CHAPTER 9

From Tatopani to Rasuwa
An Analysis of Nepal-China Trade after 2015 Earthquake

Paras Kharel

Two shocks hit Nepal in quick succession in 2015. The devastating earthquakes of April-May were followed by a stinging blockade of the Nepal-India border during September 2015-February 2016. The earthquake destroyed the only motorable link to China that was already struggling to overcome the effects of a huge landslide from a year earlier, which brought a whole mountain down at Jure, blocking the Sunkoshi and submerging a significant portion of the road. Besides taking a heavy toll on human life, the earthquake played havoc with industry and trade through various avenues, including damages to premises, equipment, raw materials and stock of finished goods, disruption of input supply, labourers' absence from work as they attended to their families, reduced demand, destruction of tourist sites and a fall in tourist arrivals, and increased time and cost of importing from and exporting to China due to the shutdown of Tatopani Customs.[1]

Some of these effects were temporary in nature. A distinct effect on international trade in goods that can be directly traced to the earthquake, and that persists over two years later, is the rerouting of Nepal's trade flows with China necessitated by the shutdown of the Tatopani-Zhangmu trade point on the Nepal-China border. The Rasuwagadhi-Kerung trade point, the only other major border point with a motorable road connection to Kathmandu, has been unable to fully absorb the traffic diverted from Tatopani due to poor conditions of the road and other infrastructure on the Nepali side. Tatopani remains closed.

Trade with China in the 10 months following the earthquake was hit by a double whammy, as a natural disaster met a manmade one. If the Tatopani shutdown disrupted overland trade with China to the north, the blockade of the Nepal-India border to the south foreclosed the option of accessing China via sea for landlocked Nepal, dependent as it is exclusively on India for access to the sea.

It is hard to isolate the effects of the earthquake and the blockade as the five-month-long border disruptions began around mid-September 2015, when the country was still reeling from the effects of the April-May quake and its aftershocks, not to mention those from the pre-quake landslide. The blockade compounded the

hardships caused by the quakes while the damages wrought by the tremors limited the country's ability to cushion the impact of the blockade. Yet, because the blockade happened so close on the heels of the devastating calamity, demonstrating that such disruptions can happen *any time*, the two shocks served to forcefully expose Nepal's economic and strategic vulnerabilities arising from an excessive dependence on a single country for trade and transit. It is, therefore, appropriate to assess the effects of the earthquake against the backcloth of the blockade, to be able to cull policy and strategic lessons in the areas of trade and transit.[2]

The Rasuwagadhi point on the Nepal-China border had opened in late 2014 just a few months ahead of the earthquake apparently as a response to the previous monsoon's infamous Jure landslide. Forced to take in a portion of the overland trade that used to flow through Tatopani, and as a point through which fuel imports from China were ferried through treacherous and narrow gravelled hairpins amid the southern border blockade, Rasuwa was catapulted from relative obscurity to the headlines. China had accorded decided priority to develop Kerung as a key gateway to Nepal long before the earthquake—as reflected in the well-developed road and port infrastructure there, its plan to extend the railways to Kerung by 2020 and its declaration in August 2017 of Kerung-Rasuwa as an "international" border crossing as part of Beijing's One Belt One Road Initiative. This has aided in Rasuwagadhi's irrevocable rise to prominence, as have high-level decisions to expedite the preparation of a detailed project report on further extending the railways from Kerung to Kathmandu and then to Pokhara and Lumbini.[3] The prime minister-elect's visit to Rasuwagadhi in December 2017, flanked by other top leaders of his party, is one measure of the importance attached to the Rasuwa-Kerung point by the current government of KP Sharma Oli.[4] The March 2016 agreement on transit transport between Nepal and China adds to the potential importance of Rasuwa. If operationalized with a protocol, the accord could pave the way for Nepal to trade with the rest of the world via China. The route to Rasuwagadhi, currently in extremely bad shape, is being replaced by a shorter, wider and easier one.

Against this backdrop, this paper analyzes changes in Nepal's trade with China in the wake of the earthquake and the border blockade, focusing on the shifts in routes and transport modes. To set the scene, the next section begins with an analysis of Nepal's aggregate trade performance—overall as well as, separately, with China, India and the rest of the world—amid the two shocks, and the recovery of 2016/17. Using monthly trade data to obtain trade flows during sub-periods of less than a year, it shows how the blockade compounded the earthquake's blow to trade. The paper, then, dissects Nepal-China trade performance and patterns at the product level, customs point/route level and product-customs point/route level. This granular analysis of changes in exports to and imports from China, disaggregated by products and customs points used, is a key novelty of this paper. It also obtains a back-of-the-envelope estimate of the time cost of the sea route detour of imports forced by the Tatopani shutdown. To do so, it combines the extra time taken by the sea journey with estimates of the cost of an additional day in transit taken from existing literature. The paper then proceeds to interpret the findings from the data analysis and discuss likely issues in the future of Nepal-China trade through the lens of transport and transit, including the emergence of the Rasuwa-Kerung option. The discourse draws on, *inter alia*, observations from a field trip to Rasuwagadhi and Kerung, and the views of government officials, private sector representatives and economists expressed in a seminar where this paper was presented.

We conclude this introductory section by discussing the data in brief and summarizing the main findings from the data analysis, leaving interpretation and policy implications to the final section. Data sources and issues are dealt at length where relevant. Here, suffice it to say that, two sources of data on trade in goods are utilized. Data from Nepal Rastra Bank (NRB)'s periodic *Current Macroeconomic and Financial Situation* updates are used mainly to analyse changes in trade flows over intervals of less than a year. Trade and Export Promotion Centre (TEPC) data are used mainly for the granular analysis of trade with China, disaggregated by products and customs points. Although services exports have surpassed

goods exports in value terms since 2012/13, this paper studies goods trade only in order to maintain a sharp focus and in recognition of the lack of disaggregated data on services trade required for a meaningful analysis. In the granular trade analysis, Fiscal Year 2013/14 (around mid-July 2013 to mid-July 2014) is taken as the pre-earthquake year and Fiscal Year 2016/17 as the post-earthquake year. The fiscal years are also referred to as 2013 and 2017, respectively. Since there was hardly any trade through Rasuwa in 2013 and Tatopani remained closed as of 2017, overland trade with China means trade through Tatopani in 2013 and Rasuwa in 2017. National accounts data are from the Central Bureau of Statistics (CBS).

With Tatopani shut and Rasuwagadhi yet to fully absorb the diverted trade traffic from Tatopani, portions of Nepal's overland imports from China are forced to take a costly detour via sea. The share of overland imports from China fell from 24 per cent before the earthquake to 12 per cent two years after the quake. There was a general shift towards using both sea and air routes rather than just a single route for imports. Among products that used a northern border point in both years or only in the initial year for imports, the sea route or both sea and air routes emerged as more prominent alternatives than the air route alone. The time cost imposed by the enforced detour for imports is equivalent to a tariff of 18 per cent to 62 per cent. During the same period, the share of overland exports to China fell from 69 per cent to 43 per cent. While changes in routes were stark for imports, they were modest for exports that initially used Tatopani. The limited route changes for exports occurred overwhelmingly towards the air route rather than the sea route. The relative importance of exports to China via air has increased, but total exports to China, as of the end of FY 2016/17, are yet to be restored to pre-earthquake levels.

Air route was the most important route taken by new exports (56 per cent of total value of new exports), followed by the Rasuwa (43 per cent) land route. Three quarters of products that ceased being exported, in value terms, had previously taken place through Tatopani, followed by Biratnagar (15.5 per cent) and Tribhuvan International Airport (TIA) (eight per cent). For Tatopani/Rasu-

wa, the gain from new products was 28 per cent of the loss from products that stopped being exported, implying a net loss along the extensive margin. For TIA, the gain from new products was 319 per cent of the loss from products that stopped being exported. Tatopani's initial share was positively associated with the subsequent export growth, until the share reached 44 per cent, which is half the mean share of 87 per cent. Thereafter, a higher Tatopani share was associated with a lower export growth. At the mean share, a one percentage point higher Tatopani share was associated with a 12.5 per cent lower export growth. While the initial share of Tatopani was not a statistically significant determinant of the probability of whether a product would continue to be exported, the number of customs points initially used was.

The bulk of new imports in value terms passed through TIA (30 per cent), Birgunj (18 per cent), Rasuwa (17 per cent), Biratnagar (15.6 per cent), Birgunj Dry-port (10 per cent) and Bhairahawa (6.6 per cent). Nepalgunj saw new imports of nine products, worth NPR 124 million, and did not see any import stops. For all customs points, the gain in imports from new products was higher than the loss in imports from products whose imports ceased—by a factor of three to 56 (Bhairahawa), implying a net gain along the extensive margin. Even for Rasuwa/Tatopani, there was a gain by a factor of three. Among the four major points, the gain ranged from 4.7 (TIA) to 9.4 (Biratnagar). An initial high exposure to Tatopani was associated with higher import growth until the share of Tatopani crossed 44 per cent, after which a penalty kicked in. The turning point was higher than the mean initial Tatopani share of 36 per cent. An increase in Tatopani share of 10 percentage points, at products in the 75th percentile of Tatopani share, was associated with a reduction in import growth of around two to three per cent. Looking at changes within the same product, on average, a one percentage point decrease in the share of Tatopani/Rasuwa was associated with a 0.37 per cent increase in import growth. The change in Tatopani/Rasuwa share accounted for about 10 per cent of the observed import growth between 2013/14 and 2016/17 of continuing products. The use of an additional customs point was

associated with a 45 per cent higher growth in imports among such products. A higher initial share of Tatopani was associated with a lower probability of a product imported in 2013/14 to continue to be imported in 2016/17.

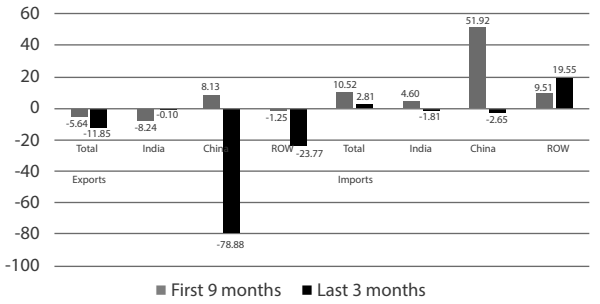
Double whammy: An analysis of aggregate trade effects

The CBS projected the gross domestic product (GDP) to grow by five per cent at market prices (4.8 at basic prices) in 2014/15, before the earthquakes struck. Revised estimates for the year put growth at 3.3 percent (three per cent at basic prices). The Post-disaster Needs Assessment (NPC 2015) projected the growth rate (at basic prices) for 2015/16 to be 5.5 per cent, taking into account the adverse shock of the earthquake and the revival on the back of reconstruction. The actual growth rate was nearly zero at basic prices and 0.4 per cent at market prices. The most important unforeseen shock to the economy in 2015/16 was the blockade, which also stymied reconstruction works. As a back-of-the-envelope estimate, therefore, the immediate cost of the blockade in terms of GDP loss was 5.5 per cent.

Exports were declining even in the first nine months of 2014/15, before the earthquake struck (Figure 9.1). Exports to India and the rest of the world (ROW) were declining while exports to China were increasing. In the last three months, when the quakes were battering the country, the rate of export decline doubled, with exports to China and ROW hit particularly hard. The shutdown of Tatopani border-point following damages to the road and the area around the customs offices explains the close to 80 per cent plunge in exports to China. Overall imports were growing at a rate of 10.5 per cent in the first nine months, only to slow down to just under three per cent in the last three months.[5] During the last three months, while imports from India and China declined, imports from ROW grew at twice the rate recorded in the previous nine months. In particular, imports from China declined by 2.7 per cent in the last three months compared to a nearly 52 per cent growth in the first nine months. Looking at year-to-year trade

Figure 9.1

Trade growth in 2014/15 (%)



Source: Author's calculation based on Nepal Rastra Bank's Current Macroeconomic and Financial Situation, various issues.

growth, exports declined by 7.3 per cent in 2014/15, compared to a 19.6 per cent growth in the previous year, while import growth fell to 8.4 per cent from 28.3 per cent. Exports to China saw a 21.5 per cent fall compared to a 6.3 per cent fall to India. The immediate negative effect of the earthquake on exports was greater for China-bound than for India-bound exports, for natural reasons.

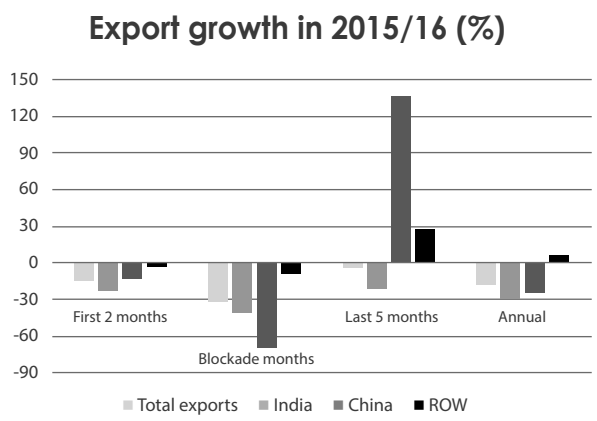
Despite the inherent difficulty in disentangling the effects of the earthquake and the blockade on trade, basic trade flow data can be used to get an idea of how the border chokehold added to the earthquake-induced woes.[6] As opposed to a 15 per cent decline in exports in the first two months of 2015/16 (mid-July to mid-September)—compared to the same period in the previous year, well before disaster hit—exports plunged by a whopping 32 per cent in the next five months (mid-September to mid-February), a period when the blockade was fully in force (Figure 9.2). Import growth, which was negative 17.5 per cent in the first two months, further fell to 23 per cent in the next five months (Figure 9.3). The reductions were felt across India, China and ROW as trade part-

ners. The contraction was the sharpest in flows to and from China. Exports to China fell by 69 per cent during the blockade months, compared to a 12 per cent decline in the two months of 2015/16 preceding the blockade.

In contrast, exports to India and ROW fell by 40 per cent and nine per cent, respectively, during the blockade months and 23 per cent and three per cent during the two months before the blockade. On the import front, flows from India during the blockade contracted by 28 per cent compared to a 20 per cent contraction in the two months prior to the blockade. Imports from China, which had crashed in the last three months of 2014/15 following Tatopani shutdown, were slowly recovering, growing at six per cent, in the first two months of the next fiscal year (2015/16). Then came the southern border blockade, and imports from China fell again, by nearly 18 per cent.

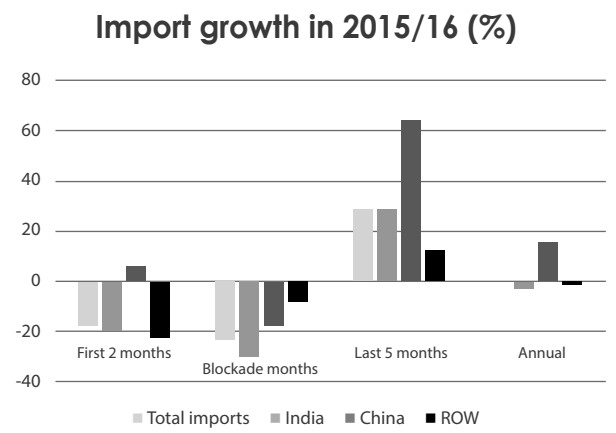
Before the earthquake, 69 per cent of Nepal's exports to China happened overland through Tatopani Customs, 19 per cent via

Figure 9.2



Source: Author's calculation based on Nepal Rastra Bank's Current Macroeconomic and Financial Situation, various issues.

Figure 9.3



Source: Author's calculation based on Nepal Rastra Bank's Current Macroeconomic and Financial Situation, various issues.

air using the country's only international airport in Kathmandu, Tribhuvan International Airport (TIA) and the rest by sea after transiting through India and using the nearest Indian seaport in Kolkata. Imports from China, originating mostly in the eastern and southern coastal regions of China, were less dependent on the Tatopani route. Tatopani handled about a quarter of imports while TIA handled another quarter, with the remaining half flowing through seven customs points along the Nepal-India border. Trade with China in the 10 months following the earthquake (late April 2015 to February 2016) was caught in a pincer movement, as a natural disaster met a manmade one. On the one hand, the earthquake-caused shutdown of Tatopani, the only customs point on the Nepal-China border connected to the capital city with a metallic road, played havoc with overland trade. Rasuwa—a potentially important customs point on the northern border, but largely neglected and underdeveloped, with extremely poor road conditions barely allowing a truck to pass through—was unable to absorb the

diverted traffic. On the other hand, the blockade along the Nepal-India border not only choked the existing sea-borne trade with China and other countries, but also denied an alternative route to the traffic diverted from Tatopani.

Within Nepal-China trade, the importance of overland trade through Nepal-China border declined sharply (Figures 9.4 and 9.5). Exports through Tatopani ground to a halt following the shutdown of the border point due to damages caused by the earthquake and remained so even a year after the quake (end of 2015/16).

Exports through Rasuwa increased from a negligible amount to some NPR 585 million. Tatopani Customs accounted for about 70 per cent Nepal's exports to China in 2013/14; the share fell to 52 per cent in 2014/15. The share of Rasuwa customs increased from a negligible figure in 2013/14 to 28 percent in 2015/16.

On the import side, Tatopani's share fell from about 25 per cent in 2013/14 to 11 per cent in 2014/15 to less than one per cent in 2015/16. Rasuwa's share increased to 8.5 per cent in 2015/16. Thus, the share of overland exports in total exports to China fell from 70 per cent to 28 per cent, with a corresponding increase in the share of exports through air and sea routes.8 Similarly, the share of overland imports in overall imports from China fell from 25 per cent to nine per cent. A 25 per cent fall in exports to China in 2015/16 relative to 2013/14—a year before the earthquake—was driven by a fall of 70 per cent in exports via the northern border points, which dwarfed in value terms the 79 per cent growth in exports via air and sea routes.[7] Imports from China increased by 52 per cent, with imports through northern border points falling by 44 per cent and imports through sea and air routes increasing by 84 per cent. While it would be interesting to know the changes in the relative importance of TIA and Nepal-India customs points—and hence that of air and sea routes—used for Nepal-China trade during that period, we were unable to get access to data at the required product-customs points level for both 2013/14 and 2015/16. However, we were fortunate enough to get that data for 2013/14 and 2016/17. There is an advantage in comparing flows to and from China at the product-customs points level in 2013/14 (the year be-

Figure 9.4

Exports to China, by route taken

Note: Data for 2001/02 through 2010/11 are from TEPC (CD ROM), for 2011/12 through 2016/17 from TEPC (Export-Import Data Bank, online version). Data for 2001/02 through 2010/11 refer to Nepali fiscal years (mid-July to mid-July), while data for 2011/12 through 2016/17 are approximations to Nepali fiscal years (e.g., July 2011 to June 2012).

fore the earthquake) and 2016/17 (the year after the blockade). In doing so, we will be able to better discern shifts in customs points (and, therefore, routes) used in Nepal-China trade that can be plausibly traced to the quake-induced Tatopani closure and are far less liable to be confounded with the effects of the border blockade than when comparing, as we have done so far, flows in 2013/14 and 2015/16. We do that in the next section.

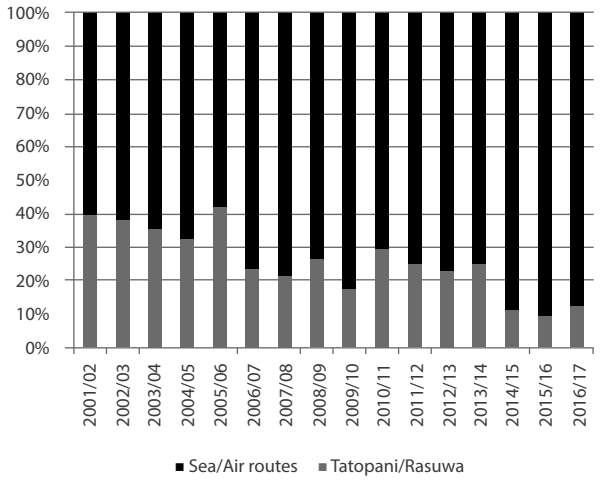
In the last five months of 2015/16—following the lifting of the blockade—import growth turned positive (28 per cent) and exports fell less sharply (-4.6 per cent). The latter was driven by a 21 per cent fall in exports to India, although exports to both China and ROW increased, by 136 per cent and 27 per cent, respectively. Imports from China grew twice faster than imports from India and

five times faster than imports from ROW. However, the rebound in trade in the latter part of the year was not sufficient to overturn the earlier massive reductions. At an annual level, exports fell by nearly 18 per cent in 2015/16—the combined effects of the earthquake and the blockade—compared to a reduction of seven per cent in 2014/15. Imports for the entire year of 2015/16 fell by 0.14 per cent, with imports from India and ROW declining but imports from China increasing.

A look at the changes in capacity utilization of manufacturing units also sheds light on how the natural and manmade disasters battered the manufacturing sector, a major source of Nepal's goods exports. Capacity utilization was on average 52.67 per cent in 2014/15. It fell to 48.2 per cent in 2015/16 (NRB 2016). During the first six months of 2015/16, it was even lower, 39.5 per cent. The disturbance in the Tarai hurt manufacturing production hard. The

Figure 9.5

Imports from China, by route taken



Note: As in Figure 9.4.

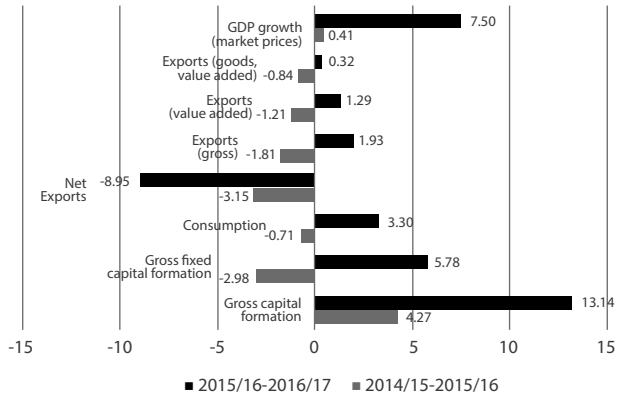
border blockages prevented/curtailed imports of vital raw materials and also restricted the outward passage of exports (*ibid.*). These were on top of the electricity shortages faced by factories and an earthquake-induced fall in demand for industrial goods (*ibid.*).

The 2016/17 rebound

With border disruptions over, supplies returning to normal, weather conditions turning favourable for agriculture, drastic reductions in power cuts and post-earthquake reconstruction activities gathering pace, the economy perked up in 2016/17, registering a growth of 7.5 per cent, albeit from a low base.[8] All 15 sectors in the national accounts, including manufacturing, expanded. Average capacity utilization in the manufacturing sector had risen to 57.3 per cent in 2016/17.

Figure 9.6

Contribution to GDP growth (% points)



Source: Author's calculation based on national accounts data of Central Bureau of Statistics. See text for details.

Table 9.1

Trade growth (%)

	2012/13	2013/14	2014/15	2015/16R	2016/17P	Ratio of 2016/17 exports to 2013/14 exports
Total exports	**3.58**	**19.60**	**-7.25**	**-17.82**	**4.18**	**0.79**
India	2.79	16.89	-6.29	-29.30	4.95	0.70
China			-21.50	-24.59	1.19	0.60
ROW	5.16	13.97	-7.83	6.31	3.30	1.01
Total imports	**20.59**	**28.31**	**8.44**	**-0.14**	**27.99**	**1.39**
India	22.59	30.22	2.87	-2.94	32.79	1.33
China			36.62	15.50	9.98	1.74
ROW	16.90	-14.03	12.12	-1.19	26.84	1.41

Source: Author's calculation based on data from TEPC.
See text for details.

Decomposing the sources of growth from the expenditure side of the national accounts, we see that of the 7.5 per cent GDP growth in 2016/17, gross capital formation contributed 13.1 percentage points (and, within it, gross fixed capital formation 5.8 percentage points), consumption 3.3 percentage points, and net exports (goods and services) negative 8.9 percentage points (Figure 9.6). Note that this is an accounting exercise with two major limitations, in that (i) it does not account for the fact that although imports detract from growth in this set-up they are also crucial for production, and (ii) even in an accounting sense, it overestimates the contributions of capital formation and consumption by subtracting all imports from exports only, although the other two components also contain imports. If we assume that exports have a zero-import content, then exports contributed 1.9 percentage

points to growth in 2016/17, compared to negative 1.8 percentage points in 2015/16. More realistically, if we incorporate into the decomposition exercise the 66.7 per cent value addition in Nepal's total exports in 2011, as calculated from the World Bank's Export Value Added Database (EVAD)[9], we find that exports of goods and services (net of import content) contributed 1.28 percentage points to growth in 2016/17, as opposed to negative 1.2 percentage points in 2015/16. Considering only goods exports and assuming a 57.8 value addition in exports of goods, again as obtained from EVAD, we find that exports of goods (net of import content) contributed 0.32 percentage points to growth in 2016/17, compared to negative 0.84 percentage points in the previous year.

Both exports and imports grew—by four per cent and 28 per cent, respectively. Trade with India, China as well as ROW grew (Table 9.1). India's share of exports, which had fallen to 56 per cent in 2015/16, did not rebound and, so, was less than the average two-thirds share it had in the previous years. India's share of imports rebounded from 62 per cent in 2015/16 to 64 per cent, close to the previous levels of about two thirds. Despite the year-to-year growth, total export value was still lower than that in 2014/15 by 20 per cent. Imports, on the other hand, exceeded the 2013/14 value by 38 per cent. Exports to China were just 70 per cent of their 2013/14 levels, while imports from China had grown by 73 per cent. We now turn to a more detailed and granular analysis of changes in trade with China.

Granular trade analysis: Exports

Exports to China fell by 39 per cent in 2016/17 relative to 2013/14. Exports through all customs points except TIA, Birgunj Dry-port and Rasuwa declined (Table 9.2). Part of the traffic through Tatopani, which has remained closed since the earthquake, shifted to Rasuwa, a minor trading point prior to the earthquake. However, overall exports to China through Nepal-China border points fell by 62 per cent in 2016/17 relative to 2013/14. The fall in exports through Nepal-China border points amounted to nearly 43 per

Table 9.2

Exports to China by customs points
(trade value in NPR million)

Customs point	Export value, 2013	Export value, 2017	% share, 2013	% share, 2017	% change in value	Change in value	Contribution, sign adjusted (% points)	Change as % of exports in 2013	No. of products exported	
									2013	2017
Biratnagar	242.00	63.30	8.12	3.50	-73.84	-178.70	-15.27	-6.00	4	3
Birgunj	78.40	23.50	2.63	1.30	-70.03	-54.90	-4.69	-1.84	5	3
Dryport	27.10	59.30	0.91	3.28	118.82	32.20	2.75	1.08	2	4
Nepalgunj	7.77	0.11	0.26	0.01	-98.62	-7.66	-0.65	-0.26	8	1
TIA	572.0	888.0	19.19	49.06	55.24	316.00	27.01	10.60	53	57
Tatopani/ Rasuwa	2050.0	775.0	68.79	42.82	-62.20	-1275.00	-108.97	-42.79	548	455
Total	2980	1810			-39.26	-1170			578	486

Source: Author's calculation based on data from TEPC.
See text for details.

cent of the total exports to China in 2013/14. The increase in exports through TIA, by 55 per cent, amounted to nearly 11 per cent of the total exports to China in 2013/14. Exports through Birgunj Dry-port rose by 119 per cent, albeit from a low base. As a result, the share of exports through northern border points (Tatopani or Rasuwa) fell from 69 per cent to 43 per cent, whereas the share of TIA rose from 19 per cent to 49 per cent and the share of Birgunj Dry-port rose from less than one per cent to more than three per cent. The shares of Birgunj, Biratnagar and Nepalgunj also declined, along with the value of exports through these points on the Nepal-India border. The increase in the value of trade through TIA and Birgunj Dry-port was just 27 per cent of the decline in the value of trade through Nepal-China border points.

Exports to China flowed through six customs points (one on the Nepal-China border, one at the TIA and the remaining four on the Nepal-India border for onward movement to the seaport

Table 9.3

Number of customs points used for exports
(trade value in NPR million)

	2013			2017		
No. of customs points used	No. of products	Export value	Share	No. of products	Export value	Share
1	542	897	30.11	453	560	30.86
2	31	918	30.82	30	1030	56.76
3	4	986	33.10	2	143	7.88
4	1	178	5.98	1	81.7	4.50
Total	578	2979		486	1814.7	

Source: Author's calculation based on data from TEPC.
See text for details.

in Kolkata and then by sea) both before and after the earthquake. In both periods, any given product was exported through at most four routes (Table 9.3). There was a sharp change in the shares of exports contributed by products exported through two and three points. More precisely, the share in exports of products exported through two points increased from 31 per cent to 57 per cent while the share in exports of products exported through three points fell from 33 per cent to eight per cent. The share in exports of products exported through just one point was, more or less, stable at 30 per cent. Among the major categories of the number of points used for exports in 2013/14, the sharpest fall in exports was seen among products exported through three points (75 per cent fall), followed by products exported through one point (45 per cent) and two points (22 per cent). In both periods, about 93 per cent of the exported products were exported through only one point, but they accounted for about 30 per cent of total exports to China. The bulk of exports were accounted for by up to three dozen products exported through either two or three points. A total of 31 (30) products were exported through two points in 2013/14 (2016/17), while four (2) products were exported through three points in 2013/14 (2016/17).

The number of products exported fell by 16 per cent from 578 to 486 (and mean exports per product fell by 28 per cent). In both periods, the highest number of products was exported through the Nepal-China border (Tatopani or Rasuwa), followed by TIA (Table 9.4). The number of products exported through the Nepal-China border fell by 17 per cent from 548 to 455 (and mean exports per product fell by 55 per cent), while that exported through TIA rose from 53 to 57 (and mean exports per product rose by 45 per cent). If one considers only those flows of at least NPR 10 million at the commodity level, there is hardly any change in the number of products exported overall (29 in 2013/14 vs 28 in 2016/17), but the mean exports per product fell by 45 per cent. Applying the same threshold at the product-port level, the number of products exported through the Nepal-China border fell from 21 to 16 (with mean exports per product falling by 65 per cent), while that

Table 9.4

Number of products and mean exports by customs points
(trade value in NPR million)

				Exports>=10 million at commodity-port level		
	No. of products/ Mean value of exports			No. of products/ Mean value of exports		
	2013	2017	Change %	2013	2017	Change %
Biratnagar	4	3	-25	2	2	0
	60.40	21.10	-65.07	115	31.50	-72.61
Birgunj	5	3	-40	2	1	-50
	15.7	7.84	-50.04	37.9	12.2	-67.81
Dryport	2	4	100	1	2	100
	13.60	14.80	8.82	25	28.10	12.40
Nepalgunj	8	1	-87.5			
	0.97	0.11	-88.97			
TIA	53	57	7.55	8	13	62.50
	10.80	15.60	44.44	66.80	63.10	-5.54
Tatopani/ Rasuwa	548	455	-16.97	21	16	-23.81
	3.75	1.70	-54.50	87.30	30.90	-64.60
Overall	578	486	-15.92	29	28	-3.45
	5.16	3.72	-27.77	94.30	52.10	-44.75

Source: Author's calculation based on data from TEPC. See text for details.

through TIA increased from eight to 13 (with mean exports per product falling by six per cent).

Exports are concentrated in a few products (Table A1 in the Appendix, available in the working paper version of this chapter,

Kharel (2018)). The top 15 products made up 82 per cent of exports to China in 2013/14; the corresponding share fell to 71 per cent in 2016/17. There was a significant churning among the top 15 products. Seven of the top 15 products exported in 2013/14 were out of the top 15 list in 2016/17: two to three of them ceased to be exported,[10] while the export of others nosedived by as much as 98 per cent. Six to seven of the top 15 products exported in 2016/17 were new additions to the top 15 list, with one to two of them not previously exported at all and three having negligible exports in the base year. Of the top 15 products in the 2013/14 list, only three saw their exports grow (carpet, kitchen table or household articles, and statuettes), with statuettes jumping from tenth to first position in 2016/17. Exports of the top 15 products in the 2013/14 list plunged by nearly 60 per cent, compared to the 39 per cent fall in total exports to China.

There were some noticeable changes in the ports used among these top products (Table A1 in the Appendix. See also Tables A3-A5 for information on top products shipped via air, the northern border and sea). Exports of HS 12119090 (Plants and parts of plants, including seeds and fruits), the top export item in 2013/14, went almost exclusively through Tatopani in 2013/14 (with a 0.05 per cent share of TIA), whereas its exports in 2016/17, which had fallen by 98 per cent, went chiefly through TIA (98.53 per cent), with Rasuwa taking up the rest (1.47 per cent). In value terms, exports through the border point plunged while exports through TIA increased. Exports of HS 83062900 (statuettes of base metal), ranked fourth in 2013/14 and third in 2016/17, fell by 25 per cent, driven by the fall in exports through the border point, although exports through TIA increased. The result was that the share of Tatopani/Rasuwa fell from 97.65 per cent to 89.48 per cent, with a corresponding increase in the share of TIA. Likewise, exports of HS57011000 (Carpet~ knotted of wool or fine animal hair) more than doubled—among the very few products in the top 15 whose exports increased—although exports through Tatopani/Rasuwa fell by two thirds, implying that the increase in exports was driven by exports through TIA,

with the result that the share of Tatopani/Rasuwa fell from 67 to 10 per cent, while that of TIA increased from 31 to 89 per cent. There may have been a diversion of some traffic from Tatopani/Rasuwa to TIA for all these three products.

Exports of HS 41041900 (Tanned or crust hides and skins of bovine or equine animals~ without hair on whether or not to split~ but not further prepared~ in the wet state) had been taking place predominantly through Nepal-India border, with Tatopani accounting for less than six per cent. In 2016/17, this product was not exported through Rasuwa, while the share of Birgunj Dry-port increased from 14 to 33 per cent.[11] Some products, such as wheat flour, were exported entirely through Tatopani before the earthquake, crashed in the post-quake period although whatever meagre amounts were still exported continued to be routed through the Rasuwa border point. There were also products whose distribution across customs points hardly changed. For example, exports of HS 83062100 (Statuettes and other ornaments plated with precious metal) increased threefold, with the shares of TIA (93 per cent in 2013/14) and Tatopani/Rasuwa (6.6 per cent) hardly changing. There were also changes in port usage among some products that entered the top 15 list in 2016/17 from low positions in 2013/14. For example, exports of HS 62149000 (Shawls~ scarves~ mufflers~ mantillas~ veils and the like of textile material), exported in negligible amounts in 2013/14, increased dramatically through TIA in 2016/17. Rudrakshya is an interesting case. It is recorded under two different HS codes in the two years. In all probability, they are the same product. Of interest to us, is the shift in customs point used. Whereas, in 2013/14 about 38 per cent of the product was exported through Tatopani and the rest through TIA, in 2016/17 almost all of it was exported through TIA.

The 353 products in which exports to China had ceased by 2016/17 made up nearly 19 per cent of exports to China in 2013/14. Exports to China in 2016/17 were mostly accounted for by 225 continuing products (85 per cent), with 261 new products contributing 15 per cent (Table 9.5). Continuing products' exports fell by over 36 per cent. The fall in continuing products' exports

Table 9.5

Export dynamics: starts, stops, continuing
(trade value in NPR million)

	No. of products	Value 2016/17	Value 2013/14	Change %	Share in 2016/17	Share in 2013/14	Contribution to change in value, sign adjusted (% points)
Stop	353		560			18.79	-47.74
Start	261	267			14.78		22.76
Continuing	225	1540	2420	-36.36	85.22	81.21	-75.02
	Total	1807	2980	-39.36			

Source: Author's calculation based on data from TEPC.
See text for details.

explained about 75 per cent of the total fall in exports to China, while export stops subtracted another 48 per cent and new exports contributed 23 per cent. The number of products with at least NPR 10 million in exports hardly changed, from 29 to 28. However, their shares in total exports declined, from 92 per cent to 81 per cent. Over 84 per cent of the exports that ceased were in 10 products with at least NPR 10 million in exports. Only five products accounted for 61 per cent of the value of new exports. Exports of 13 continuing products, each one having an export of at least NPR 10 million in both periods, fell by 46 per cent. The decline in these exports accounted for 78 per cent of the overall fall in exports to China. TIA was the most important route taken by new exports (56 per cent of total value of new exports), followed by Rasuwa (43 per cent).

For products that ceased being exported, nearly three quarters of such exports, in value terms, had previously taken place through Tatopani, followed by Biratnagar (15.5 per cent, albeit driven by just one product with an export value of NPR 86 million) and TIA (8 per cent). For Rasuwa, the gain from new products was 28 per

cent of the loss from products that stopped being exported, implying a net loss along the extensive margin.[12] In contrast, for TIA, the gain from new products was 319 per cent of the loss from products that stopped being exported, implying a net gain along the extensive margin. Among continuing products, TIA and Rasuwa/Tatopani accounted for 48 per cent and 43 per cent of exports in 2016/17, respectively. Exports through TIA rose by about 40 per cent while exports through Rasuwa/Tatopani fell by about 60 per cent. Of the 225 continuing products, 216 products saw continued use of at least one port, such that exports of the same product through the same port accounted for about 98 per cent and 96 per cent of export value of continuing products in 2013/14 and 2016/17, respectively. This means that just four per cent of the export value of continuing products in 2016/17 was explained by flows through new ports at the product level, ignoring the switch from Tatopani to Rasuwa. This further implies that flows through new ports at the product level accounted for less than four per cent of the export value of all products in 2016/17.

How many customs points were used by new products, discontinued products and continuing products? Of the 261 new products, 260 used just a single port, with exports amounting to 68 per cent of total exports of new products. Although the remaining one product (HS 14049050: Rudrakshya) used three ports, amounting to NPR 86 million, over 98 per cent of its exports were through TIA, less than two per cent through Birgunj Dry-port and a negligible amount through Rasuwa. Note that Rudrakshya exports may not actually be a new export flow since a different HS code (14049015) also denoting Rudrakshya saw exports of NPR 44 million in 2013/14, which were discontinued in 2016/17. Exports of this product in 2013/14 took place through TIA (NPR 27 million) and Tatopani (NPR 17 million). In this case, there appears to have been a shift in exports from Tatopani to TIA, with Rasuwa unable to replace Tatopani. Of the 353 products, whose exports were discontinued, 345 had been using just one customs points, accounting for about 75 per cent of exports of such products in 2013/14, and eight had been using two points, accounting for the

remaining 25 per cent of export value. Among the 225 continuing products, 198 used the same number of customs points in both years, accounting for 70 per cent of export value of continuing products in 2016/17, implying that continuing products that saw a change in the number of ports used made up 30 per cent of export value of continuing products in 2016/17.

We can thus infer that irrespective of whether continuing products use the same number of points in both periods or not, their export flows through the same customs point(s) in both periods make up most of their collective exports. However, we cannot *ipso facto* conclude that reshuffling of exports across ports at the product level is not quantitatively important. This is because we have not yet considered the changes in the distribution of exports across prior used ports at the product level. Let us clarify this with an example. Of the 41 continuing products that were exported through TIA in 2016/17, 28 had also been exported through TIA in 2013/14 and these accounted for over 98 per cent of the exports of these products through TIA in 2016/17. This does not rule out the possibility that some of these 28 products may have been exported through Tatopani as well in 2013/14 and part of the flows through Tatopani, with Rasuwa failing to absorb them fully, were diverted to TIA in 2016/17—a phenomenon that would not be captured by the analysis so far.

Since most products were exported through Tatopani/Rasuwa, let us investigate the use of additional customs points by these products. Of the 548 products that were exported through Tatopani in 2013/14, only 36 unique products were also exported through at least one other point. Among them, 31 were exported through just one additional point, four through two additional points and one through three additional points. TIA saw 32 products that were also exported through Tatopani, Birgunj four products and Biratnagar, Birgunj dryport and Nepalgunj two products. These 36 products' exports through Tatopani/Rasuwa accounted for 58 per cent of their own total exports, the rest being through other points, and 59 per cent of the total value of exports through Tatopani/Rasuwa. Their total exports accounted for nearly 70 per cent of total

exports to China. The mean share of exports through Tatopani/Rasuwa among products that were also exported through at least one more route was 39 per cent (median 35 per cent). The 32 products that were exported via TIA as well as Tatopani in 2013/14 accounted for 94 per cent of the export value of 53 products through TIA that year.

Of the 455 products exported through Rasuwa in 2016/17, only 30 unique products were also exported through at least one other point: 29 through one more point and one through two more points. Compared to 2013/14, the additional routes had fallen to two (TIA and Birgunj dryport) from five. TIA saw 30 products that were also exported through Rasuwa; the dry-port one product. These 30 products' exports through Tatopani/Rasuwa accounted for 26 per cent of their own total exports, a much lower share than in 2013/14, and 37 per cent of the total value of exports through Tatopani/Rasuwa, again a much lower share than in 2013/14. Their total exports accounted for 61 per cent of total exports to China. The mean share of exports through Tatopani/Rasuwa among products that were also exported through at least one more route was 29 per cent, lower than in 2013/14 by 10 percentage points. The median was even lower, 6 versus 35. The 30 products that were exported via TIA as well as Rasuwa in 2016/17 accounted for nearly 92 per cent of export value of 57 products through TIA that year.

The picture is different, however, for products chiefly exported through Tatopani/Rasuwa. In 2013/14, 524 of the 548 products exported through Tatopani had Tatopani as the most important customs point, with a mean (median) share of Tatopani of over 99 per cent (100 per cent). These products accounted for 97 per cent of exports through Tatopani. In 2016/17, 434 of the 455 products exported through Rasuwa had Rasuwa as the most important customs point, again with a mean (median) share of Rasuwa of over 99 per cent (100 per cent). These products accounted for over 94 per cent of exports through Rasuwa. The fact that in both the pre- and post-earthquake periods the average (and very high) share of Tatopani/Rasuwa hardly changed for products that used the

Nepal-China border point the most indicates that the Tatopani shutdown did not result in a significant emergence of alternative routes (the air route, or the sea route using Nepal-India border points) for these products[13] whose collective exports through the Nepal-China border point had plunged by nearly two thirds. A plausible explanation could be that these products are predominantly destined for Tibet and air or sea routes are not economically viable for them.

These shifts underlie the overall reduction in the share of exports through the Nepal-China border, with Rasuwa unable to absorb the traffic diverted from Tatopani. To summarize, in both periods, less than 10 per cent of products exported through the key Nepal-China border point (Tatopani/Rasuwa) were also exported through at least one additional route (mostly through TIA), but they made up over 60 per cent of exports (70 per cent in 2013/14 and 61 per cent 2016/17). Exports through TIA in both periods were predominantly in products that were exported through a Nepal-China border point as well. The share of exports through the Nepal-China border decreased on average for these products, from a median of 35 per cent to six per cent. The share of exports of these products through the Nepal-China border in total exports from Nepal to China, through the same route, fell from 59 per cent to 37 per cent. Exports of these products through Tatopani/Rasuwa fell by 76 per cent as compared to just six per cent for exports through other points and 47 per cent for exports through all points. In contrast, for the vast majority of products, chiefly exported through Tatopani/Rasuwa, the importance of the Nepal-China border point did not diminish and their collective exports through the border point fell by 63 per cent, a lower rate of decline than that witnessed by exports of products that had more route options.

Continuing products and route changes

There is limited variation in the initial share of Tatopani among continuing products. Among 225 continuing products, 184 were

exported exclusively through Tatopani in 2013/14, while the number was 182 through Rasuwa in 2016/17. Some 13 and 14 products were not exported through Tatopani/Rasuwa at all in 2013/14 and 2016/17, respectively.

Of the 225 products exported in both years, 203 saw exports through the northern border in both years. They made up nearly 99 per cent of total exports of continuing products through the northern border in both years and close to 90 per cent of total exports of continuing products to China in both years. Their exports through the northern border plunged by 60 per cent, while exports via sea and air routes rose by 32 per cent, with the result that their total exports to China fell by 38 per cent. The mean or median share of Tatopani/Rasuwa in the export of these products hardly budged (a mean of about 92 per cent and a median of 100 per cent). Among these 203 products that were exported through the northern border in both years, 17 saw the share of Tatopani/Rasuwa fall. Their exports through the northern border fell by 80 per cent and exports through other routes fell by three per cent, with the result that their total exports to China fell by 60 per cent. Their share in total exports to China of the 203 products fell from 73 per cent to 46 per cent. Interestingly, the 15 products that saw the share of Tatopani/Rasuwa rise witnessed an increase in their overall exports to China, by 70 per cent, driven by a 123 per cent increase in exports through other routes even as exports through the northern border fell by 30 per cent. The increase in total exports was driven by a couple of products with less than an eight per cent share of Tatopani/Rasuwa. The share of the 15 products in total exports to China of the 203 products increased from 10 per cent to 28 per cent. Finally, a total of 171 continuing products exported through the northern border in both years saw no change in the share of Tatopani/Rasuwa, which remained constant at 100 per cent. Although their exports fell by five per cent, their share in total exports to China of the 203 products rose from 17 per cent to 26 per cent.

Nine of the continuing products stopped being exported through the northern border. Their exports through other routes

also fell, by 38 per cent, such that their total exports to China fell by 42 per cent. Their share in total exports to China of the 225 continuing products fell from 10.3 per cent to 9.6 per cent. Exports of eight products that were not exported through Tatopani in the initial year, but started to be exported through Rasuwa in the final year, rose by 31 per cent. But their share remained very low, less than 1.5 per cent. Exports of five products that were not exported through the northern border in either year fell by 70 per cent, but they did not matter quantitatively for overall exports of continuing

Table 9.6

Route transitions of continuing products that used a northern border point in both years (exports)

Year 2013: Number of products					
	Sea+ Tatopani	Air+ Tatopani	Sea+Air+ Tatopani	Tatopani only	Total
Sea+Rasuwa	0	0	0	0	0
Air+Rasuwa	0	13	3	8	24
Sea+Air+Rasuwa	0	0	0	0	0
Rasuwa only	1	7	0	171	179
Total	1	20	3	179	203
Year 2017: Growth in Exports					
Sea+Rasuwa	-	-	-	-	
Air+Rasuwa	-	-4.91	-75.21	24.94	
Sea+Air+Rasuwa	-	-	-	-	
Rasuwa only	-86.91	-44.49	-	-2.47	
Total	-86.91	-6.53	-75.21	3.07	
Share in 2013 (%)	0.022	32.87	45.95	21.16	
Share in 2017 (%)	0.005	48.06	17.82	34.12	

Source: Author's calculation based on data from TEPC.
See text for details.

products to China much. Their share was less than 0.6 per cent in both years. Evidently, the fall in exports to China was not just due to the Tatopani shutdown, as exports of products that did not use the northern border fell, too.

Now, let us investigate the persistence or changes in routes for the same products. We shall consider the two most important categories among continuing products: those that used the northern border in both years and those that used the northern border in the initial year only. Let us start with the first category (Table 9.6). A total of 179 products among the 203 products in this category were exported only through Tatopani, initially. Their exports increased by three per cent, and their share in this category rose from 21 per cent to 34 per cent. Of the 179, 171 continued to be exported only through the northern border (Rasuwa) in the final year, with such exports falling by 2.5 per cent. Eight of the 179 products, however, started being exported through the air route besides Rasuwa, and their exports grew by 25 per cent. Initially, there were three products that used sea and air routes, besides Tatopani, with their exports making up 46 per cent of exports to China of products that used Tatopani/Rasuwa in both years. They stopped using the sea route in the final year, using only the air route besides Rasuwa. Their exports fell by 75 per cent, and their share fell to 18 per cent. Of the 20 products that used the air route besides Tatopani in 2013, 13 continued to use the two routes, with exports falling by five per cent, whereas the seven products that stopped using the air route and only used Rasuwa in the final year saw their exports nosedive by 45 per cent.

Now, turning to the second category: the five products that used the northern border in the pre-earthquake year only (Table 9.7). Two of them used sea and air routes as alternative routes in the initial year and continued using them in the final year, with exports falling by 51 per cent. The one product that used only the sea route and Tatopani in 2013 continued to use the sea route in 2017, with exports falling by 19 per cent, suggesting that the sea route was not able to absorb the exports deflected from the northern border. The one product that used only the air route and

Table 9.7

Route transitions of continuing products that used Tatopani in 2013 but not Rasuwa in 2017 (exports)

	Year 2013: Number of products				
	Sea+ Tatopani	Air+ Tatopani	Sea+Air+ Tatopani	Tatopani only	Total
Sea only	1	0	0	1	2
Air only	0	1	0	4	5
Sea+Air	0	0	2	0	2
Total	1	1	2	5	9
Year 2017: Growth in exports (%)					
Sea only	-18.83			11618.42	
Air only		294.80		2592.00	
Sea+Air			-50.76		
Total	-18.83	294.80	-50.76	-38.82	
Share in 2013 (%)	27.87	0.30	71.81	0.02	
Share in 2017 (%)	37.59	2.00	58.75	1.67	

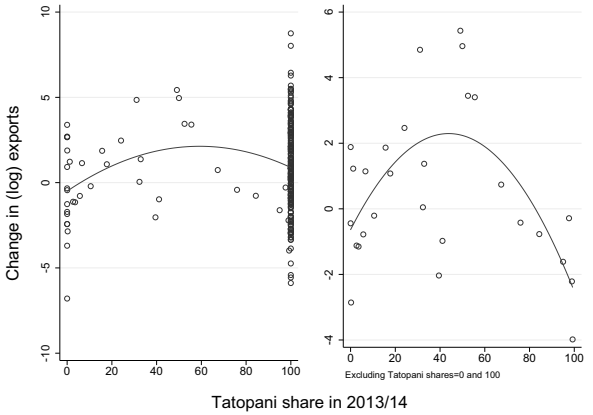
Source: Author's calculation based on data from TEPC. See text for details.

Tatopani in 2013 continued to use the air route in 2017, with exports rising by 295 per cent, albeit from a very low base. Of the five products that used only Tatopani in 2013, they had negligible exports in both years.

Let us explore, statistically, the relationship between export growth, on the one hand, and initial Tatopani share and the number of customs points used, on the other. Products that used Tatopani in 2013/14 had a significantly higher export growth than those that did not. A higher number of customs points used initially was associated with lower export growth. Initial Tatopani share is positively associated with the subsequent export growth up until

Figure 9.7

Initial Tatopani share and subsequent export growth



Source: Author's calculation based on data from TEPC.

the share reaches 44, which is half the mean share of 87.[14] Thereafter, a higher Tatopani share is associated with a lower export growth (Figure 9.7, left panel). At the mean share, a one percentage point higher Tatopani share is associated with a 12.5 per cent lower export growth. The effect is statistically significant. The number of customs points used has no statistically significant effect when the square of Tatopani share is included. When we restrict the sample to exclude products that were only exported through Tatopani or were not exported through Tatopani at all initially (Figure 9.7, right panel), the effect is positive and statistically insignificant at the mean, but turns negative and statistically significant at the 75th percentile of the share, such that a one percentage point higher Tatopani share at the 75th percentile (about 61 per cent) is associated with a five per cent lower export growth. Nevertheless, the sample size is very small at 28.

Using thresholds of percentile share of Tatopani (25th, 50th, 75th and 95th) as an alternative measure of exposure to Tatopani instead of raw shares, we do not find a significant effect when using the entire sample. The estimates for all the thresholds are the same because all of them are equal to 100 per cent. However, when we use the restricted sample, the effect is statistically significant and negative at the 75th and 95th percentiles. For example, products with an initial Tatopani share in the 75th percentile or above have a 234 per cent lower export growth than those with a share in the 25th percentile or below.

Turning to the relationship between changes in exports, on the one hand, and changes in the share of Tatopani/Rasuwa or changes in the number of ports used, on the other, we do not find any statistically significant relationship. This is the case, whether we use the full sample or a sample that only includes products that were only exported through Tatopani in 2013/14 or a sample that saw a decline in the share of Tatopani/Rasuwa or an increase in the share of Tatopani/Rasuwa.

Determinants of export continuance

While the initial share of Tatopani does not have a significant effect on the probability of whether a product will continue to be exported, the number of customs points initially used has a significant effect. This is the case when the initial share, the number of customs points and the log of initial exports are included together. Initial share is negative, statistically significant and of an order of magnitude when used as the sole regressor, but turns insignificant when used with additional regressors. The use of an additional one customs point is associated with a 17-percentage point higher probability of export continuance. The average probability of continuance is 39 per cent. The initial amounts of exports are also a statistically significant determinant of export continuance, albeit with a relatively small magnitude: a 10 per cent higher initial exports is associated with a 0.4 percentage point higher probability of export continuance. Probit estimates confirm ordinary least

squares (OLS) estimates. The story is similar when the initial share is replaced with a dummy denoting select percentiles of the Tatopani share distribution: the coefficient on exposure to Tatopani is insignificant while the coefficients on the number of points used and the log of initial exports are positive and statistically significant and of an order of magnitude. The estimates for all the thresholds are the same, because all of them are equal to 100 per cent.

New exports

Considering only the 261 products that were not exported in the pre-quake year and were exported in the post-quake year, we find that the Rasuwa share in 2016/17 had a negative and statistically significant effect on the value of exports, while the number of customs points used that year had a positive and statistically significant effect on the value of exports. A one percentage point lower Rasuwa share was associated with a two per cent higher exports, while the use of an additional customs point was associated with a 252 per cent higher exports.

Granular trade analysis: Imports

Imports from China rose by 66 per cent in 2016/17, relative to 2013/14, from NPR 78.6 billion to NPR 130 billion, with the number of products imported rising from 3,077 to 3,274 (Table 9.8). Imports occur through a higher number of customs points than exports, and the distribution of imports across custom points is more even than that of exports. A key reason for this is that even in the pre-earthquake period some three quarters of imports were routed via sea using Indian ports and these imports entered Nepal through different Nepal-India border points. With the exception of imports through Tatopani/Rasuwa, imports through all other seven customs points used in 2013/14 increased, and one additional point (Kailali) was used in 2016/17, albeit with a negligible share. Imports through Rasuwa in 2016/17 were lower by 16 per cent than imports through Tatopani in 2013/14. As a re-

sult, the share of Nepal-China border point (Tatopani/Rasuwa) in Nepal's imports from China halved, from 24 per cent to 12 per cent. Nepalgunj (although from a low base), Bhairahawa, Biratnagar and TIA saw the greatest percentage increase in imports, of over 100 per cent each. Imports through all points increased except for Rasuwa: Rasuwa saw 146 fewer products imported in 2016/17 than did Tatopani in 2013/14. Mean imports increased for all ports except Mechi and Rasuwa. While mean imports overall increased by 55 per cent, mean imports from Rasuwa fell by 11 per cent.

Table 9.8

Imports from China by customs points
(trade value in NPR million)

	No. of products		Import value		Import shares		
Customs points	2013	2017	2013	2017	2013	2017	Change in import value, %
Mechi	369	761	1559.34	1930.21	1.98	1.48	23.78
Biratnagar	830	1490	5242.42	14560.57	6.67	11.18	177.75
TIA	1660	2052	18099.47	37866.52	23.04	29.07	109.21
Birgunj	1636	2080	20014.31	29665.85	25.48	22.78	48.22
Dryport	994	1406	14085.18	25872.68	17.93	19.87	83.69
Tatopani/ Rasuwa	2313	2167	19083.83	15907.51	24.29	12.21	-16.64
Bhairahawa	113	600	442.21	3566.05	0.56	2.74	706.42
Nepalgunj	13	90	36.67	776.32	0.05	0.60	2017.02
Kailali		11		93.61		0.07	
Total	3077	3274	78563.43	130239.33	100	100	65.78

Source: Author's calculation based on data from TEPC.
See text for details.

Table 9.9

Number of customs points used for imports
(trade value in NPR million)

	2013			2017			Change in value, %
No. of points	No. of products	Import value	Share	No. of products	Import value	Share	
1	1047	6196.64	7.89	866	6443.42	4.95	3.98
2	668	8559.43	10.89	567	4975.80	3.82	-41.87
3	552	14056.29	17.89	494	10137.70	7.78	-27.88
4	380	17579.41	22.38	397	20043.22	15.39	14.02
5	256	19299.76	24.57	378	19874.92	15.26	2.98
6	149	10250.96	13.05	328	44304.68	34.02	332.20
7	24	2602.82	3.31	223	20111.36	15.44	672.68
8	1	18.12	0.02	21	4348.24	3.34	23894.39
Total	3077	78563.43	100	3274	130239.33	100	65.78

Source: Author's calculation based on data from TEPC.
See text for details.

Clearly, Rasuwa was unable to absorb the import traffic diverted from Tatopani, even two years after the earthquake. It is likely that this traffic was diverted to other customs points, that is, TIA and/or Nepal-India border customs, which, in turn, would imply that air and sea routes were used to bring in some goods that were previously hauled overland through Tatopani.

In both periods, any given product was imported through, at most, eight customs points (Table 9.9). However, there was a distinct shift in the distribution of imports towards products imported through a higher number of customs points. While the number of products imported through less than six points fell from 2,903 to 2,702 and their share in imports fell from 84 per cent to 47 per cent, the number of products imported through six points increased from 149 to 328, through seven points increased from 24

to 223 and through eight points increased from one to 21, with the share of products exported through at least six points increasing from 16 per cent to 53 per cent. Imports having more diversified customs points than exports, as well as seeing a sharper shift to the use of more customs points, is partly explained by the sea route being more important for imports, sea-borne imports having to enter Nepal via the border with India, which simply has more customs points than the Nepal-China border, and freight forwarders choosing the most convenient point depending on, *inter alia*, the destination of the consignment in Nepal.

Of the 2,313 products that were imported through Tatopani in 2013/14, 1,763 unique products were also imported through at least one other point. Most of them (1,738) used five or less points, 24 used six points and one used seven points. Whereas TIA accounted for most of the non-Tatopani exports of products exported through Tatopani, in the case of imports non-Tatopani imports were more spread out across different customs points—the leading ones being TIA, Birgunj, Birgunj Dry-port and Biratnagar. These products' imports through Tatopani accounted for 29 per cent of their own total imports, the rest being through other points, and 92 per cent of the total value of imports through Tatopani. These 1,763 products' total imports accounted for nearly 78.7 per cent of total imports from China. The mean share of imports through Tatopani among products that were also imported through at least one more route was 36 per cent (median 23 per cent). The bulk of imports through the seven different points other than Tatopani was in products that were also imported through Tatopani—for major points, the share of such products was at least over 50 per cent and up to 87 per cent.

Of the 2,167 products imported through Rasuwa in 2016/17, 1,861 were also imported through at least one other point. They accounted for 79.4 per cent of imports from China. There was a distinct shift towards the usage of a higher number of points among these products. Notably, the number of products using five points more than doubled from 153 to 324, that using six points increased from 24 to 222, and that using one point rose from one to 21. All

seven points saw an increase in the number of products that were also imported through Rasuwa. These 1,861 products' imports through Rasuwa accounted for 14 per cent of their own total imports, a share that was half of that in 2013/14. They accounted for 93 per cent of imports through Rasuwa, very similar to the share of such products in imports through Tatopani in 2013/14. Recall, that in exports, the share had fallen from 59 per cent to 37 per cent. Unlike in the case of exports, non-Tatopani/Rasuwa imports of products that also used Tatopani/Rasuwa were higher (by 100 per cent) in 2016/17 relative to 2013/14.[15] Exports in that category had fallen by six per cent. Imports through Tatopani/Rasuwa of products that did not use any other route fell by 23 per cent compared to 42 per cent for exports. These hint at the possibility that the import traffic diverted from Tatopani was more amenable to being rerouted using other customs points than the export traffic similarly diverted. This will be investigated more thoroughly later, when we distinguish between products in terms of continuing products, new products and exiting products. The mean share of imports through Rasuwa among products that were also imported through at least one more route was 29 per cent (median 8.6 per cent) in 2016/17, lower than the corresponding figure in 2013/14. Recall that a similar decline was also observed for exports.

If Tatopani was the most important customs point for 1,193 products in 2013/14 (or 52 per cent of the products imported through Tatopani), the number fell to 723 in 2016/17 with respect to Rasuwa (or 33 per cent of the products imported through Rasuwa). The mean (median) share of Tatopani/Rasuwa for such products fell from 88.5 per cent (99.5 per cent) to 83.5 per cent (95.4 per cent). Such products accounted for 84 per cent of imports through Tatopani in 2013/14. The share fell to 77 per cent with regard to Rasuwa in 2016/17. Observe that this decline in the importance of such products in imports through the Nepal-China border is more pronounced than for exports. Further, the collective imports of such products through the Nepal-China border had fallen by 23 per cent, whereas their imports through other points had risen by 63 per cent. In contrast, both exports through the northern bor-

Table 9.10

Import dynamics: starts, stops, continuing
(trade value in NPR million)

	No. of products	Value 2013	Value 2017	Change %	Share in 2013	Share in 2017
Start	594	0	12520.76		0	9.61
Stop	397	2187.78	0		2.78	0
Continuing	2680	76375.65	117718.57	54.13	97.22	90.39
Total		78563.43	130239.33	65.78		

Source: Author's calculation based on data from TEPC.
See text for details.

der and through other routes had declined by about 63 per cent for products that that relied on the northern border as the most important exit point. A possible inference is that because products that were imported through Tatopani as the chief customs point in 2013/14 had, on average, more diversified route options than did exports, they fared better following the Tatopani closure. Strictly speaking, all of these products may not be continuing ones; some may be new ones, and some may have stopped being imported.

The 2,680 continuing products accounted for 97 per cent of imports in 2013/14 and 90 per cent in 2016/17 (Table 9.10). The 397 products that stopped made up the rest of imports in 2013/17 and the 594 products that started to be imported accounted for the rest of imports in 2016/17. Continuing products' imports grew by 54 per cent, a major driver of the growth in total imports from China.

The bulk of new imports in value terms passed through TIA (30 per cent), Birgunj (18 per cent), Rasuwa (17 per cent), Biratnagar (15.6 per cent), Dry-port (10 per cent) and Bhairahawa (6.6 per cent). For all customs points, the gain in imports from new products was higher than the loss in imports from products whose

imports ceased, by a factor of three to 56 (Bhairahawa), implying a net gain along the extensive margin. Even for Rasuwa/Tatopani, there was a gain of a factor of three. Among the four major points, the gain ranged from 4.7 (TIA) to 9.4 (Biratnagar). Nepalgunj saw new imports of nine products worth NPR 124 million, and did not see any import stops.

Among continuing products, imports increased through all points, except Tatopani/Rasuwa, which saw a decline of 25 per cent. The number of continuing products also exported through Tatopani/Rasuwa fell from 2,050 to 1,900, while all other ports saw an increase. Notably, Bhairahawa saw an increase from 108 to 578. Of the 2,680 continuing products, 2,402 saw continued use of at least one customs point, such that the imports of the same product through the same point accounted for about 95 per cent and 89 per cent of the import value of continuing products in 2013/14 and 2016/17, respectively—a fall much higher than for exports. This means that 11 per cent of the import value of continuing products in 2016/17 was explained by flows through new points at the product level, ignoring the switch from Tatopani to Rasuwa. The corresponding proportion for exports was four per cent, hinting that rerouting of existing imports through new customs points was likely more pronounced than that of existing exports.

While nearly 98 per cent of 2016/17 imports through Rasuwa of continuing products was due to products that were imported through Tatopani in 2013/14, only 23 per cent of continuing products' imports through Bhairahawa in 2016/17 was due to 66 products that were also imported through Bhairahawa in 2013/14. This means 77 per cent of continuing products' imports through Bhairahawa in the post-quake period was due to existing products that were not previously imported through Bhairahawa. The corresponding figures for some major ports are: Birgunj (8 per cent), Biratnagar (33), Dry-port (10), TIA (<1) and Mechi (48). A comparison of these figures with those for exports, discussed in the previous section, provides further suggestive evidence of a greater magnitude of rerouting of existing products through new customs points for imports than for exports.

To get a more practical sense of the rerouting taking place, let us concentrate on the top 20 imports from China in the two years and consider a few concrete examples. At one extreme is HS 85171200 (Telephone used for cellular or cordless networking), mostly imported through TIA and negligibly through the Nepal-China border in both years. Or HS 31021000 (Urea fertilizer), imported only by sea and using customs points on the Nepal-India border in both years. Fresh apples (HS 08081000) were predominantly imported through Tatopani/Rasuwa in both years, and not only did their imports increase by over 200 per cent, the share of their imports through Tatopani/Rasuwa also increased, from 82 per cent to 89 per cent.

The share of Tatopani/Rasuwa in imports of some key apparel and footwear products, previously at least 98 per cent, declined sharply, by up to a half. For HS 62033300 (M&B Jackets and blazer of synthetic fibres) and HS 62032200 (M&B cotton ensembles~not knitted), the number of points used increased from two to seven and six, with Biratnagar emerging as a major new point. Total imports fell for both these products. HS 61099000 (T-shirts~singlets and vest knitted) saw an overall increase in imports even as imports through Tatopani/Rasuwa fell, with Biratnagar's share increasing from zero to 13 per cent and that of TIA from less than one per cent to 17 per cent. HS 85176200 (Machines for the reception~conversion and transmission or regeneration of voice~images or other data~including switching and routing apparatus) saw imports through Tatopani/Rasuwa decline even as overall imports grew by nearly 52 per cent, with the result that the share of Tatopani/Rasuwa fell from 44 to 14 per cent, while the share of TIA increased from 27 to 73 per cent.

We now drill into, separately, route changes among continuing products, determinants of import continuance and determinants of the value of new imports.

Continuing products and route changes

Among continuing products, nearly 62 per cent (1,657) were imported through a northern border point in both years. Their total

imports through Tatopani/Rasuwa fell by 25 per cent while imports through other points increased more than proportionately so as to take their import growth to 57.6 per cent. Their share in total imports of continuing products increased by nearly two percentage points from 76 per cent. Interestingly, there were 243 products which were not imported through Tatopani in 2013/14 but which were imported through Rasuwa in 2016/17. Their total imports grew by 87.5 per cent and their share in total imports of continuing products increased by a percentage point, from 4.5 per cent. The lowest growth rate was seen by products that stopped being imported through the northern border (30 per cent), followed by products that did not use the northern border in either year (33 per cent). Their shares in imports of continuing products fell correspondingly, from 4.4 per cent to 3.7 per cent, and from 15 per cent to 13 per cent, respectively. For the former group of products, Rasuwa failed to absorb any of the traffic diverted from Tatopani.

Comparing products that used the northern border in both years with those that used the northern border in the pre-quake year and stopped using it in the post-quake year, we observe that the average share of Tatopani in the pre-quake year was lower for the former group of products (mean of 45.6 per cent vs 50 per cent; median of 35.7 per cent versus 46.5 per cent). This hints at the possibility that the negative impact on import growth of Tatopani's closure kicked in for products with an initial exposure to Tatopani beyond a certain threshold. The mean (median) share of Tatopani/Rasuwa for products that used a northern border in both years fell from 45.6 per cent (35.7 per cent) to 28.8 per cent (10.8 per cent).

Among the 1,657 products that were imported through Tatopani/Rasuwa in both years, those that saw the share of the northern border decreasing[16] saw the absolute value of imports through the northern border falling by 53 per cent, while imports through other points more than doubled with the result that overall imports grew by 63 per cent, more than the 38 per cent growth recorded by products which saw the share of the northern border point increasing.[17] The mean share of Tatopani in the pre-earthquake year was

higher for products for which the share subsequently decreased (52 per cent) than for products for which the share subsequently increased (17 per cent).

Among the 1,657 products that were imported through Tatopani/Rasuwa in both years, 234 were imported using only Tatopani in 2013/14, making up just 1.8 per cent of total imports of the 1,657 products. The number of products using only Rasuwa in 2016/17 fell to 132, and their share in imports of the 1,657 products fell to 0.2 per cent. The number of products using, apart from Tatopani/Rasuwa, the sea route only or the air route only fell between the two periods, as did their shares. Correspondingly, there was an increase in the number of products using both sea and air routes, from 882 to 1,141, and their shares rose from 78 per cent to 87 per cent. The mean share of Tatopani/Rasuwa for these products fell from 31 per cent to 19 per cent (median share fell from 17 per cent to seven per cent). Products that had the air route as the only used alternative to Tatopani, in the initial year, were on average more dependent on Tatopani than products that had the sea route as the only alternative. This was true for the final year, too.

Now we turn to route persistence or changes among the same products. Among products imported in both years through Tatopani/Rasuwa, nearly 89 per cent of those that also used both sea and air routes in the initial year continued to use both the routes in the final year (Table 9.11). They accounted for 75 per cent of imports of such products in the initial year, a share that rose to 77.4 per cent in the final year. Products that used the sea route as the only other route in the initial year saw imports grow by 66 per cent in aggregate, products that used only Tatopani in the initial year saw imports grow by 42 per cent, and products that used air and sea routes, apart from Tatopani, in the initial year saw imports grow by 61 per cent. Products that used Tatopani and the air route in the initial year saw imports fall by 24 per cent in aggregate, with the result that their share in total imports of products that used the northern border in both years fell from 4.7 per cent to 2.29 per cent. The importance of Tatopani for these products, which used the air route as the only other route in the initial year, was substan-

Table 9.11

Route transitions of continuing products that used a northern border point in both years (imports)

Year 2017	Year 2013: No. of products					
		Sea+ Tatopani	Air+ Tatopani	Sea+Air+ Tatopani	Tatopani only	Total
	Sea+Rasuwa	147	22	74	60	303
	Air+Rasuwa	7	26	18	30	81
	Sea+Air+Rasuwa	206	92	783	60	1141
	Rasuwa only	25	16	7	84	132
	Total	385	156	882	234	1657
	Growth in imports					
	Sea+Rasuwa	84.34	191.32	54.51	410.45	
	Air+Rasuwa	-76.58	-13.27	-78.64	12.85	
	Sea+Air+Rasuwa	48.27	-26.72	62.78	-35.52	
	Rasuwa only	-75.36	31.91	-81.41	13.71	
	Total	65.90	-23.70	61.34	41.95	
	Share in 2013 (%)	15.39	4.74	78.04	1.82	
	Share in 2017 (%)	16.20	2.29	79.87	1.64	

Source: Author's calculation based on data from TEPC.
See text for details.

tially higher than for products that used the sea route as the only other route in the initial year or for those that used both sea and air routes in the initial year. Only 16.7 per cent of the 156 products that used the air route as the only route, other than Tatopani, in the initial year, continued using only the air route besides Rasuwa in the final year.

The preceding four sentences hint that among products that used Tatopani/Rasuwa in both years, but were not exclusively dependent on Tatopani in the initial year, those that were already using the sea route as an alternative before the earthquake, col-

lectively fared better than those that did not initially use the sea route at all. Drilling further, among products that used only the air route besides Tatopani in the initial year, those that switched to using only the sea route besides Rasuwa in the final year collectively saw the highest import growth, those that used the air route, either as the only other route or in combination with the sea route, registered a negative import growth in aggregate, and, interestingly, those that ended up using only Tatopani in the final year recorded an import growth of 32 per cent in aggregate. Similarly, drilling into products that used only Tatopani in the initial year, those that started using the sea route as the only other route in the final year saw imports grow by a whopping 410 per cent in aggregate, albeit from a relatively small base, those that used the air route as the only other route in the final year saw imports grow by 12.8 per cent, while those that used both air and sea routes as additional routes in the final year saw imports fall by 35.5 per cent. The 84 products that used only Tatopani initially, and only Rasuwa in the post-quake year, saw imports grow by 13.7 per cent in aggregate, although they made up less than 0.5 per cent of imports of products that used the northern border in both years.

Among the 393 products that were imported through Tatopani in the initial year but were not imported through Rasuwa in the final year, 107 used only Tatopani in the initial year. The number of products using the sea route as the only other route rose from 113 to 161 (Table 9.12). The number of products using both sea and air routes increased from 110 to 168. The number of products using the air route only hardly changed. Products for which the air route was the only used alternative to Tatopani in the initial year were, on average, more dependent on Tatopani than products that had sea route as the only alternative. Those that switched to using only the sea route recorded higher import growth in aggregate than those that switched to using only the air route or a combination of air and sea routes. And, those that switched to using a combination of air and sea routes registered higher import growth in aggregate than those that switched to using only the air route.

Among the 387 products that did not use a northern border

Table 9.12

Route transitions of continuing products that used Tatopani in 2013 but not Rasuwa in 2017 (imports)

	Year 2013: No. of products				
Year 2017	Sea+ Tatopani	Air+ Tatopani	Sea+Air+ Tatopani	Tatopani only	Total
Sea only	68	13	23	57	161
Air only	4	21	7	32	64
Sea+Air	41	29	80	18	168
Total	113	63	110	107	393
Growth in imports					
Sea only	56.67	223.70	-6.11	2080.27	
Air only	-99.91	39.26	-77.59	-89.71	
Sea+Air	-4.55	47.98	-23.15	201.37	
Total	36.15	53.19	-21.69	441.71	
Share in 2013 (%)	56.01	3.71	36.77	3.51	
Share in 2017 (%)	58.76	4.38	22.19	14.66	

Source: Author's calculation based on data from TEPC. See text for details.

point in either year, the number of products using only the air route or sea route declined, with a corresponding increase in the number of products using both routes (Table 9.13). Products that used only the sea route in the initial year for exports grew the fastest in aggregate, followed by those that used both sea and air routes and those that used the air route only. Those that shifted to using only the air route for exports shrunk, with the sharpest falls registered by those shifting from using either only the sea route (86 per cent decline) or both sea and air routes (73 per cent decline).

Among the 243 products that did not use any northern border point in the initial year but used it in the final year, the most strik-

ing change was the surge in the number of products that used both air and sea routes, from 71 to 116, with also a sharp increase in import share, from 38 per cent to 79 per cent.

We have looked at the aggregate growth in imports in different categories defined by routes taken and switched. The aggregate growth in imports is basically weighted averages of import growth of the products and, hence, is influenced by initial import shares of products (in the relevant category). The simple mean of product-level import growth is, in contrast, a measure of how the average product (regardless of its initial share in imports) fared in terms of import growth. Comparing such means across, say, different modal choices in 2017, while con-

Table 9.13

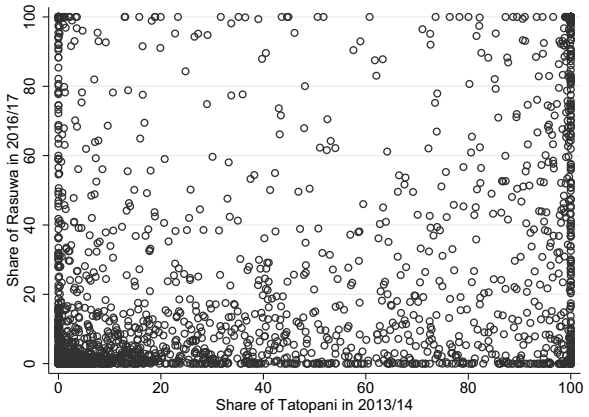
Route transitions of continuing products that did not use a northern border point in 2013 and 2017 (imports)

Year 2017	Year 2013: No. of products				
		Sea only	Air only	Sea+Air	Total
	Sea only	118	18	22	158
	Air only	15	63	17	95
	Sea+Air	46	37	51	134
	Total	179	118	90	387
	Growth in imports				
	Sea only	48.71	3258.67	165.61	
	Air only	-86.32	-4.18	-72.80	
	Sea+Air	47.75	455.00	48.78	
	Total	47.24	3.40	22.80	
	Share in 2013	62.81	25.78	11.41	
	Share in 2017	69.45	20.02	10.53	

Source: Author's calculation based on data from TEPC. See text for details.

Figure 9.8

Share of northern border in initial and final years for continuing products (imports)



Source: Author's calculation based on data from TEPC.

trolling for modal choices in 2013, we find that, even on average, products that used the sea route or both sea and air routes saw higher import growth than those that used only the air route.

In sum, there was a general shift towards using both sea and air routes rather than just a single route for imports. Among products that used a northern border point in both years or only in the initial year for imports, sea route or a both sea and air routes emerged as more prominent alternatives than air route alone. Changes in routes were stark for imports but modest for exports, when considering products that initially used Tatopani. The limited route changes for exports were overwhelmingly towards the air route rather than the sea route.

We, now, statistically explore the relationships between the exposure to Tatopani customs point and import performance.

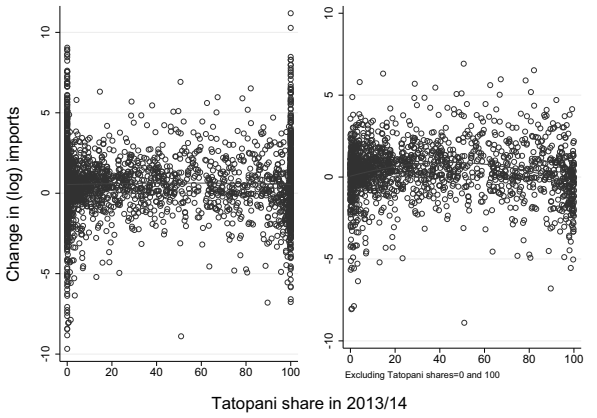
Products that used Tatopani in 2013/14 saw their total im-

ports grow by 24 per cent less than products that did not. Note that there are a substantial number of products that *only* used Tatopani in the pre-quake year, as also observations that did not use Tatopani at all (Figure 9.8). On average, products that initially only used Tatopani had a subsequent higher import growth than products that did not use that customs point at all. When we control for whether a product was initially imported only through Tatopani[18], the difference, not surprisingly, increases to 54 per cent. The association with the number of customs points used initially turns statistically insignificant.

Figure 9.9 indicates a non-linear relationship between import growth and initial share of Tatopani. This non-linearity is more pronounced when restricting the sample to products that initially used Tatopani, but not exclusively (second panel). In all regressions in this subsection, henceforth, we employ two types of specifications.

Figure 9.9

Initial Tatopani share and subsequent import growth



Source: Author's calculation based on data from TEPC.

In the first one, we use the full sample and control for, using two dummies, whether the product was imported exclusively through Tatopani and whether it did not use Tatopani at all. In the second, we use a restricted sample, excluding products that were imported either exclusively through Tatopani or not using that point at all. [19]

An initial high initial exposure to Tatopani is associated with higher import growth until the share of Tatopani crosses 44 per cent, after which a penalty kicks in. The turning point is higher than the mean initial Tatopani share of 36 per cent. The effect of an increase in Tatopani's share of 10 percentage points, at products in the 75th percentile of Tatopani share or above, is a reduction in import growth of around two to three per cent. The number of customs points used initially does not have a statistically significant effect.

We reconfirm the non-linearity using an alternative specification, where we replace the share of Tatopani as an explanatory variable with a dummy denoting whether the share of Tatopani initially was no less than a certain percentile threshold (25, 50, 75, 95 and, where applicable, 99) in separate regressions. We find that the effect is positive and significant for the 25th and 50th percentile exposure definitions and negative and significant for the 75th and 95th percentile definitions, when using a restricted sample, as defined earlier. An initial exposure to Tatopani in the upper quarter of the distribution of such exposure was associated with a 40 per cent lower import growth than for an initial exposure in the bottom 75 per cent. The number of customs points used initially has a positive and significant effect on import growth in regressions with the 25th and 50th percentile share thresholds, and becomes insignificant in regressions with higher percentile share thresholds. Using the full sample yields a negative effect of 56 per cent (of initial Tatopani exposure) for the 75th percentile exposure definition, but the effect reverts to positive territory in the 95th percentile.

Let us zoom in on the group of products that were exclusively imported through Tatopani in the pre-earthquake year. To the extent products initially imported only through Tatopani have some common attributes that set them apart from other products (e.g., region of origin in China (supply-side), taste in Ne-

pal (demand-side)), such attributes will be controlled for when considering only these 341 products. A question, then, is: how did changes in their dependence on the northern border point (Tatopani/Rasuwa) relate to their import growth? A one percentage point decrease in the share of Tatopani/Rasuwa was associated with a 1.2 per cent higher growth in imports. The use of one more customs point was associated with a 40 per cent higher growth in imports. The mean change in the share of Tatopani/Rasuwa for these products was 55 percentage points (standard deviation of 44), while the mean change in the number of points used was 1.09 (standard deviation of 1.28), and the mean change in (log) imports was 1.15 (or about 115 per cent).

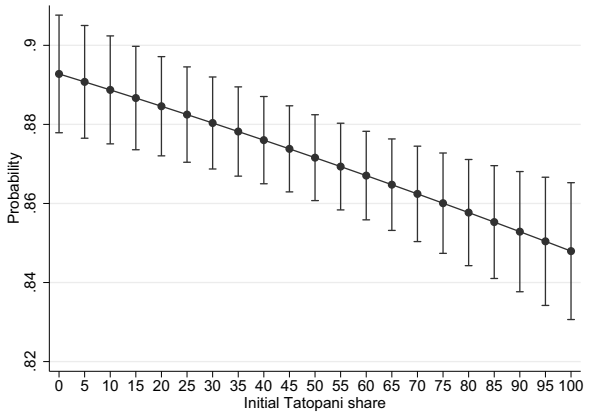
Considering all continuing products together, we still find that a decrease in the share of Tatopani/Rasuwa was associated with a higher import growth. A one percentage point decrease in the share of Tatopani/Rasuwa was associated with a 0.37 per cent increase in import growth. Given that the mean change in share was 15 percentage points and the average import growth was 56 per cent, this implies that the change in Tatopani/Rasuwa share accounted for about 10 per cent of the observed import growth between 2013/14 and 2016/17. The use of an additional customs point was associated with 45 per cent higher growth in imports. The effects are similar when we consider, separately, only those products that saw a decline/increase in the share of Tatopani/Rasuwa.

Determinants of import continuance

A higher initial share of Tatopani is associated with a lower probability of a product imported in 2013/14 continuing to be imported in 2016/17. A one standard deviation higher share of Tatopani is associated with a three-percentage point lower probability of import continuance, which is about 3.5 per cent of the average probability of import continuance (87 per cent). The use of an additional point initially is associated with a four-percentage point increase in the probability of continuance. A 100 per cent higher initial imports is associated with a two-percentage point increase in the

Figure 9.10

Initial Tatopani share and probability of import continuance



Source: Author's calculation based on data from Trade and Export Promotion Centre, Nepal.

probability of continuance. All these associations are relative low in magnitude. Probit estimations yield similar estimates. Figure 9.10, based on a probit estimation that controls for the number of customs points used initially and the log of initial imports, shows the probability of import continuance to be monotonically declining in initial share of Tatopani, for shares ranging from 0 through 100.

Defining initial exposure to Tatopani in terms of percentile share thresholds, as in the previous analysis of continuing products, we find that having an initial exposure in the 75th percentile or above in the Tatopani share distribution is associated with a 2.8 percentage points lower probability of continuance (OLS estimates). The effect increases to 19 percentage points when the threshold is set at the 95th percentile. Probit estimates are higher (lower) in magnitude for the two thresholds: 3.5 percentage points and 7.2 percentage points.

Determinants of imports of new products

A 10-percentage point higher share of Rasuwa in 2016/17 is associated with a 8.8 per cent lower imports among 594 new products. The use of an extra one customs point is associated with a 126 per cent increase in imports.

Time cost of rerouting

We have found, through an analysis of trade flows at the product-customs level, that Tatopani shutdown resulted in a shift in the relative importance of trade routes, from the Nepal-China border to sea and air routes, particularly for imports. To the extent a product's imports from China through the northern border declined or grew slower than its imports from China through air or sea routes after the earthquake, a simple revealed preferences logic would suggest that the use of air or sea routes, instead of the Rasuwa point, must have raised trade costs. For, the alternative routes were available to importers in the year before the earthquake, too, but were not chosen over Tatopani. Of course, using sea or air routes must have been more optimal than using Rasuwa, especially because of the poor conditions of the road to Rasuwa and the relatively undeveloped customs infrastructure on the Nepali side of the border there. Provided Tatopani was reopened, and/or Rasuwa customs' and its connecting road's capabilities for handling trade traffic were brought up to par, it is reasonable to expect the preferred route for some products to be an overland route traversing the northern border, again.

With this premise, we now attempt to get a ballpark estimate of the time cost imposed by the enforced sea detour on imports from China. Hummels and Schaur (2013) estimate that each day in transit is equivalent to an ad valorem tariff of 0.6 per cent to 2.1 per cent.[20] The time taken to bring goods to Kathmandu from China by sea, via Kolkata Port in India, is some 30 days longer than via Tatopani or Rasuwa.[21] Combining this with the Hummels and Schaur (2013) estimates implies that the time cost imposed by the enforced detour is equivalent to a tariff of 18 per cent to 62 per cent.

Discussion

In the pre-earthquake period, exports via Tatopani were usually destined for China's Tibet. Planes also carried cargo to Lhasa, Tibet. Exports to the mainland went via air, mainly to Chengdu (Szechuan Province), and via sea, mainly to Guangzhou. There was also a direct flight to Guangzhou. Imports were mostly from the mainland, routed mainly via air or sea.

Until the earthquake, Nepal's overland trade with China was mostly through the Tatopani-Zhangmu border point. This route was built with Chinese assistance in the 1960s. Sections of the 114-km road from Kathmandu to Tatopani, Araniko Highway, are narrow and obstructed by frequent monsoon landslides. The makeshift parking at the customs point can only hold about 80-90 trucks (SAWTEE 2016). Many trucks line up on the narrow road right up to the customs making traversing extremely difficult. Neither the customs point, nor the connecting road was expanded to better accommodate the growing trade traffic. The earthquake damaged the port infrastructure on both sides of the border at Tatopani-Zhangmu and road sections either collapsed or were buried under landslide debris on the Nepali side. The settlements on both sides of the border sustained heavy damage, prompting China to relocate its border settlements. A flooding of the Bhotekoshi River in July 2016 took another toll on the highway. The border crossing has remained closed since the earthquake despite reopening it having been high on the official agenda. In the joint communiqué issued at the end of KP Sharma Oli's visit to China as Nepal's prime minister in March 2016, the Chinese side agreed to accelerate the feasibility study on Araniko Highway Repair and Opening Maintenance Project.[22] Likewise, during the Chinese Vice Premier's visit to Nepal in August 2017, Nepal reiterated its request for an early opening of the Tatopani-Zhangmu border point.[23]

With Tatopani shut, part of the traffic through it was diverted to the Rasuwagadhi-Kerung trade point, some 145 km north of Kathmandu, officially opened in December 2014, four months be-

fore the earthquake. It had been prematurely opened in August 2014 following the disruption of the road to Tatopani. A monsoon-triggered landslide that year brought almost a whole mountain down blocking the river below and submerging a substantial portion of the road. Rasuwagadhi is the only major border crossing with China, besides Tatopani, that is connected to Kathmandu with a (barely) motorable road. Vehicles have to navigate narrow hairpins built on cliffs with frequent rockfall. The port infrastructure on the Nepali side was not designed to be able to handle the huge traffic diverted from Tatopani, either. Even the rudimentary customs facilities at Rasuwagadhi as well as the road to the border point were also damaged by the earthquake. This meant that a portion of Nepal's overland trade with China was rerouted via air or sea.

Tatopani's loss has been Rasuwa's gain (see, for example, Murton (2016)). While truck drivers of Sindhupalchowk District, where Tatopani is located, found themselves suddenly unemployed, locals of Rasuwa got the opportunity to drive trucks to and from Tibet via Rasuwagadhi-Kerung. Locals living within 30 km of the Nepal-Tibet (China) border are allowed to travel to the other country upon producing a document certifying their residence. Hence, the preference for truck drivers from the district where the trading point is located. Residents within the 30-km radius are also allowed to engage in barter trade across the border. Traders from Sindhupalchowk do not have as easy an access to Kerung, Tibet as traders from Rasuwa, who have special permits by virtue of their residence. The Sindhupalchok traders had similar access to Tibet while Tatopani lasted. The arrangement has been part of a Nepal-China agreement for long. Even as hotels and restaurants at and nearby Tatopani pulled down their shutters, Rasuwagadhi and nearby areas saw hotels and restaurants sprouting up on the back of increased trade flows through the border point. In short, business activities at Tatopani collapsed, while they increased at Rasuwagadhi and its vicinity.

In a study on Nepal's export trade with China, conducted within a year of the earthquake, traders complained about Chinese

officials not accepting documents of Nepali exports at the Rasuwa-Kerung point like they used to at the Tatopani point (SAWTEE 2016). The closure of Tatopani Customs initially also affected people travelling overland to take part in fairs in Lhasa (*ibid*.). Some of them shifted to taking those goods by air (*ibid*.).

As the bulk of Nepal's exports to China is being absorbed by Tibet, the air route generally proved to be the best alternative to overland trade following the Tatopani closure, with Rasuwa unable to take in the entire deflected trade traffic and the sea route being too costly a detour. In contrast, because the majority of imports were sourced from mainland China, mostly via sea and partly via air, and most of the products that used Tatopani also used sea or air routes and accounted for the bulk of import value, the rerouting took place both via sea and air. Given the competitiveness pressures facing Nepal's exports and the difficulty in penetrating the mainland markets, it is highly likely that the surge in exports taking place through the air route is merely a rerouting of exports destined for Tibet. However, given the relative diversity of import sources in China, one cannot rule out the possibility that the extra imports via sea and air that are partly replacing imports via Tatopani may have been partly sourced from mainland China. The available trade data does not allow us to investigate this possibility in detail.

Tatopani or Rasuwa? Both

The relative importance of Tatopani and Rasuwa for Nepal's overland trade with China, once Tatopani reopens, is anybody's guess. Throwing this question among government officials, exporters, importers and freight forwarders did not produce a conclusive answer. The distance from Kathmandu to Rasuwagadhi is 145 km as opposed to 114 km to Tatopani. The time taken for a cargo truck to travel from Rasuwagadhi to Kathmandu is some four hours more than it took from Tatopani to Kathmandu. The dry port on the Chinese side, Kerung, is 24 km from Rasuwagadhi compared to the five km distance between Zhangmu and Tatopani.

Road conditions on the way to and from Rasuwa are worse than they used to be on the way to and from Tatopani. Owing to the ongoing construction of the Birgunj-Galchhi-Mailung-Syaphrubesi-Rasuwagadhi highway, vehicular movement is not allowed along sections for some six hours a day. On the dry-port front, China-assisted construction works for a relatively spacious and well-equipped dry-port at Larcha, some six km from the Tatopani, which were disrupted by the 2014 landslide and 2015 tremors, have resumed.[24] The construction of a dry-port in Timure, about two km from the Rasuwagadhi, is expected to begin soon—also with Chinese assistance.[25]

From a longer-term perspective, however, the Rasuwa route has the potential to emerge as a major route for Nepal as the goods will not have to pass through Kathmandu if they are destined for other parts of the country. The future appears better not just for Nepal's trade with China but also Nepal's trade with other countries. This is so because the trade infrastructure in Kerung is extremely well developed and China has chosen Rasuwa-Kerung to extend its railway to the Nepal border. The railway extension was initially meant to connect the Tatopani-Zhangmu border point (SAWTEE 2012). In August 2017, China designated Rasuwa-Kerung as an "international" border crossing, as part of Beijing's One Belt One Road Initiative.[26] The Rasuwa customs is being upgraded with Chinese assistance. Importantly, Nepal and China signed a transit-transport agreement in March 2016, potentially paving the way for Nepal, hitherto entirely dependent on India for transit routes, to use Chinese ports for its trade with other countries. There are also plans to further extend the railway from Rasuwa to Kathmandu and then to Pokhara to the west and Lumbini to the south, bordering India. Even with road transport, once the Birgunj-Galchhi-Mailung-Syaphrubesi-Rasuwagadhi highway is completed, a cargo truck can reach Birgunj on the Nepal-India border from Rasuwa in a single day as opposed to the approximately two days it takes from Tatopani (SAWTEE 2012), further indicating the potential of the Rasuwa-Kerung point to remerge as an entrepot for China-India trade

like it was until less than two hundred years ago. The impending opening of the Mailung-Syaphrubesi road section, under construction by Nepal Army, would cut the distance to Rasuwagadhi by some 23 km.

Nepal needs both Tatopani and Rasuwa trading points and more—backed by well-developed infrastructure. Test runs by the Chinese railway have already proven that the time it takes for cargo to travel from that country to Nepal is considerably reduced, compared with current sea routes.[27] This is especially so as the sea routes are not only plagued by a longer travel distance, but also by port delays, congestion and unnecessary demurrage. However, the topography on the way to both areas is prone to landslides and having multiple trade points will make disruption of one route to the northern border less painful. Furthermore, as part of the planned reduction of its absolute dependence on India for meeting its oil needs, if Nepal were to source 30 per cent of its oil imports from China—via Kerung-Rasuwa—the highway in the works on the Nepali side, even when completed, could be overwhelmed.[28] Hence, the importance of multiple trading points.

Beyond Tatopani and Rasuwa, diversifying overland trade routes to the north, which could reduce trade costs, is a crucial means of boosting economic ties between different regions of Nepal with the world's second largest economy that is projected to become the largest within the next 15 years. Further, a few of these proposed corridors could turn into transit routes for China-India trade, most of which currently takes a long and circuitous sea journey. It was with such multiple factors in mind that Nepal and China in late 2015 agreed to initiate the process to open seven additional commercial trading points: Olangchungola (Taplejung District), Kimathanka (Sankhuwasabha), Lamabagar (Dolakha), Larke (Gorkha), Korala (Mustang), Nagcha (Mugu) and Hilsa (Humla) (see Shrestha 2015). Establishing proper road connectivity to these border points, followed by customs, dry-port, quarantine and immigration offices and police posts, are prerequisites to operationalizing them (*ibid.*).

Land, rail, sea or air? It depends

While Kolkata (West Bengal) is the most-used port for Nepal's overseas trade, Nepal has also been using the port in Vishakhapatnam (Andhra Pradesh in southern India) for third-country trade since it was formally opened for Nepal's transit trade in June 2017. Although our data cannot distinguish between Indian ports used for Nepal's sea-borne trade with China, Vishakhapatnam is reportedly increasingly used for imports from China and other third countries.[29] There are several advantages of importing through Vishakhapatnam over Kolkata despite being located at twice the distance from Bigunj-Raxaul, a key trading point on the Nepal-India border: it is a deep seaport where large cargo ships (mother vessels) can dock, leading to lower ocean freight; it is spacious and less congested, leading to speedier clearance and, therefore, lower detention and demurrage charges; and the shipping liner directly bills to the Birgunj Dry-port in Nepal, taking responsibility for any delays that might occur at the seaport. The emergence of Vishakhapatnam as an alternative port is expected to prompt Kolkata to offer better services and terms and conditions. Some indications to that effect are already visible.[30] Preparations are under way to shift customs paperwork to Birgunj Dry-port from Kolkata, too.[31]

Nepal and India have launched a pilot project to ease cargo movement using an electronic cargo tracking system, beginning with imports from Kolkata.[32] The government of Nepal is also mulling negotiating with India to allow over one dozen private railway operators in India to offer cargo railway services to Nepal, breaking the monopoly of the state-owned Container Corporation of India (Concor), which fails to make available rakes in an adequate and timely manner. All these developments could make sea-borne trade (particularly imports) with China more attractive in future. This is potentially so, as some traders argue, even for exports to China because two-way fare is, in general, already paid on containerized imports, partly subsidizing the return journey. This argument would be relevant to exports to mainland China; currently, exports are mostly destined for Tibet, for which road and air routes are argu-

ably the most feasible options. If exports to the mainland increase in future, the sea route may become important for exports, too. As the mainland is a huge expanse, however, the overland route, possibly rail-linked, might well be the preferred option for certain destinations within China, especially for time-sensitive cargo.

Given the plethora of non-tariff barriers facing Nepali exports to China (SAWTEE 2012), there is scepticism about whether the proposed rail-link would help Nepali exports, not to mention the nagging concern that it would only facilitate imports from China, as expressed by some participants in a seminar where this paper was presented. A contrasting viewpoint was that non-tariff measures bedevil Nepal's exports to not just China but virtually all destinations, and to argue that Nepal should defer establishing a rail-link with its northern neighbour until all market access issues are resolved amounts to throwing the baby out with the bathwater.

Better physical connectivity is a precondition for enhanced bilateral trade—imports or exports. The proposed railway has a potential to achieve that. Even if the railway did not increase exports, it could lower import costs, a no mean achievement for a landlocked country. Moreover, the railway is not just about bilateral trade. The expansion of railway links between China and Europe and the growth in trade volumes they carry point at the opportunity, even if not immediate, for Nepal to tap into those networks for its third-country trade via the proposed Nepal-China railway. This would help Nepal realize its longstanding quest for transit-route diversification. After all, the ancient salt routes to China, especially those connecting Xigatse, used to pass all the way through Kashghar (Xinziang) to central Asia and beyond.

The Tatopani shutdown forced freight forwarders to explore the sea option for imports. It is plausible that some of them discovered the sea route to be competitive with the existing land route (Tatopani or Rasuwa) and, hence, have not turned to Rasuwa. Still, there are importers who import via land route (Rasuwa) only, even two years after the earthquake. For them, the time to import via the land route is much less (by up to 30 days) while the direct cost of haulage up to Kathmandu is only slightly more

expensive than via sea. However, those who consider the sea option holding greater promise point out that the haulage cost up to Kolkata is US$1,200-1,500 as opposed to US$4,000 up to Tatopani/Rasuwa, while the cost of transporting cargo from Kolkata to the Nepal-India border could be reduced substantially from NPR 200,000-240,000 at present, if transit facilities through India improved, as discussed earlier.

Are traders who mostly import through Rasuwa simply unaware of the benefits of importing via sea? Unlikely. The type of products, including whether they are branded or non-branded, also determines modal choice. Within mobile phones, for example, while smartphones, with a relatively short shelf life, are predominantly imported by air, basic cell phones are still imported mostly by sea.[33] Likewise, for the 215 apparel items at the HS 8-digit level imported by Nepal from China in 2017, the share of Rasuwa ranged from zero per cent to 100 per cent, with a mean of 39 per cent, median of 33.7 per cent and standard deviation of 34.7. Correspondingly, the share of the air route ranged from zero per cent to 100 per cent, with a mean of 27 per cent, median of 11.4 per cent, and standard deviation of 31.5. The share of sea route ranged from zero per cent to 100 per cent, with a mean of 33.7 per cent, median of 24.8 per cent and standard deviation of 31.6. On a weighted average basis, Rasuwa accounted for 54 per cent of the imports of these products from China. Assuming unit values to be a proxy for average price and quality, we compare the unit values of apparel products across three modes in 2017: air, sea and land (Rasuwa).[34] Among 167 products that used both air and Rauswa, the unit value of shipments was higher for air than for Rasuwa in nearly 93 per cent of cases. Among 168 products that used both air and sea, the unit value of shipments was higher for air than for sea in close to 77 per cent of cases. Among 167 products that used both sea and Rasuwa, the unit value of shipments was higher for sea than for Rasuwa in nearly 93 per cent of cases. Further, performing t-tests on unit values for three mode pairs—air-Rasuwa, air-sea and sea-Rasuwa—among products using both modes in a pair, we find, not surprisingly, that unit

values are significantly different between any two modes by an order of magnitude. One-sided t-tests also confirm a natural prior about the direction of the difference in unit values across the three modes, that the highest-value items are shipped via air, followed by sea and overland (Rasuwa): air>Rasuwa, air>sea and sea>Rasuwa.[35]

When Tatopani was in operation, most branded goods imported from China were reportedly routed via sea, while non-branded products were mostly sourced via Tatopani (SAWTEE 2012). The Chinese discouraged exports of branded goods through Tatopani as they considered Khasa (or Zhangmu), the market across the border from Tatopani, as a local market center (*ibid.*). Continuance of this practice may also be affecting the type of goods imported via Rasuwa versus other routes. A fallout of this practice is the reluctance of banks to issue letters of credit to finance imports through the northern border.

Preferential treatment to imports from or via Tibet under certain conditions creates an incentive to import via a northern border point. For example, first, goods produced in China and imported under an L/C procedure from Tibet are granted a rebate of three per cent on customs duty if the chargeable customs duty (provided it is ad valorem, not specific) is five per cent or more (Department of Customs 2017). This provision is presumably aimed at encouraging L/C-based trade through the northern border. Second, full exemption from customs duty is granted for goods imported from Tibet for some 384 agricultural goods (HS 8-digit level), on which an agricultural reform fee (ARF) of five per cent—which is less than the most-favoured-nation tariffs on these goods—is imposed instead. An ARF of eight per cent is imposed instead of customs tariffs on nine other agricultural goods imported from Tibet. Third, imports through barter are also allowed when importing from Tibet under certain conditions. The barter option is allowed for imports of raw wool, live goat and sheep, salt, yak and yak tails, carpet and herbs. Payment via banks is not mandatory for imports (as well as exports) of up to a value of NPR 16,000.

Summary

In a nutshell, Nepal's strategy should be to diversify trade and transit routes, exploring all options. The temptation to make a cost-benefit analysis comparing trade costs along different routes, without factoring in the value of transit needs, must be avoided. Obviously, you cannot compare apples with oranges. Top priority should be accorded to developing the necessary road, dry port and customs infrastructure to enable the Rasuwagadhi-Kerung border point to realize its potential for handling greater amounts of bilateral trade and, possibly, part of Nepal's third-country trade. The process of establishing a rail-link from Rasuwa to, at least, Kathmandu should be expedited, beginning with a feasibility study. Diplomatic efforts to reopen Tatopani-Zhangmu should be complemented by repairing and upgrading the Araniko Highway and upgrading the customs and port infrastructure there as national priority projects. A long-term vision that recognizes the possibility of Nepal not only emerging as an entrepot for China-India trade but also benefitting from north-south economic corridors should guide the development of trading points on the Nepal-China border. Connectivity with the northern neighbour should not be confined to Rasuwa and Kerung. It is imperative to act on the 2015 agreement between Nepal and China to open seven additional border points as commercial trading points. To begin with, proper road connectivity with these border points, coupled with dry ports, must be initiated in a time-bound manner. As the bulk of imports from China are routed via sea, and the sea route is likely to continue to be the best option for the import of certain products, the government of Nepal must redouble its efforts in negotiating with India on transit arrangements for a quicker and cheaper movement of cargo between Indian seaports and Nepal, capitalizing on recent developments such as moves to shift customs procedures from the seaport to the Nepal-India border. ■

The author thanks participants in a seminar at SAWTEE for helpful comments and is grateful to Mr. Suyash Khanal and Mr. Rabindra Duwadi, of Trade and Export Promotion Centre, Kathmandu, for facilitating access to data. The author is grateful to Mr. Alabhya Dahal for research assistance.

Notes

1 NRB (2015) and NPC (2015).

2 In the fiscal year preceding the earthquake, in 2013/14, China was Nepal's fourth most important export destination (share: 3.1 per cent) and second most important import source (share: 10.7 per cent). India was Nepal's largest trade partner, with a share in exports and imports of about 66 per cent each. Although China is a fairly important trade partner of Nepal, Nepal significantly under-exports to China despite potential (see Narain and Gonzalo 2017).

3 Republica. 2018. "Nepal-China to expedite feasibility study, DPR on rail." *Republica* April 19. http://www.myrepublica.com/news/40159/?categoryId=81

4 Ghimire, B. 2017. "Oli and co visit Rasuwagadhi border point." *The Kathmandu Post* December 20. http://kathmandupost.ekantipur.com/news/2017-12-20/oli-and-co-visit-rasuwagadhi-border-point.html

5 It should be noted that international oil prices have a significant bearing on imports from India. Imports of petroleum products from India, which accounted for 30 per cent of total imports from India in 2013/14, were already falling in the first nine months of 2014/15—before the earthquake and the border disruptions. The reason was the fall in global oil prices, which translated into lower import prices. This explains the slow growth of imports from India of 4.6 per cent. In the last three months of 2014/15, i.e., after the quake, imports fell by 1.8 per cent. This would have been the combined effect of lower petroleum import prices and a dampened demand owing to the earthquake (which must also have dampened demand for petroleum products).

6 Comparing the Post-disaster Needs Assessment (PDNA)'s goods trade projections for the post-earthquake years, made in the aftermath of the quake but ahead of the blockade, with subsequent estimates is another way to get an inkling of how the blockade compounded the quake's effects. Estimated exports in 2015/16 were 20 per cent lower than the PDNA projection. Estimated exports in 2016/17 were still less than the PDNA projection for 2015/16. Estimated imports in 2015/16 were 15 per cent less than the PDNA projection for that year. The estimates are drawn from the national accounts section of the central bank's Current Macroeconomic and Financial Situation database (revised estimates for 2015/16 and initial estimates for 2016/17).

7 Since we are looking at trade flows through customs points in this sentence, the data source is TEPC. However, note that NRB data show total exports to China fell by 41 per cent and Department of Customs data show total exports to China fell by 45 per cent, a significantly higher fall than the 25 per cent decline shown by the TEPC data. At the heart of the difference is the export value for 2015/16 of around NPR 1.7 billion in the NRB and Customs dataset versus NPR 2.1 billion in the TEPC dataset. One possible explanation for

the discrepancy is that NRB and Customs data are for the fiscal year running from mid-July of one year to mid-July of another, whereas the TEPC data, extracted from its online export-import databank, are for a period that approximates the fiscal year (from July of one year to June of another). As our focus here is the relative trade flows through different customs points and as trade data by customs points are not available for 2013/14 in the NRB and Customs datasets, we choose to ignore this discrepancy. Moreover, it is reassuring that the aggregate export and import figures vis-à-vis China for 2016/17 are fairly consistent across the three datasets, as we will be extensively comparing flows for that year with flows for 2013/14 for most of the remainder of the paper from the next section onwards.

[8] CBS projection based on first nine months of data. GDP at (constant) market prices are used because the decomposition exercise below can only be done with market prices. GDP at (constant) basic prices grew by seven per cent in 2016/17.

[9] 2011 was the latest year for which EVAD data on Nepal was available at the time of writing this paper.

[10] Rudrakshya was exported under one HS code in 2013/14 and in another code in 2016/17.

[11] Exports through the dry port increased by about eight per cent, whereas exports through Biratnagar, previously the most important exit point, fell. Total exports of the product to China fell by 54 per cent.

[12] For Rasuwa, new products mean products not exported via Tatopani in 2013/14, while products that stopped being exported mean products that were exported via Tatopani in 2013/14 but not in 2016/17.

[13] Note that these products include continuing products as well as, possibly, new products and products that have stopped being exported.

[14] In the regression analysis, henceforth, in this sub-section, we use three core specifications. In the first specification, the dependent variable is a first differenced log of exports while the explanatory variable is the share of Tatopani and its squared term. In the second specification, the dependent variable is the same as the first, but the explanatory variable is changed to a treatment dummy that switches on if the product used Tatopani with at least a cut-off corresponding to the 25th, 50th, 75th and 95th percentile in 2013/14. The third specification is like the first one, but without the squared term and all the variables are first differenced. The number of customs points used (initially used or in changes) and the log of initial exports are controlled for, where applicable. We also control for whether a product did not use Tatopani at all or used only Tatopani in 2013/14. We also run the regressions on a restricted sample, excluding products that did not use Tatopani at all or used only Tatopani in 2013/14.

[15] Recall that total imports from China had increased by 65 per cent.

[16] 1,165 products accounting for 80 per cent and 82 per cent of total value of imports of the 1,657 products.

[17] 408 products accounting for 20 per cent and 17 per cent of the total value of imports of the 1,657 products.

[18] Whether a product did not use Tatopani at all is already captured by the dummy variable of interest.

[19] The sample is reduced from 2,680 to 1,180. The restricted sample covers, in both years, about 80 per cent of imports of continuing products.

[20] Hummels and Schaur (2013) use the trade-off between fast and expensive air transport versus slow and inexpensive ocean shipping to identify the value of time saving. To do so, they use disaggregated import data of the United States at the level of exporting country × HS 6 digit product × US entry coast × year, combined with a detailed ocean shipping schedule for all ocean vessels worldwide that yields shipping times for each exporter × US entry coast. Djankov et al. (2010), using a gravity model on cross-country aggregate trade flows, obtain a similar estimate.

[21] This is based on press reports that quote traders who have had to reroute from Tatopani to the sea port in India, which was confirmed in a seminar where this paper was presented. One report states that shipping time from China to Kathmandu via Kolkata is at least 45 days, with delays at Kolkata adding to the time, while transportation of the same goods takes only two weeks via Tatopani or Rasuwa.

[22] Pangeni, Rudra. 2015. "With Tibet routes down, China good to come via Kolkata." *Republica*. June 10. http://admin.myrepublica.com/economy/story/22530/with-tibet-routes-down-china-goods-to-come-via-kolkata.html. Another states that it takes between 45-60 days for Nepali traders to import goods via sea from Guangzhou, compared to the 15-20 days it used to take when importing through Tatopani. See also: Xinhua. 2017. "Nepal's businesses still suffering 2 years after devastating quake shutters main trade route with China." *Xinhuanet* April 25. http://news.xinhuanet.com/english/2017-04/25/c_136234396.htm

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[27] Post Report. 2017. "Rasuwagadhi-Kerung becomes int'l crossing point." *The Kathmandu Post* August 31. http://kathmandupost.ekantipur.com/news/2017-08-31/rasuwagadhi-kerung-becomes-intl-crossing-point.html

[28] For example, a cargo service was launched in December 2016, transporting goods from Guangzhou to Xigatse by railway, and then to Kerung and Nepal on trucks. See: The Times of India. 2016. "China launches new cargo service linking Tibet with Nepal." *The Times of India* December 10. https://timesofindia.indiatimes.com/world/china/China-launches-new-cargo-service-linking-Tibet-with-Nepal/articleshow/55908913.cms

[29] Based on comments received in a seminar where this paper was presented.

[30] Based on comments by Mr Rabi Shanker Sainju, Joint Secretary, Ministry of Commerce and Supplies, Government of Nepal, in a seminar where this paper was presented. See also: Acharya, Shankar. 2018. "Cargo movement via Visakhapatham up." *The Kathmandu Post* January 23. http://kathmandupost.ekantipur.com/news/2018-01-23/cargo-movement-via-visakhapatnam-up.html

[31] *ibid.* Note 28.

[32] Tripathi, Ritesh. 2018. "Customs formalities for Nepal bound cargoes at Indian ports to ease." *Republica* April 23. http://www.myrepublica.com/news/40388/?categoryId=81

[33] ADB. 2018. "India, Nepal to launch electronic tracking of transit trade." Asian Development Bank. February 06. https://www.adb.org/news/india-nepal-launch-electronic-tracking-transit-trade

[34] This is based on an observation made during the seminar where this paper was presented. In our data, all cell phone imports are lumped under a single HS code (HS 85171200). In 2017, 92 per cent of NPR 17.4 billion worth of imports of cell phones from China were transported by air and the rest by sea. The unit value (total import value divided by total quantity—in pieces) for air was higher than that for sea. The unit value by air was 3.68 times higher than that by a customs point on Nepal-India border (which means, by sea) having the next highest unit value. This is consistent with the fact that smart phones cost on average more than basic cell phones.

[35] Unit values are computed at the level of product-mode: total value divided by total quantity. All but four apparel products at the HS 8-digit level are recorded in the same quantity unit: pieces. As it is not meaningful to compare unit values of products in different quantity units, the four products not recorded in pieces are dropped; they account for barely 0.1 per cent of the total imports of apparel from China.

[36] There is a caveat to this interpretation, though. Since the financing of imports by sea is conducted largely through letters of credit (L/C), while the bulk of imports via the northern border is based on bank drafts and telegraph transfers (SAWTEE 2012), and if there are reasons to believe that under invoicing in terms of price is more prevalent in non-L/C-based trade, part of the lower

unit values observed for imports via Rasuwa may be due to underpricing. Investigating this aspect is beyond the scope of this paper.

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