



Australian  
National  
University

## Working Papers in Trade and Development

**Export performance and potential with regional partners:  
The case of a landlocked LDC, Nepal**

***Ramesh Chandra Paudel***

***and***

***Swarnim Wagle***

April 2017

Working Paper No. 2017/06

Arndt-Corden Department of Economics  
Crawford School of Public Policy  
ANU College of Asia and the Pacific

This Working Paper series provides a vehicle for preliminary circulation of research results in the fields of economic development and international trade. The series is intended to stimulate discussion and critical comment. Staff and visitors in any part of the Australian National University are encouraged to contribute. To facilitate prompt distribution, papers are screened, but not formally refereed.

**Copies may be obtained at WWW Site**  
<http://www.crawford.anu.edu.au/acde/publications/>

# **Export Performance and Potential with Regional Partners: The Case of a Landlocked LDC, Nepal**

Ramesh Chandra Paudel

Arndt Corden Department of Economics

The Australian National University, Canberra, Australia

Email: [Ramesh.paudel@anu.edu.au](mailto:Ramesh.paudel@anu.edu.au)

Swarnim Waglé

National Planning Commission

Government of Nepal

## Abstract

This paper assesses export performance and potentials for increased bilateral trade with regional partners of Nepal, a least-developed country (LDC) in South Asia. Following an overview of the country's export performance, and the distinct policy and logistical challenges it faces as a landlocked country, an econometric analysis of the determinants of bilateral exports is undertaken using the gravity modelling framework. The results suggest that the 'structural' factors such supply-side constraints, distance to markets, and cultural proximity as geographical and cultural proximity have mattered more than trade and other policy barriers imposed by destination markets. The paper also identifies partners to which Nepal appears to be "under-exporting," and concludes that there is much room for the country to integrate further with regional markets if it were to overcome its supply side constraints.

JEL Code: F130, F110, F120, O50

Keywords: Nepal, Export performance, gravity model, landlocked countries, regional integration

Forthcoming in Jayant Menon and T.N. Srinivasan (Ed.), *Integrating South and East Asia, Economics of Regional Cooperation and Development*, New Delhi: Oxford University Press

# **Export Performance and Potential with Regional Partners:**

## **The Case of a Landlocked LDC, Nepal**

### **1. Introduction**

The 49 Least Developed Countries (LDCs), by definition, have low income, poor human assets, and vulnerable economies. A significant subset, 16 of these LDCs including Nepal, is also landlocked which re-enforces their low-income status by constraining their full utilization of world markets for international exchange of goods, services, capital, and ideas. The LDCs account for about two percent of global output and 12 percent of world population. By sheer headcount of poor people, they matter. Indeed, if LDCs of Asia alone were a single country, they would be the third largest in the region if not the world. The LDCs, however, lag behind substantially in trade. While they contribute to less than one percent of world commerce, 75% of their exports are accounted for by seven countries and a handful of products like oil, minerals and garments.

This paper takes Nepal as a representative LDC<sup>1</sup> to understand better the challenges faced by LDCs to integrate further with the regional and world economy. We analyze Nepal's merchandise trade performance, relate it to the policy framework in place, and conduct an empirical estimation of the potential for trade expansion in the region using a gravity model. Further, we present the export scenario of Nepal analysing estimates of over- and under-reliance on regional export markets, including East Asian countries. The study is structured as follows. In section 2, we present an overview of Nepal's recent performance in trade (mainly exports). Section 3 elaborates on Nepal's trade policies, trade costs and the logistic environment. Section 4 describes the econometric model, methodology and results of Nepal's state of bilateral trade with countries in the geographical vicinity, spanning the Gulf countries in the west (where Nepal sends hundreds of thousands of migrant workers) to Australia and New Zealand in the east. The final section concludes.

---

<sup>1</sup> Nepal has chaired the Global Coordination Council of the Group of LDCs in recent years.

## 2. An overview of export performance

### 2.1 Export patterns and trends

Nepal adopted import substitution rather than export promotion strategies until the early 1990s. The economic reforms initiated two decades ago opened up the economy, and the steady rise of imports until 1997 was perhaps as expected. What stands out is the rapid rise in imports in the 2000s – fuelled by rising inflow of remittances and official aid – at the same time exports have been stagnant, never crossing the US\$1 billion mark in nominal terms. The upper panel of Figure 1 captures goods trade, which indicates negative trade balance throughout the period. The lower panel presents services trade which stands in contrast to performance in goods because the country's services exports exceeded imports until about 2005, after which there was a reversal.

*Figure 1 here (trade balance)*

The story of stagnant exports is stark not just in terms of absolute numbers, but also when expressed relative to the size of the economy. While the overall trade-to-GDP ratio peaked in 1997 and has declined since, the increasing share of imports in total trade has kept the overall trade ratio at around 40 percent; however, when imports are stripped off total trade, the secular decline in exports relative to GDP is unmistakable (Figure 2).

*Figure 2 here (Trend)*

Figure 3 presents a picture of “adjusted openness,” which is the trade to GDP ratio adjusted for per capita income, relative to other countries that are also landlocked or in the region. Countries tend to trade more as they become richer, but at a decreasing rate. In this figure, the actual level of export orientation of countries is compared with the level one would expect to reach for their economic affluence measured by gross domestic product (GDP) per capita. The latter is estimated by regressing trade or export-to-GDP ratio on the log of GDP per capita as well as its squared value for a balanced panel of 155 economies. Relative to countries at similar levels of per capita income, Nepal remains an under-trader (left panel). But in terms of exports to GDP, Nepal's performance is not only the lowest among a group of countries with comparable per capita incomes, but almost in the entire world, irrespective of income. This relative picture confirms that the absolute stagnation discussed earlier is a matter of grave policy challenge. It is ironical that without Nepal's “successful” export of labor over the past 15 years, in lieu of labor embodied in merchandise exports, the country would almost certainly have faced a balance of payments crisis.

*Figure 3 here (Adjusted openness)*

## **2.2 Geographical orientation**

In terms of the reach of exports, India has always been a major market, easily explained by lower trade costs attributable to geographical and cultural proximity. The relatively “open” border, abetted by Nepal’s peg of its currency with the Indian Rupee, has further facilitated bilateral trade. What is striking, however, is that over the past decade, there has been a substantial re-orientation of Nepal’s trade towards India. Figure 4 presents the market reach of exports in two different time periods: 1999-2001 and 2009-2011. About 64 percent of merchandise exports in 2009-11 went to India, an increase of about 28 percentage points from a decade earlier.

During this period, exports to the European Union declined significantly to about 12 percent from 25 percent earlier. The decline in exports to North America was even more dramatic, from 30 percent to eight percent. Exports to other regions, such as the member states of the European Free Trade Association (EFTA) and Northeast Asia have also declined substantially. Exports to countries that are closer geographically, in the Asia-Pacific rim, such as Australia and New Zealand, ASEAN, China and Hong Kong SAR, and South Asia have increased. Exports to Gulf states and Sub-Saharan Africa have also increased, albeit from a low base. This increased “regionalization” of Nepal’s exports can be directly attributed to the collapse of its apparel industry, following the termination of the WTO Agreement on Textiles and Clothing.

*Figure 4 here (Export destination)*

## **2.3 Export composition and sophistication**

The composition of products exported from Nepal in 2001 and 2011 are reported in Figure 5. Nepal has a comparative advantage in labour-intensive manufactures and primary products. But as already mentioned, the most significant of manufactured exports – apparel -- more than halved in value during the past decade. There were some gains in material-based manufactures, as well as processed food, beverages, tobacco and live animals, which crossed the US\$100 million mark. Textile (fabric) and leather related products were the largest in 2011. There was some gain in the export of ores and metals, and also of industrial machinery, electronics and road vehicles and transport equipment.

*Figure 5 about here (export composition)*

Amidst the gloomy export statistics, it may come as a surprise that Nepal’s export basket is “richer” than what its average per capita income suggests. This is shown in Figure 6 where Nepal lies above the regression line in a scatter plot of about 100 developing countries that the World Bank has classified as either low or middle income. This is based on one of the measures of export sophistication (EXPY) which assesses the export baskets of countries by the incomes of countries that produce similar products,

weighted by the share of those exports in the national total.<sup>2</sup> By observing the movement of EXPY indices over time, we cannot definitively say if rising export sophistication pulled up per capita incomes, or countries moved into production of more sophisticated exports after average incomes rose. However, Hausmann and Klinger (2007) have shown for a large pool of countries that export sophistication at present is a good predictor of economic growth in the future.<sup>3</sup>

The caveat is that if sophistication is measured based on the final value of assembled good, it is likely to over-estimate the ability of countries to produce complex, high-value (intermediate) products. Nonetheless, compared to landlocked countries at similar levels of per capita income (such as Uganda and Zambia), Nepal's relatively high EXPY indicates two facts: first, it does have a foothold in manufacturing of goods that appear to present plenty of scope for technological upgrading, for such goods are also exported by higher-income countries; and, second, its exports are not dominated by natural resources (fuel, minerals or unprocessed commodities) whose abundance in poorly-governed low-income countries is often associated with the chronic challenges of export diversification towards industrialization.

*Figure 6 about here (sophistication)*

### **3. Trade policy regime, costs and logistics**

Nepal has gone through three distinct phases of trade policy — (almost) free trade between 1923 and 1956, protectionism (1956-1986), and a relatively open regime from 1986 onwards. Nepal embarked on market-oriented policy reforms in the mid-1980s replacing the inward-oriented policy that failed to fulfil growth and development objectives (Karmacharya, 2001; Sharma, 2001). However, a major policy reform occurred in the early 1990s (Acharya et al., 2003). One of the major indicators of policy direction in international economics is openness, which is measured mainly in three ways: the Sachs-Warner criteria, tariff rates, and trade as percentage of GDP. All of these indicators have their shortcomings but together they provide a useful indication of trade orientation,<sup>4</sup> which is that Nepal has maintained a relatively open trade regime since 1991.

---

<sup>2</sup> EXPY is preceded by the calculation of the “income content” of products (PRODY). It is calculated by combining the methods of Hausmann et al. (2006) and Lall et al. (2006). The premise is that products largely exported by rich countries are “revealed” as sophisticated. We divide 148 countries into ten income groups, sorted by their level of real GDP per capita in 2007-2008. The income content of each product is the sum of the average GDP per capita income of these ten groups weighted by the ratio of the share of the product in a group's basket to the sum of shares of the product in the overall export basket of all income groups. The weights sum to unity, and are a variant of the Revealed Comparative Advantage (RCA) index. Treating these ten groups as hypothetical countries, we attach the weighted mean per capita income of each group proportionately to the products they export. This assigns implicit productivity numbers to products based on the income character of their exporters.

<sup>3</sup>Felipe et al. (2010) also estimate that a 10 percent increase in EXPY at the beginning of period raises growth by about half a percentage point.

<sup>4</sup>The five criteria consist of thresholds on average tariff rates, coverage of non-tariff barriers on imports, black market premium exceeding 20 percent, presence of export marketing board, and a socialist political regime.

Since about 2001, the trend towards greater liberalization was slightly reversed with the imposition of select import taxes in addition to customs duties and this situation remain unchanged until 2010 (Pursell, 2011). However, Nepal was also the first least developed country to join the WTO through a negotiated process in April 2004, which locked in its commitments to reform laws and gradually liberalize goods and services. Table 1 presents the weighted average applied tariff rates for all products in Nepal and India. The data are averages over five-year periods, which show that during 1990-95, Nepal's tariff rates were lower, at 22 percent on average compared to almost 60 percent in India. During 1995-2000, Nepal's rates remained unchanged, while India reduced tariff rates to 26 percent. Nepal's tariff rates were lower than those of India from 2000 to 2005. The average rate declined in Nepal from 2005 to 2010, falling to 15.5 percent, but India reduced much faster in this period, to an average of just seven percent. This suggests that Nepal has the space to further reform its trade policies, aligning them closely with those of its main trading partner(s).

*Table 1 about here*

Like trade, the Government of Nepal started to promote foreign direct investment (FDI) with the enactment of the Foreign Investment and Technology Transfer Act in 1992 and the Industrial Enterprises Act 1992. Since then, foreign investors and domestic investors have been treated alike, with favourable visa conditions for foreign investors (Rana and Pradhan, 2005). Despite the de jure legal provisions, however, FDI inflows have not picked up because of constant political instability. Unlike countries in East Asia at comparable levels of per capita income, like Cambodia, Nepal has not quite managed to join global value chains where trade and FDI complement and reinforce each other.

Landlocked countries face inevitable barriers to trade because of their location, often remote and distant from navigable rivers or seas (Collier and Gunning, 1999; Faye, Macarthur, Sachs and Snow, 2004). A growing body of literature has highlighted the negative impact of trade costs on the volume of trade (Anderson, et al. 2004). Finger and Yeats (1976) found that transportation costs are comparatively higher for products exported from developing countries compared to products exported from developed countries. Amjadi and Yeats (1995) concluded that high transportation costs and trade policies were responsible for the weak trade performance in Sub-Saharan Africa during much of the second half of the past century.

Trade costs typically comprise of transportation, tariffs, and costs associated with unreliable supply chains due to the poor infrastructure and administrative burdens imposed by transit countries. Faye et al. (2004) argue that transportation and insurance costs are higher in landlocked countries by about nine percent. They are comparatively higher in landlocked countries not only because of the long distance to seaways, but also because of the costs associated with the unreliable supply chain caused by

administrative burdens and other customs procedures (Arvis, et al., 2007). The literature suggests that landlockedness imposes exogenous costs on exports, making them not only expensive, but also more vulnerable and uncompetitive despite their trade friendly trade policies (Paudel & Burke, 2015).

While trade policies play a vital role in improving export performance (Alvarez, 2011; Santos-Paulino, 2002), other factors are also important in geographically handicapped countries like Nepal. On trade logistics, exporters from Nepal have to travel more than 1000 kilometres to reach Kolkata seaport in India via road, the dominant mode of transport in and out of Nepal. The alternative seaport is Chittagong in Bangladesh, which is almost at a similar distance to Kolkata, but involves first a narrow crossing of Indian territory (about 17 kilometres) which nonetheless has proven to be a politically prohibitive route so far. Nepal's transportation costs could be substantially reduced if India extended transit facilities to reach the seaport in Bangladesh (Dubey, 2010). In addition, as part of the infrastructure for trade, three Inland Clearance Depots (ICD) - dry ports are operating in Bhairahawa, Birgunj, and Biratnagar (all along the border with India) but the quality and operation of these dry ports have not been efficient enough to reduce transportation costs to render traded goods competitive.

An alternative mode of transportation for international trade is air cargo, which is more cost effective generally for light products. In Nepal, only 17.6 million kilograms of cargo (imports and exports) were handled by air services in 2009 via 20 international air lines networks in 35 countries. About 17 percent of total exports used air transportation in the same year. Railway transport could be a more efficient way to connect to Kolkata seaport to export to third countries; it would also be an effective means of transport to connect to the wider Indian market which has one of the biggest railway networks in the world. Unfortunately, Nepal has an unreliable and highly limited (about 56 kilometres) railway facility to connect with the Indian rail network. Of the mere 56 kilometres of railway lines, only 29 kilometres are being used partly because of managerial inefficiency (Rajkarnikar, 2010). Moreover, the railway network has never been a priority item on the agenda of the policy makers despite it having great potential in the flat Terai region, if not in the mountains.

Of course, none of the logistical difficulties are pre-ordained. They can be improved together with macroeconomic management, political stability, and public investments. It currently fares quite poorly in both the World Bank's Trading Across Borders indicators (as part of Doing Business), as well as the Logistic Performance Index (LPI). The latter is constructed based on the efficiency of customs clearance, quality of trade and transport infrastructure, condition of shipments, quality of logistic service and consignment handling, using a number of qualitative and quantitative indicators: in 2012, Nepal ranked 151st out of the 155 countries surveyed (World Bank, 2013a). On average, the time required to export a standard container full of goods from Nepal is substantially higher, 41 days, compared to 5 days in the top-ranking countries in the world.

Trade cost disadvantages arising from landlockedness are compounded by Nepal's own macro-institutional failures (such as instability and civic disturbances) and micro-regulatory constraints. For example, the documents needed to export reflect the lengthy procedures to engage in international trade. On average, Nepali exporters are required to fill out nine documents to get government approval for exporting, compared to five in other landlocked countries. Processing and inland costs associated with exporting a 20-foot container, estimated by the World Bank, is about US\$2000, which is almost double that in India or Bangladesh; it is also higher than in several other landlocked LDCs (Figure 7). The summary of the Ease of Doing Business and indicators of trade logistics for Nepal compared against global benchmarks are presented in Table 2.

*Table 2 about here*

#### **4. Determinates of export performance: the model, variables and data**

We assess Nepal's bilateral export performance vis-à-vis all its active export destinations using the latest methodology in gravity modelling along the lines of Helpman, Melitz and Rubinstein (2008), henceforth HMR. The HMR technique controls for country selection bias and firm heterogeneity bias even with aggregate country-level trade data (see Table 4 for results). We use data on bilateral exports with at least 134 partners averaged over a three-year period between 2009 and 2011. The explanatory variables are the standard determinants of bilateral trade: distance, contiguity, common language, common colonial power, as well as the log of GDP, log of GDP per capita, average weighted tariff, and the log of the Remoteness index (computed by summing each country's distance with every other country, weighted by the latter's share in world GDP). In the model specification below,  $\alpha$  is a constant term, subscripts  $i$  and  $j$  refer to Nepal and its trading partners, respectively. The last term,  $\varepsilon_{ij}$  is the stochastic error term and  $\beta$ s are the coefficients of individual explanatory variables. The details of the variables, their description, sources and expected sign are explained in Table 3.

*Table 3 about here*

The estimated model is as follows:

$$\log(\text{Export})_{ij} = \alpha + \beta_1 \log(\text{GDP})_j + \beta_2 \log(\text{GDPpercapita})_j + \beta_3 \log(\text{Remoteness})_j \\ + \beta_4(\text{Tariff})_i + \beta_5 \log(\text{Distance})_j + \beta_6(\text{FTA})_{ij} + \sum_{ij} (\text{Dummy})_{ij} * D_{ij} + \varepsilon_{ij}$$

Of the 161 export destination countries in the Comtrade dataset, 27 have either zero or extremely low values.<sup>5</sup> When data series is expressed in logarithm, zero values drop out of the sample even though they may contain important information about trade costs.<sup>6</sup> We control for such “sample selection” bias by creating an inverse Mills ratio from the Probit estimation (column 1 in Table 4). This is the first-stage. For identification, we use a valid exclusion restriction that affects the propensity of two countries engaging in bilateral trade, but not the volume of trade after the trading relationship is established. In other words, this exclusion restriction affects the fixed cost of exporting, but not the variable cost. We consider an index from Doing Business 2008 created by combining the fixed export and import cost associated with processes, fees and inland transportation as a valid exclusion restriction. From the inverse Mills ratio, we also create a control for unobserved heterogeneity.<sup>7</sup> Both terms are included in a non-linear and ordinary least squares regression. Because the coefficients are similar, we prefer the bias-corrected OLS method.

Importantly, the coefficients of the bias-corrected model (column 3) are different from coefficients obtained from a simple OLS (column 2). The coefficient of GDP (of the partner country) is significant and higher in the bias-corrected model. The coefficients of variables measuring bilateral distance, sharing of a common border or ethnic language, and having a free trading agreement are all statistically significant, with coefficients for shared border and language and an FTA much higher in the bias-corrected mode (3) than the simple OLS model (2). The coefficient of weighted tariffs is not a significant determinant of exports from Nepal.

In columns 4 and 5, we decompose the country and firm heterogeneity biases to assess which of the two biases is more prominent. Column 4 reports results controlling only for heterogeneity bias and not the selection bias. In column 5, only the sample selection bias is corrected. While coefficients on some variables in column 4 are close to those in column 3, and those in column 5 are closer to the magnitudes reported in the benchmark regression (column 2), it is difficult to infer which of the two biases dominate from the results in columns 4 and 5. A priori, however, because the problem of zero bilateral flows between the country pairs does not appear to be too serious, the control for unobserved heterogeneity would have been expected to produce most of the bias in this gravity-like model.

Conditional on the bilateral characteristics (and the corrections for the two biases), Figure 8 depicts countries to which Nepal “under-exports” above the 45-degree line, and those to which it “over-exports” below it. This figure shows that controlling for the standard explanatory variables mentioned above,

---

<sup>5</sup> Positive export values under \$1,000 are treated as “zero.” We do not discount the possibility that some zeros are just missing or unreported values.

<sup>6</sup> Ad-hoc adjustment in the extant literature of adding 1 to 0 and then retaining the full sample in the regressions is flawed.

<sup>7</sup> It is a polynomial of the sum of the inverse Mills ratio and the fitted values of the latent variable in the selection equation.

Nepal's export values vary quite significantly even across countries that are geographically equidistant. Along the Pacific Rim, Nepal's exports are as would be predicted with Australia and New Zealand, but below potential with both Japan and the Republic of Korea as well as Indonesia. Nepal's exports to Thailand, Malaysia, Vietnam and the Philippines are not sub-optimal.

*Table 4 about here*

In South Asia, Nepal's exports to India, Bangladesh and Sri Lanka are above what would be predicted, but it under-exports to Pakistan, Afghanistan and the Maldives. In countries belonging to the Gulf Cooperation Council (GCC), which are home to hundreds of thousands of temporary migrants from Nepal, export volumes are as expected or more with the United Arab Emirates and Qatar, but below potential with Saudi Arabia and Oman. Focusing on the countries above the fitted line, Nepal can increase the export level to a higher level. For preliminary estimates of the magnitude of over- or under-exporting, see Table 5.

On the whole, the country pines for the levels of export achievement it reached after the reforms of the 1990s. There has since been a sharp deterioration in productivity and export competitiveness while imports have surged on the back of rising remittances, which as a share of national income is the highest in the world for a relatively populous country. The massive transfers have likely induced a "Dutch Disease." The non-tradable sector has expanded as a result of a "resource movement" effect and a "spending" effect,<sup>8</sup> leading to a contraction of manufacturing and a rise in the real exchange rate. Because the exchange rate of the Nepalese Rupee is pegged to the Indian Rupee, the pressure on the Nepalese rupee to appreciate against currencies, other than India's, has also aggravated export competitiveness.

*Table 5 about here*

---

<sup>8</sup> The first effect is caused when mobile factors are sucked into the booming sector (overseas) and wages are bid up at home, causing other tradable sectors to contract. The second effect is a result of resources flowing into the economy that creates extra demand for labor in the non-tradable sector. Because demand for non-traded goods increases their prices go up. Prices of traded goods, however, are set internationally, so they do not rise. This is, by definition, an appreciation of the *real* exchange rate, i.e., the rise of the *relative* price of non tradables to tradables.

## 4. Conclusion

In this short paper, we have undertaken a broad-brush examination of Nepal's export performance in recent years and discussed some policy and supply-side challenges faced by a typical landlocked least developed country. Following such an overview, we econometrically analyzed the state of the value of Nepal's exports, averaged between 2009 and 2011, in several countries in the region. The aim was to see which of the explanatory variables stood in prominence in determining the magnitude of bilateral flows, and to identify some of the countries where Nepal may look to for greater regional integration.

The results demonstrate that partners' GDP and trade costs (as proxied by gravity variables like distance, contiguity and common language) are two of the main determinants of Nepal's bilateral exports. While this result is partly accounted for by Nepal's growing trade with India, a generalizable policy inference is that it will be difficult for countries like Nepal to engage more actively in international trade without first addressing their supply-side and logistical bottlenecks. They present a much more binding constraint than policy-related distortions at home or in the import markets (e.g., tariffs).

Over the past decade, the decline in Nepal's exports, relative to GDP, as well as its major re-orientation towards regional markets like India happened in tandem with the intensification of civil conflict as well as the termination of global quotas end-2004 that governed trade of apparel for four decades. That Nepal was not able to maintain its competitiveness after the distortionary quotas were abolished re-affirms the salience of supply-side factors in trade.

The analysis also shows great variance in Nepal's exports to subsets of countries that may lie in close to each other geographically. This suggest that exports could be deepened and diversified in countries where it is seen to "over-export," and greater penetration could be encouraged in countries where it under-exports. Newer trade issues such as trade in services, regional trade and investment agreements, and attempts to latch on to regional and global value chains deserve greater policy priority. Experience of the past decade suggests that, foremost, this would require a modicum of political stability and the removal of pressing bottlenecks in trade-related infrastructure.

## References

- Acharya, M., Y. R. Khatiwada and S. Aryal. 2003. *Structural Adjustment Policies and Poverty Eradication*. Institute for Integrated Development Studies, Kathmandu, Nepal.
- Alvarez, R. 2011. "Export Transitions." *Journal of International Trade & Economic Development*, 20(2), pp. 221–50.
- Amjadi, A. and A. J. Yeats. 1995. "Have Transport Costs Contributed to the Relative Decline of Sub-Saharan African Exports ?" *Policy Research Working Paper 1559*, World Bank.
- Anderson, James and Wincoop, Eric Van. 2004. "Trade Costs." *Journal of Economic Literature*, 42, pp. 691-751.
- Arvis, Jean-Francois, Gael Raballand, Jean -Francois Marteau. 2007. "The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability." *World Bank Policy Research Working Paper*, 4258.
- CEPII (2013), 'The CEPII Gravity Dataset', in <http://www.cepii.fr/anglaisgraph/bdd/gravity.asp> (accessed on 16/04/2013)
- Collier, Paul and Jan Willem Gunning. 1999. "Why Has Africa Grown Slowly?" *The Journal of Economic Perspectives*, 13(3), pp. 3-22.
- Commodity Trade Statistics Database (2014), UN Comtrade Database, United Nations, in <http://comtrade.un.org/data/> (accessed on 28/05/2014).
- Dubey, M. . 2010. "Regional Economic Integration in South Asia: The Development of Institutions and the Role of Politics," In *Does South Asia Exist? Prospects for Regional Integration*, 53–84. The Water H. Shorenstein Asia-Pacific Research Centre, New York.
- Faye, M. L, J.W. McArthur, J. D. Sachs and T. Snow. 2004. "The Challenges Facing Landlocked Developing Countries." *Journal of Human Development*, 5, pp. 31-68.
- Felipe, J. Kumar, U., and A. Abdon. 2010. "As You Sow Shall You Reap: From Capabilities to Opportunities," Asian Development Bank draft.
- Finger, J. M. and A. J. Yeats. 1976. "Effective Protection by Transportation Costs and Tariffs: A Comparison of Magnitudes." *The Quarterly Journal of Economics*, 90(1), pp. 169–76.
- Hausmann, R., D. Rodrik and J. Hwang. 2006. "What You Export Matters." NBER Working Paper No. 11905, Cambridge, MA.
- Hausmann, R. and B. Klinger. 2007. "The Structure of the Product Space and the Evolution of Comparative Advantage." CID Working paper No. 146, Harvard University.
- Helpman, Elhanan; Marc Melitz and Yona Rubinstein. 2008. "Estimating Trade Flows: Trading Partners and Trading Volumes." *The Quarterly Journal of Economics*, 123(2), pp. 441-87.
- Karmacharya, B. 2001. "Economic Reforms in Nepal and Their Implications for Trade, Economic Growth, Inequality and Poverty." *South Asia Economic Journal*, 2(1), pp. 87-103.

- Lall, S., Weiss, J. & Zhang, J. 2006. "The sophistication of exports: a new trade measure," *World Development* 34(2), 222–237.
- Paudel, R. C. and P. J. Burke (2015). "Exchange Rate Policy and Export Performance in a Landlocked Developing Country: The Case of Nepal." *Journal of Asian Economics* 38: 55-63.
- Pursell, G. . 2011. *Routledge Handbook of South Asian Economies*. Routledge, London, UK.
- Rajkarnikar, P. R. . 2010. "Adequacy and Effectiveness of Logistic Services in Nepal: Implication for Export Performance'." *Working Paper Series, No. 79*, Asia-Pacific Research and Training Network.
- Rana, M. S. and S. Pradhan. 2005. "Implementation Evaluation of Foreign Direct Investment Policy in Nepal." *Policy Paper 11*, Economic Policy Network, Kathmandu, Nepal.
- Santos-Paulino, A.U. 2002. "Trade Liberalisation and Export Performance in Selected Developing Countries." *Journal of Development Studies*, 39(1), pp. 140-64.
- Sharma, Kishor. 2001. "Liberalisation, Growth and Structural Change: Evidence from Nepalese Manufacturing'." *Applied Economics*, 33, pp. 1253–61.
- World Bank. 2013a. "Logistics Performance Index," In.World Bank' LPI, online, url: <http://data.worldbank.org> (accessed on 16/04/2013).
- \_\_\_\_\_. 2013b. "World Development Indicators," In.World Bank, <http://data.worldbank.org> (accessed on 16/04/2013).
- \_\_\_\_\_. 2015. "World Development Indicators," In.World Bank, <http://data.worldbank.org> (accessed on 28/05/2015).

Table 1: Weighted average applied tariff rate: Comparison with India (in %)

Period Average	Nepal	India
1990-95	22.1	59.6
1995-00	22.1	26.0
2000-05	17.2	22.0
2005-10	15.5	7.2

Source: World Bank ([2013b](#))

Table 2: Nepal's logistic indicators

	<b>Ease of Doing Business Rank</b>	<b>Logistic Performance Index</b>	<b>Time taken to export</b>	<b>Documents required for export</b>	<b>Cost of exporting</b>
<b>Nepal</b>	108	2.2	41	11	1975
<b>Best in the World</b>	1	5	5	2	450

Source: World Bank (2015)

Notes: Ease of doing business - ranking of 183 countries (best is 1) in 2011. Logistic Performance Index: overall (1=low and 5=high), time to export-days (5 - 80 days); Documents to export: number of documents to export (2- 11 documents), and costs to export per container ( US\$ 450 - US\$5902) in 2015.

Table 3: Description and sources of variables

Variables	Sources	Descriptions	Expected sign
Export	Commodity Trade Statistics Database (2014)	Bilateral exports from Nepal to trading partners, (mirrored) value in US\$, averaged between 2009 and 2011. Where mirror data are missing, actual values reported by Nepal are used, multiplied by an ad-hoc cost, insurance and freight (c.i.f.) conversion factor of 1.1; When mirrored values are less than actual, the later used	n/a
GDP	World Bank (2013b)	Gross Domestic Product in current US Dollar, then expressed in logarithm	(+)
GDP per capita	World Bank (2013b)	Gross Domestic Product per capita in current US Dollar, then expressed in logarithm	(+)
Distance	CEPII (2013)	Distance in kilometers between two countries using the great circle formula which uses latitudes and longitudes of each country's most populated cities or official capital.	(-)
Remoteness	Computed by authors based on CEPII (2013) and World Bank (2013b) data	Log of the sum of a country's bilateral distance with all other countries in the world, weighted by the share of the GDP of the partner country in total world GDP.	(-)
Tariff	World Bank (2013b)	Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. When the effectively applied rate is unavailable, the most favored nation rate is used.	(-)
Free Trade Agreement (FTA)		1 for a bilateral preferential trade agreement in existence between Nepal and importing countries during a year of observation; 0 otherwise.	(+)
Contiguity	CEPII (2013)	Dummy variable, 1 if trading partner borders with Nepal, 0 otherwise.	(+)
Common ethnic language	CEPII (2013)	Dummy variable, 1 if the partner has the common ethnic language, 0 otherwise.	(+)

Colony	CEPII (2013)	Dummy variable, 1 if the partner was with same colonial with Nepal	(+)
Fixed Trade Cost	World Bank(2013a)	The cost associated with all procedures required to export and import goods. Includes the costs for documents, administrative fees for customs clearance and technical control, customs broker fees, terminal handling charges and inland transport.	(-)

---

Table 4: Determinants of Nepal's bilateral exports

	(1)	(2)	(3)	(4)	(5)
	Probit	OLS	HMR	Bias I	Bias II
GDP	0.317***	0.607***	0.616***	0.787***	0.876***
	0.085	0.084	0.135	0.111	0.087
GDP per capita	-0.04	0.593***	0.503***	0.629***	0.598***
	0.123	0.13	0.131	0.113	0.098
Remoteness	-0.143	0.986	0.714	1.056*	1.004*
	0.795	0.597	0.508	0.571	0.518
Weighted tariffs	-0.043	-0.033	-0.068	-0.055	-0.099***
	0.035	0.038	0.042	0.04	0.038
Distance	0.065	-0.555**	-0.518*	-0.540*	-0.516*
	0.265	0.279	0.262	0.286	0.278
Contiguity	.	2.708***	3.732***	2.942***	1.718**
	.	0.972	1.145	0.695	0.808
Common language	.	3.435***	4.021***	4.367***	4.832***
	.	1.076	1.181	1.143	0.961
FTA	.	2.488***	4.687***	4.724***	3.822***
	.	0.898	0.521	1.346	0.881
Fixed Trade Cost	-0.688**	0.162			
	0.322	0.321	0	0	0
Inverse Mills Ratio			-1.229		3.398***
			2.937	0	0.854
Z1 (Control for heterogeneity)			-12.532*		
			6.587		
Z2 (Control for heterogeneity)			5.072**		
			2.206		
H1 (Control for heterogeneity)				-0.586*	
				0.313	
N	153	134	134	134	134
R-sq.		0.7	0.76	0.71	0.74

Note 1: Robust standard errors reported in the second line corresponding to each variable

Note 2: Statistical significance indicated as \* for  $p < 0.1$ , \*\* for  $p < 0.05$  and \*\*\* for  $p < 0.01$

Note 3: Sample selection bias is controlled by the Inverse Mills Ratio and firm selection is controlled by a polynomial whose coefficients include those on Z1 and Z2.

Table 5: Estimates of over- and under-reliance on regional export markets, 2009-2011

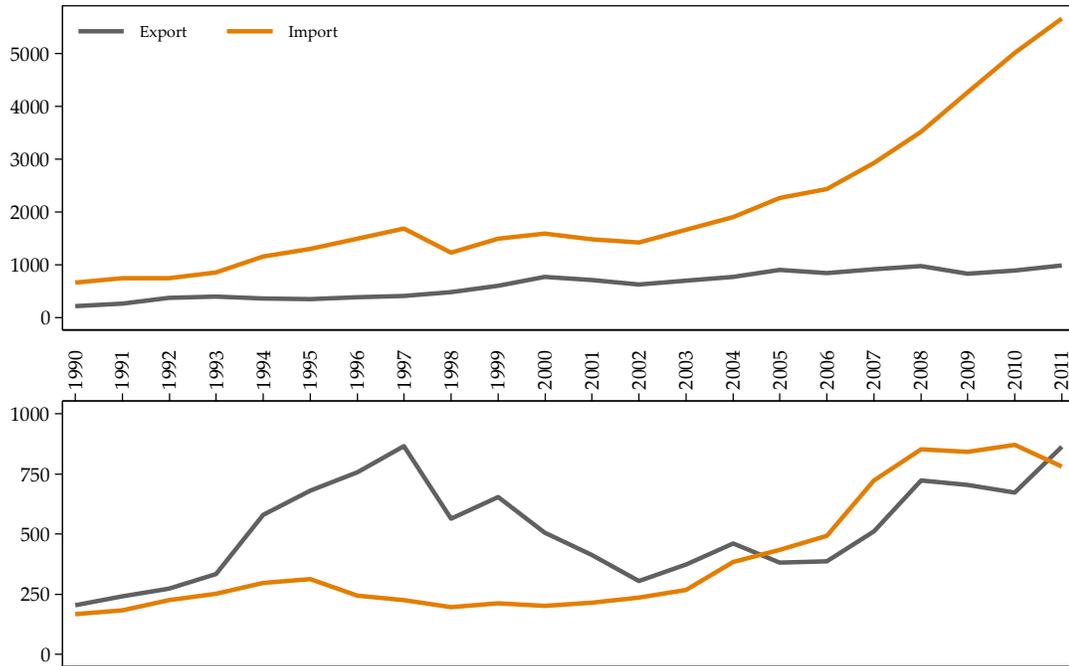
Country	Actual	Predicted	Discrepancy (%)
Bangladesh	48782.0	1415.6	97.1
Vietnam	2108.1	110.2	94.8
Philippines	1116.9	219.3	80.4
United Arab Emirates	6189.5	2485.5	59.8
New Zealand	810.9	429.7	47.0
Thailand	1028.1	688.7	33.0
Singapore	5307.6	3737.9	29.6
Qatar	1183.7	839.8	29.1
Malaysia	1747.6	1275.3	27.0
Sri Lanka	2037.7	1639.1	19.6
Australia	5422.0	4748.5	12.4
China	17557.8	16583.0	5.6
India	631842.5	668985.7	-5.9
Pakistan	1771.9	2183.9	-23.3
Korea, Rep.	1401.8	2006.1	-43.1
Saudi Arabia	659.2	1288.9	-95.5
Japan	11062.4	33051.2	-198.8
Maldives	28.5	132.8	-366.1
Afghanistan	58.7	413.8	-604.3
Oman	36.0	284.0	-688.1
Indonesia	41.4	1538.6	-3613.6

Source: Authors' calculations

Note 1: Export values in USD thousands

Figures

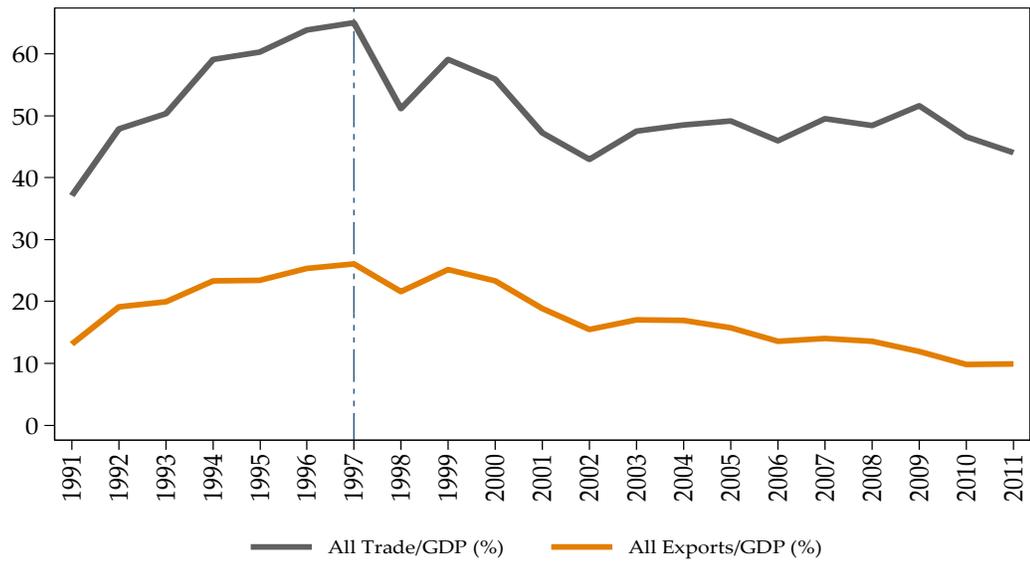
Figure 1: Nepal's trade balance



Source: Balance of payments data from WDI

Source: World Bank (2013b)

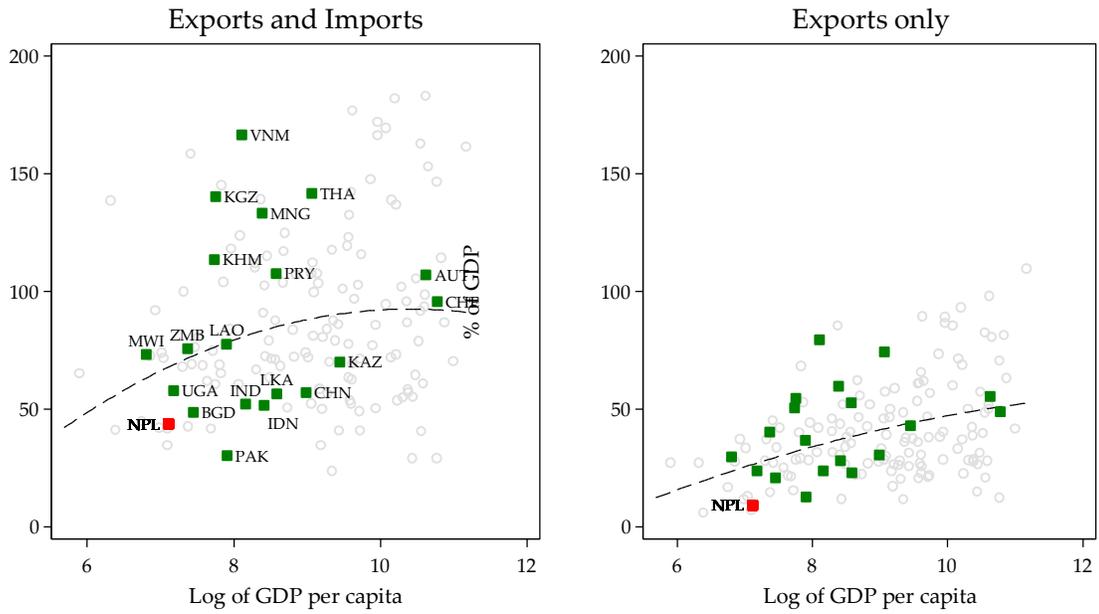
Figure 2: Trade trend



Source: Balance of payments data from WDI

Source: World Bank (2013b)

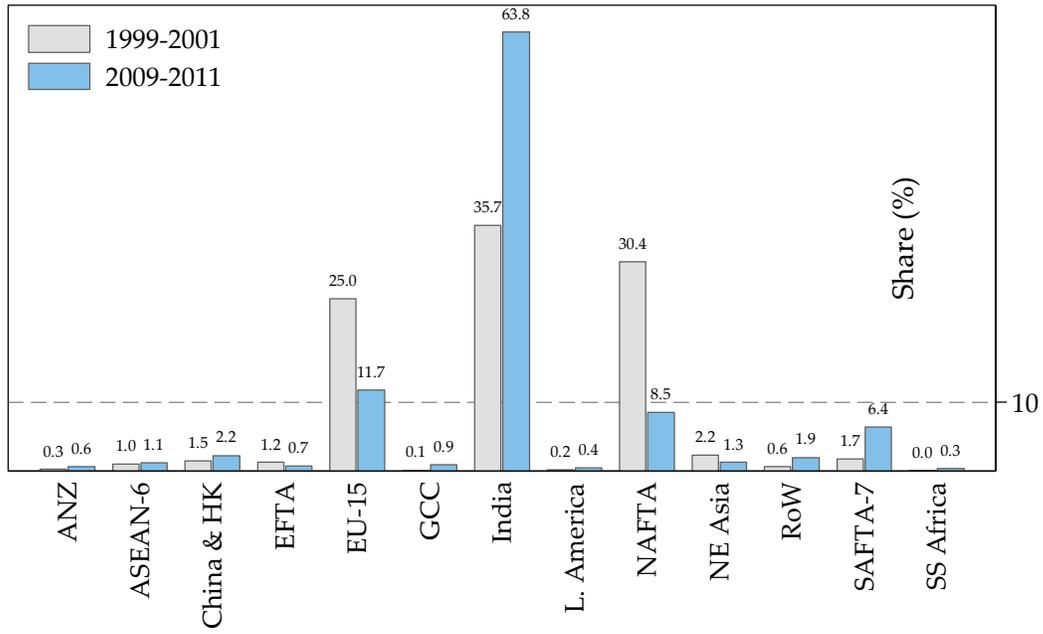
Figure 3: Relative trade openness



Note 1: Curve is a quadratic fit of trade/GDP regressed on the log of GDP per capita and its squared value.  
 Note 2: A balanced panel of 155 economies.  
 Source: WDI.

Source: World Bank (2013b)

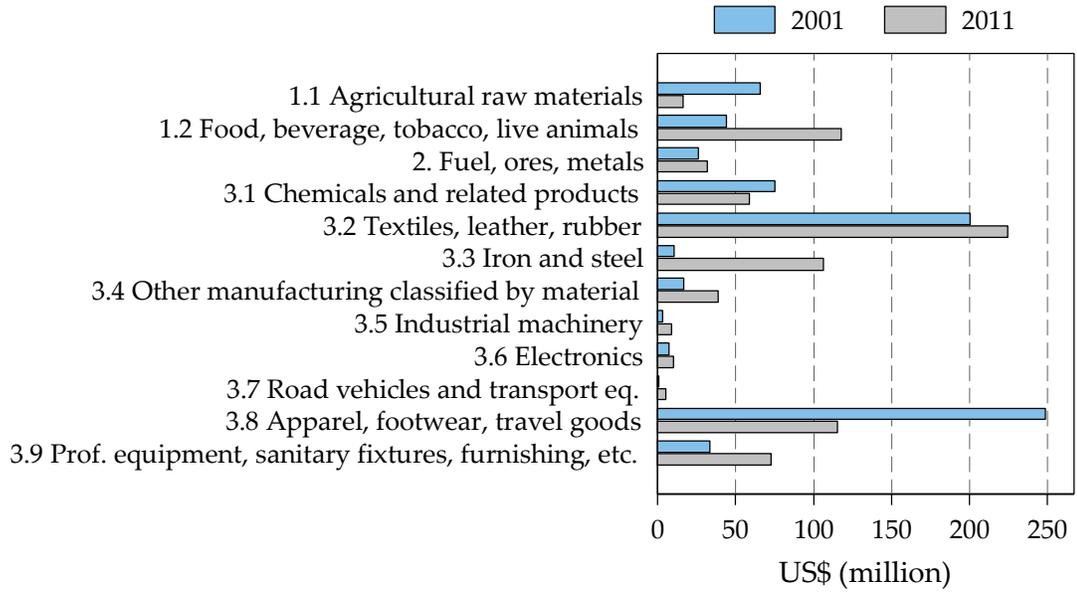
Figure 4: Nepal's export destinations



Source: COMTRADE

Source: Commodity Trade Statistics Database (2014)

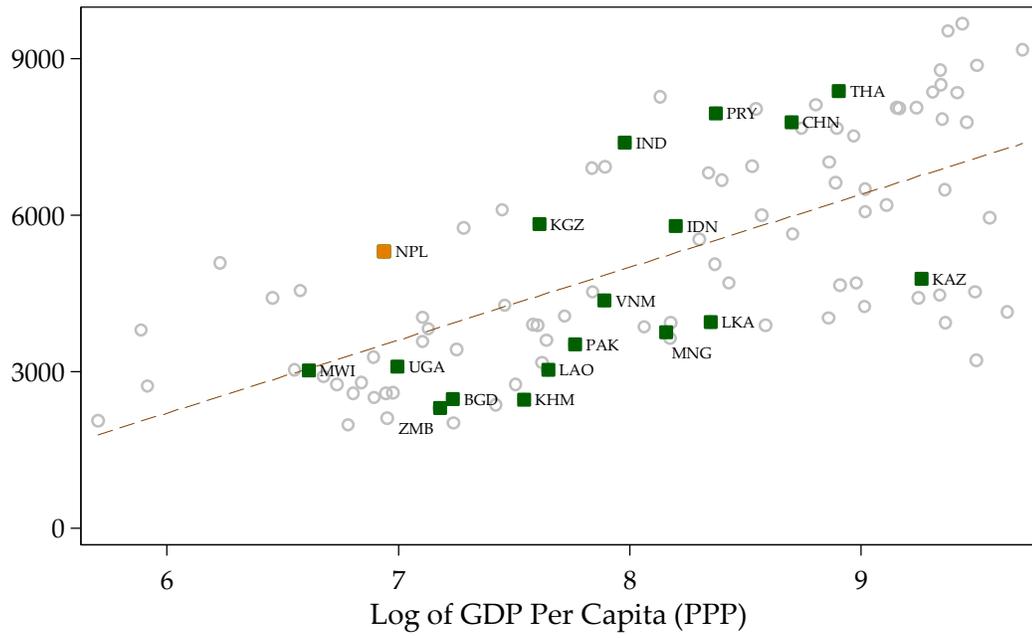
Figure 5: Export composition



Note 1: Mirrored export figures  
Source: COMTRADE

Source: Commodity Trade Statistics Database (2014)

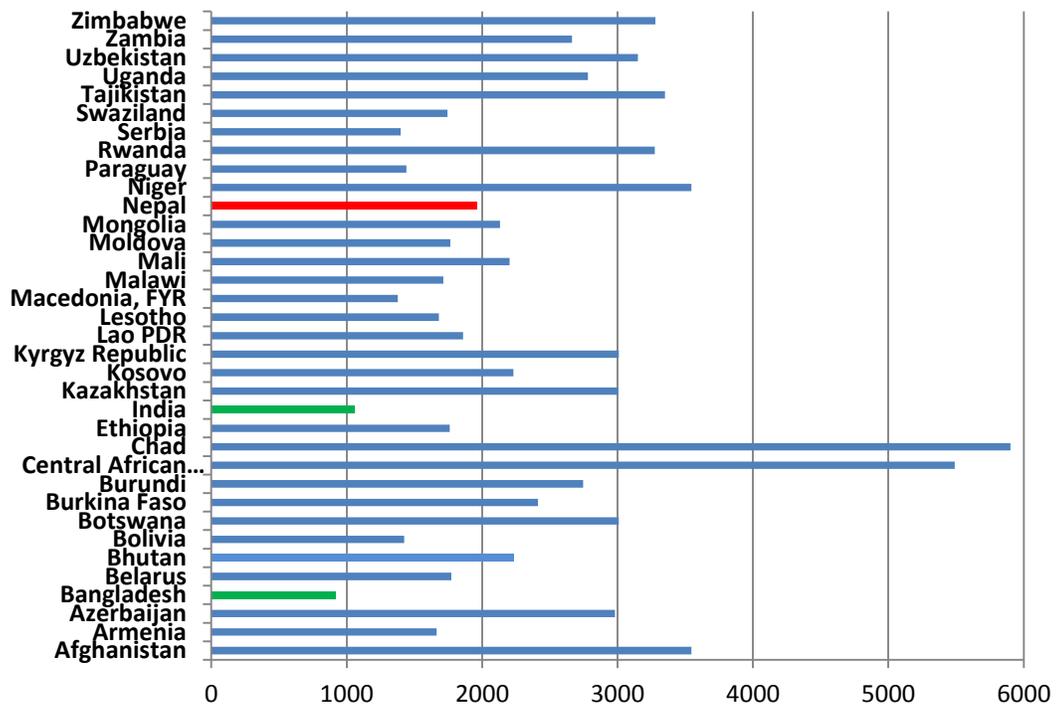
Figure 6: Export sophistication



Note 1: Only low & middle-income countries used in the regression

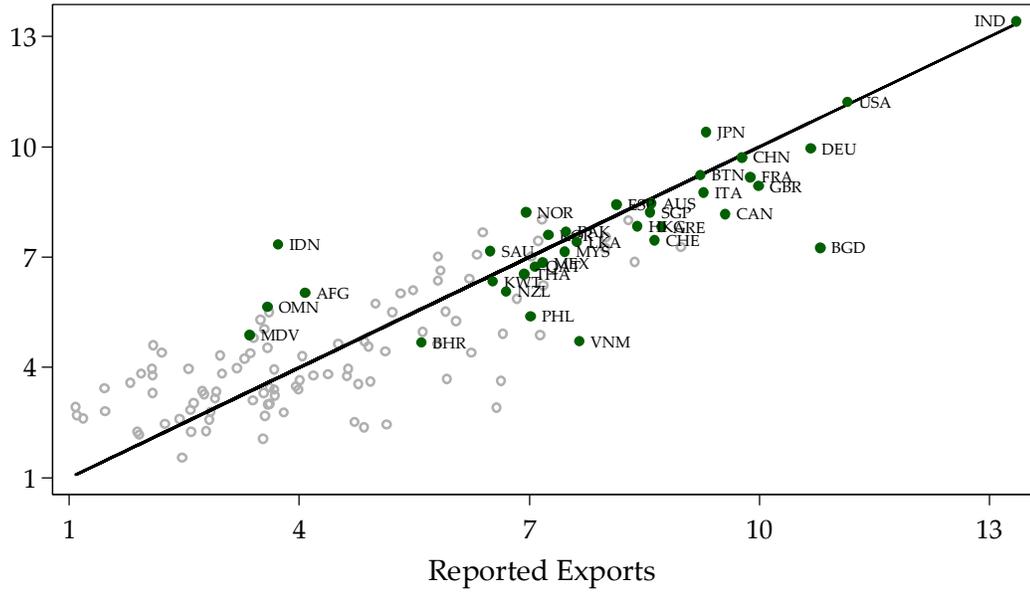
Source: World Bank (2013b)

Figure 7: Cost of processing export shipment in landlocked developing countries and Nepal's Neighbours



Source: World Bank (2013a)

Figure 8: Gravity estimates of bilateral exports



Note 1: Mirrored export values in log of US\$ (in thousands, averaged 2009-2011).  
Note 2: Mirrored values replaced by actual export values for 2009-2011 when missing or less than actual.  
Source: COMTRADE

Source: Commodity Trade Statistics Database (2014)

**Working Papers in Trade and Development**  
**List of Papers (as at 2017)**

- 16/01 RAGHBENDRA JHA and SADIA AFRIN, 'Pattern and determinants of structural transformation in Africa'
- 16/02 SANTANU GUPTA and RAGHBENDRA JHA, 'Democracy and redistribution'
- 16/03 W. MAX CORDEN and SISIRA JAYASURIYA, 'The Japanese macroeconomic mystery'
- 16/04 PREMA-CHANDRA ATHUKORALA and C VEERAMANI, 'Internationalization of Indian enterprises: patterns, determinants and policy issues'
- 16/05 PREMA-CHANDRA ATHUKORALA, TALA TALGASWATTA and OMER MAJEED, 'Global production sharing: exploring Australia's competitive edge'
- 16/06 KYM ANDERSON, JOSEPH FRANCOIS, DOUGLAS NELSON and GLYN WITTWER, 'Intra-industry trade in a rapidly globalizing industry: the case of wine'
- 16/07 KYM ANDERSON, 'National and global price- and trade-distorting policies'
- 16/08 BUDY P RESOSUDARMO, ACRAM LATIPH, SARAN SARNTISART and ISRA SARNTISART, 'Development in Southeast Asia's lagging regions'
- 16/09 ARIUN-ERDENE BAYARJARGAL, 'Economic growth and income inequality: asymmetric response of top income shares to growth volatility'
- 16/10 CHRIS MURPHY, 'The effects on consumer welfare of a corporate tax cut'
- 16/11 ANIS CHOWDHURY, 'Financing poverty eradication'
- 16/12 PREMA-CHANDRA ATHUKORALA and JOHN RAVENHILL, 'China's evolving role in global production networks: the decoupling debate revisited'
- 16/13 SANTANU GUPTA and RAGHBENDRA JHA, 'Democracy, redistribution and optimal tax structures'
- 16/14 PAUL J BURKE and HEWEN YANG, 'The price and income elasticities of natural gas demand: International evidence'
- 16/15 IVAN GONZALEZ and BUDY P. RESOSUDARMO, 'A sectoral growth-income inequality nexus in Indonesia'
- 16/16 BLANE D. LEWIS, 'Local elections, political fragmentation, and service delivery in Indonesia'
- 16/17 IAN COXHEAD and RASHESH SHRESTHA, 'Globalization and school-work choices in an emerging economy: Vietnam'
- 16/18 KYM ANDERSON, 'Sectoral trends and shocks in Australia's economic growth'
- 16/19 SELWYN CORNISH and RAGHBENDRA JHA, 'Trevor Swan and Indian planning: The lessons of 1958/59'

- 16/20 MOHAMMAD ZULFAN TADJOEDDIN, ILMIAWAN AUWALIN and ANIS CHOWDHURY, 'Revitalizing Indonesia's manufacturing: the productivity conundrum'
- 17/01 PREMA-CHANDRA ATHUKORALA, 'Global productions sharing and local entrepreneurship in developing countries: Evidence from Penang export hub, Malaysia'
- 17/02 ROHAN BEST, 'Switching towards coal or renewable energy? The effects of financial capital on energy transitions'
- 17/03 PREMA-CHANDRA ATHUKORALA, 'Manufacturing Exports from Sri Lanka: Opportunities, Achievements and Policy Options'
- 17/04 MANOJ K PANDEY, VANI S KULKARNI and RAGHAV GAIHA, 'Aging, depression, and non-communicable diseases in South Africa'
- 17/05 SHUHEI NISHITATENO and MASATO SHIKATA, 'Has improved daycare accessibility increased Japan's maternal employment rate? Municipal evidence from 2000-2010'
- 17/06 RAMESH CHANDRA PAUDEL and SWARNIM WAGLE, 'Export performance and potential with regional partners: The case of a landlocked LDC, Nepal.'