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Exchange rate policy and export performance in a landlocked developing country: The case of Nepal

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April 2015

This paper examines the implications of Nepal's exchange rate policy for its export performance over the period 1980–2010. We first document Nepal's long-standing currency peg against the Indian rupee and that Nepal's real exchange rate appreciated substantially from the late 1990s. We then employ a gravity modeling approach to confirm that this real exchange rate appreciation has adversely affected Nepal's exports, especially to third-country markets. Nepal's exchange rate-related export competitiveness trap provides a motivation to reconsider the current peg.

Exchange rate policy and export performance in a landlocked developing country: The case of Nepal[1]

1. Introduction

The choice of exchange rate regime for a landlocked developing country involves several considerations. One is the effect on exports. Landlocked countries have to rely heavily on bordering countries for connections to international markets, although for some goods this reliance can be reduced by the use of air transport. Higher transport costs typically increase the costs of goods from landlocked countries, placing them at a disadvantage in international markets. This is particularly so for developing countries, the economies of which are often focused on the production of bulky agricultural and manufactured goods rather than light goods and services. The disadvantage could be further exacerbated by the choice of a fixed exchange rate regime in the context of comparatively rapid producer-price inflation, which would combine to result in an appreciation of the real exchange rate against the currency to which the peg applies, and potentially other currencies also. This paper will document that this type of real exchange rate appreciation has occurred in Nepal, to the detriment of Nepal's exports. The results provide a motivation for Nepal to reconsider the current peg of the Nepalese rupee (NRe) against the Indian rupee (IRe).

The mountainous landscape of the Himalayan range has led Nepal to seek access to the sea via India only, with most merchandise exports to third-country markets travelling more than 1,000

kilometers to reach the Bay of Bengal at Kolkata. Nepal's dependence on India and desire for macroeconomic stability have seen it maintain a fixed exchange rate against the IRe, with no change to this rate since 1993. As will be seen, however, Nepal's average producer prices increased at a relatively fast rate since the 1990s, causing a real exchange rate appreciation vis-à-vis the IRe. Our calculations show that Nepal's real exchange rate also appreciated against the currencies of *other* partner countries from the late 1990s to the end of our sample period (2010). The International Monetary Fund (IMF, 2011) assessed that, as of 2010, Nepal's nominal exchange rate was overvalued by 10% or more.[2]

Nepal's export performance has been far from impressive. Merchandise exports were 5% of gross domestic product (GDP) in 2010, well below the global figure of 24% (World Bank, 2014a). The value of Nepal's annual merchandise exports to partners other than India has actually fallen since the year 2000, even in nominal terms. Nepal has a huge goods and services trade deficit (27% of GDP in 2010, or US$4.3 billion; World Bank, 2014a), financed by a combination of foreign aid, worker remittances, and borrowing. The country's trade deficit is often cited as an increasingly important structural challenge facing the nation (Paudel & Shrestha, 2006; Basyal, 2011; Oh & Prasai, 2012; Panday, 2014). Nepal remains a low-income country, with a lower GDP per capita than any other South Asian country except Afghanistan (World Bank, 2014a).

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[2] Panday (2014) also reports that Nepal's real exchange rate was overvalued as of 2008 (the last year of their analysis). The IRe has depreciated against major currencies such as the US dollar, euro, and Japanese yen since 2010, which has somewhat alleviated Nepal's export competitiveness trap. Nepal's peg means that any overvaluation against the IRe remains unaffected by this change.

Our method involves two steps. We first document Nepal's exchange rate policy and the real currency appreciation the country experienced during the late 1990s and the 2000s. We then employ gravity modeling to confirm that Nepal's real exchange rate appreciation has been a significant contributor to its poor export performance. The analysis covers Nepal's merchandise exports to its largest twenty export markets over the period 1980–2010.

Our finding that Nepal's fixed exchange rate has seen it enter an export competitiveness trap presents a case that is consistent with the results of Nilsson & Nilsson (2002), who report that flexible exchange rates boost export performance among a sample of more than 100 developing countries. Our results also provide an illustration of the warning of Ghosh & Ostry (2009) that, when they result in real overvaluations, pegged exchange rate regimes can be economically damaging. In addition to being of direct policy relevance to Nepal, our findings may be of interest to, for example, the other landlocked developing countries that peg their currency to that of a large neighbor (e.g. Bhutan, Lesotho). As far as we are aware, this is the first paper to provide a systematic analysis of the effect of Nepal's real exchange rate on its exports.

This paper is structured as follows. Section 2 presents an analysis of Nepal's exchange rate, documenting the real appreciation it experienced in the late 1990s and 2000s. Section 3 discusses Nepal's export performance. Section 4 details our gravity model. Section 5 presents the gravity model results. The final section concludes.
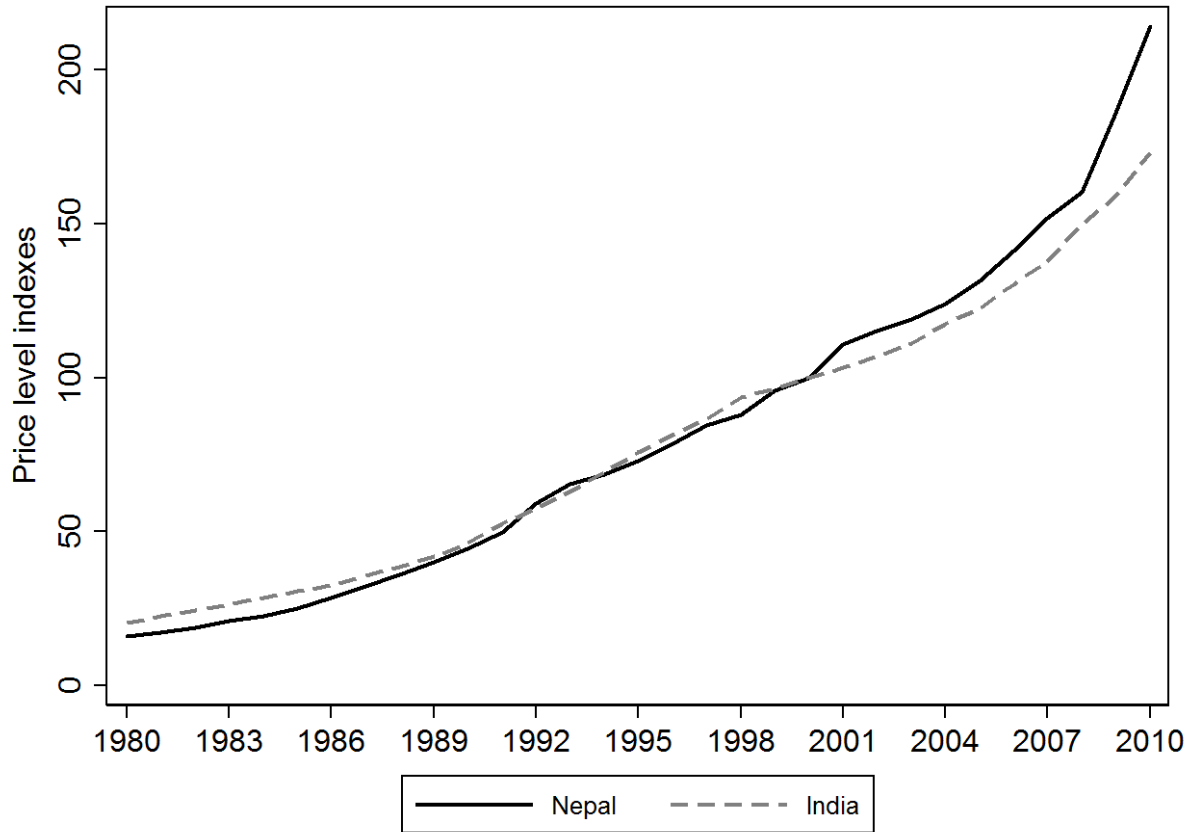
2. Nepal's exchange rate

Recent history has seen the NRe fixed to the IRe, with occasional adjustments until the early 1990s. The most significant revaluation since the 1960s happened in November 1985 when Nepal devalued its currency under an IMF structural adjustment program, with the number of

NRe per IRe increasing by 17% (Acharya et al., 2003). There were three small appreciations of the NRe against the IRe in 1986, 1991, and 1993. Since 1993 the NRe:IRe exchange rate has remained the same: IRe 1 can be traded for NRe 1.60. The Appendix provides a history of Nepal's exchange rate since 1960.

Figure 1 presents price indexes for Nepal and India for the period 1980–2010, with each normalized to 100 in the year 2000. The GDP deflator – a measure of average producer prices – is used as it better reflects changes in the price competitiveness of a country's output than the consumer price index would (noting that the consumer price index covers imported consumer goods). Changes in the price levels for both countries show minor differences in the 1990s, but in the 2000s prices in Nepal increased relatively quickly. The Dutch disease effect of large remittance receipts has been cited as one of the reasons for Nepal's comparatively high inflation in recent years (Nepal Rastra Bank, 2009; IMF, 2012).[3]

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[3] For a review of the effects of remittance inflows to Nepal, see Sapkota (2013). Lartey et al. (2012) found that the Dutch disease effects of remittance inflows are particularly damaging in countries with currency pegs.

Figure 1
Price indexes: Nepal and India, 1980–2010. Year 2000=100.

Source: World Bank's World Development Indicators.

Figure 2 presents three real exchange rate indexes for Nepal for the period 1980–2010. The first is an export-weighted index covering Nepal's twenty largest export markets identified by their merchandise imports from Nepal over the full period. The second is a bilateral index with India (Nepal's large neighbor and largest export market). The third is an export-weighted index excluding India (i.e. for 19 partners). The indexes are based on the following formula:

$$REER = BERI \left(\frac{WP}{DP}\right) \tag{1}$$

where *REER* is the real effective exchange rate index, *BERI* is a nominal exchange rate index, *WP* is the GDP deflator of a partner, and *DP* is Nepal's GDP deflator. The index is for NRe per partner currency, so an increase denotes a depreciation of Nepal's real exchange rate. We

have used initial euro-domestic currency conversion rates listed by the European Central Bank (2013) in our construction of euro-adopting countries' nominal exchange rate indexes. The export-weighted series in Figure 2 use time-invariant weights equal to the merchandise export share of each partner over the full period 1980–2010.[4]

Figure 2

Real exchange rate indexes for Nepal, 1980–2010 (2000=100). A decrease is an appreciation of the real NRe. These series cover a total of 20 partners, weighted by merchandise exports over the period 1980–2010.
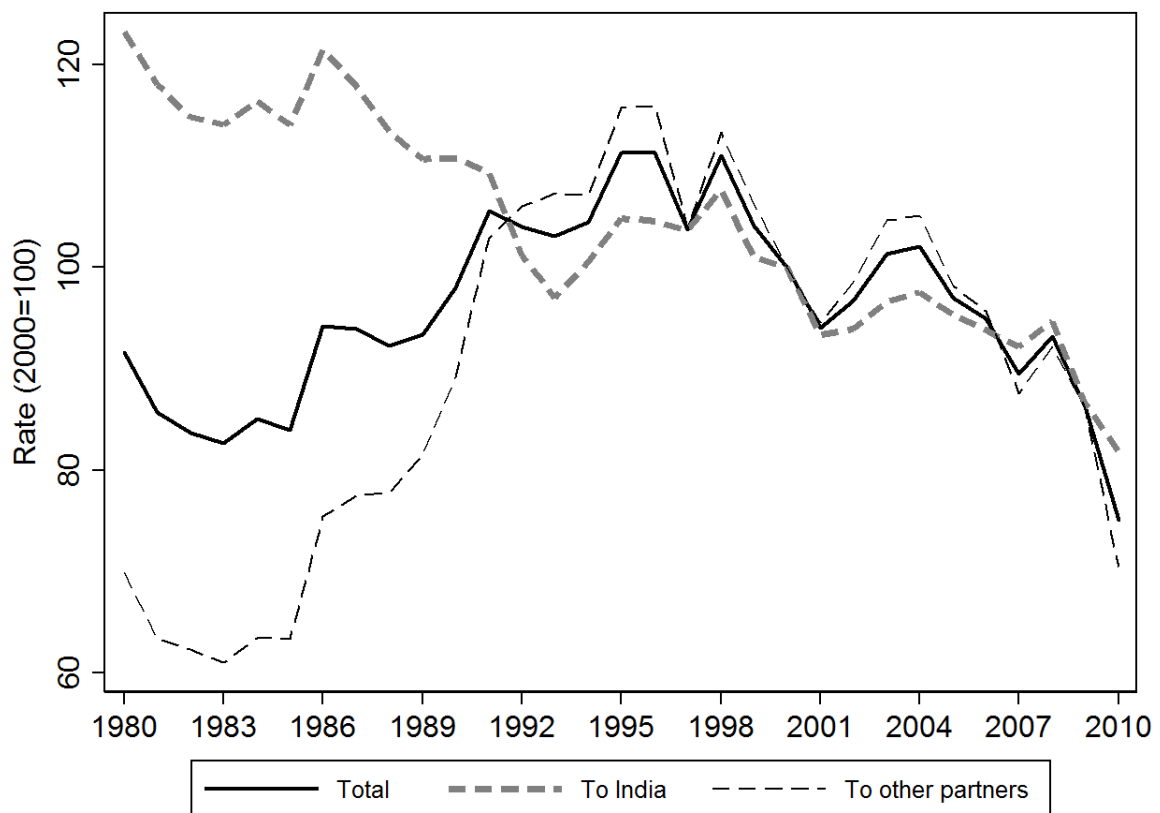
Sources: World Bank's World Development Indicators; World Bank's World Integrated Trade Solution.

Under a fixed nominal peg with the IRe, the behavior of Nepal's weighted real exchange rate depends on movements in prices in Nepal, movements in prices in its trading partners, *and*

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[4] Our gravity model uses the same real exchange rate indexes but without any weighting by export share.

what happens to the IRe's nominal value relative to the currencies of these partners.[5] It can be seen in Figure 2 that since 1998 Nepal's real exchange rate has appreciated against both India's currency and, in particular, the currencies of other export partners (the number of NRe per unit foreign currency decreased by 24% against the IRe and 38% against the 19 other partners' currencies over 1998–2010). In the 1980s and early 1990s, Nepal's real exchange rate depreciated vis-à-vis the 19 other export partners (export weighted) as the nominal value of the IRe fell against these countries' currencies. The real NRe generally appreciated against the IRe in these earlier years.

3. Nepal's exports

Figure 3 shows the current-dollar value of Nepal's merchandise exports to its largest 20 export partners, and separate series for exports to India and the other 19 partners. India accounted for almost 60% of Nepal's total merchandise exports in 2010. Trade relations with India, guided by the Anglo-Nepali Treaty of 1923, have generally been friendly, with the exception of 1989–1990, when India imposed a trade and transit blockade on Nepal (Sharma, 1999). Exports to the 19 other markets have declined in nominal terms since 2000. Nepal's most valuable merchandise export commodities as of 2010 were textile yarn, floor coverings, textile articles, spices, and clothing accessories.

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[5] As noted, there were also four readjustments of the NRe:IRe rate during our study period, the last of which was in 1993.

Figure 3

Merchandise exports of Nepal, 1980–2010. Nominal values. India series constructed using mirror data. Other series in the Figure are constructed without using mirror data.
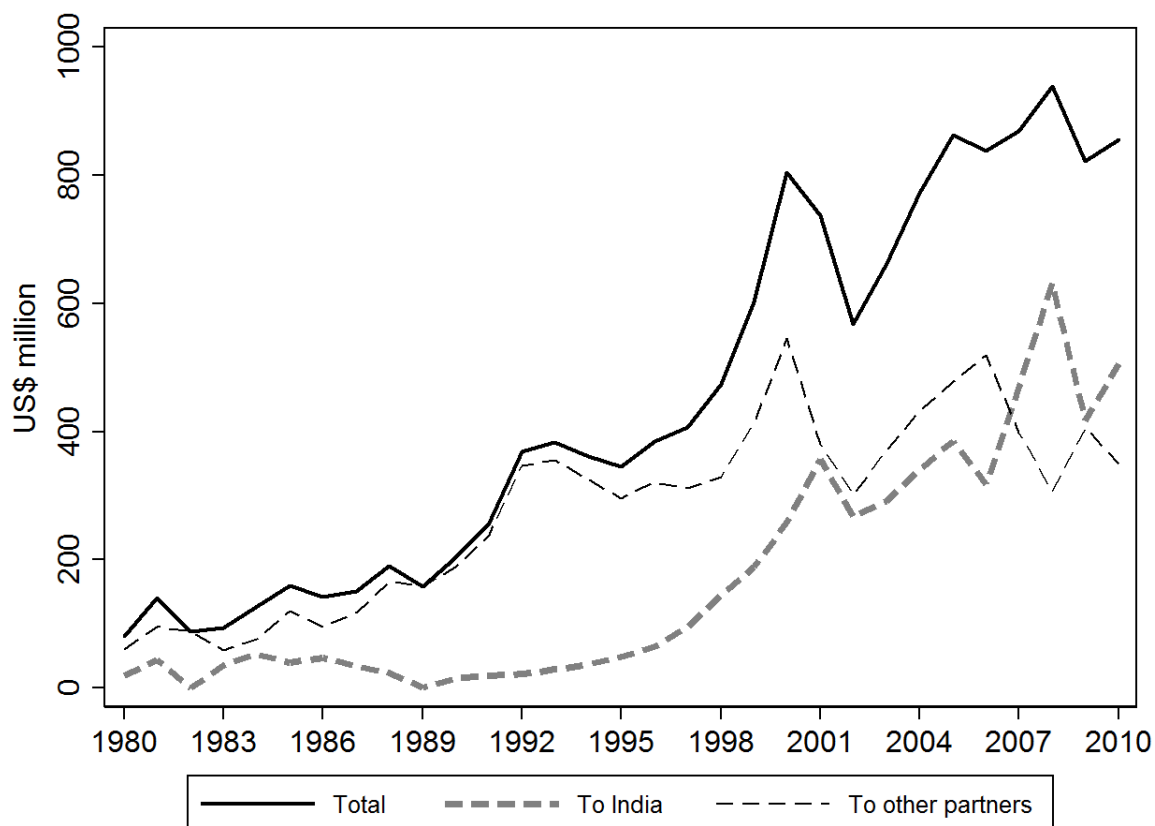
Sources: World Bank's World Development Indicators; World Bank's World Integrated Trade Solution.

Table 1 presents the annual average growth of the nominal value of merchandise exports from Nepal and the world over the period 1961–2010. Nepal's merchandise exports growth rate eclipsed the global merchandise exports growth rate in the 1980s and 1990s. But the decade 2001–2010 was a disappointing one for Nepal's merchandise exports, which recorded annual average growth of only 0.6% per annum in nominal terms, slower than the rate of inflation. This decade witnessed not only an appreciation of Nepal's real exchange rate – the effects of which are the focus of this paper – but also the end of the Multi-Fibre Arrangement (MFA) and interruptions associated with armed conflict involving the Communist Party of Nepal (Maoists). The Multi-Fibre Arrangement (MFA), which concluded on 1 January 2005, was a system of

quotas on textile exports of developing countries to developed countries. During the MFA era, Indian firms set up clothing and garment operations in Nepal to avoid the MFA quota on garment exports from India. When the MFA was abolished, some of these firms exited Nepal (Athukorala & Sharma, 2006). Our estimations will control for these other factors that may have influenced Nepal's merchandise exports over our estimation period.

Table 1
Growth in the nominal value of merchandise exports of Nepal and the world; annual average rate (%, nominal).

Decade	Nepal	World
1961–1970	9.6	9.4
1971–1980	6.4	20.6
1981–1990	9.8	5.8
1991–2000	14.7	6.4
2001–2010	0.6	9.0

Notes: Growth rates are annual compound growth rates over the ten-year periods shown (from the initial base level of each decade, i.e. 1960, 1970, 1980, 1990, 2000).
Source: World Bank's World Development Indicators.

Table 2 presents the value of merchandise exports from Nepal and the share of these exports in global merchandise exports and in Nepal's GDP for 1960–2010. Nepal's merchandise exports equalled only $856 million in 2010, less than 0.01% of global merchandise exports. Nepal's contribution to global merchandise exports halved over the years 2000–2010, and the share of merchandise exports in its GDP fell by two-thirds, to only 5%. Nepal's per capita real GDP growth rate over the decade was 2.4% per annum, equal to the country's long-run average real GDP per capita growth rate over the full period 1980–2010 (World Bank, 2014a). The decade was thus more challenging for Nepal's export sector than for its economy as a whole, consistent with the effects of an export competitiveness trap associated with real exchange rate appreciation.

Table 2
Nepal's merchandise exports, 1960–2010.

Year	Value US$ (million, current prices)	Share of global merchandise exports (%)	Share of Nepal's GDP (%)
1960	17	0.014	3
1970	42	0.014	5
1980	80	0.004	4
1990	204	0.006	6
2000	804	0.012	15
2010	856	0.006	5

Source: World Bank's World Development Indicators.

Figure 4 shows that growth in Nepal's manufacturing exports has eclipsed growth in other types of merchandise exports. Manufacturing exports accounted for 72% of Nepal's merchandise exports in 2010, up from 30% in 1980 (World Bank, 2014a). This increase reflects a degree of industrialization, although Nepal's manufacturing export volumes remain relatively small for a country of its population (27 million people as of 2010). Altogether, Nepal's export performance over recent years has not been impressive, particularly since 2000 and to markets other than India.

Figure 4
Manufacturing and non-manufacturing exports from Nepal to top 20 partners, 1980–2010.
Nominal values, constructed using mirror data.
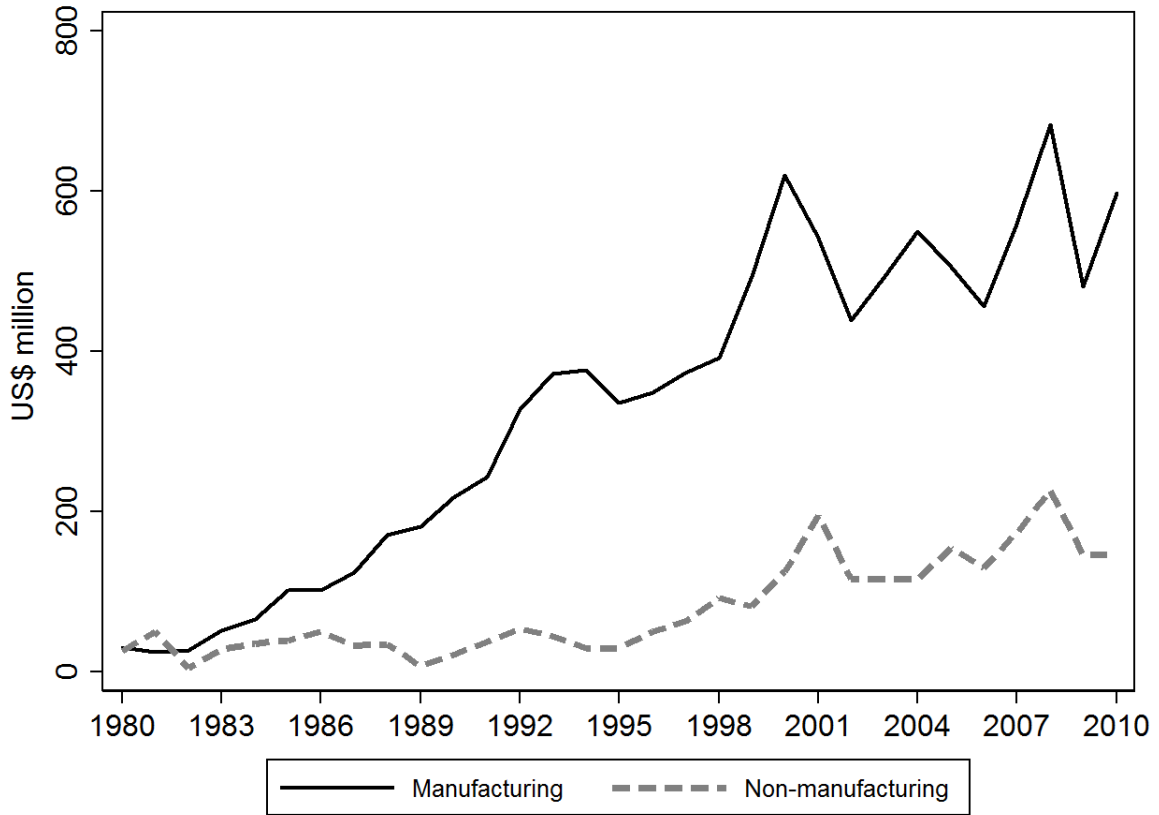
Source: World Bank's World Integrated Trade Solution.

4. Gravity model approach

The gravity model, proposed by Tinbergen (1962) and known as a "workhorse" by international trade economists (Bergeijk & Brakman, 2010), explains trade flows in terms of "mass" variables such as the GDPs of the reporting and partner countries, as well as the geographic distances between them. The real exchange rate is often used to measure price factors. To examine the effects of Nepal's real exchange rate appreciation on its exports, we use a Nepal-centred augmented gravity model with partner fixed effects, of the form:

$$EXPORTS_{j,t} = f\{\pi_j, L(GDPS)_{j,t}, L(POPS)_{j,t}, L(REER)_{j,t}, TREND_t, L(FDI)_t, TARIFF_t,$$

$$INDIBLOCK_t, RTA_{j,t}, END\_MFA_t, MAO_t, \varepsilon_{j,t}\}$$

(2)

where j is partner, t is year, and L denotes the natural logarithm. π_j represents partner fixed effects, which capture time-invariant variables such as the distance between Nepal and its partners and remove the need to explicitly control for these factors. $\varepsilon_{j,t}$ is a stochastic error term, assumed to have a normal distribution. We present standard errors that are robust to heteroskedasticity and clustered by partner. Details of the variables and their expected signs are as follows.

EXPORTS: Merchandise exports from Nepal, in nominal US$. Mirror data (the imports to other countries) are used as these are likely to be more accurate for a developing country such as Nepal. Following Anderson & van Wincoop (2003), Baldwin & Taglioni (2006), and De Benedictis & Taglioni (2011) we use nominal values to avoid estimation biases associated with deflating. For the reason of data availability we focus on merchandise exports by partner rather than total exports (which include tourism services and other flows).

GDPS: The product of the nominal-US$ gross domestic products of Nepal and the partner. Other gravity modeling studies to include the log of the GDP products as a mass variable include those of Baldwin & Taglioni (2006) and Oh & Prasai (2012). Expected sign: positive, as larger economic mass by exporter/importer should be associated with greater trade flows.

POPS: The product of the populations of Nepal and the partner, to capture the size of producer and consumer markets in terms of population. Expected sign: positive.

REER: Bilateral real exchange rate index with partner, calculated using the formula in Eq. (1). The REER captures the relative profitability of exporting compared to selling in the domestic

market. An increase is a depreciation. We have used initial euro-domestic currency conversion rates listed by the European Central Bank (2013) in our construction of euro-adopting countries' nominal exchange rate indexes.[6] Year 2000=100. Expected sign: positive.

TREND: We include a linear time trend to capture secular changes in Nepal's exports over time. The time trend also serves as a deflator of the nominal US$ series used for the dependent and some explanatory variables.

FDI: FDI inflow into Nepal in nominal US$. Used to measure (foreign-funded) additions to the supply capacity of Nepal's economy. Expected sign: positive.

TARIFF: Nepal's import tariff rate (%), applied, weighted mean for all products. Expected sign: negative, if reducing Nepalese tariffs promotes Nepalese exports as postulated by the Lerner (1936) symmetry theorem. This theorem suggests that import tariffs act as an export tax by reducing the relative profitability of exporting compared to selling in the domestic market. In cases of missing observations – a problem for early years in particular – we have used the rate for an adjacent year.

INDIBLOCK: Indian trade blockade: 1 for 1989 and 1990; 0 otherwise. This variable captures the impact of the Indian trade and transit blockade imposed on Nepal. Expected sign: negative.

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[6] Results are similar excluding partners that adopted the euro.

RTA: Regional trade agreement dummy for the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), signed in February 2004. Equals 1 for Bangladesh, India, and Sri Lanka from 2004 onwards; 0 otherwise. Expected sign: positive.

END_MFA: Dummy for years after the ending of the Multi-Fibre Arrangement (MFA). 1 for 2005 and after; 0 otherwise. Expected sign: negative, as Nepal's garments sector is thought to have been advantaged by the MFA arrangements.

MAO: Dummy for years in which there was a city-focused armed conflict by the Communist Party of Nepal (CPN)-Maoists. 1 for 2002–2007; 0 otherwise. Expected sign: negative.

Following Santos Silva & Tenreyro (2006) we estimate Eq. (2) using the Poisson pseudo maximum likelihood (PPML) estimator. PPML, a multiplicative estimator, has the advantage of retaining instances of zero exports, so allowing estimation over a balanced sample (cf. estimation approaches using a logged dependent variable). PPML estimation is also consistent in the presence of heteroskedasticity. The dependent variable enters in level form, but coefficient estimates can be interpreted as if the dependent variable were in log form in an additive estimation such as ordinary least squares (OLS). The coefficients on logged dependent variables (such as the logged real exchange rate index) are elasticities.

Specifications of Eq. (2) will be presented for both (1) total merchandise exports to each country and (2) manufacturing exports, which dominate Nepal's merchandise export structure. We present estimates with the basic gravity variables (the GDP, population, real exchange rate, and time trend measures) and also with the full set of variables in Eq. (2). We also present results excluding India from the partner set in order to investigate the degree to which

movements in Nepal's real exchange rate have affected exports to markets other than the one to which the peg applies. The rationale for including the set of controls is to isolate the effect of Nepal's real exchange rate on exports to each partner country from the effects of other economic and political factors.

Our dataset is a balanced panel of Nepal's 20 largest export markets over 1980–2010. The sample thus has 620 observations (20 partners; 31 years). The 20 partner countries accounted for 96% of Nepal's merchandise exports over the study period. In order of weight in Nepal's export basket over the period, these partners are: India, United States, Germany, United Kingdom, France, Switzerland, Italy, Japan, Canada, Belgium, China, Austria, Singapore, Netherlands, Spain, Sri Lanka, Turkey, Pakistan, Bangladesh, and Australia.

Our source of exports data is the World Integrated Trade Solution (WITS) dataset (World Bank, 2014b). GDP, tariff, and the required variables to calculate the REER index are from the World Bank (2014a). The FDI data are from the United Nations Conference on Trade and Development (UNCTAD, 2012).

One concern is potential reverse causality from the GDP term to exports. Our results on the *L(REER)* term are similar in estimates that exclude the GDP term, however. We also obtain similar results in specifications using a log rather than a linear time trend.

5. Gravity model results

Table 3 presents our estimates of Eq. (2). The coefficient of the real exchange rate variable (REER) is statistically significant for total merchandise exports (columns 1–2) and manufacturing exports (columns 3–4), indicating that a 1% decrease in the NRe to foreign

currency exchange rate (i.e. an appreciation of Nepal's currency) is associated with a lowering of Nepal's merchandise exports to that partner of around 1.3–1.5%, on average. This confirms that Nepal's appreciating real exchange rate since 1998 has contributed to lowering Nepal's merchandise exports, as economic theory would suggest (Corden, 2002). We obtain similar results controlling for the partial or full set of controls, and using either total merchandise exports (columns 1–2) or exports of manufactured goods (columns 3–4).[7]

The log of the product of the GDPs of exporter and importer is statistically significant in all estimations, with the coefficients indicating that a 1% increase in the GDP product on average is associated with an increase in Nepal's exports of 0.5–0.7%, *ceteris paribus*. The coefficients for the log product of the populations are large and highly significant, suggesting that population size rather than economic size is of most relevance to changes in Nepal's export pattern over time. The time trend signals a secular decline in Nepal's exports on average, holding the other variables constant.

The results on the other controls in Table 3 are also of interest. The FDI variable has a positive coefficient and is statistically significant in column 2, consistent with other evidence that FDI is an important contributor to economic success (Sharma, 2003; Burke & Ahmadi-Esfahani, 2006). The coefficient on Nepal's import tariff rate indicates that reductions in import tariffs in Nepal have contributed to export performance, in line with the Lerner (1936) symmetry theorem.[8] The regional trade agreement coefficients are positive, but only significant at the 10%

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[7] We also obtain similar results if we restrict our estimation sample to the period from 1998 on, when Nepal saw overall real exchange rate appreciation.

[8] Our need to extrapolate the Nepal tariff rate variable – particularly for early years – reduces our confidence in this result, although we obtain a similar estimate if we drop the early years.

level. We find evidence that the ending of the MFA and the period of the Maoist movement were times of abnormally poor export performance, particularly for manufactured products.

Table 3
Gravity model PPML estimation results.
Dependent variable: Nepal's annual merchandise exports to each partner

	Total		Manufacturing	
	(1)	(2)	(3)	(4)
Ln (Product of GDPs)	0.60***	0.46***	0.73***	0.54***
	(0.11)	(0.15)	(0.10)	(0.15)
Ln (Product of populations)	8.32***	7.11***	10.25***	8.89***
	(1.22)	(1.55)	(1.59)	(1.97)
Ln (Real exchange rate index)	1.46***	1.34***	1.49***	1.36***
	(0.36)	(0.34)	(0.34)	(0.30)
Time trend	-0.27***	-0.23***	-0.33***	-0.27***
	(0.05)	(0.06)	(0.05)	(0.06)
Ln (FDI)		0.09*		0.07
		(0.06)		(0.06)
Nepal's import tariff rate (%)		-0.02**		-0.03***
		(0.01)		(0.01)
Indian trade blockade		-0.03		0.17*
		(0.22)		(0.10)
Regional trade agreement		0.42*		0.53*
		(0.23)		(0.29)
Ending of MFA		-0.22***		-0.31***
		(0.08)		(0.08)
Maoist movement		-0.16**		-0.19***
		(0.07)		(0.06)
Partner fixed effects	Yes	Yes	Yes	Yes
Observations	620	620	613	613
R-squared	0.94	0.94	0.93	0.94

Notes: ***, **, and * indicate 1%, 5%, and 10% level of statistical significance, respectively. Robust standard errors clustered by partner are in parentheses. There are 7 instances of missing data on manufacturing exports.
Source: Authors' calculations using data from the World Bank's World Development Indicators; World Bank's World Integrated Trade Solution; the United Nations Conference on Trade and Development's UNCTADstat; and the European Central Bank's website.

Table 4 presents estimates excluding India, i.e. for the other 19 partners. The coefficients of the real exchange rate variable are larger in size, suggesting that exports to third countries are

particularly sensitive to the real exchange rate. This makes sense, as Nepal faces heightened price competition when exporting to more distant locations. Interestingly, we find that the Indian trade blockade saw increased exports to these third-partner countries, presumably because there was an uptick in air-transported exports to alternative markets in response to the border closure. The other results are generally similar.

Table 4
Gravity model PPML estimation results, excluding India.
Dependent variable: Nepal's annual merchandise exports to each partner

	Total		Manufacturing	
	(1)	(2)	(3)	(4)
Ln (Product of GDPs)	0.26	0.32	0.39	0.43
	(0.27)	(0.24)	(0.27)	(0.27)
Ln (Product of populations)	4.48***	4.16**	6.14***	5.84***
	(1.69)	(1.74)	(1.17)	(1.23)
Ln (Real exchange rate index)	1.93***	1.73***	1.92***	1.73***
	(0.34)	(0.31)	(0.34)	(0.30)
Time trend	-0.13*	-0.14**	-0.19***	-0.19***
	(0.07)	(0.07)	(0.06)	(0.06)
Ln (FDI)		0.12**		0.09*
		(0.06)		(0.05)
Nepal's import tariff rate (%)		-0.03***		-0.03***
		(0.01)		(0.00)
Indian trade blockade		0.19***		0.27***
		(0.05)		(0.06)
Regional trade agreement		-1.40***		-0.41
		(0.25)		(0.57)
Ending of MFA		-0.18*		-0.23***
		(0.09)		(0.08)
Maoist movement		-0.24***		-0.25***
		(0.07)		(0.07)
Partner fixed effects	Yes	Yes	Yes	Yes
Observations	589	589	582	582
R-squared	0.91	0.93	0.92	0.93

Notes: ***, **, and * indicate 1%, 5%, and 10% level of statistical significance, respectively. Robust standard errors clustered by partner are in parentheses. There are 7 instances of missing data on manufacturing exports.
Source: Authors' calculations using data from the World Bank's World Development Indicators; World Bank's World Integrated Trade Solution; the United Nations Conference on Trade and Development's UNCTADstat; and the European Central Bank's website.

6. Conclusion

This paper has examined the role of Nepal's real exchange rate appreciation in explaining the country's poor export performance. Our results imply that, after controlling for other relevant variables, real exchange rate appreciation has had a materially adverse effect on Nepal's exports, with the appreciation in Nepal's real exchange rate vis-à-vis the 20-partner group over the period 1998–2010 being associated with a reduction in Nepal's merchandise exports of around two-fifths (relative to the counterfactual of an unchanged real exchange rate). Nepal's real exchange rate appreciated by more against third-partner currencies (see Figure 2), meaning that exports to these other markets have been particularly adversely affected.

The results highlight export-competitiveness effects of the practice of pegging the Nepalese rupee to the Indian rupee. In the first decade of the new Millennium, the currency peg brought Nepal into an export competitiveness trap as domestic inflation and appreciation of the IRe saw the real exchange rate become overvalued (IMF, 2011, 2012; Panday, 2014). This situation need not always be the case, as depreciations of the IRe may benefit Nepal's export competitiveness at other times. A key feature of Nepal's current exchange rate regime, however, is that real exchange rate appreciations – particularly against third-country markets – can occur for reasons quite unconnected to Nepal's economy (i.e. due to appreciation in the IRe relative to other currencies). Comparatively rapid inflation in Nepal adds to the problem.

Exchange rate regime choice involves several considerations. When it comes to avoiding export competitiveness traps, the results suggest that Nepal may wish to reconsider its current peg, either by an adjustment to the peg rate or by moving to a more flexible exchange rate system. Nepal could perhaps learn lessons from Botswana, which maintains a crawling peg, or other landlocked developing countries such as Paraguay that have floating exchange rates.

Several scholars (e.g. Patnaik et al., 2011; Rajan, 2012) have noted that there is a gradual move to more flexible exchange rates among emerging economies in Nepal's region.

Nepal also has other opportunities to boost its export performance. One is to focus on improving transport infrastructure so as to reduce transport costs to world markets. A fruitful option might be the improvement of airports to facilitate the export of high-value low-weight goods. Nepal may be landlocked, but it is not air locked. An increasing emphasis on facilitating air-freighted exports may be a useful strategy to reverse the decline in Nepal's goods exports to countries other than India.

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Appendix. Selected history of exchange rate of the Nepalese rupee vis-à-vis Indian rupee.

Date	Exchange rate NRe:IRe	Notes
13 April 1960	1.60	Fixation of a new rate by the Nepal Rastra Bank (NRB). Introduction of unlimited convertibility with IRe.
6 June 1966	1.01	Appreciation of NRe due to a decision not to follow India's sharp devaluation.
8 December 1967	1.35	Devaluation of the NRe for competitiveness reasons.
22 December 1971	1.39	Decision to allow slight depreciation against IRe.
22 March 1978	1.45	Decision to allow depreciation against IRe.
30 November 1985	1.70	Devaluation of NRe under IMF structural adjustment program.
31 May 1986	1.68	Adjustment involving slight appreciation against the IRe.
1 July 1991	1.65	Adjustment due to change in the exchange rate of IRe with US$.
12 February 1993	1.60	Adjustment due to change in the exchange rate of IRe with US$.

Source: Adhikary (2005).

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