From Tatopani to Rasuwa

Nepal-China trade after the 2015 earthquake

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Motivation

- Two shocks hit Nepal in quick succession
  - The earthquake of April 2015, followed by the September 2015-February 2016 blockade of Nepal-India border.
- Trade with China in the 10 months following the earthquake was caught in a pincer movement, as a natural disaster met a manmade one.
- In the fiscal year preceding the earthquake, in 2013/14, China was Nepal's fourth most important export destination (share: 3.1%) and second most important import source (share: 10.7%). Cf India: ~66% share.
- Yet, Nepal significantly under-exports to China (World Bank 2017) despite potential.
- One lingering effect of the earthquake is the shifts in routes for a portion of Nepal-China trade: Rasuwa unable to fully absorb traffic diverted from Tatopani, which remains shut.
- Because the blockade happened so close on the heels of the devastating calamity, 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.
- Rasuwa/Kerung route irrevocably shot to prominence.

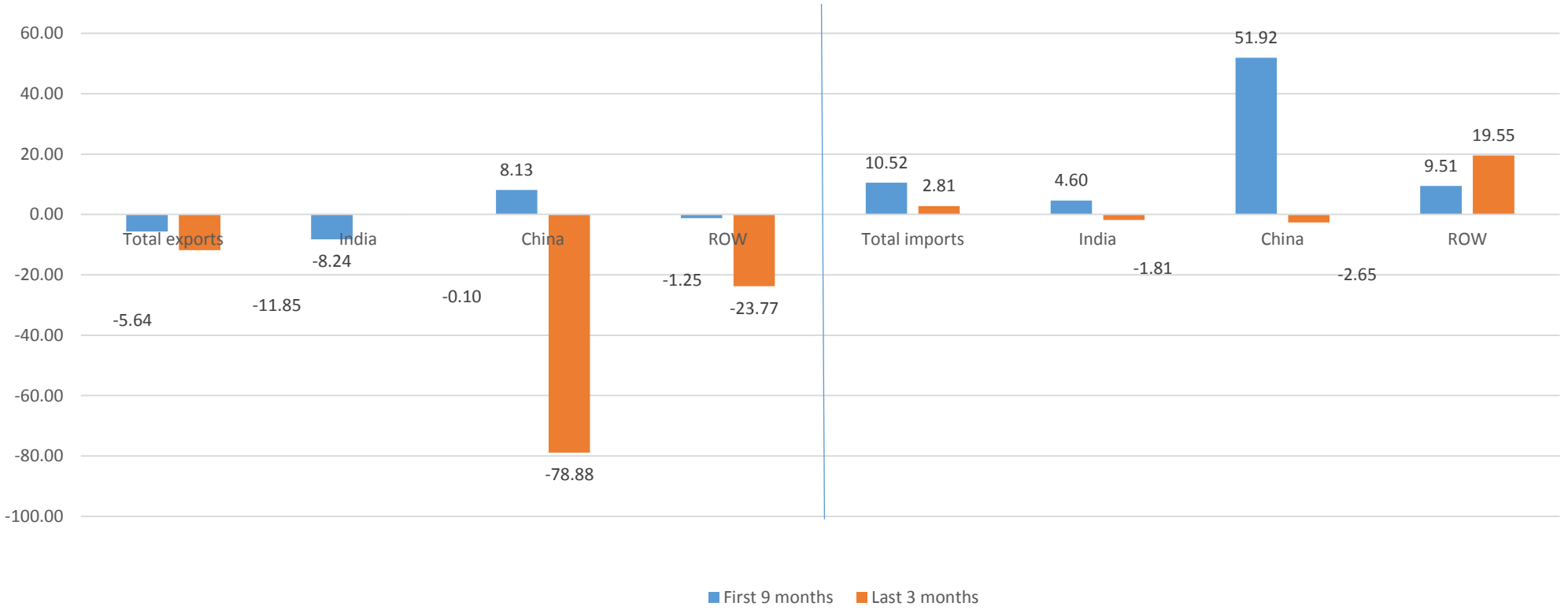
The plan

- Analyse Nepal's trade performance in the wake of two shocks (earthquake and border blockade).
- Dissect Nepal-China trade performance and patterns in the post-earthquake period at the product level, customs point/route level and product-customs point/route level.
- Obtain a back-of-the-envelope estimate of the time cost of the sea route detour forced by the Tatopani shutdown.
- Generate issues for discussion on the future of Nepal-China trade through the lens of transport and transit, including the emergence of the Rasuwa/Kerung route.

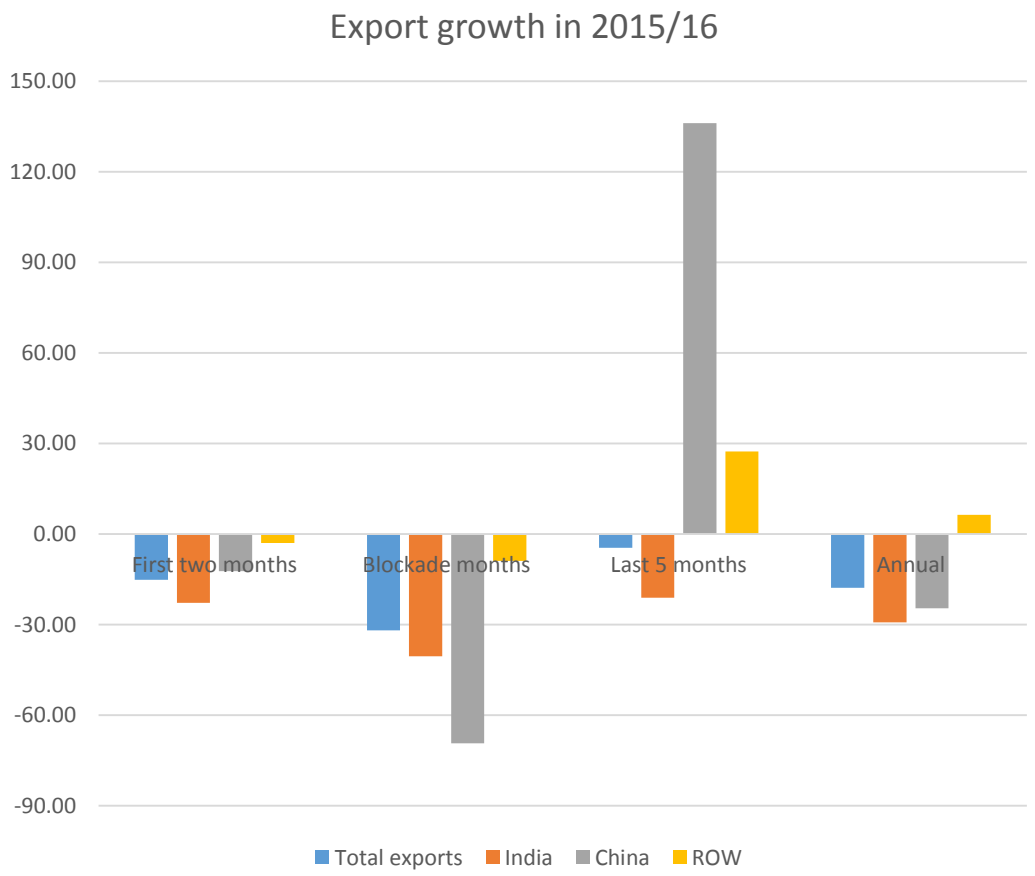
Data and methods

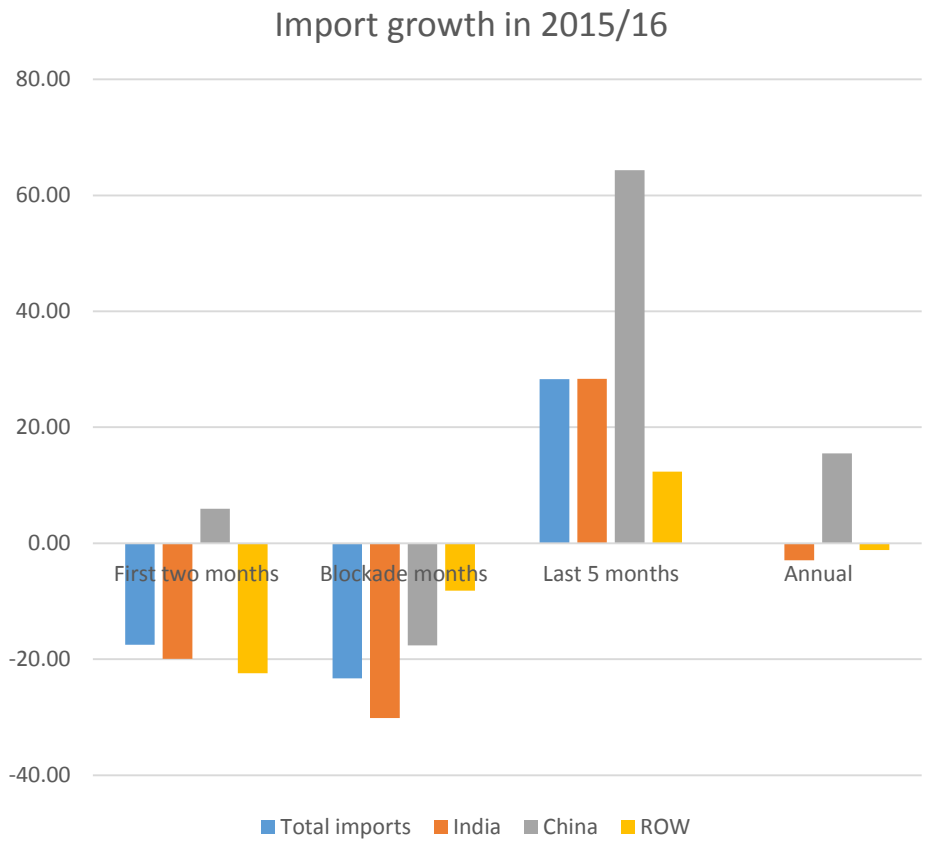
- Two main sources of trade data: NRB and TEPC.
- Primarily, only goods trade studied.
- NRB data are mainly used to analyse changes in trade flows over intervals of less than a year.
- TEPC data are mainly used for granular analysis of trade with China: disaggregated by products and customs points.
- Granular trade analysis years
  - Pre-earthquake year: 2013/14; Post-quake year: 2016/17.
- Northern border point refers to Tatopani in 2013 and Rasuwa in 2017.
- National accounts data from CBS.
- Statistical analysis: associations, not causality.
- Field visit to Rasuwagadhi.

Trade growth in 2014/15: before and after earthquake



Double whammy: natural meets manmade disaster





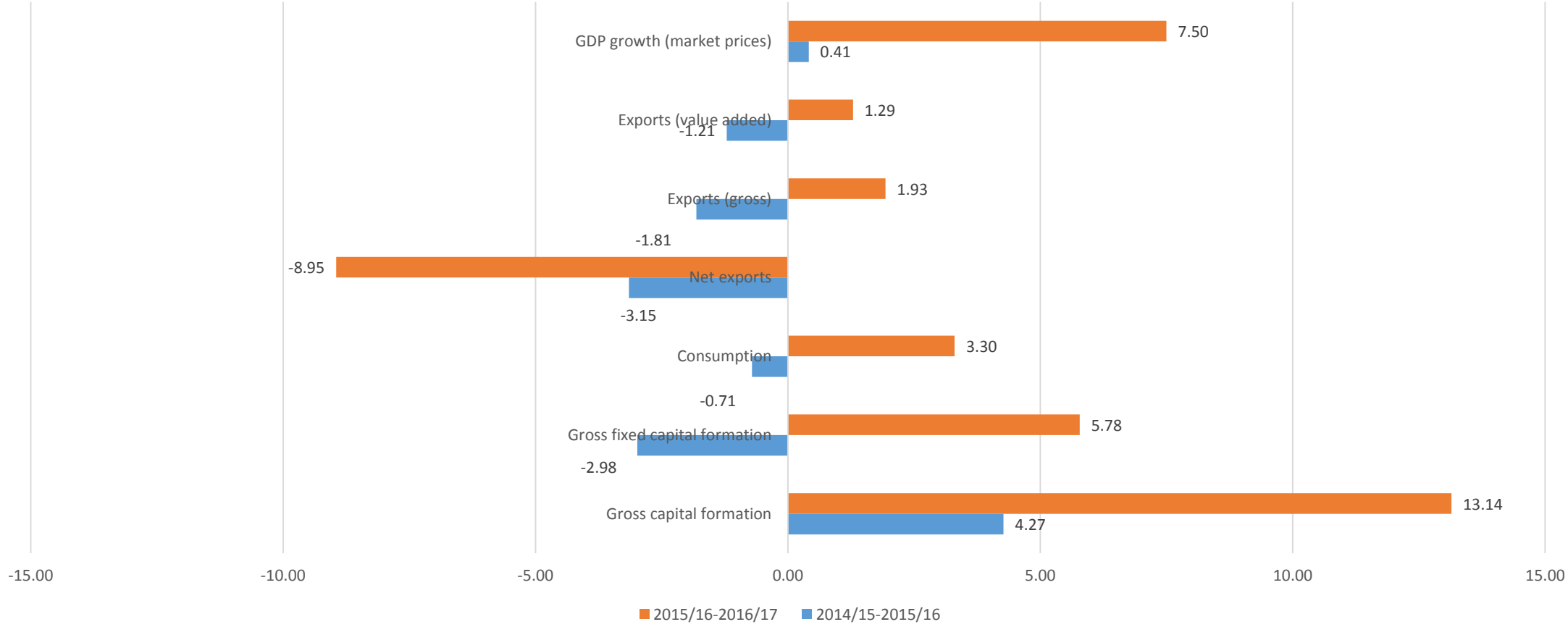
The 2016/17 rebound: asymmetry in exports and imports

	Growth (%)					
	2012/13	2013/14	2014/15	2015/16R	2016/17P	Ratio of 2016/17 value to 2013/14 value
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

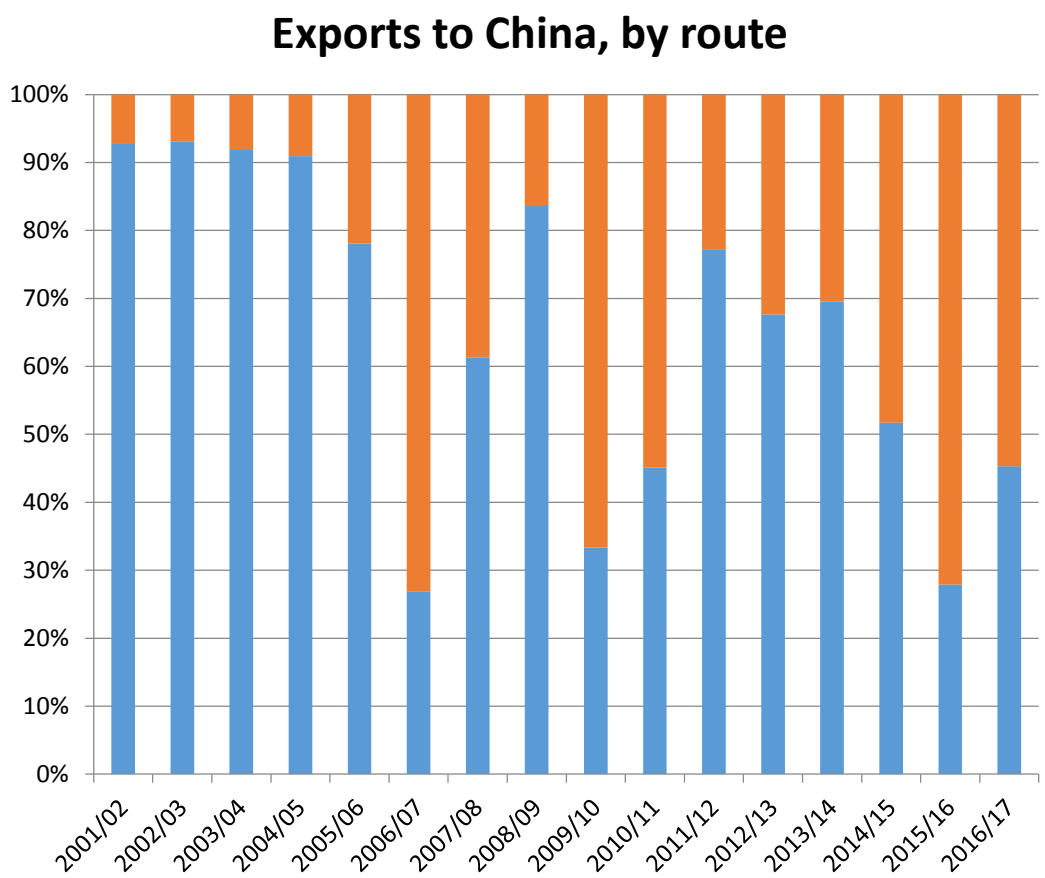
Total exports still less than Post-Disaster Needs Assessment's projection

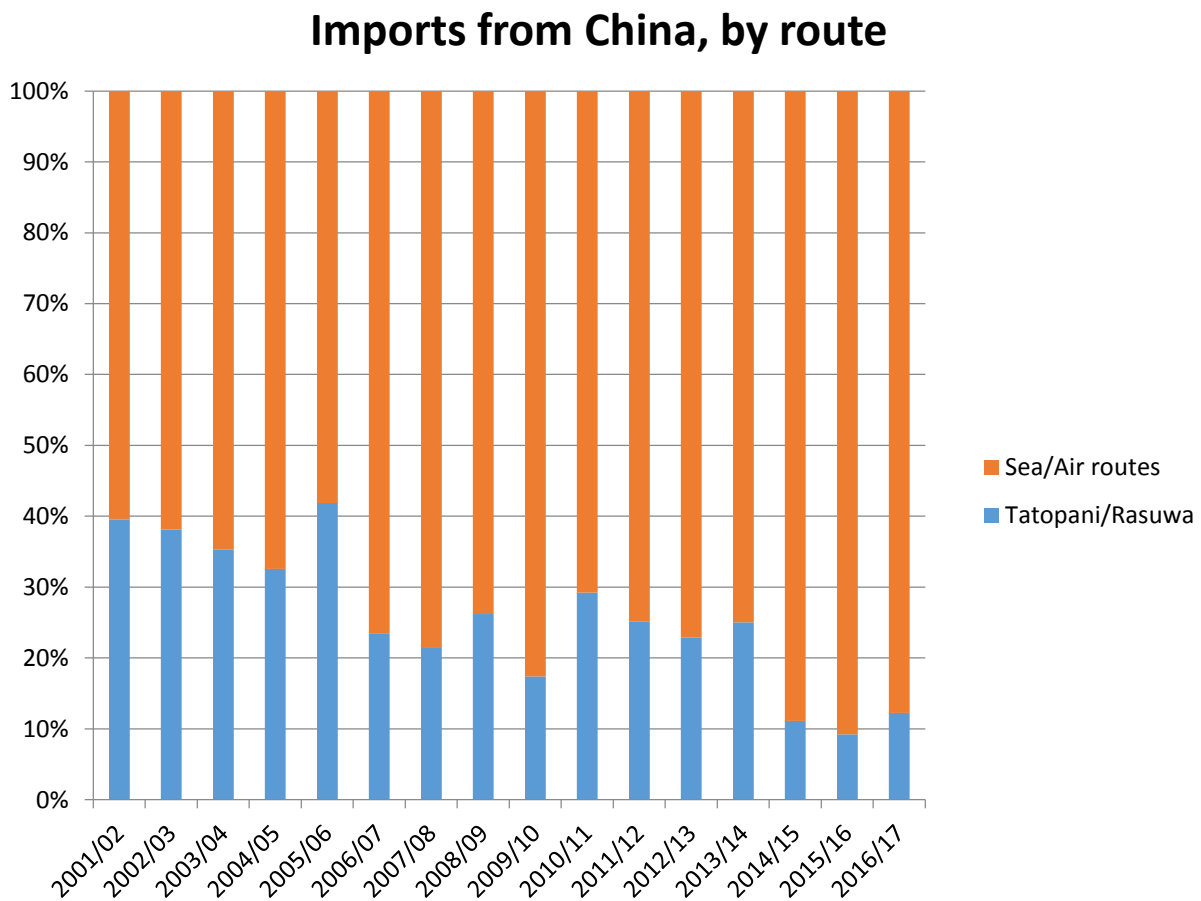
- Estimated exports in 2015/16 were 20 percent lower than the PDNA projection.
- Estimated imports in 2015/16 were 15 percent less than the PDNA projection for that year.
- Estimated exports in 2016/17 were still less than the PDNA projection for 2015/16.

Contribution to GDP growth (% points)



Shift from northern border to sea/air routes





Exports to China by customs points

Value in NPR million

								No. of products exported	
	Export value, 2013	Export value, 2017	% share, 2013	% share, 2017	% change in value	Contribution, sign adjusted	Change as % of exports in 2013	2013	2017
Biratnagar	242.00	63.30	8.12	3.50	-73.84	-15.27	-6.00	4	3
Birgunj	78.40	23.50	2.63	1.30	-70.03	-4.69	-1.84	5	3
Dryport Birg	27.10	59.30	0.91	3.28	118.82	2.75	1.08	2	4
Nepalgunj	7.77	0.11	0.26	0.01	-98.62	-0.65	-0.26	8	1
T.I. Airport	572.00	888.00	19.19	49.06	55.24	27.01	10.60	53	57
Tatopani/Rasuwa	2050.00	775.00	68.79	42.82	-62.20	-108.97	-42.79	548	455
Total	2980	1810			-39.26			578	486

Mean exports per product fell by 28%.

Mean exports per product through northern border fell by 55%, through TIA rose by 45%.

The increase in exports through TIA and Birgunj dryport was just 27 percent of the decline in exports through Nepal-China border points.

Exports to China: No. of customs points used

	No. of ports used, value in NPR million					
	2013			2017		
No. of 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	

Export concentration

- Exports concentrated in a few products
  - Top 15 products: 82% of exports in 2013, 71% of exports in 2017.
  - Exports of top 15 products in 2013 fell by 60% in 2017 (cf 39% fall in total exports to China).
  - Of the top 15 products in the 2013 list, only three saw their exports grow (carpet, table kitchen or household articles, and statuettes), with statuettes jumping from tenth to first position in 2017.
  - 29 products had exports of at least 10 million NPR in 2013, with a share of 92%; 28 products in 2017, with a share of 81%. Mean exports fell by 45% (NPR 94 million to NPR 52 million).

Changes in customs points for top exports

- Exports of HS 12119090 (Plants and parts of plants (including seeds and fruits) of a kind used primarily …), the number one export item in 2013/14, went almost exclusively through Tatopani in 2013/14 (with a 0.05 percent share of TIA), whereas its exports in 2016/17, which had fallen by 98 percent, went chiefly through TIA (98.53), with Rasuwa taking up the rest (1.47 percent). In value terms, exports through northern border plunged while exports through TIA increased.

Changes in customs points for top exports

- Exports of HS 83062900 (statuettes of base metal), ranked fourth in 2013/14 and third in 2016/17, fell by 25 percent, 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 percent to 89.48 percent, with a corresponding increase in the share of TIA.

Changes in customs points for top exports

- Exports of HS 57011000 (Carpet~ knotted of wool or fine animal hair) more than doubled, although exports through Tatopani/Rasuwa fell by two thirds, implying that the increase in exports were driven by exports through TIA, with the result that the share of Tatopani/Rasuwa fell from 67 percent to 10 percent, while that of TIA increased from 31 percent to 89 percent.

Changes in customs points for top exports

- Exports of HS 41041900 (Tanned or crust hides and skins of bovine or equinine animals~ without hair on whether or not split~ but not further prepared~ in the wet state) had been taking place predominantly through Nepal-India border, with Tatopani accounting for less than 6 percent. In 2016/17, this product was not exported through northern border, while the share of Birgunj dryport increased from 14 to 33 percent. Total exports fell by 54 percent.

Changes in customs points for top exports

- 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 border point (Rasuwa).
- 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 percent in 2013/14) and Tatopani/Rasuwa (6.6 percent) hardly changing.

Changes in customs points for top exports

- 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 2013/14, increased dramatically through TIA in 2016/17.

Changes in customs points for top exports

- 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 percent of the product was exported through Tatopani and the rest through TIA, in 2016/17 almost all of it was exported through TIA.

Export dynamics: starts, stops, continuing

	Value in NPR million						
	No. of products	Value 2016/17	Value 2013/14	Change %	Share in 2016/17	Share in 2013/14	Change contribution, sign adjusted
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			

NPR 10 million threshold: Over 84% of the exports that ceased were in 10 products. Only five products accounted for 61% of the value of new exports. Exports of 13 continuing products, fell by 46%, accounting for 78% of the overall fall in exports to China.

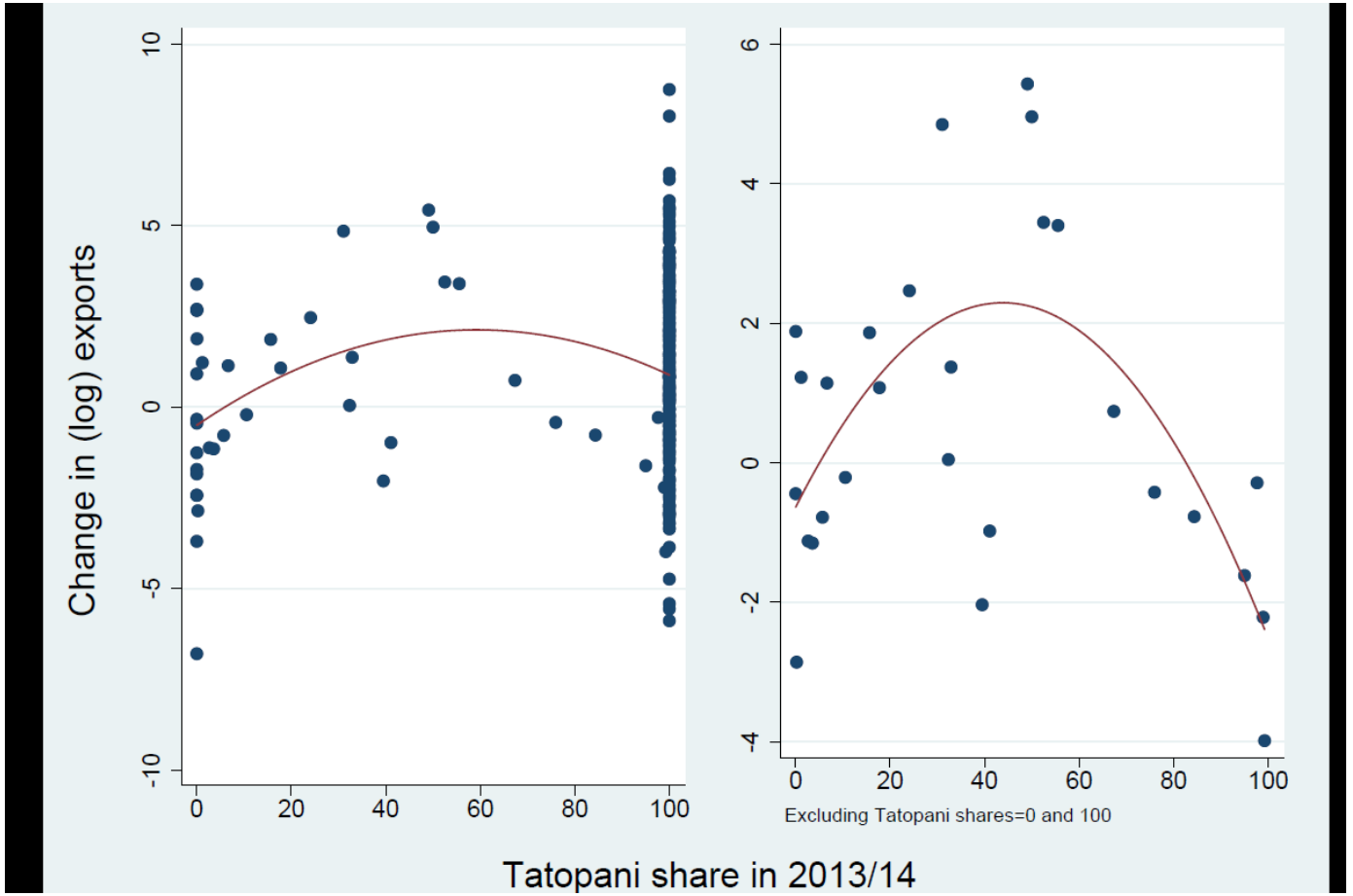
Export dynamics: starts, stops, continuing

- TIA was the most important route taken by new exports (56 percent of total value of new exports), followed by Rasuwa (43 percent).
- 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 percent, albeit driven by just one product with an export value of NPR 86 million) and TIA (8 percent).
- For Rasuwa, the gain from new products was 28 percent 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 percent 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 percent and 43 percent of exports in 2016/17, respectively. Exports through TIA rose by about 40 percent while exports through Rasuwa/Tatopani fell by about 60 percent.

Export dynamics

- In both periods less than 10 percent 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 percent of exports (70 percent in 2013/14 and 61 percent 2016/17).
- The share of exports of such products through Nepal-China border point in total exports from Nepal to China through the same route fell from 59 percent to 37 percent.
- Exports of these products through Tatopani/Rasuwa fell by 76 percent as compared to just 6 percent for exports through other points and 47 percent for exports through all points.
- For these products the share of exports through Nepal-China border point decreased on average, from a median of 35 percent to 6 percent.
- Exports through TIA in both periods were predominantly of products that were exported through Nepal-China border point as well. In contrast, for the vast majority of products, chiefly exported through Tatopani/Rasuwa, the importance of Nepal-China border point did not diminish and their collective exports through the border point fell by 63 percent, a lower rate of decline than that witnessed by exports of products that had more route options.

Initial Tatopani share and export growth



Initial Tatopani share is positively associated with the subsequent export growth up until the share reaches 44, which is half the mean share of 87. Thereafter, a higher Tatopani share is associated with a lower export growth. At the mean share, a 1 percentage point higher Tatopani share is associated with a 12.5 percent lower export growth.

Probability of continuance and new exports

- *Export continuance:* 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 percent.
- *New exports*: A one percentage point lower Rasuwa share is associated with a 2 percent higher exports, while the use of an additional customs point is associated with a 252 percent higher exports.

Imports from China by customs points

	No. of products		Import value (NPR million)		shares		
	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
T.I. Airport	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 Birg	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

Mean imports increased for all points except Mechi and Rasuwa. While mean imports overall increased by 55 percent, mean imports from Rasuwa fell by 11 percent.

Imports from China: No. of customs points used

	No. of customs points used, value in NPR million						
	2013			2017			change in value, %
	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

Share of products exported through at least six points increased from 16 percent to 53 percent.

Import dynamics

- 76% of products imported through Tatopani in 2013 were also imported through at least one more point. 86% in 2017. Accounted for about 79-80% of imports from China.
- There was a distinct shift towards usage of a higher number of points for such products.
- Unlike in the case of exports, non-Tatopani/Rasuwa imports of products that used Tatopani/Rasuwa were higher (by 100%) rather than lower in 2017 relative to 2013. Exports in that category had fallen by 6%.
- The share of imports of such products through Tatopani/Rasuwa in total imports from China through Tatopani/Rasuwa remained stable at 92-93%. Recall that in exports the share had fallen from 59% to 37%.
- Strong indications that import traffic diverted from Tatopani was more amenable to being rerouted using other customs points than export traffic similarly diverted.
- Products that used Tatopani as the most important entry point accounted for 84% of imports through Tatopani in 2013. The share fell to 77% with regard to Rasuwa in 2017. More pronounced decline than for exports (97% to 94%). The collective imports of such products through Nepal-China border had fallen by 23%, whereas their imports through other points had risen by 63%. In contrast, both exports through the northern border and through other routes had declined by about 63% for products that relied on the northern border as the most important exit point.
- Possible reason: products that were imported through Tatopani as the most important point in 2013 had on average more diversified route options than did exportables.

Changes in customs points for top imports

- 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.
  - Imports worth NPR 17.4 billion in 2017, up 130%.
  - Share in total imports in 2017: >13%
  - Share of TIA fell from 99.9% to 91%; increased use of Biratnagar (3.86%), Dryport (2.26%) and Mechi (1.42%).

- HS 31021000 (Urea fertilizer), imported only by sea and using customs points on the Nepal-India border in both years.

Changes in customs points for top imports

- Fresh apples (HS 08081000) were predominantly imported through Tatopani/Rasuwa in both years, and not only did their imports increase by over 200%, the share of their imports through Tatopani/Rasuwa also increased, from 82% to 89%.

Changes in customs points for top imports

- The share of Tatopani/Rasuwa in imports of some key apparel and footwear products, previously at least 98%, 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 2 to 7 and 6, 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 nil to 13% and that of TIA from less than 1% to 17%.

Changes in customs points for top imports

- 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%, with the result that the share of Tatopani/Rasuwa fell from 44 percent to 14%, while the share of TIA increased from 27% to 73%.

Import dynamics: starts, stops and continuing

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		

Continuing products' imports grew by 54 percent, a major driver of the growth in total imports from China.

Import dynamics: starts, stops and continuing

- The bulk of new imports in value terms passed through TIA (30 percent), Birgunj (18 percent), Rasuwa (17 percent), Biratnagar (15.6 percent), Dryport (10 percent) and Bhairahawa (6.6 percent). 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 were 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).

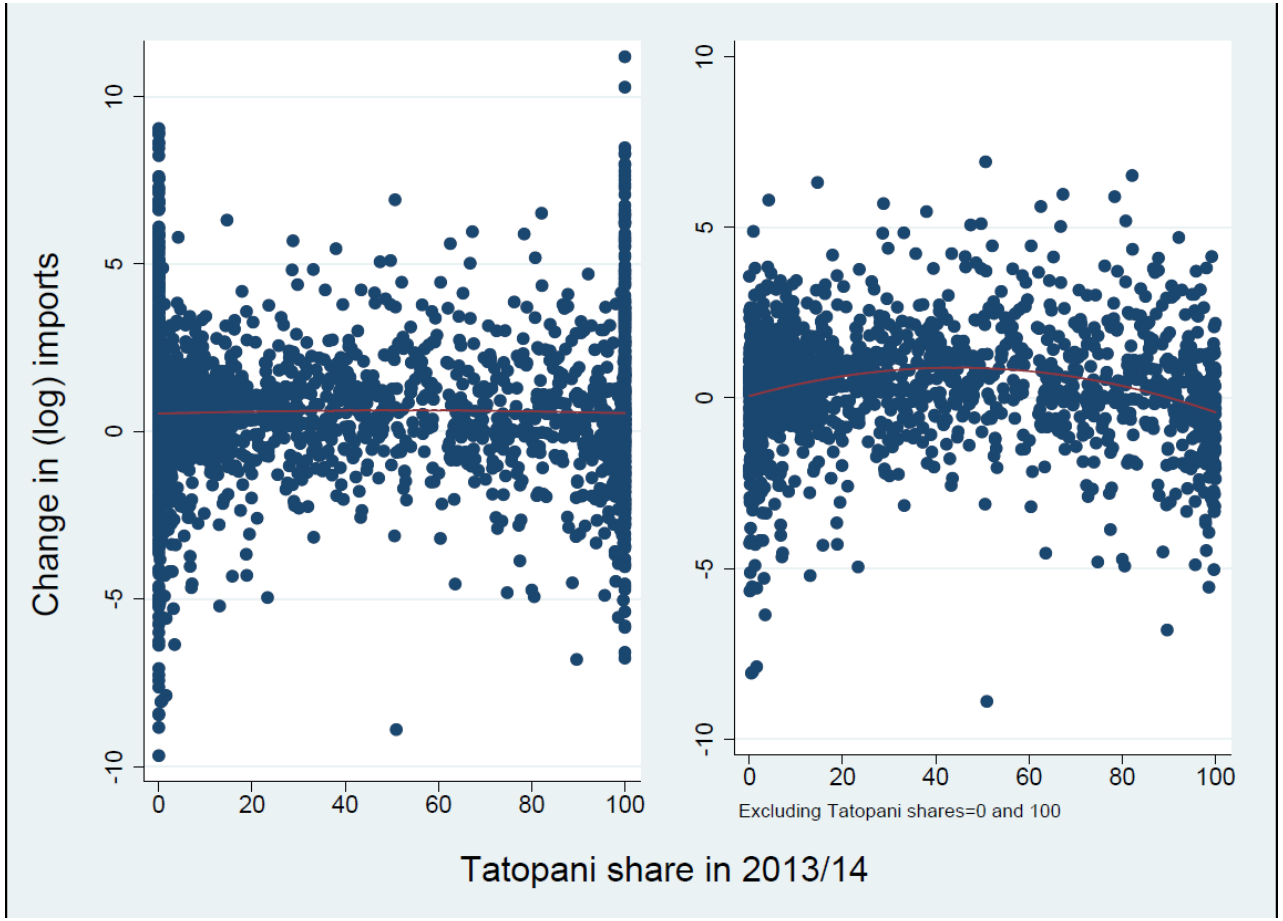
Import dynamics: starts, stops and continuing

- Among 2680 continuing products, imports increased through all points except Tatopani/Rasuwa, which saw a decline of 25%. The number of continuing products also exported through Tatopani/Rasuwa fell from 2050 to 1900, while all other ports saw an increase. Notably, Bhairahawa saw an increase from 108 to 578, with value increasing over sixfold to NPR 2.7 billion.
- Of the continuing products, 2402 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% and 89% of the import value of continuing products in 2013 and 2017, respectively—a fall much higher than for exports.
- This means that 11% of the import value of continuing products in 2017 was explained by flows through new points at the product level. The corresponding proportion for exports was 4%, hinting that rerouting of existing imports through new customs points was likely more pronounced than that of existing exports.
- 77% 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%), Biratnagar (33), Dry Port (10), TIA (<1) and Mechi (48).
- Suggestive evidence of a greater magnitude of rerouting of existing products through new customs points for imports than for exports.

Import dynamics: route transitions

- Among products that used Tatopani/Rasuwa in both years, those that already were using the sea route as an alternative before the earthquake fared better than those that did not use the sea route at all initially.
- There was a general shift towards using both sea and air routes rather than just a single route. Among products that used northern border point in both years or only in the initial year, sea route or a both sea and air routes emerged as more prominent alternatives than air route alone.

Initial Tatopani share and import growth

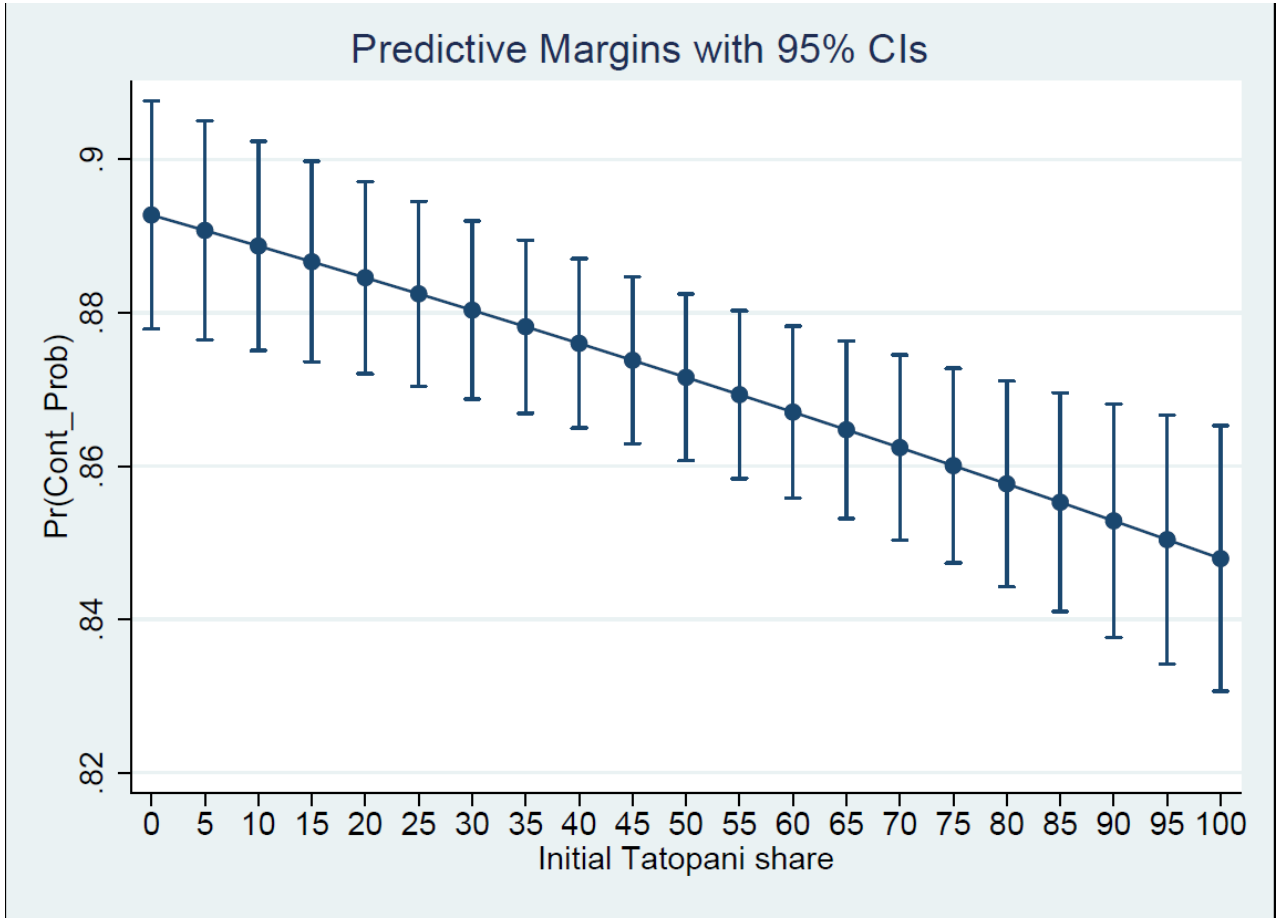


An initial high initial exposure to Tatopani is associated with higher import growth until the share of Tatopani crosses 44%, after which a penalty kicks in. The turning point is higher than the mean initial Tatopani share of 36%. The effect of an increase in Tatopani share of 10 percentage points, at products in the 75th percentile of Tatopani share, is a reduction in import growth of nearly 2%.

Change in Tatopani/Rasuwa share and import growth

- Products that were exclusively imported through Tatopani in 2013
  - A one percentage point increase in the share of Tatopani/Rasuwa was associated with a 1.2% lower growth in imports. An increase in the number of points used by one was associated with a 40% higher growth in imports.
- All continuing products
  - A 1 percentage point increase in the share of Tatopani/Rasuwa was associated with a 0.37% decrease in import growth.
  - The use of an additional customs point was associated with 45% higher growth in imports.

Probability of continuance and new imports



A one standard deviation higher share of Tatopani is associated with a 3 percentage point lower probability of import continuance, which is about 3.5% of the average probability of import continuance (87%).

A 10 percentage point higher share of Rasuwa in 2017 is associated with a 8.8% lower imports among 594 new products. The use of an extra one customs point is associated with a 126% increase in imports.

Time cost of rerouting

- 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 handing trade traffic were brought up to par, it is reasonable to expect the preferred route for some products to revert to an overland route traversing the northern border.

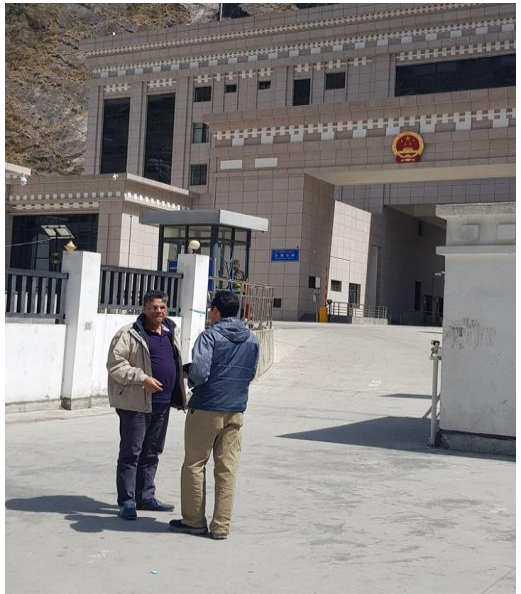
Time cost of rerouting

- The air route could potentially reduce trading/transit times but is also likely more expensive. The sea route raises both trading/transit times and direct transport costs.
- We focus on the time cost associated with taking the sea route and transiting through India for two reasons.
  - Estimates of direct transport costs for our purpose are not available.
  - Because both trading/transit times and direct transport costs increase when taking the sea route (compared to the Tatopani route taken previously), we can interpret an estimate of the cost exacted by the additional trading/transit time as a likely lower bound of the total increase in trade costs.
- Hummels and Schaur (2013, *AEJ*) estimate that each day in transit is equivalent to an ad-valorem tariff of 0.6% to 2.1%.
  - The time taken to bring goods to Kathmandu from China by sea via Kolkata port in India is at least 30 days longer than that via Tatopani or Rasuwa.
  - Combining this with the estimates in Hummels and Schaur (2013) implies that the time cost imposed by the forced detour is equivalent to a tariff of 18% to 62%.

All eyes on Rasuwa

- Tatopani yet to reopen. Repair/reconstruction inexplicably slow.
- Rasuwa: Poor infrastructure, difficult geography, construction activities
    - The route via Galchhi remains closed between 11 am to 5 pm for construction.
- Chinese priority
    - Declared international border crossing in August 2017
    - Well-developed infrastructure
    - Rail connectivity by 2020
    - Part of Belt and Road Initiative.
- Nepali priority
    - Blockade forced Nepal to consider Rasuwa/Kerung as a serious option
    - Potential as a border point for transit of goods through China to and from third countries
    - Visit to Rasuwa by PM flanked by top leaders after poll results in December 2017.
- 82-km Galchhi-Mailung-Syaphrubesi-Rasuwagadhi highway under construction, with Nepal Army, Department of Roads and Chinese government handling different sections. Plans to upgrade Rasuwagadhi customs.
- DPR on cross-border rail to be expedited (April 2018 visit to China by Nepal foreign minister).
- Future potential
    - Travel time for a cargo truck shorter from Rasuwa to Birgunj than from Tatopani to Birgunj once the Galchhi-Syaphrubesi-Rasuwagadhi highway is completed, by close to a day (SAWTEE 2012).
    - Potential of Rasuwa-Kerung to remerge as an entrepot for China-India trade.

Reality check: A study in contrasts



Some issues/questions for discussion

- What are the challenges (or advantages) of trading through Rasuwa, apart from the obvious reason (poor road conditions)?
  - Customs processes/trade facilitation practices (Nepali side/Chinese side)?
  - How do they compare with Tatopani?
  - How does haulage cost and time taken through Rasuwa route compare with that through Tatopani route?
- What would the relative importance of Rasuwa and Tatopani be like once Tatopani is reopened and the Galchhi-Syaphrubesi-Rasuwagadhi highway completed?
- What is the potential of Rasuwa/Kerung, with a proper at least two-lane highway on the Nepali side, to attract some of the sea- and air-borne trade with China?
- Do the answers depend on the type of goods and the origin/destination in China?
- How much bilateral trade can Rasuwa be reasonably expected to handle once the planned road and customs infrastructure upgradation works are completed?
  - An aside: Will the infrastructure be adequate to handle entrepot trade? Assuming China and India are willing.

Thank you