All These Worlds are Yours, Except India: The Effectiveness of Export Cash Subsidies in Nepal*

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Abstract

This paper evaluates the effect of an ad-valorem cash subsidy on exports on firm-level export performance. The Cash Incentive Scheme for Exports (CISE) is a subsidy offered by the government of Nepal to firms based on their exports of a select group of products to countries other than India. Using an array of matching estimators, we find that the subsidy has delivered a positive effect on treated firms' exports of eligible products sold outside India—primarily through the extensive margin—over the period 2012-2014. We do not find any significant effect on exports to India nor on exports of non-eligible products sold elsewhere. The potential of the subsidy to foster diversification and promote exports appears to be hindered by the fact that treated firms were predominantly large exporters that were selling eligible products outside India even before the scheme began to be implemented.

Keywords: Export Subsidies; Export Diversification; Export Margins; Impact Evaluation; Least Developed Countries; Nepal.

JEL classification: F13; F14; F61; O24.

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1 Introduction

Export diversification matters for policy makers in developing countries. A highly concentrated export basket can result in high aggregate volatility that is difficult to offset by fiscal or monetary policy (Brainard and Cooper, 1968; de Ferranti et al., 2002); it is also considered a necessary condition to spur industrialization and development (Prebisch, 1950; Singer, 1950; Young, 1991; Hausmann et al., 2007), and is frequently seen as a desirable policy objective in its own right (Bhagwati and Srinivasan, 1969; Panagariya, 2000; Cadot et al., 2011).

It is hard to find a country for which the urgency for trade diversification is a more pressing issue than for Nepal (WTO, 2012). In 2011, for instance, its top five HS 6-digit export products accounted for one-third of all exports. The geographic concentration of its exports is even more dramatic. Landlocked, wedged between China and India and the third poorest country in Asia, in 2011 Nepal sold 85% of its exports to only 5 countries, with 80% of these accounted for by India alone. In an effort to promote export diversification and reduce its trade deficit, the government of Nepal introduced in 2012 the Cash Incentive Scheme for Exports (CISE)—an ad-valorem cash subsidy to exports of a select group of products *sold in countries other than India*.[1]

Our objective in this paper is to estimate the impact of the CISE export subsidy on firm-level export performance. To do so, we combine customs transaction data for the period 2011-2014 with information on subsidy disbursements to individual firms. We employ a double-robust matching estimator with an array of weighting schemes to control for the non-random allocation of subsidies to firms; we use information from 2011—the year before the subsidy began to be offered—to estimate the probability that a firm selling eligible products to countries other than India (what we refer to as 'the rest of the world' hereafter) received the CISE subsidy after 2012. We estimate the impact of the subsidy on the extensive and intensive margins of exports directly targeted by the subsidy—i.e. eligible products

[1] Fuelled by large inflows of remittances from abroad, Nepal's chronically high trade deficit has consistently worsen since 2000, reaching 24% of GDP in 2011.

sold in countries other than India. Exploiting the fact that most exporters in our data sell multiple products across several destinations, we also investigate whether the export subsidy affects product-destination combinations that are not directly targeted under the CISE scheme—namely, eligible and non-eligible products sold in India and non-eligible products sold elsewhere.

The CISE scheme provides us with a rare opportunity to investigate how a 'textbook' ad-valorem subsidy to export sales affects export performance at the firm-level. To the best of our knowledge, we are the first to do so.[2] While export subsidies, broadly defined, are ubiquitous across the world, there are fewer empirical studies investigating them than almost any other instrument of commercial policy (WTO, 2006). As a case in point, the chapter by Bown and Crowley (2016) entitled "The Empirical Landscape of Trade Policy" in the Handbook of Commercial Policy edited by Bagwell and Staiger does not consider export subsidies (see footnote *e*, page 7) and the chapter on "Subsidies and Countervailing Duties" by Lee (2016) only reviews theoretical research.

There are two main reasons behind the dearth of empirical work on export subsidies, both of which we overcome effectively in this paper. First, export subsidies take a wide variety of forms. Examples include tax breaks and exemptions, access to public utilities at below-market prices and soft loans granted to firms located in special economic zones; export credit guarantees; duty-free access to foreign intermediate inputs and capital goods; co-financing grants for training, investment in physical capital, R&D, and business development conditioned on export performance, among others.[3] This remarkable degree of heterogeneity in addition to the frequent imposition of a variety of eligibility requirements to enjoy these incentives makes them hard to define precisely. In contrast, the CISE scheme is a simple, well defined, ad-valorem subsidy granted on the basis of export sales. Since we observe

[2]Earlier work on export subsidies relied on country- or industry-level data; see e.g. Balassa (1978) and the papers reviewed in Rodrik (1995).

[3]Farole and Akinci (2011), Wang (2013), Defever and Riaño (2017), and Defever et al. (forthcoming) study subsidies offered in special economic zones; Felbermayr and Yalcin (2013) investigate export credit guarantees; Fernandes and Tang (2012) and Brandt and Morrow (2017) look at export processing regimes; Görg et al. (2008) and Cadot et al. (2015) study co-financing grants provided to exporters.

which products firms export and where from customs data, we can readily identify the firms that are eligible to receive the subsidy; crucially, however, we observe which firms actually receive the subsidy. These are key advantages relative to other papers in the literature. Defever and Riaño (2017) and Defever et al. (forthcoming), for instance, can identify firms that are eligible to receive subsidies based on their export intensity and location in a special economic zone, but do not observe which firms are subsidized and how, since these zones offer a broad range of incentives. Kalouptsidi (2018) does not observe observe which firms are subsidized either and therefore needs to develop a structural model to infer the presence and magnitude of subsidies received by shipbuilders in China. Some manufacturing surveys (e.g. in China and Colombia) provide information on total subsidies received by firms, thus bundling together disbursements from different incentive schemes (e.g. Girma et al., 2009; Helmers and Trofimenko, 2013).

A second reason for the paucity of data and empirical work on export subsidies is that they are prohibited by the World Trade Organization's (WTO) Agreement on Subsidies and Countervailing Measures (ASCM). Therefore, governments have a strategic incentive to not report these to avoid challenges by other WTO members and potential countervailing duties; see e.g. WTO (2006) and Haley and Haley (2013). However, since Nepal is a WTO member classified as a least developed country by the United Nations, it is not subject to the disciplines of the ASCM, allowing it to offer a direct cash subsidy to exports like the CISE scheme.[4] It is worth noting that cash subsidies granted to exports of specific products to certain destinations are commonplace among Nepal's neighbors. Bangladesh, for instance, offers these (with ad-valorem rates as high as 30%) to a wide range of products such as frozen shrimp, jute and straw products, leather goods and garments among others.[5] India also provides cash incentives ranging from 2 to 5% of exports to more than 100 products under its Merchandise Exports Incentive Scheme with subsidy rates varying according to the

[4]Based on the principle of Special and Differential Treatment for Developing Countries enshrined in the WTO agreements. See Article 27.2.(a) of the ASCM.

[5]See http://www.bangladeshcustoms.gov.bd/trade_info/export_incentives.

country to which the goods are sold.[6]

Ours is the first paper to evaluate the impact not only of export subsidies, but also of export promotion services on firm-level export performance in a least developed country. The existing literature, particularly that studying the effect of export promotion agencies, has focused on middle-income and developed countries (see Table 1 of Van Biesebroeck et al., 2016). Our paper also contributes to the literature on the question of whether the principle of Special and Differential Treatment for Developing Countries encourages these countries to export more. While most empirical work in this area focuses on the role of non-reciprocal preferences granted by developed countries (see the review by Ornelas (2016)), we examine instead the use of otherwise prohibited export subsidies. In so doing, we also complement the theoretical work investigating the normative properties of the WTO's subsidy rules (Bagwell and Staiger, 2006; Lee, 2016). Naturally, our paper is closely related to the flourishing literature that evaluates the effect of export promotion policies on export outcomes (Álvarez and Crespi, 2000; Bernard and Jensen, 2004; Volpe Martincus and Carballo, 2008; Görg et al., 2008; Volpe Martincus and Carballo, 2010; Cadot et al., 2015; Van Biesebroeck et al., 2015, 2016; Munch and Schaur, 2018) both in terms of the scope of our research question and the empirical strategy we employ.

Our results can be summarized as follows. Firms that received the subsidy experienced an 11-12% increase in the number of export transactions of targeted products in the year they received the incentive. This response occurs through an increase in both the number of products exported and foreign markets reached—although the impact of the subsidy on the latter margin is about twice as big as on the former. The effect on the value of export sales, while positive, is less precisely estimated. Our results shed light on the barriers to growth faced by exporters in developing countries. Nepalese firms take advantage of the CISE subsidy by adding new markets and products to their exporter scope, rather than by increasing their sales in markets where they already have a presence—at least in the short

[6]See http://dgft.gov.in/sites/default/files/pn0617.pdf.

run. This response is similar both in nature and magnitude to what the literature studying the impact of services provided by export promotion agencies has found in other developing countries (Álvarez and Crespi, 2000; Volpe Martincus and Carballo, 2008, 2010; Cadot et al., 2015); it is also consistent with the findings of the randomized field experiment conducted by Atkin et al. (2017) showing how difficult it is for Egyptian rug exporters to establish export relationships beyond trial orders. The export subsidy does not have any discernible impact on the exports of non-targeted product-destination pairs.

While we do not carry out a cost-benefit analysis of the CISE scheme, our paper raises questions about the cost effectiveness of this instrument to achieve Nepals international trade objectives. As we discuss in more detail in Section 5, the annual expenditure of the CISE scheme exceeds the entire budget of export promotion agencies in richer countries. This is all the more salient given the tight constraints that Nepal faces on its public finances in the aftermath of the disastrous earthquake that afflicted it in 2015, which produced economic losses in the order of 10 billion US dollars.[7]

The rest of the paper is organized as follows: Section 2 describes the CISE export subsidy and its eligibility requirements. Section 3 introduces our data and provides summary statistics on export patterns in Nepal and the usage of the CISE export subsidy. Section 4 discusses the potential effects of a cash subsidy on export margins in light of the theoretical literature and explains our empirical strategy to estimate the causal effect of the CISE program. Section 5 presents our results. Section 6 concludes.

2 The Cash Incentive Scheme for Exports

The Cash Incentive Scheme for Exports (CISE) is an ad-valorem cash subsidy granted by the government of Nepal to firms on the basis of their exports of 24 industrial and 7 agricultural products sold in countries other than India.[8] The list of eligible goods and their respective

[7] This is also the reason why we only have data until 2014.

[8] What the Nepalese Customs Act Rules and Regulations refers to as "third countries".

subsidy rates is presented in Table 1. The products included in the scheme were chosen because of their high export potential as determined by the Nepal Trade Integration Strategy report drawn by the Ministry of Commerce and Supply in 2010. The objectives of the scheme are to increase exports, improve the country's balance of payments position and foster export diversification.

Table 1: Eligible Products for CISE Export Subsidy and Subsidy Rates

Industrial Products		Agricultural Products
2% subsidy rate	1% subsidy rate	1% subsidy rate
Processed coffee	Ready-to-eat chow chow	Seeds
Semi-processed hides & skins	Bran	Cut flowers
Handicraft & wooden craft	Wheat flour	Fruits
Crust skin	Polyester or viscous yarn	Vegetables
Handmade paper & rel. products	Ready-made garments	Ginger
Processed honey	Polyester textile yarn	Cardamom
Tea	Vegetable fat/oil	Herbs
Carpet & woolen products	Transfer	
Pashmina & silk products	Ball pens	
Processed herbs & essential oils	Lentils	
	Precious & semi-precious jewelry	
	Gold & silver ornaments	
	Turmeric	
	Dried ginger	

Source: CISE 2070, Government of Nepal Ministry of Commerce and Ojha (2015).

Subsidy payments are disbursed by the Nepalese Central Bank (*Nepal Rastra Bank*) upon receiving evidence that payment for an export transaction in foreign exchange has been deposited in a Nepalese bank. Monies are disbursed on a 'first come first served' basis, which implies that not all eligible export transactions necessarily receive the subsidy. The initial budget allotted to the scheme in 2012 was 240 million Nepalese rupees (approximately 3.2 million US dollars) and was increased to 300 million rupees in 2013. The subsidy is available both to direct exporters and "Export Trading Houses" (i.e. wholesalers), which are required to transfer 50% of the cash payment to the producer of the good in question.

There are two reasons adduced by the Ministries of Finance and Commerce and Supply to justify the exclusion of exports to India from the CISE scheme. First, as noted above, one of the goals of the program was to promote the diversification of Nepalese exports—particularly away from India—which in 2010 accounted for approximately 70% of the country's exports. The second reason is that the movement of people and goods between India and Nepal has been essentially free since 1950 when the India-Nepal Treaty of Peace and Friendship was signed (Sharma, 2015). Extending the subsidy to exports to India would provide incentives for Nepalese firms to sell goods in India, claim the subsidy and then reship the goods back to Nepal—thus subsidizing goods that were actually not exported.[9]

The CISE subsidy was first introduced in the Public Statement on Income and Expenditure for the 2010-11 fiscal year in November 2010, but the scheme only began to operate in practice in 2012 due to delays in the preparation of guidelines and regulations (Sapkota, 2011). In its inception the CISE scheme required export shipments to incorporate at least 30% of domestic value-added and subsidy rates were increasing in the share of local content. This aspect of the program was quickly reformed in 2013 following complaints from exporters about the administrative burden involved in the calculation of domestic value-added. This shortcoming might account for the very low usage of the subsidy in 2012, which we document in the next section.[10] This led to the introduction of the product list with fixed subsidy rates presented in Table 1. While there is an annual review procedure for the list of products to be included in the scheme and their subsidy rates, administered by the Ministry of Industry, no changes have been made to the program since 2013. It is important to highlight that the products selected for the CISE scheme are also the ones that previous assessments such as Nepal's Trade Policy 2009 and the aforementioned Nepal Trade Integration Strategy have

[9]To further ensure that no subsidies are granted to exports to India, the CISE regulation stipulates that export transactions have to be denominated in convertible currencies, thereby excluding sales invoiced in Indian rupees, which are deemed non-convertible by the Nepalese Central Bank.

[10]Exporters were required to fill new value-added assessments for every export transaction for which they claimed the subsidy. This procedure was made more cumbersome because different government agencies involved in the administration of the CISE scheme, such as the Department of Customs and the Ministry of Industry, use different methodologies to calculate domestic value added (Sapkota, 2011).

identified as incorporating a high share of domestic content.[11]

3 Data and Summary Statistics

We utilize transaction-level customs data provided by the Nepalese Department of Customs. The data contain the universe of international trade transactions (exports and imports) by product at the HS 6-digit level and by country of origin/destination between 2011 and 2014. Throughout this period there are 1,698 firms reporting at least one positive export transaction in at least one of 1,762 HS 6-digit products sold to/bought from 177 countries.

Table 2: Export Patterns in Nepal, 2011-2014

Year	# Firms	Median exports per exporter	Mean exports per exporter	Mean # HS-6 per exporter	Mean # destinations per exporter
2011	1,310	80.08	644.97	5.27	4.02
2012	1,313	94.60	686.76	5.20	3.82
2013	1,346	80.79	635.09	5.28	3.62
2014	1,375	98.49	684.70	5.44	3.73

Export values are denominated in thousand US dollars.

Table 2 provides a first pass at the export patterns in our data across different margins. The number of active exporters remains stable throughout our period study, with around 1,300 to 1,400 firms exporting each year. On average, Nepalese firms export 5 HS 6-digit products to 4 foreign markets. Exports per firm averaged 663 thousand US dollars, but exhibit substantial variation over time. There are about twice as many exporters in Nepal than in the other Least Developed Countries studied by Fernandes et al. (2016) with the exception of Bangladesh; the value of exports per firm is in line with those observed in countries at a similar stage of development.[12]

[11] All beneficiaries of the CISE subsidy in 2012 export products from the list in Table 1.

[12] The Least Developed Countries included in the World Bank's Export Dynamics Database are Bangladesh, Burkina Faso, Cambodia, Lao PDR, Malawi, Mali, Niger, Senegal, Uganda and Yemen.

Table 3: Composition of Export Value by Product Type and Destination in 2011 (%)

Product: Destination:	Eligible	Non-Eligible	Total
India	15.4	51.3	66.7
Rest of the World	25.6	7.7	33.3
Total	41.0	59.0	100

Table 3 decomposes Nepal's exports in 2011—the year before the CISE export subsidy started to operate—according to the product and destination eligibility requirements imposed on the subsidy. Two key insights emerge from Table 3. Two-thirds of Nepal's exports in 2011 were sold to India, and most of these were not eligible for the export subsidy. At the same time, it is clear that eligible products are of crucial importance in Nepal's export basket; they account for 41% of export value, and are most important outside India.

Table 4: Eligibility, Usage, and CISE Subsidy Disbursements

Year	# Exporters	# Eligible exporters	# Exporters receiving subsidy	Total subsidy disbursements (millions of US dollars)
2011	1,310	917	0	0
2012	1,313	878	28	1.570
2013	1,346	912	57	1.805
2014	1,375	921	151	3.813

Eligible exporters are those that have conducted at least one export transaction of a CISE-eligible product to a country other than India in a given year.

We next examine the amount of subsidies disbursed throughout our period of analysis using data provided by the Central Bank of Nepal. Table 4 shows that approximately two-thirds of Nepalese exporters in 2011 would have been eligible to receive the CISE subsidy—i.e. they carried out at least one export transaction of a CISE-eligible product to a country other than India. In 2012, however, only half of the allotted budget for the subsidy was

distributed among 28 firms. Over the following two years both outlays and the number of exporters receiving the subsidy increased dramatically. Total subsidy disbursements more than doubled from 1.57 million to 3.81 million US dollars, while at the same time the number of exporters receiving subsidies increased fivefold, reaching 16.4% of eligible exporters in 2014.

Table 5: Sectoral Export Patterns and Subsidy Disbursements, Top-10 Export Sectors 2012-2014

Sector HS 2-digit	Export value (%)	Exports sold to India (%)	Exports of eligible products (%)	Eligible firms receiving subsidies (%)	Subsidy outlays (%)
Iron and steel	10.2	99.9	0.0	0.0	0.0
Coffee, tea, mate & spices	8.2	95.8	99.3	0.5	0.3
Carpets & textile floor coverings	8.1	0.8	100.0	11.9	45.3
Man-made staple fibres	7.8	82.0	75.3	75.0	12.2
Man-made filaments	7.2	99.1	6.7	14.3	0.3
Apparel and clothing accessories	6.3	6.0	100.0	0.5	2.2
Preparations of vegetables, fruit, nuts	4.7	99.8	0.0	0.0	0.0
Articles of iron or steel	4.2	93.6	6.7	14.3	0.5
Other made up textile articles	4.1	76.5	0.9	0.0	0.0
Edible vegetables, roots and tubers	3.2	5.6	99.8	30.8	31.4

Figures are averages over the period 2012-2014.

Table 5 examines the importance of eligible products, India as an export destination, and the allocation of subsidy funds across Nepal's top-10 export sectors. Column 1 shows that Nepalese exports are substantially less concentrated in terms of products than destinations served—no single HS 2-digit sector accounts for more than 10% of total exports over the 2012-2014 period. We can also see—consistent with the message provided by Table 3—that the sectors in which eligible products account for the largest share of export value are also the ones in which exports are mostly sold in the rest of the world.

The last two columns of Table 5 examine the usage of the CISE subsidy and the allocation of expenditure. Overall, only a low share of eligible firms received the export subsidy—the notable exception being firms exporting man-made staple fibres, in which three quarters

of eligible exporters were subsidized. The disbursement of the subsidy has been highly concentrated among firms exporting carpets, man-made fibers and edible vegetables. These three sectors alone account for 89% of all monies granted between 2012 and 2014.

4 Empirical Strategy

Our objective is to estimate the causal effect of the CISE export subsidy on export outcomes for the firms that received the subsidy—i.e. the average treatment effect on the treated. To be more precise, we estimate the impact of the subsidy on the intensive (value and quantity) and extensive (number of HS 6-digit product-destination transactions conducted, products sold and foreign destinations served) margins of exports. Since the subsidy program targets exports of a specific combination of products and export destinations, we estimate its effect on exports of eligible products sold in the rest of the world—the set of varieties directly incentivized—as well as on the remaining product-destination combinations: non-eligible products sold in the rest of the world and both eligible and non-eligible products sold in India.

Theoretical Effects

We first discuss how an ad-valorem cash subsidy granted on the basis of export sales, $S > 1$ (expressed in gross terms), affects export margins. Consider a firm that can potentially sell G goods partitioned between those eligible to receive the subsidy, G_e, and those that are not, G_n, so that $G = G_e \cup G_n$ in $D + 1$ foreign markets—India (indexed by $d = 0$) and the rest of the world ($d = 1, \ldots, D$). The firm's profit maximization problem is given by:

$$\max_{\{q_{gd}\} \geqslant 0} \quad \pi = \sum_{d=1}^{D} \left[S \sum_{g \in G_e} p_{gd}\left(q_{gd}\right) q_{gd} + \sum_{g \in G_n} p_{gd}\left(q_{gd}\right) q_{gd} \right] + \sum_{g \in G} p_{g0}\left(q_{g0}\right) q_{g0} - C(Q), \qquad (1)$$

where $p_{gd}(\cdot)$ is the inverse demand function of 'variety' (product-destination pair) (g, d), and Q is the set of varieties produced by the firm—$\{(g, d) : \quad q_{gd} > 0\}$—its exporter scope; $C(Q)$ denotes the firm's total cost, which includes both costs of production and foreign market access. The profit function shows that the firm only receives the subsidy on its sales of eligible products sold in the rest of the world (the first term within the square brackets).

To fix ideas, let us consider first the case in which there are no within-firm complementarities in the production of varieties—i.e. $\frac{\partial^2 C(Q)}{\partial q_{gd} \partial q_{g'd'}} = 0$ for $g \neq g'$ and $d \neq d'$—as in Bernard et al. (2011). Under these circumstances, increasing the subsidy only affects the exports of targeted varieties. A higher subsidy has a positive effect on the quantity of products that the firm was already exporting— the intensive margin of exports—under fairly general conditions.[13] The extent to which there is a positive effect on extensive margin—increasing the number of products sold or markets served—depends on whether the marginal cost adjusted by the higher subsidy falls below the 'choke price' at least for some varieties (e.g. in the linear demand system of Melitz and Ottaviano (2008)), or if the variable profit after the subsidy exceed the fixed cost of exporting when preferences are CES and market access costs are fixed as in Bernard et al. (2011).

The strength of the response that the subsidy exerts across different export margins depends on the interaction between market access costs and the degree of (dis)-economies of scope faced by the firm (Arkolakis et al., 2016). The effect on the intensive margin would dominate the one for the extensive margin if, for instance, the firm faces high destination-specific fixed costs to export and the marginal cost of producing varieties farther away from its 'core competence' increases rapidly.[14] Alternatively, if firms face increasing marketing costs to reach consumers in each foreign destination it serves, as in Arkolakis (2010), then

[13] Using the implicit function theorem in the first-order condition of a variety $q_{gd} \in Q$ which belongs to the subset of eligible goods sold in the rest of the world, it follows that $\frac{\mathrm{d}q_{gd}}{\mathrm{d}S} = -\frac{p''(q_{gd})q_{gd} + 2p'(q_{gd}) - \partial^2 C(q_{gd})/\partial q_{gd}^2}{p'(q_{gd})q_{gd} + p(q_{gd})} > 0$. The numerator is negative from the second-order sufficient condition for profit maximization and the denominator is the marginal revenue of variety (g, d), and is therefore positive.

[14] Strong empirical support for the core competency theory of multi-product firms, i.e. that the marginal cost of production increases as the firm introduces new products, has been provided by Mayer et al. (2014), Eckel et al. (2015), and Arkolakis et al. (2016) among others.

a higher subsidy could induce firms to start selling small volumes in new markets rather than increasing their sales in markets where they already operate.[15] A stronger response to the subsidy on the extensive margin could also occur if increasing sales of previously exported products requires substantial investments to achieve a minimum threshold of quality (Verhoogen, 2008). Atkin et al. (2017) find that it is extremely hard for Egyptian rug producers to achieve sustained export orders in high income countries, with only one in seven export relationships moving beyond trial orders. There is suggestive evidence that this is also a crucial bottleneck for Nepalese exporters. The WTO (2012) documents a high occurrence of export rejections due to not meeting international standards and technical requirements, particularly in traditional agricultural exports (e.g. honey, ginger, and herbal medicines) and rugs and carpets—some of the products that have received the highest share of the funds from the CISE scheme.

It is possible that the subsidy could also affect exports of non-eligible products and sales to India. This happens when varieties are not perfectly substitutable in terms of the firm's costs—e.g. when there are decreasing returns to scale at the firm level, or when the inputs and techniques used to manufacture products differ substantially according to the market in which they intend to be sold. Since marginal costs are equalized across all varieties being produced, it follows that if the production of eligible products sold outside India increases in response to the subsidy, the firm would adjust the quantities of non-targeted products it produces as well. Whether the subsidy has a positive or negative effect on the exports of non-targeted varieties depends crucially on the elasticity of substitution across varieties from the perspective of the firm.

To summarize, we expect the CISE export subsidy to increase the exports of targeted varieties by incentivized firms. Nevertheless, whether this effect operates primarily through the intensive or extensive margins and whether the subsidy affects firms' exports of products

[15] Both Arkolakis (2010) and Eaton et al. (2011) estimate the parameter that determines the effectiveness of advertising to reach new costumers to be close to 1. This means that the fixed cost of reaching the first consumer in a new market is very low and then increases very rapidly as the share of consumers aware of the firm's product approaches 1.

and destinations not directly targeted by the scheme are, ultimately, empirical questions. We now discuss the empirical strategy we employ to answer them.

Empirical Implementation

We aggregate our data at the firm-year level to estimate the following outcome regression:

$$\ln y_{it} = \beta S_{it} + f_i + f_t + \varepsilon_{it}, \tag{2}$$

where y_{it} denotes the export outcome (number of transactions, destinations served, products sold, export value or quantity) of firm i in year t; S_{it} is an indicator that turns on when firm i receives the subsidy in year t, and f_i and f_t are firm and year fixed effects respectively. This means that we identify the effect of the subsidy by exploiting within-firm variation in export performance of treated firms. Standard errors are clustered at the firm level.

The main challenge we face in estimating the effect of the CISE export subsidy on export performance is the so-called fundamental problem of causal inference—we cannot observe what the exports of treated firms would have been had they not received the subsidy—and therefore need to estimate the expectation of this potential outcome. Since the allocation of subsidies is not random, export outcomes of firms that did not receive the subsidy are unlikely to be appropriate proxies for the expected counterfactual performance of treated firms. Therefore, to control for selection bias we use the double-robust matching estimator method proposed by Wooldridge (2007), which is also used by Van Biesebroeck et al. (2015) to evaluate the effect of the Trade Commissioner Service, an export promotion program in Canada. This involves estimating regression (2) using different weighting schemes, which we describe in detail below, to construct an appropriate counterfactual for subsidized firms on the basis of their observable characteristics before receiving the treatment. This estimator has the advantage that it is consistent as long as either the conditional mean regression or the treatment selection models are correctly specified (Imbens and Wooldridge, 2009).

The key identifying assumption is that the observable covariates as well as time-invariant factors, which are controlled for by the firm fixed effects, contain all relevant characteristics determining whether a firm receives the export subsidy or not.

We now specify our model for the probability of receiving the export subsidy among firms that carried out at least one export transaction satisfying the scheme's eligibility criteria (i.e. exporting one of the products listed in Table 1 to a country other than India) in 2011—the pre-treatment year. We estimate a probit model in which the dependent variable takes the value 1 if a firm received the export subsidy at any point after 2012 and 0 otherwise. The set of covariates we use, $\mathbf{X}_i$ are: the log value of total exports, the share of exports sold in the rest of the world, the share of exports accounted for by eligible products, a dummy variable taking the value 1 when the difference between a firm's exports and imports exceeds 30% (a proxy for firms' domestic value addition), an indicator for the firm's importer status, the Herfindahl index of exports calculated at the HS 6-digit product level, as well as sectoral measures of physical and human capital intensity.[16]

We implement three weighting schemes based in our specification of the treatment selection model: (i) inverse probability (IPW), (ii) propensity score matching (PSM) and (iii) Mahalanobis or nearest neighbor matching (NNM). To estimate the average treatment effect on the treated using IPW we assign a weight of 1 to subsidized firms and the inverse of one minus the propensity score $(1/(1-\widehat{\rho}(\mathbf{X}_i)))$ to control firms. PSM matching assigns a weight of 1 to each treated firm and its respective control—i.e. the unsubsidized firm that is closest in terms of its propensity score—and 0 otherwise. NNM works in the same way as PS but treated and control firms are matched according to the Mahalanobis distance between covariates instead of the propensity score.[17]

[16]The latter two variables are constructed with U.S. data from Bartelsman and Gray (1996).

[17]Our results are robust to changing the the number of control firms used to match each treated firm with the PSM and NNM.

5 Results

In this section we first discuss the estimates of our model predicting the probability of receiving the CISE export subsidy and then assess the quality of our matching procedure. We then move to our estimates of the average treatment effect of the CISE subsidy on firm-level export outcomes, both for eligible products sold in the rest of the world and the other product-destination combinations that are not directly targeted by the policy.

Table 6: First Stage Probit for the Probability of Receiving the Export Subsidy

	(1)	(2)	(3)	(4)	(5)	(6)
Log export value	0.365***				0.506***	0.488***
	(0.034)				(0.052)	(0.054)
Shr. exports to ROW		0.542***			1.385***	1.322***
		(0.172)			(0.260)	(0.284)
Shr. exports eligible products			0.828***		1.031***	0.944***
			(0.183)		(0.214)	(0.230)
Domestic VA $\geqslant$ 30% dummy				0.707***	-0.001	-0.003
				(0.112)	(0.138)	(0.146)
Importer dummy						0.526
						(0.593)
Product-level Herfindahl						-0.213
						(0.334)
Physical capital intensity						-0.516
						(0.581)
Human capital intensity						2.555***
						(0.695)
Observations	917	917	917	917	917	912
Pseudo R-squared	0.194	0.012	0.032	0.050	0.309	0.329
χ^2 joint significance test (p-value)	0.000	0.002	0.000	0.000	0.000	0.000

The table reports the coefficients of a probit model estimated among the set of firms that conducted at least one export transaction of a CISE-eligible product sold to a country other than India in 2011 (the pre-treatment period). The dependent variable takes the value 1 if a firm received the CISE export subsidy at any point between 2012 and 2014 and 0 otherwise. All covariates are measured in 2011. The propensity score used to weight the regressions presented in the main body of the paper corresponds to the specification in column (6). Standard errors in parenthesis. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 6 presents the estimates of the probit model used to calculate the propensity score.

Column (1) shows that exporter size is a strong predictor of treatment. Larger exporters are more likely to be aware of the availability of the export subsidy scheme and are also more likely find it optimal to incur the administrative costs involved in applying and securing the subsidy. The coefficients reported in columns (2)-(4)—all of which are positive and strongly significant—indicate that the firms that received subsidies after 2012 were engaged in the activities that the CISE scheme sought to incentivize in 2011 already: i.e. exporting a high share of eligible products incorporating a high proportion of local content to countries other than India. Column (5) includes all the variables discussed before. Interestingly, once that size and the share of exports of eligible products to the rest of the world are controlled for, high domestic value added loses its significance in predicting a firm's treatment status. This is likely the case because eligible products sold outside India incorporate a high share of local inputs, as we noted in Section 2. Column (6) presents the full specification used to estimate the propensity score. In addition to the covariates included in column (5) we add an indicator for a firm's importer status, the product-level Herfindahl index of export sales—which accounts for the possibility that higher sales concentration facilitates firms' coordination to lobby for subsidies (Caves, 1976; Grossman and Helpman, 1994)—and sector-level human and physical capital intensities, which intend to capture the potential for domestic value addition. While the first-stage probit model does a good job in predicting firms receiving the CISE subsidy, there still is substantial variation left unexplained. This allows us to find unsubsidized firms that closely resemble treated firms in terms of their observable characteristics, and therefore provides a suitable control group to estimate the effects of the subsidy on export outcomes.

The identification of the treatment effect requires that the procedure used to match treated and control achieves balancing of the variables used to predict treatment status. Table 7 presents standardized differences and variance ratios for treated and control firms for the three weighting schemes we utilize. The large pre-treatment differences between subsidized and control firms—particularly in terms of size, the allocation of exports across

products and destinations and domestic value-added—are largely eliminated by weighting. The standardized differences of all covariates with one exception fall well below 20%, the informal criterion employed in the literature (Girma and Görg, 2007; Volpe Martincus and Carballo, 2008). Similarly, the variance ratios move closer towards unity after weighting, and the overidentification test proposed by Imai and Ratkovic (2014) does not reject the null hypothesis that covariates are balanced. Table 8 presents the pseudo R-squared and joint significance tests obtained after running the treatment status probit model using only the treated firms and their respective controls (Caliendo and Kopeinig, 2008). The results of this exercise—pseudo R-squared very close to zero and the lack of rejection of joint significance test—suggest that once we control for observable covariates, assignment into the treatment is as good as random.

Table 7: Indicators of Matching Quality

Variable	Standardized differences				Variance ratio			
	Raw	Weighted			Raw	Weighted		
		IPW	PSM	NNM		IPW	PSM	NNM
Log export value	1.242	-0.056	-0.009	0.255	0.449	0.852	1.083	1.171
Shr. exports to ROW	0.288	0.070	0.006	-0.010	0.441	0.633	0.721	0.789
Shr. exports eligible products	0.473	0.050	-0.026	-0.010	0.608	1.155	1.242	0.962
Domestic VA $\geqslant$ 30% dummy	0.563	-0.032	0.057	0.000	1.692	0.992	1.021	1.000
Importer dummy	0.133	0.007	0.000	0.000	0.311	0.928	1.000	1.000
Product-level Herfindahl	-0.168	-0.01	0.1621	0.063	0.862	1.011	1.947	1.182
Physical capital intensity	-0.134	0.112	-0.154	0.011	0.425	0.947	0.533	1.001
Human capital intensity	0.565	0.001	0.055	0.009	0.958	1.041	1.576	1.024
Imai-Ratkovic overidentification test p-value (H_0: covariates are balanced): 0.258								

All variables, with the exception of physical and human capital intensities, which come from Bartelsman and Gray (1996), are calculated using data for 2011 (the pre-treatment year). The dummy for domestic value added takes the value 1 if the difference between a firm's value of exports and imports exceeds 30%. The Herfindahl index of export sales is calculated at the HS 6-digit level. IPW stands for inverse probability weighting, PSM stands for propensity score matching weighting and NNM for Mahalanobis matching weighting.

Table 8: Joint Significance and Pseudo R-squared of Treatment Status Model

	Raw data	Weighted data		
		IP	PS	NN
Pseudo R-squared	0.329	0.004	0.015	0.017
χ^2 test (p-value)	0.000	0.983	0.745	0.763

The table reports the pseudo R-squared and p-value of the χ^2 joint significance test from running the probit model of the probability of receiving the CISE export subsidy (column (6) of Table 6) and the same statistics when the model is estimated using only the treated and matched control firms. IPW stands for inverse probability weighting, PSM stands for propensity score matching weighting and NN for Mahalanobis matching weighting.

We now discuss the magnitude of the effect of the export subsidy on export outcomes. The sample we use for our estimation consists of 912 firms which conducted at least one export transaction involving an eligible product sold in the rest of the world in 2011; 141 of them receive the subsidy at least once between 2012 and 2014. It is worth noting that the distribution of propensity scores of treated and control firms exhibit full overlap; this enables us to not exclude any treated firms from the analysis.

Table 9 presents our estimates of the average treatment effect of the export subsidy on firms' exports of eligible products sold outside India. First, note that OLS consistently understates the impact of the subsidy relative to our matching estimates and even implies a negative, albeit insignificant, effect on the intensive margin of exports. All of our matching-based estimates paint a similar picture regardless of the specific weighting scheme we employ. We find that firms that received the export subsidy increased the number of export transactions they conducted by 11-12% in the year they received the incentive. Both extensive margins of exports—i.e. the number of destinations reached and products exported—increase when firms receive the subsidy. The former increases by 10-12%, while the latter rises by 6-7%. In terms of the intensive margin, we find a marginally significant increase in the value of exports and no significant change in the physical quantities shipped after firms received the subsidy. These results remain largely unchanged when we add a measure of the intensity

of treatment (log of subsidy payments) to regression (2) following Van Biesebroeck et al. (2015), although in most specifications the point estimate of the treatment intensity variable is not statistically significant.

Table 9: Average Effect of Export Subsidy—Eligible Products sold in the Rest of the World

	Number of export			Export	
	transactions	destinations	products	value	quantity
	(1)	(2)	(3)	(4)	(5)
OLS	0.079**	0.086**	0.061**	-0.088	-0.062
	(0.037)	(0.033)	(0.030)	(0.090)	(0.107)
Inverse probability (IPW)	0.101***	0.108***	0.061**	0.152*	0.034
	(0.036)	(0.032)	(0.030)	(0.091)	(0.110)
Propensity score (PSM)	0.112***	0.117***	0.069**	0.181*	0.085
	(0.041)	(0.037)	(0.034)	(0.104)	(0.117)
Mahalanobis matching (NNM)	0.102***	0.093***	0.058*	0.100	0.025
	(0.038)	(0.035)	(0.033)	(0.095)	(0.120)

Entries in the table are the average effect of the cash export subsidy on the log export outcome in the corresponding column among firms that received the subsidy. All regressions include firm and year fixed effects. Products are defined at the HS 6-digit level. Standard errors clustered at the firm level in parenthesis. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Most firms in our sample are multi-product exporters operating in several different markets. This allows us to explore whether the CISE export subsidy had any within-firm effects on exports of products and destinations not directly targeted by the scheme. Table 10 reports the estimates of the average treatment effect for exports outcomes related to sales of non-eligible products in the rest of the world, eligible products shipped to India and non-eligible products sold in India. We do not find any significant effects of the subsidy on the export margins of non-targeted product-destination combinations.

Table 10: Average Effect of Export Subsidy—Other Product-Destination Combinations

	Number of export			Export	
	transactions	destinations	products	value	quantity
	(1)	(2)	(3)	(4)	(5)
OLS:					
Non-eligible products sold in ROW	0.028	0.015	0.068	-0.046	0.069
	(0.063)	(0.045)	(0.063)	(0.141)	(0.182)
Eligible products sold in India			0.040	0.148	0.086
			(0.056)	(0.206)	(0.195)
Non-eligible products sold India			0.021	0.162	0.464
			(0.080)	(0.298)	(0.446)
Inverse probability (IPW):					
Non-eligible products sold in ROW	0.089	0.061	0.094	0.223	0.283
	(0.066)	(0.044)	(0.066)	(0.140)	(0.196)
Eligible products sold in India			0.041	0.235	0.181
			(0.056)	(0.236)	(0.232)
Non-eligible products sold India			0.069	0.189	0.496
			(0.083)	(0.322)	(0.468)
Propensity score (PSM):					
Non-eligible products sold in ROW	0.083	0.044	0.091	0.156	0.220
	(0.072)	(0.051)	(0.068)	(0.170)	(0.223)
Eligible products sold in India			0.089	0.549*	0.515
			(0.064)	(0.306)	(0.355)
Non-eligible products sold India			0.003	0.134	0.417
			(0.085)	(0.339)	(0.480)
Mahalanobis matching (NNM):					
Non-eligible products sold in ROW	0.071	0.058	0.078	0.146	0.185
	(0.074)	(0.052)	(0.071)	(0.161)	(0.217)
Eligible products sold in India			0.019	0.278	0.251
			(0.058)	(0.252)	(0.241)
Non-eligible products sold India			0.021	0.003	0.386
			(0.079)	(0.398)	(0.513)

Entries in the table are the average effect of the cash export subsidy on the log export outcome in the corresponding column among firms that received the subsidy. All regressions include firm and year fixed effects. Products are defined at the HS 6-digit level. There are 68 subsidized firms that export non-eligible products to the rest of the world; 34 that export eligible products to India and 27 that export non-eligible products to India. Standard errors clustered at the firm level in parenthesis. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Discussion

To put our results in context, we compare our estimates with those obtained by the literature evaluating the impact of export promotion agencies. Our findings are consistent with the work that focuses on export promotion in developing countries, e.g. Volpe Martincus and Carballo (2008) (Peru), Álvarez and Crespi (2000) and Volpe Martincus and Carballo (2010) (Chile), and Cadot et al. (2015) (Tunisia). These studies have consistently found a positive and significant effect of promotion efforts on the extensive margin of exports (number of products exported and destinations served) ranging from 5 to 16%, despite the fact that the specific instruments of export promotion they assess vary tremendously in scope—including co-financing of export business plans, logistic help in meeting foreign buyers, advertising and promotion, among others. The estimated effects of promotion on the intensive margin are much more heterogeneous across countries, and appear to be higher in developed countries (Görg et al., 2008; Van Biesebroeck et al., 2015).

Our results show that the firms that received the subsidy expanded their export scope, they were predominantly large exporters which were already doing what the CISE scheme sought to encourage—exporting eligible products outside India—as Table 6 shows. This outcome might have been facilitated by the subsidy being allocated on a first come, first served basis. In its current version, it appears as if the CISE scheme does not provide a strong enough incentive for firms to change their export portfolio and has instead rewarded firms for doing something that they would have done even if they were not subsidized. Perhaps cash subsidies need to be supplemented with other interventions (e.g. providing training to reduce export rejections or improving the connectivity with Indian customs to avoid delays in the their ports) that would help Nepalese exporters to establish long-term relationships with buyers in high income countries. To the limited response of exports to the subsidy, however, we need to add the fact that the CISE scheme is an expensive program. The program's annual outlay (approximately 3.2 million US dollars in 2014, as shown in Table 4) is larger than the entire budget of export promotion agencies in countries such as

Bolivia, El Salvador, Guatemala, Honduras, Paraguay, and the Philippines (see Table 2.5 in Volpe Martincus, 2010)—all of which have a GDP per capita at least three times as high as Nepal. Thus, all in all, our analysis suggests that the CISE scheme has not been very effective in fulfilling its objectives of promoting export diversification and increasing exports.

6 Conclusion

In this paper we estimate the impact of the Cash Incentive Scheme for Exports export subsidy offered by the government of Nepal on firm-level exports. In so doing, we assess whether the program has fulfilled its objectives of increasing exports and fostering export diversification over the period 2012-2014. The scheme offers firms an ad-valorem subsidy of 1 or 2% of the value of their exports of a select group of 31 products, as long as these are sold in countries other than India. Using a double-robust matching estimator with several weighting schemes to control for firms' selection into the program, we estimate the impact of receiving the subsidy on the extensive and intensive margins of exports. We assess the impact of the subsidy on exports of eligible products sold outside India, as well as on the sales of product-destination combinations not directly targeted by the scheme—exports to India and exports of non-eligible products to the rest of the world.

We find that subsidized firms experience a robust and significant increase in the number of export transactions of eligible products sold to the rest of the world they conduct—both through an increase in foreign markets reached and the number of products exported. This response is of a similar magnitude to the effect that the literature has estimated for a broad set of interventions commonly offered by export promotion agencies in developing countries. We also find that the subsidy produces an increase in the value of exports of targeted products, although this result is less robust. Our analysis shows that while the subsidy has succeeded in encouraging Nepalese firms to reach new foreign markets and export new products, the limited response produced on the intensive margin and high fiscal cost have

limited the effectiveness of the scheme in achieving its objectives.

Our work provides valuable insights for Nepal and other developing countries seeking to leverage the broader trade policy scope offered by the principle of Special and Differential Treatment for Developing Countries.

References

Álvarez, R. E. and G. T. Crespi (2000): "Exporter performance and promotion instruments: Chilean empirical evidence," *Estudios de Economía*, 27, 225–241.

Arkolakis, C. (2010): "Market Penetration Costs and the New Consumers Margin in International Trade," *Journal of Political Economy*, 118, 1151–1199.

Arkolakis, C., S. Ganapati, and M.-A. Muendler (2016): "The Extensive Margin of Exporting Products: A Firm-level Analysis," Cowles Foundation Discussion Papers 2028, Cowles Foundation for Research in Economics, Yale University.

Atkin, D., A. K. Khandelwal, and A. Osman (2017): "Exporting and Firm Performance: Evidence from a Randomized Experiment," *The Quarterly Journal of Economics*, 132, 551–615.

Bagwell, K. and R. W. Staiger (2006): "Will International Rules on Subsidies Disrupt the World Trading System?" *American Economic Review*, 96, 877–895.

Bagwell, K. and R. W. Staiger, eds. (2016): *Handbook of Commercial Policy*, Amsterdam: North-Holland.

Balassa, B. (1978): "Export Incentives and Export Performance in Developing Countries: A Comparative Analysis," *Weltwirtschaftliches Archiv*, 114, 24–61.

Bartelsman, E. J. and W. Gray (1996): "The NBER Manufacturing Productivity Database," NBER Technical Working Papers 0205, National Bureau of Economic Research.

Bernard, A. B. and J. B. Jensen (2004): "Why Some Firms Export," *The Review of Economics and Statistics*, 86, 561–569.

Bernard, A. B., S. J. Redding, and P. K. Schott (2011): "Multiproduct Firms and Trade Liberalization," *The Quarterly Journal of Economics*, 126, 1271–1318.

Bhagwati, J. and T. N. Srinivasan (1969): "Optimal Intervention to Achieve Non-Economic Objectives," *Review of Economic Studies*, 36, 27–38.

Bown, C. P. and M. A. Crowley (2016): "The Empirical Landscape of Trade Policy," Amsterdam: North-Holland, vol. 1 of *Handbook of Commercial Policy*, 3 – 108.

Brainard, W. C. and R. N. Cooper (1968): "Uncertainty and Diversification in International Trade," *Studies in Agricultural Economics, Trade and Developmenti*, 8.

Brandt, L. and P. M. Morrow (2017): "Tariffs and the organization of trade in China," *Journal of International Economics*, 104, 85 – 103.

Cadot, O., C. Carrère, and V. Strauss-Kahn (2011): "Export Diversification: What's behind the Hump?" *The Review of Economics and Statistics*, 93, 590–605.

Cadot, O., A. M. Fernandes, J. Gourdon, and A. Mattoo (2015): "Are the benefits of export support durable? Evidence from Tunisia," *Journal of International Economics*, 97, 310–324.

Caliendo, M. and S. Kopeinig (2008): "Some Practical Guidance for the Implementation of Propensity Score Matching," *Journal of Economic Surveys*, 22, 31–72.

Caves, R. E. (1976): "Economic Models of Political Choice: Canada's Tariff Structure," *Canadian Journal of Economics*, 9, 278–300.

de Ferranti, D., G. Perry, D. Lederman, and W. Maloney (2002): "From Natural Resources to the Knowledge Economy," Manuscript, The World Bank.

Defever, F., J.-D. Reyes, A. Riaño, and M. E. Sánchez-Martín (forthcoming): "Special Economic Zones and WTO Compliance: Evidence from the Dominican Republic," *Economica*.

Defever, F. and A. Riaño (2017): "Subsidies with export share requirements in China," *Journal of Development Economics*, 126, 33–51.

Eaton, J., S. Kortum, and F. Kramarz (2011): "An Anatomy of International Trade: Evidence From French Firms," *Econometrica*, 79, 1453–1498.

Eckel, C., L. Iacovone, B. Javorcik, and J. P. Neary (2015): "Multi-product firms at home and away: Cost- versus quality-based competence," *Journal of International Economics*, 95, 216–232.

Farole, T. and G. Akinci (2011): *Special Economic Zones: Progress, Emerging Challenges and Future Directions*, Washington DC: The World Bank.

Felbermayr, G. J. and E. Yalcin (2013): "Export Credit Guarantees and Export Performance: An Empirical Analysis for Germany," *The World Economy*, 36, 967–999.

Fernandes, A. M., C. Freund, and M. D. Pierola (2016): "Exporter behavior, country size and stage of development: Evidence from the Exporter Dynamics Database," *Journal of Development Economics*, 119, 121–137.

Fernandes, A. P. and H. Tang (2012): "Determinants of Vertical Integration in Export Processing: Theory and Evidence from China," *Journal of Development Economics*, 99, 396–414.

Girma, S., Y. Gong, H. Görg, and Z. Yu (2009): "Can Production Subsidies Explain China's Export Performance? Evidence from Firm-level Data," *Scandinavian Journal of Economics*, 111, 863–891.

Girma, S. and H. Görg (2007): "Evaluating the foreign ownership wage premium using a difference-in-differences matching approach," *Journal of International Economics*, 72, 97–112.

Görg, H., M. Henry, and E. Strobl (2008): "Grant Support and Exporting Activity," *The Review of Economics and Statistics*, 90, 168–174.

Grossman, G. M. and E. Helpman (1994): "Protection for Sale," *American Economic Review*, 84, 833–850.

Haley, U. C. V. and G. T. Haley (2013): *Subsidies to Chinese Industry: State Capitalism, Business Strategy and Trade Policy*, Oxford: Oxford University Press.

Hausmann, R., J. Hwang, and D. Rodrik (2007): "What you export matters," *Journal of Economic Growth*, 12, 1–25.

Helmers, C. and N. Trofimenko (2013): "The Use and Abuse of Export Subsidies: Evidence from Colombia," *The World Economy*, 36, 465–486.

Imai, K. and M. Ratkovic (2014): "Covariate balancing propensity score," *Journal of the Royal Statistical Society Series B*, 76, 243–263.

Imbens, G. W. and J. M. Wooldridge (2009): "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature*, 47, 5–86.

Kalouptsidi, M. (2018): "Detection and Impact of Industrial Subsidies: The Case of Chinese Shipbuilding," *Review of Economic Studies*, 85, 1111–1158.

Lee, G. M. (2016): "Subsidies and Countervailing Duties," in *Handbook of Commercial Policy*, ed. by R. W. Staiger and K. Bagwell, Amsterdam: North-Holland, vol. 1B, 161 – 210.

Mayer, T., M. J. Melitz, and G. I. P. Ottaviano (2014): "Market Size, Competition, and the Product Mix of Exporters," *American Economic Review*, 104, 495–536.

Melitz, M. J. and G. I. P. Ottaviano (2008): "Market Size, Trade, and Productivity," *Review of Economic Studies*, 75, 295–316.

Munch, J. and G. Schaur (2018): "The Effect of Export Promotion on Firm-Level Performance," *American Economic Journal: Economic Policy*, 10, 357–87.

Ojha, P. (2015): "Translation of Cash Incentives Scheme on Export (CISE) Procedure-2070," Manuscript.

Ornelas, E. (2016): "Special and Differential Treatment for Developing Countries," in *Handbook of Commercial Policy*, ed. by R. W. Staiger and K. Bagwell, Amsterdam: North-Holland, vol. 1B, 369 – 342.

Panagariya, A. (2000): "Evaluating the Case for Export Subsidies," World Bank Policy Research Working Paper 2276.

Prebisch, R. (1950): "The Economic Development of Latin America and its Principal Problems," *Economic Bulletin for Latin America*, 7, 1–12.

Rodrik, D. (1995): "Taking Trade Policy Seriously: Export Subsidization as a Case Study in Policy Effectiveness," Ann Arbor, MI: University of Michigan Press, New Directions in Trade Theory.

Sapkota, C. (2011): "Cash Incentives for Export Promotion in Nepal," Manuscript, South Asia Watch on Trade, Economics and Environment (SAWTEE).

Sharma, K. (2015): "Trade Policymaking in a Land-locked Developing Country: The WTO Review of Nepal," *The World Economy*, 38, 1335–1349.

Singer, H. W. (1950): "The Distribution of Gains between Investing and Borrowing Countries," *American Economic Review: Papers & Proceedings*, 40, 473–485.

Van Biesebroeck, J., J. Konings, and C. Volpe Martincus (2016): "Did export promotion help firms weather the crisis?" *Economic Policy*, 31, 653–702.

Van Biesebroeck, J., E. Yu, and S. Chen (2015): "The impact of trade promotion services on Canadian exporter performance," *Canadian Journal of Economics*, 48, 1481–1512.

Verhoogen, E. A. (2008): "Trade, Quality Upgrading, and Wage Inequality in the Mexican Manufacturing Sector," *The Quarterly Journal of Economics*, 123, 489–530.

Volpe Martincus, C. (2010): *Odyssey in International Markets: An Assessment of the Effectiveness of Export Promotion in Latin America and the Caribbean*, Washington, DC: Inter-American Development Bank.

Volpe Martincus, C. and J. Carballo (2008): "Is export promotion effective in developing countries? Firm-level evidence on the intensive and the extensive margins of exports," *Journal of International Economics*, 76, 89–106.

——— (2010): "Beyond the average effects: The distributional impacts of export promotion programs in developing countries," *Journal of Development Economics*, 92, 201–214.

Wang, J. (2013): "The economic impact of special economic zones: Evidence from Chinese municipalities," *Journal of Development Economics*, 101, 133–147.

Wooldridge, J. M. (2007): "Inverse probability weighted estimation for general missing data problems," *Journal of Econometrics*, 141, 1281–1301.

World Trade Organization (2006): *World Trade Report 2006: Exploring the Links Between Subsidies, Trade and the WTO*, Geneva: World Trade Organization.

——— (2012): *Trade Policy Review of Nepal*, Geneva: World Trade Organization.

Young, A. (1991): "Learning by Doing and the Dynamic Effects of International Trade," *The Quarterly Journal of Economics*, 106, 369–405.