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Entering the Export Markets:
Do Trade Missions Help?

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Abstract: *In this paper, we investigate the impact of trade missions on export performance. Using the census of participant data of the State of Victoria trade missions during 2010–2013, we estimate the impact of trade missions at the extensive and intensive margins by employing matched difference-in-differences analyses. We find, on average, the missions increased participating firms' export value by more than 170%. We also find non-exporting (at the time of the mission) participants were 26 percentage points more likely to become exporters after the missions. There is evidence for diminishing returns for repeat participants and that the impact varies by the size and sector of the participants and by the destination country of the trade mission.*

Keywords: Trade mission; export; impact evaluation; difference-in-differences; matching

JEL Classification: F13; F14; L52

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1. Introduction

The objective of this study is to examine empirically whether trade mission programmes help in improving the export performance of the participants. Specifically, we aim to provide empirical estimates of the impact of participating in government-sponsored trade mission programme in Australia's State of Victoria. First, we estimate the impact of trade missions in the intensive margins by looking at the impact on the export performance of participating firms that are already operating in the export markets. Second, we estimate the impact of trade missions in the extensive margins by looking at how trade mission participation affects the probability of non-exporting participants to enter the export market.

Trade missions are structured, personal visits by groups of producers seeking new trade opportunities in foreign countries. For example, for a country such as Australia which is on the periphery of a trading bloc and remote in terms of culture, language, or location, trade missions can be an effective way to initiate entry into foreign markets and global value chains. Participation in a trade mission introduces businesses to customers and business counterparts one-on-one, often in the latter's premises.

Notwithstanding evidence that only the most productive firms export, trade missions can provide a marginal advantage in customised trades where personal introductions, product quality, and company reputation are critical. While virtually every study finds that only the most productive firms export due to the presence of sunk entry costs into export markets (Bernard et al. 2007), multinationals may offshore to their foreign subsidiaries, and then as the product matures, sell to external foreign suppliers. In the most common situation, the traded product in this outsourcing relationship is customised; hence, the quality of the relationship between the buyer and the seller can be the determining factor in a deal. Personal visits, mediated by the warm introductions offered in a trade mission, are designed to create these relationships.

The existing empirical evidence on the effect of trade missions is thin and mixed, with most studies evaluating bundled export promotion programmes. Earlier studies tend to rely on aggregated national or regional data and again throw up inconclusive results. Such aggregate studies rarely provide the hard evidence on the benefits of trade missions

needed to convince most policy decision makers. More recent studies have started to exploit the benefits of more readily available firm-level datasets (see Van Biesebroeck, Konings, and Volpe Martincus (2016) for a review). Unfortunately, most of these studies only have data for firms which export. Thus, they are unable to answer our second research question (the extensive effect of trade mission programmes). They are also often limited to a non-random sample of firms, resulting in possibly biased estimates, except for a series of South American firm-level studies.

It is still not clear how the existing evidence can be generalised to other settings, particularly to developed countries or countries with closer ties to the Asian region. Our study contributes to the literature particularly because we investigate the impact of trade mission programmes for a developed economy (that is Australia's State of Victoria). All else equal, one may expect that businesses from developed countries would benefit less from trade mission programmes. Furthermore, since Australia is at the periphery of Asia and has stronger trade relationships with the region, the study's findings would have relevant policy inferences for the surrounding countries. Also, our study is one of the very few that is based on the full administrative record of trade mission participants linked to the census of firm-level business and export performance data. The information in these linked databases allows for the implementation of a robust, non-experimental method for identifying the impact of the missions.

Specifically, we estimate the impact of trade mission programmes run by the Victorian Government from 1 December 2010 to 30 June 2013. There were 1,192 businesses participating in one or more of the trade missions, with each trade mission comprising of 20–100 participating businesses. For each participant, we extract its business performance variables from the population of all Victorian businesses that completed a Business Activity Statement and Business Income Tax (BAS-BIT) database between 2001–2002 and 2012–2013. We then estimate the difference-in-differences average treatment effect on the treated group using a matched sample of participating and non-participating businesses.

To preview the results, we find that trade missions increased participating firms' exports within 12 months by at least 170%. Furthermore, trade mission participation appears to have increased the probability of becoming an exporter within 12 months by 26 percentage points (about half of the participants were non-exporters). We also find that

the additional effect of undertaking a second mission was smaller than the first but still positive and statistically significant. Finally, we find the impact to vary by the size and sector of the participants and by the destination country of the trade mission

The rest of this paper is structured as follows. In Section 2 we provide a brief review of the literature. In Section 3, we describe the State of Victoria Trade Mission programmes. In Section 4, we specify the empirical method and discuss the data. In Section 5, we present and discuss the results. In Section 6, we provide some concluding remarks on the study, including the limitations and policy implications.

2. Literature Review

According to Bernard et al. (2007), results from virtually every study across industries find that only the most productive firms export, which implies the presence of sunk entry costs into export markets. One way to address these barriers for multinational firms is to offshore to their foreign subsidiaries, and then as the product matures, to external foreign suppliers. Regardless of the method used by would be exporters, if the traded product is customised, the quality of the relationship between the buyer and the seller can be the determining factor in a deal. Personal visits, mediated by the warm introductions offered in a trade mission, are designed to create these relationships.

This is where trade missions and the closely related trade shows may matter. Trade missions are bespoke, organised trips to overseas destinations. The missions introduce businesses to customers and business counterparts one-on-one, often in the latter's premises. Closely related to trade mission programmes are trade show programmes. In contrast to trade missions, trade shows are mass many-to-many exhibitions, where the sponsor provides, or subsidises, booth space in a hall for complementary businesses to meet each other. Both shows and missions can be industry-focused, and a specific export promotion programme may exhibit the characteristics of both a trade show and trade mission.

Although popular with government ministers and premiers, trade missions do not have to be run or subsidised by the public sector and can be operated by industry associations or for-profit companies. Nonetheless, regardless of which entity operates or

pays for a mission, all parties, not the least the business itself, have a clear interest in knowing whether or not they succeed. Post-programme surveys of grateful recipients of government largess do not constitute acceptable, objective evidence. Rigorous evaluations need to be based on behaviour that is revealed through verifiable records, such as sales or employment.

The existing empirical evidence on the effect of trade missions is thin and mixed, with most studies evaluating bundled export promotion programmes. Two available studies that evaluate the economic impact of trade missions are based on either a country-level evaluation (Head and Ries (2010), who find a statistically insignificant but small negative effect) or a survey of a limited sample (113 participants; Spence (2003), who reports positive effects). Earlier existing studies also tend to rely on aggregated national or regional data and again throw up inconclusive results. Gil-Pareja, Llorca, and Serrano (2007), for example, find that regional export promotion is associated with 74% higher exports; Lederman, Olarreaga, and Payton (2010) find country-level correlations between spending on export promotion programmes and exports, but Bernard and Jensen (2004), using United States (US) state-level data, do not. Rose (2007) and Creusen and Lejour (2012) both find a positive relation between the presence of a foreign trade office with exports to that destination. As correlations may indicate successful rent seeking (self-selection bias) by large exporter communities, these aggregate studies rarely provide the hard evidence on the benefits of trade missions needed to convince most policy decision makers.

More recent studies starting from around 2008 have taken advantage of the burgeoning availability of firm-level datasets (see Van Biesebroeck, Konings, and Volpe Martincus (2016) for a review). Almost all find a positive and significant effect of export promotion support on firm-level exports. However, most of these studies only have data for firms which export, and, thus, are unable to evaluate the impact of trade missions on the extensive margins. They are also often limited to a non-random sample of firms, resulting in possibly biased estimates (e.g. Görg, Henry, and Strobl (2008); Lach (2002); Van Biesebroeck, Yu, and Chen (2015); Van Biesebroeck, Konings, and Volpe Martincus (2016); Mion and Muûls (2015); Lederman, Olarreaga, and Zavala (2016)).

Nonetheless, there are five firm-level studies, all from South America, that specifically evaluate trade missions using participant and non-participant and exporter

and non-exporter data. Volpe Martincus and Carballo (2008, 2010b, 2010c, 2012) and Álvarez and Crespi (2000) find consistently positive results, especially along the extensive margin (new export market entry or new product introduction to existing export markets). There is no significant evidence for the impact of trade missions on the intensive margins. It is still not clear, either, how these South American findings can be generalised to other settings, particularly to developed countries or countries with closer ties to the Asian region.

3. Victoria Trade Mission Programme

The Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR) has a range of trade programmes to help Victoria-based companies build their export capabilities. The programmes' activities have been designed to strengthen and diversify Victoria's export base. An important programme amongst these is known as the trade missions programme.[1]

The trade missions programme sits under the Victorian International Engagement Strategy (VIES) developed in 2010. The government-integrated strategy is a new set of coordinated programmes that include trade missions to respond to Victoria's economic challenges and capitalise on global opportunities. The overarching objective of the strategy is to secure the path towards sustained economic growth through deep international engagements, including exports and outward internationalisation. To achieve the objective, the strategy focuses its interventions on high growth and high market failure areas, including sectors in which barriers to entry are high and sectors in which high-growth international markets still show low awareness of Victorian capabilities.

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[1] There are other programmes that are outside the scope of this study but might be relevant, such as the Technology Trade and International Partnering (TRIP) programme. This programme provides grants to assist companies in attending recognised overseas conferences and trade events and meetings with regulatory authorities overseas. The programme targets companies in the biotechnology (including health, industrial and agricultural biotechnology, medical devices, and diagnostics) and small technology (micro technology and nanotechnology) areas. An amount of up to $10,000 funding is available to participating companies.

VIES has four strategic goals, all of which determined the design and objectives of the trade missions programme:

1. Internationalise Victorian industry – by helping Victorian businesses, particularly small and medium enterprises, in understanding and accessing international markets.

2. Develop knowledge and expertise – by helping companies gain a deeper understanding of market-specific knowledge and knowledge on international business processes and 'going global'.

3. Build strategic relationships – by recognising the importance of government-to-government relationships, broader engagements at the ministerial level, and the nurturing of existing relationships for international business outcomes.

4. Position Victoria globally – by forming partnerships with allied organisations in order to better expose Victoria's capabilities to high-growth markets that are still unaware of the capabilities.

Under the trade missions programme, DEDJTR takes participating Victorian organisations to key overseas markets. The goals are to showcase Victoria's capabilities in key industries and to introduce the participants to potential buyers, investors, and trading partners. The larger scale activities of the trade missions typically bring more than 100 Victorian organisations at one time. The more normal activities are smaller in scale, bringing around 20–100 Victorian businesses.

The trade missions are usually led by the premier and/or a minister and involve high-level government-to-government engagement in order to provide participating companies with a platform to develop new relationships (or nurture existing ones) in the destination regions through various activities, including business briefings and networking functions, site visits, trade exhibitions, and business matching. By participating in the missions, organisations can improve their capability in building international connections (fostering existing business relationships and identifying partnering opportunities), securing international sales and attracting foreign investment, developing skills and knowledge of international markets, enhancing their international profiles through new export market entry, understanding regulatory requirements in international markets, and securing local distributors and/or importers.

The destinations of the trade mission trips are countries or regions considered as high-growth markets. These include China, India, Southeast Asia, the Middle East, and Turkey. In addition, there are destination regions in which niche opportunities have been identified, including the Republic of Korea, Japan, the United States, and Latin America. Table 1 lists examples of the most recent destinations of the trade mission programmes.

Table 1. Most Recent Examples off Victorian Trade Mission Destinations

Period	Destination	Description
February 2015	United Arab Emirates, Saudi Arabia, and Turkey	This trade mission to the Middle East and Turkey targeted Dubai, Istanbul, Riyadh, and Jeddah, and various industries, including food and beverage, agribusiness, higher education, defence, fashion, equine, marine, and sustainable urban development (infrastructure, transport and water).
March 2015	Japan	Trade Mission to Foodex Japan (Japan's largest trade-only food show).
April 2015	Indonesia	This was a mission to attend Food and Hotel Indonesia 2015, Indonesia's leading annual food and hospitality exhibition which attracted more than 24,000 visitors, including many from the ASEAN region.
April 2015	Saudi Arabia	Higher education 'roadshow'[2] to attend the International Exhibition and Conference on Higher Education (IECHE) 2015 in Riyadh.
April 2015	United Arab Emirates, Saudi Arabia, and Kuwait	This mission to Dubai, Riyadh, and Kuwait was in collaboration with Austrade under the Australia Unlimited MENA Trade Mission programme[3] to support Victorian Vocational Education and Training (VET) providers.

Source: Compiled from http://www.business.vic.gov.au/support-for-your-business/trade-missions

For each trip, the trade missions programme provides $2,000–$3,000 funding to eligible participating companies. Furthermore, an eligible company is allowed to participate in and receive funding multiple trade mission trips. However, there is a maximum limit of $10,000 per company per financial year. In order to receive this funding, organisations must be headquartered in Victoria (or have significant contribution to Victoria's exports and jobs); be directly engaged in the industry or business prioritised

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[2] Education roadshows are not permitted in Saudi Arabia. Thus, participation in IECHE provides an alternative opportunity for Victorian higher education organisations to meet with prospective students.
[3] Mission programme refer to: http://www.austrade.gov.au/EventViewBookingDetails.aspx?Bck=Y&EventID=4002&M=283#.VNFRHP6KCPw (accessed April 2018).

by the programmes[4]; be financially viable; be able to demonstrate a sound case for doing business in the targeted regions; be currently exporting or able to demonstrate export readiness; be (or will be) exporting Victoria-originated goods or services (or with significant value added taken place in Victoria); be represented on the mission by an employee or officer of the company[5]; and not be seeking other funding to cover the same expenses of a mission.[6]

4. Empirical Method and Data

4.1. Empirical Method

To ensure that we identify the direction of causality of the estimated impact of the trade mission programmes, we combine two quasi-random experimental approaches: matching and difference-in-differences analysis. These approaches use cross-section and cross-time observables to control for the possibility that programme participation is not random by accounting for the fact that the more capable, interested, or talented businesses might choose to participate in trade mission programmes. In fact, we know that trade mission participation is not random due to some eligibility conditions related to business and export performance. For example, to be eligible for the trade mission programme, firms must be financially viable; be able to demonstrate a sound case for doing business in the targeted regions; and be currently exporting or able to demonstrate export readiness.

There is further selection by the grant provider, which may have their own objectives, such as which sector they want to emphasise. For example, preliminary investigation reveals that manufacturing, wholesale trade, and professional, scientific, and technical services and education and training were over-represented in the programme compared with the total population. These industries represent Victoria's relative comparative

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[4] This condition implies professional service firms (such as accounting and legal), chambers, municipal councils, and freight companies may apply to participate in the mission but will not be eligible for funding. However, industry associations directly representing member companies may be eligible for funding.

[5] Thus, funding eligibility excludes distributors, agents, or other in-market representatives. However, though they may be invited to participate in events, they will not be automatically entitled to all the privileges of the trade mission participants.

[6] Data on declined applicants, if any, would be useful in better understanding the selection issues.

advantage in terms of industrial capabilities. Three in four trade mission businesses are from the services industry.

4.1.1 Difference-in-Differences

The difference-in-differences analysis component can be essentially described as follows. Denote programme participation D_{it}, where $D_{it} = 1$ if firm i participates in the Victorian Government trade-supported programme in year t, and $D_{it} = 0$ otherwise. Denote X_{it} as a vector of observed covariates corresponding to observable firm and programme characteristics. Denote Y_{it}^1 as the observed outcome (say, export revenues) and Y_{it}^0 as the unobserved (counterfactual) outcome. Hence, denote $E(Y_{it}^1|X_{it}, D_{it} = 1)$ as the observed average outcome of participating firms conditional on X_{it} and $E(Y_{it}^0|X_{it}, D_{it} = 1)$ as the counterfactual average outcome of participating firms had they not participated. Note that for a given firm, we either observe Y_{it}^1, or Y_{it}^0, but not both variables at the same time. Then, the impact of the trade promotion programme is measured by the average treatment effect on the treated (ATT) denoted by τ:

$$\tau = E(Y_{it}^1|X_{it}, D_{it} = 1) - E(Y_{it}^0|X_{it}, D_{it} = 1) \tag{1}$$

In equation (1), τ measures the average change in the outcomes of participating firms as the difference between observed average outcomes after treatment and counterfactual average outcomes had the firms not received the treatments. It is clear from the equation that to obtain an unbiased estimate, we need an unbiased estimate of $E(Y_{it}^0|X_{it}, D_{it} = 1)$, the counterfactual. An obvious candidate is to use the average outcome of a selected group of non-participants. This control group would need to be identified by taking into account any potential non-randomness in programme participation.[7]

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[7] As a stylised fact, exporters from all countries are larger (on the basis of employment and tangible assets), employ more skilled and well-paid workers, and are more likely to be foreign owned and part of a multi-plant enterprise (Bernard and Jensen, 2004; Roberts and Tybout, 1997; Wagner 2007; Bernard et al., 2007; Görg, Henry, and Strobl, 2008). Moreover, exporting is a persistent process: today's exporters are more likely to export tomorrow, which suggests the influence of the fixed and sunk costs of exporting; and the managerial or product orientation towards export markets (Bernard and Jensen, 2004; Timoshenko, 2015).

4.1.2 Matching

As discussed above, we need to select the control group such that the firm heterogeneous characteristics are comparable in both groups. As mentioned, we do this first by selecting a control group that matches the participation group on observable factors that we believe determine exporting (and, therefore, participation in the trade mission programme). Specifically, we use propensity score matching, which is estimated as the predicted probability of a firm to participate in the programme based on observed co-variates, X. In addition, to assess the robustness of the estimates, we also implement the coarsened exact matching method.

For each year, the observable co-variates vector X_{it} consists of the total sales revenues, whether or not the firm is an exporter, import values, total wages paid, share of foreign ownership, and the one-digit industry code. Thus, X_{it} measures the size and the extent of international engagement of the firms within each broad industry. Using only the years before the Victorian Trade-supported programme began (that is, data from 2009 or earlier), we compute the pre-2009 average values of each component in X_{it} across the years for each firm. Denote the average values as X_{ipre}; these covariate vectors are the independent variables for the propensity score matching.

We complemented the propensity matching method with a non-parametric method known as exact matching. The exact matching approach is an old approach that aims to identify 'similar' non-participants in a more direct way. Instead of comparing the propensity scores computed as a function of the matching variables (total sales revenue, imports, share of foreign ownership, industry), with exact matching we make sure that the selected similar non-participants have the same values of total sales revenue, imports, share of foreign ownership, and industry as those of a given participant. For example, if a participant has a total sales revenue = $1 million, imports = $100,000, share of foreign ownership = 5%, and industry = manufacturing, then the matched non-participants would have identical values in all of those matching variables.

There are, however, some dimensionality problems when the matching variable, such as total sales revenue, is continuous. To avoid this problem, we use the more recently developed coarsened exact matching (CEM) approach, where the continuous matching variable has been 'coarsened' or 'discretised' (Iacus, King, and Porro, 2011a, 2011b). In

this case, the CEM algorithm first coarsens each continuous variable to ensure that substantively indistinguishable values (with respect to programme participation) are grouped and assigned the same numerical value. Then, an exact-matching algorithm is applied to each strata within the coarsened data to identify the control group (non-participants that are most similar to the participants).

As in the case of the propensity matching approach, we use two 'most similar' definitions in order to allow us to assess the sensitivity of impact estimates to the matching approach:

1.   One exact match (CEM-K2K): For each participant, select one non-participant identified as one of the exact matches.

2.   All exact matches (CEM): For each participant, select all participants identified as the exact matches.

Finally, using sample data consisting of the participants and matched non-participants, we estimate the DID estimator specified in equation (1) as:

$$Y_{it} = X_{it}\beta + \tau D_{it} + \mu_i + \lambda_t + \varepsilon_{it} \qquad (2)$$

Note that in specifying equation (2), we assume the conditional expectation function $E(Y|X,D)$ is linear and that any unobserved firm characteristics are decomposable into time-invariant firm-specific fixed effects (μ_i), common across firms' year effect (λ_t) and a random component (ε_{it}). The introduction of the covariates (X) linearly may have led to inconsistent estimates of τ due to potential misspecification (Meyer, 1995; Abadie, 2005) if we had not limited our estimation sample with the matching analysis.

4.2. Data

We utilise two firm-level datasets linked to each-other using year and business identifiers:

(i) The first data set contains the population of all 1,563 businesses that participated in a trade mission with the Victorian Government between 1 December 2010 and 30 June 2013. Each trade mission comprises 20–100 businesses.

(ii) The second dataset contains the population of all Australian businesses that completed a Business Activity Statement and Business Income Tax (BAS-BIT)

database between 2001–2002 and 2012–2013 (over 19 million records). This database is *indirectly* accessible as part of the recently launched Australian Bureau of Statistics' Business Longitudinal Analysis Data Environment (BLADE).[8]

The BAS-BIT database includes a number of indicators of business performance, including exports of goods and services, sales, turnover, and effective full-time employment.[9] Unlike most firm-level datasets, our database contains businesses of all sizes. However, the database only records export revenues if the recipient of the good or service is outside Australia. This includes consultancy services, contract research, and business services undertaken in Australia but paid for by an overseas company. Tourism and education services consumed in Australia by non-residents are not recorded in the BAS-BIT database as they are not tax-free.[10] Although this means service export sales are underestimated, at least relative to the measured goods exports, this will not bias our results if the extent of underestimation stays constant before and after the programme and between the participation and control groups.

For the financial year 2011–2012, the BAS-BIT database contains records of 2.5 million businesses in Australia. After removing the records with zero values in sales, business income, total expenses, or salary and wage expenses we are left with 1.5 million Australian and 660 thousand Victorian businesses (see Table 2 below). Of the 1,192 businesses that undertook a trade mission between 2010 and 2013, we were able to match around 800 (of a possible 1,192) unique trade mission businesses to the BAS-BIT database. This matching revealed that manufacturing, wholesale trade, professional, scientific and technical services, and education and training were over-represented in the programme compared with the total population. These industries represent Victoria's relative comparative advantage in terms of industrial capabilities. Three in four trade mission businesses are from the services industry.

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[8] For more details, see https://industry.gov.au/Office-of-the-Chief-Economist/Data/Pages/Business-Longitudinal-Analysis-Data-Environment.aspx

[9] Exported goods are goods and services tax-free if they are exported from Australia within 60 days of one of the following, whichever occurs first: the supplier receives payment for the goods or the supplier issues an invoice for the goods. Other exports generally include supplies of things other than goods or real property for consumption outside Australia, such as services, various rights, recreational boats, financial supplies, and other professional services.

[10] Goods and services tax.

5. Results

5.1. Matching

5.1.1. Propensity Score Matching

We estimated two propensity models: PSM1 and PSM2. The second model is the same as the first one except for two additional matching variables: value of exports and export status before the first year of the trade mission programme (2010). The coefficient estimates of each propensity score equation are summarised in Table 2.

Based on the propensity scores of PSM1 and PSM2, we identify the one-to-one matched nearest neighbours (NN1) and five-to-one matched five nearest neighbours (NN5). Table 4 summarises the average differences between the participants (P) and non-participants (N) in terms of export value and export status. From the results, it appears that the matched control group based on PSM2 and the 1-1 nearest neighbours is the most similar to the participant group. The differences (N-P column) between the treated and control groups after matching are not statistically significant (the average export value of the matched non-participants is in fact greater than that of the matched participants).

Table 2. Number of Victorian Businesses and Average Firm Characteristics by Trade Mission Participation Status, 2001–2002 to 2012–2013

(T = trade mission participants; C = potential control group)

Year	Number of Businesses		Proportion of Exporters (%)		Export Sales ($ thousands)		Total Sales Revenue ($ millions)		Employment (full time equivalent persons)	
	T[11]	C	T	C	T	C	T	C	T	C
2001–2002	424	397,189	41	3	20600	87	137.0	1.4	577	11
2002–2003	459	440,022	43	3	15200	70	122.0	1.4	622	10
2003–2004	501	488,299	41	3	15400	75	126.0	1.5	465	10
2004–2005	525	493,570	43	3	17400	82	128.0	1.7	735	15
2005–2006	552	548,418	42	3	16700	78	125.0	1.7	314	9
2006–2007	589	613,271	42	2	11600	2	121.0	1.7	302	8
2007–2008	646	666,195	43	2	14000	77	119.0	1.8	290	8
2008–2009	657	676,267	40	2	13500	93	148.0	1.7	326	8
2009–2010	713	626,120	43	2	7926	127	146.0	1.9	323	8
2010–2011	772	646,030	44	2	8684	161	170.0	1.9	315	9
2011–2012	821	661,278	44	2	7725	185	158.0	2.0	318	9
2012–2013	795	656,152	45	2	6419	161	154.0	2.1	323	9

Notes: Constructed based on merged Victorian Government trade mission programme administrative database and cleaned version of BAS-BIT database for the State of Victoria. The total number of businesses may not be identical to the official ABS' estimate of the number of businesses in Victoria in each financial year.
Source: Author.

Table 3. Propensity Score Matching Coefficient Estimates.

Independent Variable	PSM1	PSM2
Mean pre-2010 output	1.87e-10	1.98e-10
	(1.76e-10)	(1.68e-10)
Mean pre-2010 import	3.83e-09	-5.27e-09
	(5.03e-08)	(3.97e-08)
Mean pre-2010 foreign ownership share	1.512***	0.582**
	(0.288)	(0.292)
Mean pre-2010 wages	7.90e-09***	7.20e-09***
	(1.16e-09)	(1.08e-09)
Mean pre-2010 export sales		-6.52e-11
		(9.97e-10)
Mean pre-2010 export status		2.204***
		(0.097)
Constant	-6.227***	-6.577***
	(0.185)	(0.189)
Industry fixed effects	Yes	Yes
Sample size	222,307	222,307
Pseudo-R2	0.0752	0.1405

Notes: The dependent variable D_i is the programme participation status between 2010–2011 and

[11] As mentioned in the preceding paragraph, 843 business that participated in the Trade Missions programme and recorded in the DEDJTR database were found in the ABS BAS-BIT database. However, some of these have missing values in terms of the matching variables, such as sales revenue, wages/employment, or exports, for various reasons. For example, some of the businesses may not have existed prior to 2010–2011 or they may have existed under different ABNs. As a result, the figures reported in the columns with the 'P' heading (that is, the number of participants) decrease as we move away from the VIC Trade Mission years (2010–2011 to 2012–2013).

2012–2013 ($D_i = 1$ if business i participated in any year in the period). Estimated using matched DEDJTR Victoria Trade Missions and ABS BAS-BIT databases. The notations *, **, and *** denote statistically significant estimates at the 10%, 5%, and 1% levels. Standard errors are in parentheses. Source: Author.

5.1.2. Coarsened Exact Matching

For the exact matching, we used the same two sets of matching variables used in the PSM1 and PSM2 propensity matching above. The differences in the programme participation after matching using the coarsened exact matching (CEM) are summarised in Table 5 below. Corresponding to the NN1 and NN5 matching criteria in the case of propensity matching, we produce CEM-K2K matches (1-1 match) and CEM (many-to-1) matches. The performance of the CEM matching appears to be worse than the propensity matching as shown by the statistically significant pre-programme participant and non-participant differences in all cases except for the case of export probability and when the full set of matching variables (PSM2) is used.

Table 4. Differences in Pre-programme Participation Average Export Sales and the Export Probability of Participants (P) and Non-participants (N), Before and After Matching; PSM1

	Nearest Neighbour (NN1)			Five Nearest Neighbours (NN5)		
	P	**N**	**N – P**	**P**	**N**	**N – P**
Before matching						
Sample size	575	596,516		575	596,516	
Mean (export) ($)	824,559	21,249	-803,310	824,559	21,249	-803,310
t-stat (Ho: N – P = 0)			-3.285***			-3.285***
Mean (Prob. [export])	0.445	0.037	-0.408	0.445	0.037	-0.408
t-stat (Ho: N – P = 0)			-51.530***			-51.530***
After matching (PSM1)						
Sample size	487	469		487	12,143	
Mean (export) ($)	867,536	236,962	-630,575	867,536	442,275	-425,261
t-stat (Ho: N – P = 0)			-1.715*			-0.239
Mean (Prob. [export])	0.493	0.204	-0.489	0.493	0.043	-0.450
t-stat (Ho: N – P = 0)			-9.773***			-43.922***
After matching (PSM2)						
Sample size	487	470		487	11,145	
Mean (export) ($)	867,536	1,785,873	-918,337	867,536	458,901	-408,636
t-stat (Ho: N – P = 0)			1.011			-0.235
Mean (Prob. [export])	0.493	0.504	0.011	0.493	0.098	-0.395
t-stat (Ho: N – P = 0)			0.354			-27.615***

Note: *, **, and *** denote statistically significant estimates at the 10%, 5%, and 1% levels.
Source: Author's calculations.

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To conclude, the matching analysis suggests that nearest neighbour (NN1) matching with the full set of PSM2 matching variables (which include the pre-2010 average export sales and export status) is the only one that can reduce the pre-programme differentials in both export performance measures to an amount that is not statistically significantly different from zero. Having said this, to assess the robustness of the estimates to the matching results, we proceed to produce a different set of impact estimates based on all potential non-matched and matched samples.

Table 5. Differences in Pre-programme Participation Average Export Sales and the Export Probability of Participants (P) and Non-participants (N), Before and After Matching; CEM and CEM-K2K

	CEM-K2K			CEM		
	P	**N**	**N – P**	**P**	**N**	**N – P**
After matching (PSM1 variables)						
Sample size	566	566		567	541,127	
Mean (export) ($)	752,287	48,118	-704,170	752,288	10,474	-741,814
t-stat (Ho: N – P = 0)			-2.305**			-15.173***
weighted mean						-693,857
t-stat (Ho: N – P = 0)						-2.28**
Mean (Prob.[export])	0.437	0.093	-0.344	0.437	0.039	-0.398
t-stat (Ho: N – P = 0)			-14.225***			-48.756***
weighted mean						-0.332
t-stat (Ho: N – P = 0)						-15.89***
After matching (PSM2 variables)						
Sample size	563	563		564	490,820	
Mean (export) ($)	753,604	1,028,083	270,478	756,261	10,022	-756,261
t-stat (Ho: N – P = 0)			0.313			-17.126***
weighted mean						-611,402
t-stat (Ho: N – P = 0)						-2.00**
Mean (Prob. [export])	0.439	0.439	0	0.438	0.032	-0.406
t-stat (Ho: N – P = 0)			1.000			-54.625
weighted mean						2.93e-14
t-stat (Ho: N – P = 0)						0.00

Note: *, **, and *** denote statistically significant estimates at the 10%, 5%, and 1% levels.
Source: Author's calculation

5.2. Impact of Trade Missions

5.2.1. Intensive Margins

We obtain eight sets of DID impact estimates by comparing the Victoria Trade Mission participants to different sets of non-participants produced by different matching methods based on the matching variables in the PSM2 model. We refer to these eight sets of impact estimates as Model 1 to Model 8 estimates. In Model 1 ('M1'), we did not perform any matching. All available non-participating firms were used as the control group. In the rest of the models, we used matching. In Model 2, we used the nearest neighbour based on the estimated propensity scores. In Model 3, we used the five nearest neighbours based on the estimated propensity scores. In Model 4, we used one CEM matched non-participant for each participant. In Model 5, we used all CEM matched non-participating firms. Models 6–8 are similar to Models 2–4, respectively, except for the addition of two time-varying control variables (firm age and size of employment). These eight sets of estimates of the impacts of Victoria Trade Mission programme on the participants' export sales are summarised in Table 6.

Table 6. Average Increase in the Export Sales of Victoria Trade Mission Participants, 2010–2013 (%)

	M1	M2	M3	M4	M5	M6	M7	M8
0–12 months								
Average	**135**	**219**	192	186	138	**172**	161	157
Lower 95%-CI	117	117	141	103	120	60	85	51
Upper 95%-CI	152	321	244	269	156	284	237	263
0–24 months								
Average	165	345	226	291	174	343	224	332
Lower 95%-CI	139	198	170	172	147	151	131	142
Upper 95%-CI	190	491	281	409	200	535	316	522

Notes: Estimates are based on a difference-in-difference analysis of the participating Victorian firms compared to different sets of non-participating Victorian firms. Model 1 (M1) uses all non-participating firms as the control group. Model 2 uses one propensity score matched non-participating firm for each treated firm as a control. Model 3 uses five propensity score matched non-participating firms. Model 4 uses one CEM matched non-participant. Model 5 uses all CEM matched non-participating firms. Models 6–8 are similar to Models 2–4, respectively, except for the addition of two time-varying control variables (firm age and size of employment). The lower and upper bounds (lower 95%-CI and upper 95%-CI) are the approximated 95% confidence intervals.
Source: Author's calculations.

Table 6 shows that regardless of the method used, the average impact of the trade mission programme on export revenue is positive and significant, both in terms of magnitude and statistical significance. Before controlling for the selection on observables, participants had on average a 135% (see Model 1) higher export revenue within 12 months compared with the control group. The corresponding 95% confidence interval was 117%−152%. The estimated impact within 24 months was higher at an average of 165%. However, moving from a one-year to a two-year period only added around 30 percentage points to the impact, which is less than the 135% initial impact in the first year.

Model 2 (and its more robust version, Model 6) should provide the most reliable impact estimates as the control group showed no statistically significant difference for the programme participants in terms of pre-programme export performance. On average, the impact estimates produced by Models 2 and 6 were 219% and 172%, respectively. However, their 95% confidence intervals were also wider, suggesting that we need to take into account the range of the impact estimates. Nevertheless, even the most conservative estimates summarised in Table 2 above (which is 51% according to Model 8's lower bound) suggest that trade mission participation had a significant positive impact.

The average export sales of participants in the base year (that is, pre-programme participation) were $809,662. Based on the most conservative model specification, Model 6 (which is the more restrictive version of the preferred Model 2), in monetary terms, trade mission participation increased participants' export sales by at least 60% x $809,662 = $485,797 within 12 months.

5.2.2. Extensive Margins

Approximately half of the programme participants were not exporters in the base year. Using this natural variation in the data, we derived DID impact estimates using the probability of being an exporter as the export performance measure (instead of the value of exports). The results, summarised in Table 7, present five sets of estimates corresponding to Models 1−5 discussed above. Based on the preferred specification of Model 2, trade mission participation increased the probability of becoming an exporter by 26 percentage points within 12 months (an approximate 53% increase) and 35 percentage points within 24 months (an approximate 71% increase).

Table 7. Increase in Probability of Export of Victorian Trade Mission Participants, 2010–2013, by Empirical Model Specification (percentage points)

	Model 1	Model 2	Model 3	Model 4	Model 5
0–12 months					
Average	21	26	26	24	20
Lower 95%-CI	15	17	18	15	18
Upper 95%-CI	26	35	34	33	21
0–24 months					
Average	26	35	32	34	25
Lower 95%-CI	18	26	24	24	18
Upper 95%-CI	33	45	39	43	32

Notes: Estimates are based on the difference-in-difference analysis of participating Victorian firms compared to different sets of non-participating Victorian firms (see the notes for Table 6). No results are shown for Models 6–8 due to non-convergence issues. The lower and upper bounds (lower 95%-CI and upper 95%-CI) are the approximated 95% confidence intervals.
Source: Author's calculations.

5.2.3. Characterising the Impact

We now investigate how the impact varies in terms of three factors, firm size, sector, and trade mission destination country, in order to better understand the relationship between trade mission participation and export performance. First, approximately 98% of the participants are small and medium-sized enterprises (SME) with fewer than 200 employees. In terms of sector, services is the largest sector, representing slightly more than 70% of the participants; the shares for manufacturing and resources are around 25% and 5%, respectively. Finally, in terms of destination, due to sample size limitations, we divide the destinations into three regions: West, Asia, and Other.[12] Asia is the destination with the largest number of participants, representing more than 75% of them. The number of participants to Western countries is roughly the same as that for other countries at about 50% of all participants. However, note that because a participant may come to more than one trade mission the participant can go to more than one region.

Table 8 provides impact estimates based on the split sample according to employment size, main sector, and the destination country categories as defined above. First, there is

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[12] 'West' includes the United Kingdom, the United States, Spain, Netherlands, Germany, Sweden, Denmark, Finland, Switzerland, Austria, and Canada. 'Asia' includes China, India, Japan, the Republic of Korea, Malaysia, Singapore, Indonesia, Hong Kong, Taiwan, Thailand, Viet Nam, and the Philippines. 'Other' includes the United Arab Emirates, Brazil, Colombia, South Africa, Botswana, Saudi Arabia, Turkey, and Qatar.

evidence that the impact of the trade missions is strongest for SME firms, particularly for increasing the value of exports, where the average impact for SMEs is almost double. Similarly, the impact in terms of the probability of becoming an exporter is also larger for SMEs, however the difference between the two groups is not as large as the difference in terms of export values. These results are consistent with the expectation that it is smaller firms that are more affected by the cost of establishing an export market. However, relatively speaking, it appears smaller firms need more help in terms of increasing their export market size than in establishing an export market size.

Table 8. Trade Mission Participation Impact by Firm Size, Sector, and Country Destination, 2010–2013.

	Intensive Effect (%)			Extensive Effect (percentage points)		
	Mean	**Lower**	**Upper**	**Mean**	**Lower**	**Upper**
Firm size						
SME (<200 workers)	132	84	192	19	13	25
Large (200+ workers)	71	-4	205	15	2	28
Sector						
Resources	366	96	1009	30	12	48
Manufacturing	483	289	774	37	28	46
Services	94	56	141	18	12	23
Destination						
West	457	253	778	40	28	52
Asia	252	179	345	29	24	35
Other	216	122	349	27	18	36

Notes: The estimates are based on a difference-in-difference analysis of participating Victorian firms compared to different sets of non-participating Victorian firms (see the notes for Table 6). Model 3 (propensity matching) is used. The lower and upper bounds (lower 95%-CI and upper 95%-CI) are the approximated 95% confidence intervals.
Source: Author's calculations.

Second, we compare the impact of trade mission participation in terms of the main industry of the participants. Firms in resource and manufacturing industries appear to have higher barriers to both export market expansion (for those who are already exporters) and the establishment of any export market present. It is unclear, however, what drives these results since we do not have any additional details with regards to the specific goods or services exported. It is possible that Victorian exporters have a higher reputation in services exports (such as education, healthcare, and professional services) compared to goods exports. If that is the case, then it would be more difficult for manufacturing and resource firms to establish and expand their export market presence.

Finally, Table 8 also provides separate estimates based on the region of the trade mission destination countries. In contrast to our expectation, the trade mission programme has a higher impact on participants of trade missions. Again, it is not clear why this is the case since we do not have further details about the actual destination of the exports or the trading partner companies. Statistically, Asia is the most important export destination for Australian exporters, including those from Victoria. It is possible that within global value chains, the trade mission to the West introduces Victorian exporters to Western companies that require Victorian exports as part of the global value chains of those companies.

6. Conclusions and Policy Implications

6.1 Trade Missions Are Helpful

Firms face many obstacles when trying to enter the export market, and one of the most significant ones manifests in the form of information barriers. Firms would need to collect information in order to identify the potential export markets and the characteristics of consumers, and the market entry procedures and marketing channels (including identifying capable, reliable, trustworthy, and timely trade partners). Markets cannot work if market signals are hard to read. If markets perform poorly, a country may miss out on many gains from specialisation and economies of scale. These gains from trade are critical in a small isolated economy distant from most global markets, such as Australia.

Various formal and informal solutions for reducing the significant cost of informational and contact establishment barriers have been proposed. Institutions such as embassies and consulates that especially set up trade promotion organisations and their trade promotion programmes (trade shows and trade missions) are part of the solution to the market failure problem. However, existing evidence provides conflicting conclusions with regards to the effectiveness of these solutions.

This study exploited firm-level datasets and found a positive and significant effect of export promotion support on firm-level exports. Unlike most existing studies, especially in developed country settings, this finding is more robust to the bias arising from the use of aggregate data or the non-random samples of the participating firms that are exporters. The more common approach, especially in developed country literature, is to evaluate

export support programmes as a bundle and rely on aggregated national or regional data, resulting in inconclusive results. The observed correlations may indicate successful rent seeking by large exporter communities instead of the genuine impact of these programmes. These aggregate studies rarely provide the hard evidence needed to convince most policy decision makers.

Our findings complement the findings of similar firm-level data studies based on developing country data from South America. However, unlike the South American studies, our findings show that trade missions can still provide effective assistance for firms to enter foreign markets (the extensive effect) when those firms are expected to have superior (compared to firms from developing countries) access to market intelligence.

6.2 Policy Implications

The positive finding of this study supports the case for policymakers to implement trade mission programmes. The positive effect of the trade missions indicates that personal contacts made during the missions overcome some of the additional information costs associated with doing business in foreign markets, and businesses actually face these costs as barriers to enter the markets. These costs include establishing a relationship of trust, identifying potential customers, and understanding their nuanced requirements.

Our findings also support the case for targeting SMEs, as they are more likely to be affected by the cost barriers related to incomplete information when trying to establish and expand in the export markets. The finding suggests that SMEs face more serious problems in expanding export sales, and these plausibly information-related problems can be alleviated by participation in trade mission activities. This implies trade missions can be more effective if they introduce participants to larger groups of potential importers.

Moreover, the effectiveness of trade missions appears to vary by country destination and industry. Specifically, missions to Western countries, as opposed to Asia, have a larger impact. Unfortunately, we do not have enough details to interpret what this means in terms of policy. It is plausible that with the increased importance of global value chains, in order to establish or increase market presence in Asia (the most important destination for Australian firms), Victorian firms would need introductions to multinationals based in the Western countries.

6.3 Directions for Future Research

There are a number of limitations to our study that will be the subject of our further analysis. First, the estimated programme effect can be biased if there remain unobserved and time-varying firm-related factors that affect both programme participation and export outcomes. This could be the sudden identification of an export opportunity by the firms' managers, or a change in the market circumstances for a specific niche. We will need to investigate the robustness of our estimates against unobserved and time-varying confounding factors by implementing the lagged dependent variable method in the next iteration of the study[13] or assessing the influence of such factors through the method proposed by Altonji et al. (2005).

Finally, our study did not evaluate the welfare impact of the programme. At the very least, a follow-up study that compares the costs and benefits of the programme would be able to provide more justification for whether or not trade mission programmes are welfare improving. It would also be interesting to investigate the importance of the ranking of government representatives engaged in the missions, both from sending and hosting governments. Are trade missions engaging higher ranked government officers more likely to have more significant impacts? Why and why not?

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[13] See O'Neill et al (2016).

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