures and a per capita income that is about 100% higher than their own." Hausmann argues that a better method to identify the potential industries for diversification is by using the product space and measures of product complexity.[3]

III. Methodology and Data

To identify the opportunities for countries in South Asia to build their productive capacities and promote structural transformation, this paper identifies the products that require a set of capabilities that is somewhat similar to that required to produce the current product mix. They are located in the product space nearby to the existing product mix.

The measure of proximity between products A and B (Φ_{AB}) is calculated, similarly as proposed by Hidalgo *et al.* (2007), as the minimum value between the conditional probability $P(A|B)$ of a country producing A given that it produces B and the conditional probability $P(B|A)$ of a country producing B given that it produces A:

$$\Phi_{AB} = \Phi_{BA} = \min(P(A|B),\ P(B|A)) \tag{1}$$

The proximity between two products, therefore, ranges from 0%, in the case in which no country produces both products, to 100% in the case in which all countries that produce one good also produces the other. This paper adopts the threshold of 80% proximity to an existing product of the country's product mix to identify potential new products for diversification.

The paper then identifies the potential new products that are nearby in the product space and that, in addition, are more complex. To measure product complexity, this paper uses the method of reflections proposed by Hidalgo and Hausmann (2009). The method constructs a bipartite network of countries and products that they produce and iteratively calculate a generalized measure of diversification and ubiquity as follows:

[3] Source: Hausmann, R. "A comment on: The New Structural Economic, A Rethinking of Development Economics and Policy." Available at: http://siteresources.worldbank.org/DEC/Resources/84797-1104785060319/598886-1104852366603/599473-1223731755312/Hausmann_comment_on_Justin_Lin.pdf.

$$K_{c,N} = \frac{1}{K_{c,0}} \sum_p M_{cp} K_{p,N-1} \text{ (Generalized measure of diversification) (2)}$$

$$K_{p,N} = \frac{1}{K_{p,0}} \sum_c M_{cp} K_{c,N-1} \text{ (Generalized measure of ubiquity)} \quad (3)$$

Where M_{cp} is 1 if country c makes product p and 0 otherwise, $K_{c,0}$ is the number of products produced by country c and $K_{p,0}$ is the number of countries that make product p.

The measure of product complexity (*PCOMP*) is taken as the normalized value of the 5th interaction of Kp:

$$PCOMP = \frac{K_{p5} - <K_{p5}>}{sd(K_{p5})} \quad (4)$$

Where $<K_{p5}>$ is the mean and $sd(K_{p5})$ is the standard deviation of the distribution of K_{p5}. The K_{p5} is used because the interactive analysis is carried out until no further information is obtained from this method, which depends on the structure of the network and for the dataset used occurs on the 5th interaction.

The paper then analyses the price incentives that entrepreneurs face when choosing between different potential new economic activities, by estimating both export and import substitution opportunities. The assumption is that entrepreneurs face price incentives when choosing between different potential new economic activities. New products with higher demand potential are more likely to be selected, other things being equal.

To estimate the product's export potential, this paper proposes an export opportunity measure of potential new products. This measure is a monetized type of overlap index designed to measure the degree to which the potential new exports of one country match the expanding import markets of another. A higher degree of export opportunity of potential new products indicates more favorable prospects for trade expansion towards the new products given the past rate of growth of their import markets.

The indicator (*XOP*) is defined as the sum of the differences of the shares of the sectoral imports of the import country in total world imports between two periods. Formally:

$$XOP = \sum_i G_{isd}^{t0,t1} M^{2010} \tag{5}$$

Where M^{2010} is the total imports by all countries in all products in year 2010, and $G_{isd}^{t0,t1}$ is the growth in the global share of imports m of industry i in country d in the period between $t0$ and $t1$ ($t0 < t1$). For any pair of countries, only the sectors that meet the following criteria are included: 1) share of the sectoral imports in total world imports has increased between the two periods, and 2) that sector represents a potential new product for the export country. Formally:

$$G_{isd}^{t0,t1} = \frac{m_{id}^{t1}}{M^{t1}} - \frac{m_{id}^{t0}}{M^{t0}} \quad \text{if} \ \Phi_{ij} > 80\%$$

for some product j in the country's existing product mix and $\qquad$ (6)

$\dfrac{m_{id}^{t1}}{M^{t1}} > \dfrac{m_{id}^{t0}}{M^{t0}}$, and zero otherwise.

Where s is the source country, d is the destination country, and m_{id}^{t1}/M^{t1} is the share of imports of product i by country d in total world's imports of all products in the period $t1$.

The selection of new products for diversification may also be affected by their potential for import substitution. The import substitution opportunity for country s of a potential new product i is defined in this paper as the value of total imports of that product by country s in 2010. At the time of the analysis, 2010 import data for Bangladesh was not available and, therefore, the country was not included in the results that require such data.

To apply the method of reflections and to calculate the proximity between products in the product space, data on country's production is required. Since there are few systematically disaggregated data on each country's production, this paper uses as a proxy the 2010 disaggregated trade data from *United Nations COMTRADE* using Harmonized System code (HS 2002) at 6-digit level, further disaggregated by quantity unit code and by unit price range.

Countries tend to report imports better than exports; hence, import data are used in the analysis to estimate exports. For example, the export basket of India is estimated by combining the data from countries who report imports from India. Import data also contains more observations of exports from the least developed countries and other small develop-

ing economies, many of which have not reported export data. Only the part of the dataset that includes quantities of imports is used in the analysis, since this information is used to estimate the unit value of the products traded.

The distribution of the unit value of products classified using the same 6-digit code is fat-tailed — there are outliers that are many standard deviations away from the mean. Taken apart from the possibility of errors in the reporting of the trade, the existence of such outliers may be due to either sizeable differences in the quality of products that are reflected in their unit values or the existence of totally different products classified under the same 6-digit code. These reasons justify the assumption that similar products at different unit values are different products.

To account for possible differences in trade costs, the following procedure was adopted.

1) The bilateral trade was initially sorted by the unit used to measure the quantity of the trade, such unit codes are part of the COMTRADE dataset and are based on the standards of quantity recommended by the World Customs Organization (WCO) (*e.g.*, weight in kilograms, length in meters and volume in cubic meters). The quantity unit code was added to the 6-digit classification to create an "artificial" 7-digit classification. The assumption is that if the products under the same 6-digit code are registered using different quantity unit codes then they may have different characteristics and could be classified as different products.

2) The bilateral trade in the same 7-digit classification was sorted by the unit value of the trade, which is calculated by dividing the value by the quantity traded. The distribution of unit value (x) for the same 7-digit product was then divided into up to nine groups. The first 3 groups are:

- Group 1 if $x < q_1$
- Group 2 if $q_1 < x < q_3$
- Group 3 if $q_3 < x < 1.5\,(q_3 - q_1)$

Where q_1 and q_3 are the first and the third quartiles of the distribution, respectively.

For $x > 1.5\,(q_3 - q_1)$, the distribution of the unit value (y) above this threshold is further divided into 4 quartiles and 3 more groups are created:

- Group 4 if $y < q_1$
- Group 5 if $q_1 < y < q_3$
- Group 6 if $q_3 < y < 1.5\,(q_3 - q_1)$

Again, for $y > 1.5 \, (q_3 - q_1)$, the distribution of the unit value (z) above this threshold is further divided into 4 quartiles and 3 more groups are created:

- Group 7 if $z < q_1$
- Group 8 if $q_1 < z < q_3$
- Group 9 if $q_3 < z < 1.5 \, (q_3 - q_1)$

The group number was added to the 7-digit classification to create an "artificial" 8-digit classification. At the end of this procedure, each product is represented by such 8-digit classification code in which the first six digits correspond to the 6-digit HS 2002 code, the seventh digit corresponds to the quantity unit code of the product and the eighth digit represents the unit value group that includes the unit value of the product.

IV. Opportunities for Diversification

This section applies the methodology presented above to identify the opportunities for countries in South Asia to diversify their economies and promote structural transformation. These opportunities are in products that are more complex and that are nearby in the product space to the existing product mix.

Figure 3 illustrates the map of potential new exports in the case of Bhutan. The figure shows in the horizontal axis the complexity of all products produced by the country in 2010 classified at 8-digit level (*i.e.*, 6-digit level HS 2002 and further disaggregated by quantity unit code and unit value group). The scale is normalized in such a way that the average global complexity is zero and the standard deviation of the distribution of product complexity is one. In the vertical axis, the graph shows the complexity of potential new products. Therefore, each dot in the graph represents a pair composed by an existing and a new product. The colour of the dots indicates the proximity of the existing and new products in the product space. The average complexity of Bhutan's product-mix is -1.59, thus, new products with complexity above that level would contribute in pushing the distribution of complexity of the country's product mix towards more complex products.

Similar maps can be created for each country in the South Asian region. Based on the analysis of these maps, Table 3 presents the number of potential new products with above country's average complexity
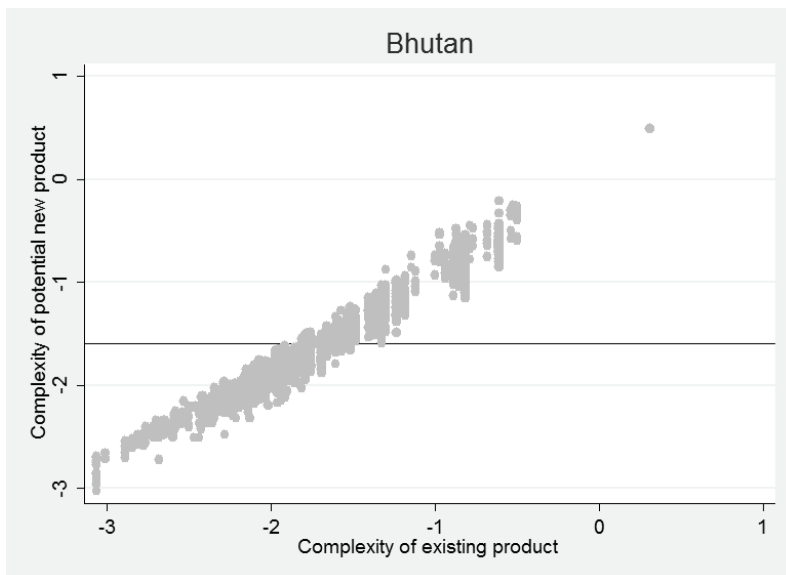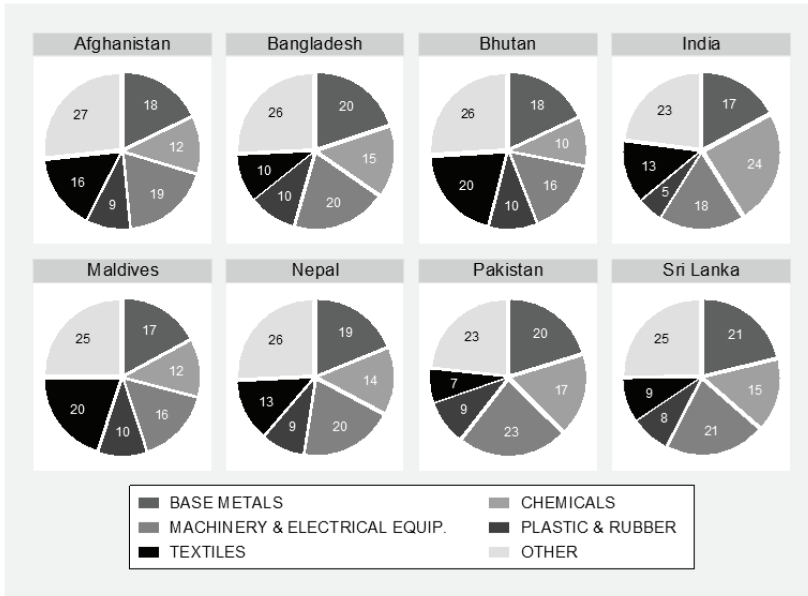
Source: Author based on data from the United Nations Commodity Trade
Statistics Database (COMTRADE).

FIGURE 3

MAP OF POTENTIAL NEW PRODUCTS FOR DIVERSIFICATION, BHUTAN

classified by industry using HS 2002 classification. The table shows
that for every country of the region there are opportunities for diversifi-
cation in almost all industries. Nevertheless, five industries account for
73% or more of the potential new products with above country's average
complexity. This is illustrated in Figure 4, which shows for each coun-
try the top five industries with higher shares in percentage of the po-
tential new products. In the case of Afghanistan, for example, the top
five industries with potential new products with above country's average
complexity are machinery and electrical equipment (19%); base metals
and articles of base metals (18%); textiles and textile articles (16%);
chemicals (12%); and plastic and rubber and articles thereof (9%). Two
industries are among the top two in five out of eight countries of the
region, namely base metals and machinery and electrical equipment,
together accounting for 33% to 43% of the potential new products with
above country's average complexity.

The analysis of opportunities for diversification by industry as pres-
ented in Figure 4 shed some light on the potential target areas for

Source: Author based on data from the United Nations Commodity Trade
　　　　Statistics Database (COMTRADE).

FIGURE 4

TOP FIVE INDUSTRIES WITH HIGHER PERCENTAGE OF POTENTIAL NEW
PRODUCTS

diversification that promotes structural transformation and builds pro-
ductive capacities. However, in addition to the identification of potential
areas for diversification, it is important to identify the factors that could
facilitate or prevent the process of discovery of these new economic acti-
vities by the business sector.

One factor that is somewhat self-evident is the share of potential new
products that have above country's average product complexity. The
higher the share, the higher is the probability that an entrepreneur would
select a new economic activity with above country's average complexity.
A lower share reduces the probability that more complex new economic
activities are likely to emerge. Moreover, economic agents usually respond
to price incentives and, therefore, demand factors are also expected to
play a role in the diversification process, as discussed in the following
section.

TABLE 3

NUMBER OF POTENTIAL NEW PRODUCTS WITH ABOVE COUNTRY'S AVERAGE
COMPLEXITY, BY INDUSTRY (HS 2002 CLASSIFICATION)

Industry (HS classification section number)	Afgha-nistan	Bang-ladesh	Bhutan	India	Mal-dives	Nepal	Pakistan	Sri Lanka
ANIMAL & VEGETABLE OILS (Section III)	3	1	3	2	1	2	1	2
ARMS & AMMUNITION (Section XIX)	1	2		2		1	1	5
BASE METALS (Section XV)	339	347	175	84	243	362	323	378
CHEMICALS (Section VI)	229	259	102	119	168	262	277	271
FOOD & BEVERAGES (Section IV)	65	35	34	10	45	47	23	22
FOOTWEAR (Section XII)	15	11	9		18	7	5	11
LEATHER (Section VIII)	21	2	9		15	18	2	14
LIVE ANIMALS (Section I)	2	8	3	12	3	11	8	4
MACHINERY & ELECTRICAL EQUIP (Section XVI)	366	353	158	87	232	376	373	381
MINERALS (Section V)	16	15	4	18	7	21	6	13
MISCELLANEOUS MANUFACTURING (Section XX)	50	33	36	7	48	44	34	43
OPTICAL, PHOTO, WATCHES, MUSICAL INS TR. (Section XVIII)	91	112	35	13	61	113	85	112
PAPER (Section X)	82	81	52	19	70	67	58	69
PLASTIC & RUBBER (Section VII)	172	167	96	27	145	176	151	152

(Table 3 Continued)

TABLE 3
(Continued)

| Industry (HS classification section number)	Afgha-nistan	Bang-ladesh	Bhutan	India	Mal-dives	Nepal	Pakistan	Sri Lanka
PRECIOUS STONES & METALS (Section XIV)	3	5	2	3	2	2	6	5
STONE, CERAMIC, GLASS (Section XIII)	90	77	46	12	58	90	77	81
TEXTILES (Section XI)	314	179	200	63	289	248	108	163
VEGETABLES (Section II)	18	23	9	6	8	20	15	16
VEHICLES, AIRCRAFT, VESSELS (Section XVII)	33	25	10	8	16	34	41	38
WOOD (Section IX)	22	20	8	1	14	22	13	13
TOTAL	1,932	1,755	991	493	1,443	1,923	1,607	1,793

Source: Author based on data from the United Nations Commodity Trade
Statistics Database (COMTRADE).

V. The Effects of Demand

It seems reasonable to assume that products that are in high demand are more likely to attract entrepreneurs and are also more likely to succeed. Using Bhutan as an example, Figure 5 maps the export opportunities of its potential new products. It shows that the potential new products with higher export opportunities (over $1 million) are concentrated at the less-complex part of the set. New products with below average complexity are, thus, more likely to attract entrepreneurs, perpetuating the low complexity of the country's product mix.

Entrepreneurs may also consider the potential for import substitution of new products. Figure 5 also maps such import substitution opportunities in the case of Bhutan. It shows that, similar to the case of export opportunities, the potential new products with higher import substitution opportunities have complexity levels below the country's average. Therefore, it is likely that the change in the distribution of product complexity, and consequently in the country's productive capacity, would be
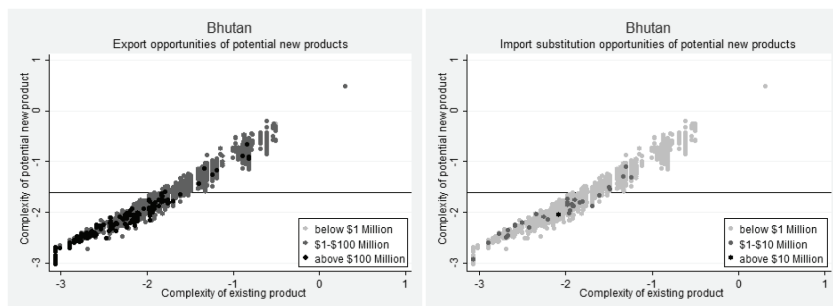
Source: Author based on data from the United Nations Commodity Trade
     Statistics Database (COMTRADE).

FIGURE 5

MAP OF POTENTIAL NEW PRODUCTS FOR DIVERSIFICATION AND IMPORT AND
EXPORT OPPORTUNITIES, BHUTAN

driven by the higher demand for lower-complexity new products both in
export and domestic markets.

The government can thus play a role in nudging the discovery process
towards the new products that have higher complexity. Successful diver-
sification towards these new products will generate the new capabilities
that will increase the country's productive capacity. They will also facili-
tate the process of diversification towards other products with higher
complexity. That process of increasing product complexity, and conse-
quently increasing productive capacity, has a social benefit of facilitating
future diversification and further economic growth. Such benefit is not
quantifiable a priory and, thus, cannot be captured by the private entre-
preneur. The society will benefit if a larger proportion of entrepreneurs
take their chances in those products of higher complexity, but that
benefit is not internalized by the entrepreneurs themselves, thus the
diversification towards those products is likely to be below the optimum
social level.

VI. Results and Findings: The Role of the State in Promoting Diversification

The State has an important role to play in facilitating the creation of
new economic activities that increase the productive capacity of the
economy. That should entail the support of both emulation and "new to
the world" innovation strategies. However, the balance between them

TABLE 4

POTENTIAL NEW PRODUCTS RELATED TO THOSE ALREADY PRODUCED BY
COUNTRIES IN SOUTH ASIA

Country	Number of existing products	Number of potential new products for emulation	Percentage of potential new products with above country's average complexity	Percentage of export opportunities with above country's average complexity	Percentage of import substitution opportunities with above country's average complexity
Afghanistan	1 830	3 000	64%	27%	50%
Bangladesh	3 816	2 537	69%	37%	
Bhutan	315	1 945	51%	12%	18%
India	18 985	570	86%	75%	33%
Maldives	758	2 380	61%	22%	18%
Nepal	2 649	3 047	63%	24%	21%
Pakistan	7 515	2 065	78%	43%	63%
Sri Lanka	6 142	2 340	77%	43%	47%

Note: Number of products exported is the number of category of products
exported classified using HS 2002 trade data disaggregated at 6-digit
level and further disaggregated by unit price.
Source: Author based on data from the United Nations Commodity Trade
Statistics Database (COMTRADE).

depends on the level of diversification and productive capacities in the
country. This is illustrated by the data in table 4, which lists for each
country in the South Asian region the number of products that are
currently produced; the total number of potential new products; the
percentage of those potential new products that have above country's
average complexity; and the percentages of export and import substitu-
tion opportunities with above country's average complexity.

The comparison of the number of existing and potential new products
shows that countries with less diversified product mix have many op-
portunities to diversify by emulating the production of more developed
countries, moving towards products that already exist but are new in
the context of the country's economy. For example, Bhutan has 315 pro-
ducts in its product mix but more than six times that number (1,945)
as potential new products for emulation. On the other hand, for India,
the most diversified country of the region, innovation seems to be a much
more important strategy, given the relative lower number of potential new
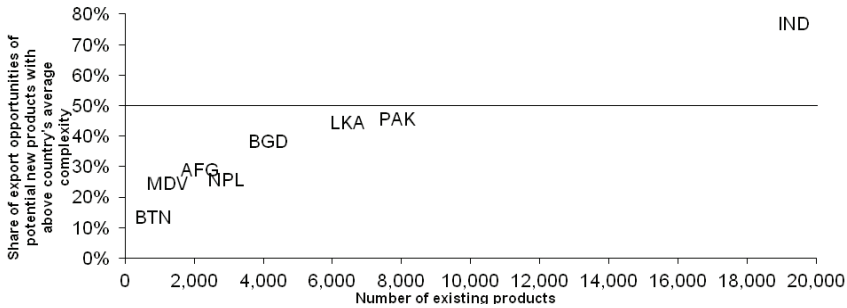products for diversification through emulation.
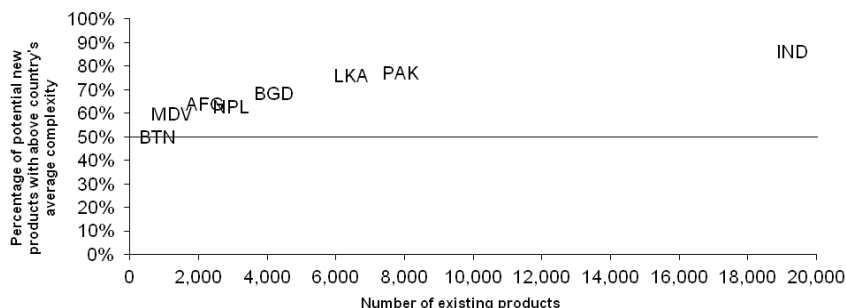
Source: Author based on data from the United Nations Commodity Trade Statistics Database (COMTRADE).

FIGURE 6

PERCENTAGE OF NEW PRODUCTS WITH ABOVE COUNTRY'S AVERAGE PRODUCT COMPLEXITY

Table 4 also shows that all countries in South Asia have more than 50% of potential new products with above country's average product complexity, which would contribute in pushing the distribution of complexity of the country's product mix towards more complex products. This is illustrate in Figure 6, which shows in the vertical axis the percentage of potential new products with above country's average complexity and in the horizontal axis the number of existing products in the country's product mix, measured as the number of categories of products exported classified using HS 2002 trade data disaggregated at 6-digit level and further disaggregated by unit price. The figure shows that proportion of potential new products with above country's average complexity increases with the number of products in the product mix. The figure suggests that the countries that have lower share of potential new products with above country's average complexity, and therefore with lower opportunity to move up in the complexity ladder, are exactly the less diversified economies that in principle could benefit more from an emulation strategy.

The percentages of export and import substitution opportunities with above country's average complexity add another layer to the analysis. Figure 7 shows the number of existing products in the country's product mix in the horizontal axis and the share in percentage of the export opportunities of potential new products with above country's average product complexity in the vertical axis. For example, in Pakistan, the sum of export opportunities of potential new products with above country's

Source: Author based on data from the United Nations Commodity Trade
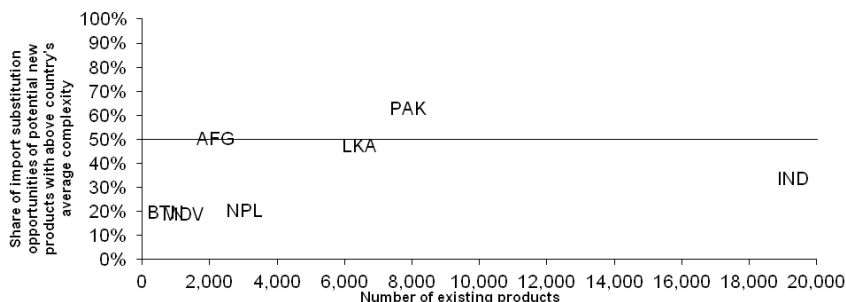   Statistics Database (COMTRADE).

FIGURE 7

EFFECT OF EXPORT OPPORTUNITIES ON THE INCENTIVES FOR
DIVERSIFICATION TOWARDS PRODUCTS OF ABOVE COUNTRY'S AVERAGE
PRODUCT COMPLEXITY

average product complexity represents 43% of the export opportunities
of the whole set of potential new products given the existing product mix.

Assuming that entrepreneurs take into consideration the potential
demand of new products when deciding between potential new economic
activities and also assuming that new exports that have a higher export
opportunity have higher chances of success, it is reasonable to suppose
that a higher proportion of new economic activities will have below coun-
try's average product complexity. Although this outcome makes perfect
sense in the short-term as the one that maximizes the efficient use of
the limited resources in the economy, in the long run it perpetuates the
relative lower level of productive capacities and opportunities of produc-
tive employment in the economy, reducing the chances of the country
to catch up with developed economies.

Figure 7 shows that the effect of export opportunities on the majority
of the countries of the South Asia is to reduce the likelihood of a posi-
tive outcome of a laissez-faire approach to the promotion of new exports.
Except from India, all the other countries of the region are more likely
to lose than gain in the longer-term if they let the market alone to create
the incentives for export diversification.

Similarly, opportunities for import substitution also create the incen-
tives either for increasing or for reducing the average complexity of a
country's product mix. Figure 8 illustrates this effect for the countries
of the region by showing the number of existing products in the coun-

Source: Author based on data from the United Nations Commodity Trade
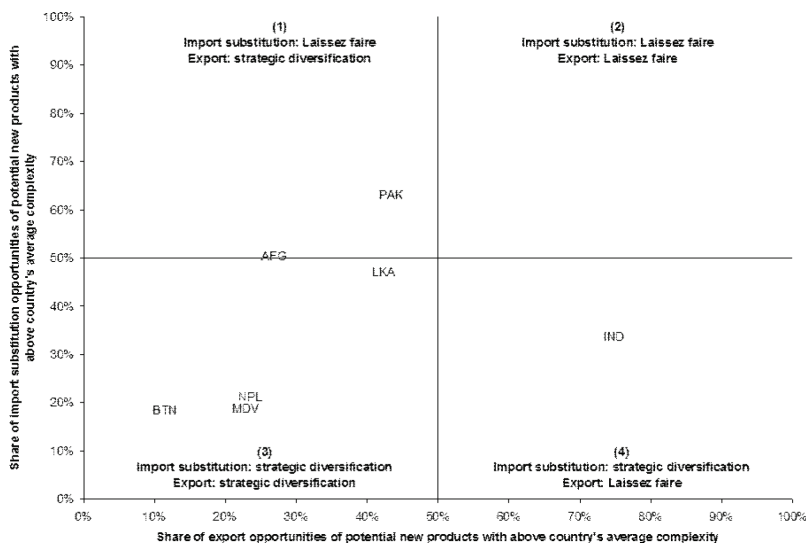   Statistics Database (COMTRADE).

FIGURE 8

EFFECT OF IMPORT SUBSTITUTION OPPORTUNITIES ON THE INCENTIVES FOR
DIVERSIFICATION TOWARDS PRODUCTS OF ABOVE COUNTRY'S AVERAGE
PRODUCT COMPLEXITY

tries' product mix in the horizontal axis and the share in percentage of
the import substitution opportunities of potential new products with
countries' above average product complexity in the vertical axis. The
figure shows that only Pakistan is more likely to benefit from a laissez-
faire approach to import substitution. The governments of the other
countries of the region have to strategically create targeted incentives to
nudge entrepreneurs in import substitution economic activities towards
the potential new products with above average complexity.

The joint analysis of export and import substitution incentives is
illustrated in Figure 9, which shows in the vertical axis the share in
percentage of the import substitution opportunities of potential new pro-
ducts with above country's average product complexity and the share of
export substitution in the horizontal axis. The graph is divided in four
quadrants. In the first quadrant are the countries that could adopt a
laissez-faire approach to import substitution but should adopt a strategic
diversification approach towards new export opportunities to facilitate
the private sector's discovery of new economic activities leading to the
desirable social objective of increasing the economy's productive capacity.
Pakistan is located in this quadrant with shares of export and import
substitution opportunities of the potential new products with above coun-
try's average product complexity accounting for 43% and 63%, respec-
tively.

India is in the third quadrant, where 75% of export opportunities of
potential new products and 33% of import substitution opportunities

Note: Import data necessary to calculate the share of import substitution op-
      portunities in Bangladesh was not available. Considering on the informa-
      tion on share of export opportunities, Bangladesh would be located either
      on quadrant 1 or 3.
Source: Author based on data from the United Nations Commodity Trade
        Statistics Database (COMTRADE).

FIGURE 9

THE ROLE OF THE STATE

have above average product complexity for the country. New exports,
therefore, are likely to have product complexity above the country's aver-
age, and the country could adopt a laissez-faire approach towards export
diversification and let the market guide the identification of new export
opportunities. On the other hand, import substitution is likely to result
in new products that have below the country's average product com-
plexity. Therefore, the State has a role to play in nudging discovery to-
wards economic activities that result in higher long-term gains.

The remaining countries of the region are located in the fourth quad-
rant. They are in the difficult position of not being able to rely on the
market incentives to drive the economy towards increasing productive
capacities. If let to the market alone, the new economic activities, either
exports or import substitution that emulate the production of richer
countries, are more likely to have below the country's average product

complexity. These countries have to adopt an approach based on strategic diversification to nudge the private sector and create incentives towards economic activities with higher complexity. The implementation of such strategic diversification requires the selective promotion of new economic activities through the use of targeted industrial, infrastructure, trade, investment and private sector development policies.

In implementing such policies, the policy instruments available to many developing countries may be somewhat limited by the regulations under the WTO system. Nevertheless, the analysis of empirical evidence, as presented in this paper, can be used in the process of identification of strategic direction of diversification. A list of potential products could serve as a public good that could be made available to the private sector. It reduces the cost of discovery of potential successful new economic activities by informing entrepreneurs of the new products that require productive capacities similar to those already available in the country.

VII. Conclusions

Development requires a focus on production and employment that recognizes household members as both consumers and producers, and that their living standard depends on how they make a living. However, over the past 40 years, the countries in South Asia have made little progress transforming their economic structure and building productive capacities. This paper approaches development in South Asia through the framework of structural transformation and productive capacities.

Economies build their productive capacities through a path-dependent diversification process that expands their production bases by including products that are increasingly more complex. Therefore, a pragmatic strategy for countries to build their productive capacities is to let these capacities be generated or acquired as part of the process of diversification, either through emulation of production in richer economies or through "new to the world" innovation. The State should support both the emulation and the new product innovation strategies but the balance between them depends on the level of diversification and productive capacities in the country. Countries with less diversified product mix have many opportunities to diversify by emulating the production of more developed countries. As countries diversify, such strategy results in gradually fewer potential new products and countries should start to combine emulation with innovation.

Export and import substitution opportunities may create incentives to increasing productive capacities. The analysis presented in this paper suggests that Pakistan could adopt a laissez-faire approach to import substitution but should adopt a strategic diversification approach towards new export opportunities to facilitate the discovery of new economic activities by the private sector leading to the desirable social objective of increasing productive capacities of the economy. India could adopt a laissez-faire approach towards export diversification and let the market guide the identification of new export opportunities, but the State has a role to play in nudging the discovery towards the import substitution products that result in higher long-term gains. The remaining countries of the region are in the difficult position of not being able to rely on the market incentives to drive the economy towards increasing productive capacities. These countries have to adopt an approach of strategic diversification to nudge the private sector and create incentive towards the economic activities with higher complexity.

The implementation of such strategic diversification requires the selective promotion of new economic activities over traditional ones through the use of targeted industrial, infrastructure, trade, investment and private sector development policies. An environment conducive to the private sector activities allows for an easier transition to a more diversified economy. In this process, it is essential to strengthen national institutions and good governance in order to provide a stable environment for the evolution of the economy, the curbing of cronyism and the promotion of development goals.

Establishing this stable environment requires "developmental states," governments that give top priority to economic development in government policy and seek to design policies and institutions that promote this goal. It also requires a broader policy space that allows industrial and trade policies, macroeconomic policies and regulations that promote the transformation of productive capacities.

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