

The expected economic impacts of the EU-Canada Comprehensive Economic and Trade Agreement in Finland

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Abstract

The CETA agreement aims to remove especially various non-tariff measures (NTMs) on trade and investment stemming from regulatory practices, in addition to the nearly full elimination of tariffs between the EU and Canada. This report analyses the expected impacts of the agreement to the Finnish economy with a GTAP CGE model and microdata analyses on the current trade structures. The expected GDP impact of 0.04 percent to Finland is slightly higher than the EU average (0.03 percent). In terms of value added, most sectors in Finland grow minimally as a result of the CETA. The highest bilateral trade effects are found for motor vehicles and transport equipment industries where both bilateral exports and imports are expected to increase by over 100 percent. Further, the extensive liberalisation of services trade is likely to have some positive effects for Finland as some 30-50 percent of the current domestic value added from Finnish exports to Canada originated from service exports. Even nearly total opening of public procurement markets to EU exporters in Canada is not, again, likely to result in very large benefits for EU firms in absolute terms, while some increases are possible. The reduction of fixed and marginal costs of exporting in the CETA agreement is likely to open the Canadian market to Finnish SME exporters, which have not entered the Canadian market as well as other export markets until now.

Key words: EU-Canada Comprehensive Economic and Trade Agreement (CETA), Finland, economic impacts, ex-ante

JEL classes: F13, F17

Abbreviations

| | |
|-------------|--|
| CETA | EU-Canada Comprehensive Economic and Trade Agreement |
| CGE | Computable General Equilibrium (model) |
| EC | European Commission |
| EU | European Union |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| GTAP | Global Trade Analysis Project |
| IPR | Intellectual Property Rights |
| OECD | Organisation for Economic Co-operation and Development |
| NTM | Non-tariff Measure |
| RTA | Regional Trade Agreement |
| SME | Small and Medium sized Enterprises |
| SPS | Sanitary- and Phytosanitary Measures |
| TBT | Technical Barriers to Trade |
| TiVA | Trade in Value Added (statistics) |
| TSIA | Trade Sustainability Impact Assessment |
| UK | United Kingdom |
| UN Comtrade | United Nations' Comtrade statistical database |
| US | United States |
| USD | United States Dollar |
| WIOD | World Input-Output Database |
| WTO | World Trade Organisation |

Laaja tiivistelmä

EU:n ja Kanadan välisessä vapaakauppasopimuksessa (CETA, Comprehensive Economic and Trade Agreement) keskeisessä asemassa on tullien ulkopuolisten kaupanesteiden (NTM, Non-tariff measures) vähentäminen. Sopimus poistaa paitsi lähes kaikki jäljellä olevat tuontitullit EU:n ja Kanadan välisestä kaupasta, myös lainsäädännöllisiä ja muita teknisiä esteitä, jotka rajoittavat kauppaa ja investointeja. Palvelukaupan ja investointien osalta CETA onkin tähän asti kattavin EU:n solmima kauppasopimus. Lisäksi sopimus muun muassa avaisi Kanadan julkisia hankintoja EU-toimijoille enemmän kuin toistaiseksi millekään muulle Kanadan kauppakumppanille.

Suomen suora vienti Kanadaan 2011–2015 tuotti vuosittain arviolta 350–450 miljoonaa euroa kotimaista arvonlisäystä. Vuonna 2015 palveluiden osuus viennin tuottamasta 450 miljoonan euron arvonlisäyksestä oli noussut 50 prosenttiin, kun se vielä vuonna 2002 oli vain 20 prosenttia.¹ Huomattava osa palveluviennistä on lähtöisin teollisuustoimialoilta. Palveluiden ohella koneet ja laitteet sekä elektroniikkatuotteet ovat olleet merkittäviä kotimaisen arvonlisäyksen tuottajia Suomen viennissä Kanadaan. Näiden kolmen tuoteryhmän yhteenlaskettu osuus kokonaissummasta on viime vuosina ollut 60–70 prosentin luokkaa. Yhteensä suorasta Suomen viennistä Kanadaan syntynyt kotimainen arvonlisäys vastasi 0,2–0,3 prosenttia Suomen bruttokansantuotteesta. Suomalaisten tuotteiden loppukäyttö Kanadassa taas vastaa yhteensä 0,3–0,4 prosentista Suomen vuotuisesta bruttokansantuotteesta. Tämä luku sisältää sekä suoran että epäsuoran viennin luoman kotimaisen arvonlisäyksen. Suomen ja Kanadan välinen kauppa on ollut lähes koko 2000-luvun Suomelle ylijäämäistä sekä bruttomääräisenä että arvonlisäyksellä mitaten. Kanadan bruttovienti Suomeen on koostunut pääasiassa kaivosteollisuuden tuotteista, palveluista ja moottoriajoneuvoista. Suomelle Kanadan kauppa on vastannut 1,2 prosenttia viennistä ja 0,8 prosenttia tuonnista. Kanadalle EU kokonaisuudessaan on vastannut 11 prosenttia viennistä ja 14 prosenttia tuonnista, kun taas EU:n kokonaisviennistä vienti Kanadaan muodostaa noin yhden prosentin.

Ulkomaisten suorien sijoitusten virrat Suomesta Kanadaan ovat olleet suhteellisen pieniä, mutta kokonaisuudessaan Suomen suorien sijoitusten kanta Kanadassa on pysynyt yli 1,5 miljardissa eurossa vuodesta 2010. Kanadan

¹ Vain viennin tuottama kotimainen arvonlisäys lisää bruttokansantuotetta. Bruttomääräisen viennin arvoon sisältyy tyypillisesti merkittävä määrä ulkomaista arvonlisäystä ulkomaisten välituotteiden kautta. Bruttomääräisesti vienti Kanadaan on viime vuosina ollut noin 600-1000 miljoonaa euroa. Tästä summasta ja vuosittaisesta vaihtelusta suuri osa on heijastellut öljytuotteiden viennin arvoa, josta jää kuitenkin hyvin pieni osuus Suomeen arvonlisäyksenä. Kotimaisen arvonlisäyksen osuus viennin arvosta on laskettu tuotekohtaisesti rekisteriaineistojen avulla. Metodologia näiden laskelmien tekemiseksi on esitelty raportissa Haaparanta ym. 2017, '100 vuotta pientä avotaloutta', Valtionneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 73/2017.

ulkomaisten suorien sijoitusten kanta Suomessa ylitti miljardin euron rajan vuonna 2015. Vuosien 2002 ja 2014 välisenä ajanjaksona Suomesta suoraan Kanadaan tuotteita vievien yritysten määrä vaihteli 800:n ja 1200:n välillä. Valtaosa näistä yrityksistä oli tavaroiden viejiä, mutta tunnistettujen palveluviejien määrä kasvoi ajanjaksolla 90:stä 150:een. Vientiyritysten kokonaismäärään suhteutettuna 6–10 prosenttia tavarantieistä ja 10–12 prosenttia palveluviejiä kävi kauppaa Kanadaan. Suomen vienti Kanadaan on ollut varsin keskittynyttä: 20 suurinta vientiyritystä vastasi yli 60 prosentista kotimaista arvonlisäystä.

Koulutustaustan mukaan jaoteltuna korkeasti koulutetut työntekijät tuottivat noin 40 prosenttia Suomen viennin kotimaisesta arvonlisäyksestä, kun peruskoulun käyneiden työntekijöiden tuottama osuus oli 8 prosenttia. Kanadaan vientiä harjoittavien yritysten työvoima oli selvästi suomalaisten yritysten keskiarvoa korkeammin koulutettua, ja näiden yritysten työntekijöistä noin 70 prosenttia oli miehiä.

Kaupanesteet EU:n viennille Kanadaan on arvioitu kokonaisuudessaan jonkin verran pienemmiksi kuin Kanadan viennin esteet EU-maihin. Ero syntyy pääosin tullien ulkopuolisista kaupanesteistä. Tullimaksut tuonnille EU-maista Kanadaan ovat viennin arvolla painotettuna keskimäärin 2,2 prosenttia kaupan arvosta ja arvioidut muut kaupanesteet noin 24 prosenttia. EU:n tullimaksut ja muut kaupanesteet Kanadan tuonnille taas ovat vastaavasti keksimäärin 1,1 ja 29 prosenttia. Suomen ja Kanadan välisessä kaupassa kaupanesteet ovat kumpaankin suuntaan EU-keskiarvoa matalampia.

Aiemmissä tutkimuksissa arvioidut CETA-sopimuksen vuotuiset, pitkänajan BKT-vaikutukset koko EU:n tasolla vaihtelevat 0,02 ja 0,08 prosentin välillä. Vaikutukset Kanadalle ovat suurempia, koska EU on Kanadalle selvästi merkittävämpi kauppakumppani kuin Kanada EU:lle. Tullien ulkopuolisten kaupan esteiden vähentämisen arvioidaan olevan tärkein selittävä tekijä EU-tason BKT-vaikutuksille. Toimialatasolla palveluiden, moottoriajoneuvojen valmistuksen ja meijeriteollisuuden odotetaan hyötyvän sopimuksesta eniten EU-alueella keskimäärin, kun taas EU:n lihanjalostusteollisuus kuuluisi sopimuksen suurimpiin häviäjiin.

Tutkimusnäytön valossa vapaakauppasopimusten kokonaisvaikutukset riippuvat niiden yksityiskohtaisesta sisällöstä ja vaikutuksista eri toimialoihin, yrityksiin, viennin rajakustannuksiin ja kiinteisiin kustannuksiin sekä markkinoille pääsyyn. Odotettujen vaikutusten etukäteisarvioinnissa käytetään laajasti laskennallisia yleisen tasapainon malleja (YTP-mallit), kuten tässä tutkimuksessa Suomen taloudelle koituvien vaikutusten arviointiin käytetty GTAP (Global Trade Analysis Project) -malli. Jo toteutuneiden alueellisten kauppasopimusten jälkikäteisanalyysissä niiden on havaittu kasvattaneen kahdenvälisiä kauppavirtoja keskimäärin 40 prosentilla. Koska tullien lasku pienentää viennin

rajakustannuksia, muttei vaikuta kiinteisiin kustannuksiin, se hyödyttää lähinnä niitä toimijoita, joilla jo on kyseisen tuotteen vientikauppaa kohdemaahan. Useimpien hyödykkeiden osalta CETA-sopimuksesta seuraava tullimaksujen lasku on vähäinen, ja tällaisten pienten rajakustannusten vähennysten ei ole tutkimuksissa havaittu lisäävän vientiyritysten määrää. Sen sijaan on havaittu, että viennin kiinteitä kustannuksia pienentävät tullien ulkopuolisten kaupanesteiden purku ja markkinoillepääsyn esteiden madaltaminen kasvattavat vientiyritysten määrää ja hyödyttävät enemmän pieniä kuin suuria yrityksiä. Koska CETA-sopimus keskittyy erityisesti viimeksi mainittuihin toimiin, sen odotetaan helpottavan varsinkin pienten yritysten markkinoillepääsyä ja lisäävän vientiyritysten osuutta kaikista yrityksistä. Markkinoiden kasvava kilpailullisuus saattaa kuitenkin samalla vähentää yritysten kokonaismäärää, mutta tällöinkin aiempaa suurempi osuus jäljelle jäävistä yrityksistä pystyy harjoittamaan vientiä, ja tuottavuus koko talouden tasolla kasvaa. Tämän lisäksi markkinoillepääsyn vapauttaminen saattaa pienentää aiemmin suojatuilla markkinoilla toimineiden yritysten ylisuuria voittoja sekä alentaa kuluttajahintoja. Kaupanvapauttamisen on toisaalta osoitettu voivan kasvattaa tuloeroja ja tiettyjen toimialojen ja työntekijäryhmien työttömyyttä, koska vapauttamisen hyödyt jakautuvat epätasaisesti sekä toimialojen sisällä että välillä. Tutkimus näiden vaikutusten suuruudesta ja kohdentumisesta on kuitenkin vasta alkuvaiheessa, mutta näyttää siltä, että kauppa vaikuttaa hyötyjen ja haittojen jakautumiseen vähemmän kuin esimerkiksi tuotantoteknologian muutokset.

GTAP-mallisimulaatioiden tulosten perusteella CETA-sopimuksen kokonaistaloudelliset vaikutukset EU:lle näyttävät pieniltä. Positiivinen vaikutus talouskasvuun on 0,03 prosenttia, mikä on samaa luokkaa kuin aiemmissa vastaavissa tutkimuksissa. Suomelle sopimus tuottaisi jonkin verran EU-keskiarvoa suuremman 0,04 prosentin talouskasvun lisäyksen. Kanadalle sopimuksen vaikutukset sen sijaan ovat selvästi positiivisia. Erot kaupanvapauttamisen vaikutuksissa eri alueille selittyvät pitkälti sopimuksen piirissä olevien kauppavirtojen suhteellisilla osuuksilla alueiden ulkomaankaupan kokonaismäärästä.

Mallitulosten osoittamiin, CETA-sopimuksen EU-keskiarvoa suurempiin hyötyihin Suomelle vaikuttavat erityisesti kolme selittävää tekijää: (1) Kanadasta Suomeen tuotuihin hyödykkeisiin vaikuttavat tullien ulkopuoliset kaupanesteet ovat jo suhteellisten vähäisiä, joten myös esteiden purkamisesta Suomelle koituvat tulojen menetykset ovat pieniä. (2) Kanada on tärkeämpi vientikohde Suomelle kuin EU:lle keskimäärin. (3) Monet Suomen tärkeimmät vientituotteet Kanadaan, etenkin palvelu- ja moottoriajoneuvojen valmistus -toimialoilta, kuuluvat arvioiden mukaan sopimuksesta eniten hyötyviin tuoteryhmiin.

Kotimaisella arvonlisäyksellä mitaten useimmat toimialat kasvavat Suomessa CETA-sopimuksen seurauksena jonkin verran. Alkutuotteita lukuun ottamatta kaikkien hyödykeryhmien tuonnin arvo kasvaa, mutta viennin osalta

vaikutuksissa on enemmän eroja hyödykeryhmien välillä. Muutaman hyödykeryhmän (kemianteollisuuden tuotteet, moottoriajoneuvot, muut koneet ja laitteet) vienti kasvaa selvästi samalla kun se toisaalla vähenee (paperituotteet, elektroniset laitteet).

Suhteelliset muutokset viennin ja tuonnin kokonaisarvoissa ovat useimpien hyödykeryhmien osalta hyvin pieniä, mikä heijastelee Kanadan ja Suomen välisen kaupan pientä osuutta koko ulkomaankaupasta. Vain moottoriajoneuvojen viennin sekä muiden kuljetusvälineiden viennin ja tuonnin osalta ulkomaankaupan kokonaisvirtojen muutokset ylittävät yhden prosentin rajan. Tarkasteltaessa Suomen viennin muutoksia kohdemaittain havaitaan CETA-sopimuksen tuottavan sekä kokonaan uutta kauppaa että kauppavirtojen uudelleensuuntautumista. Useimpien tuoteryhmien Kanadaan suuntautuvan viennin lisäyksen vastapainona vienti muihin kohteisiin vähenee, joissakin tapauksissa jopa Kanadan viennin lisäystä enemmän. Merkittävä poikkeus on moottoriajoneuvojen valmistus, jonka tuotteiden vienti kasvaa Kanadan lisäksi sekä muihin EU-maihin että EU:n ulkopuolelle.

Muutokset tuonnin rakenteessa alkuperämaittain ovat yleisesti ottaen samantyyppisiä kuin viennin rakenteessa kohdemaittain. Samalla kun kaikkien tuoteryhmien tuonti Kanadasta Suomeen kasvaa, tuonti muista maista useimmissa tapauksissa vähenee. Poikkeuksina tästä ovat elintarviketeollisuuden ja paperiteollisuuden tuotteet, joiden tuonti kasvaa myös muualta. Useiden hyödykeryhmien tuonti vähenee erityisesti EU-maista. Tuonti lisääntyy pääsääntöisesti myös muualta EU:n ulkopuolelta ja elektroniikkatuotteissa, joiden kotimainen tuotanto Suomessa vähenee, euromääräisesti jopa enemmän kuin Kanadasta.

Tarkasteltaessa Suomen ja Kanadan kahdenvälisiä kauppavirtoja CETA-sopimuksen aiheuttamat suhteelliset muutokset ovat selvästi havaittavissa. Tämä vastaa aiempien tutkimusten tuloksia CETA-sopimuksen ja yleisemmin kattavien alueellisten vapaakauppasopimusten vaikutuksista. Suurimmat muutokset kahdenvälisiin kauppavirtoihin havaitaan moottoriajoneuvoille ja kuljetusvälineille, joiden kohdalla sekä tuonti että vienti kasvavat yli 100 prosenttia. Muista toimialoista metalli- ja elektroniikkateollisuuden vienti Suomesta Kanadaan kasvaa yli 60 prosenttia, ja koneiden ja laitteiden tuonti Kanadasta Suomeen yli 70 prosenttia. Monissa tapauksissa suuret suhteelliset muutokset kuitenkin koskevat hyvin pieniä euromääräisiä kauppavirtoja.

Tuloksia tulkittaessa on otettava huomioon käytetyn GTAP-mallinnuskehikon rajoitteet. Kaikki tämän tyyppiset kauppamallit nojaavat tämänhetkisiin talouksien rakenteisiin ja kauppavirtoihin perustuviin tietokantoihin. Tästä seuraa, että malleilla pystytään melko hyvin tunnistamaan muutokset nykyisissä kauppavirroissa, mutta tarkasteltujen maiden välisessä kaupassa kokonaan uusien tuotteiden osalta tulokset ovat huomattavasti epävarmempia. Tullien

ulkopuolisten kaupanesteiden osalta laskelmat perustuvat estimointituloksiin esteiden nykyisestä tasosta sekä epävarmoihin arvioihin kauppasopimuksen vaikutuksesta niihin. Tuloksiin vaikuttavat myös mallissa käytetyt parametrit, erityisesti hyödykeryhmien tuonnin hintajoustop, jotka kuvaavat tietyn hyödykeryhmän osalta sitä, kuinka helposti eri maista tulevat ja kotimaassa tuotetut hyödykkeet ovat korvattavissa toisillaan.

Mallilla ei myöskään voida suoraan arvioida markkinoillepääsyn helpottumisesta ja alentuneista viennin kiinteistä kustannuksista mahdollisesti seuraavaa pienten vientiyritysten määrän lisäystä eikä vaikutuksia julkisten hankintojen avautumisesta kilpailulle. Aiemman tutkimuskirjallisuuden valossa CETA-sopimus voisi kasvattaa vientiä harjoittavien yritysten määrää nykyisestä varsinkin pienen yritysten joukossa. Lisäksi erityisesti palvelukaupan laajalla vapauttamisella on todennäköisesti positiivisia vaikutuksia Suomelle, sillä 30–50 prosenttia Suomen viennistä Kanadaan syntyneestä kotimaisesta arvonlisäyksestä tulee palveluiden kaupasta, jossa nykyisten kaupanesteiden on arvioitu olevan monien alojen osalta korkeita.

Julkisten hankintojen osalta vaikutusten arviointi ei ole mahdollista samalla tarkkuudella kuin päätoimialoittain tarkasteltaessa, sillä julkisten hankintojen tuonti- ja vientitietojen saatavuus ja luotettavuus eivät varsinkaan Kanadan osalta ole samaa tasoa kuin kokonaiskauppavirroissa. Saatavissa olevien tilastojen perusteella voidaan kuitenkin arvioida, ettei Suomen ja Kanadan välillä käytännössä ollut julkisia hankintoihin liittyviä kauppavirtoja ajanjaksolla 2000–2014 juuri lainkaan. Kokonaisuudessaan julkista hankinnoista noin 3 prosenttia ostettiin suoraan ulkomaisilta yrityksiltä Suomessa ja 0,05–0,10 prosenttia Kanadassa vuosina 2010–2014. Kanadan julkisten hankintojen vuotuinen kokonaisarvo on ollut noin 400 miljardia USD. Julkisten hankintojen markkinoiden vapauttamisen vaikutuksia voidaan arvioida karkeasti analysoimalla EU-maiden julkisten hankintojen muutoksia yhteismarkkinoiden seurauksena. CETA-sopimuksen vaikutukset ovat mitä todennäköisimmin näitä vähäisempiä. Viime vuosina EU-maiden julkisissa hankinnoissa ulkomaisten yritysten osuus on ollut 1,7 prosenttia sopimuksista ja 3 prosenttia hankintojen arvosta. Useimmiten kyseiset ulkomaiset toimittajat olivat toisen EU-jäsenvaltion yrityksiä. EU:ssa paikallisilla yrityksillä on myös ollut 900-kertainen todennäköisyys voittaa julkisten hankintojen sopimuksia ulkomaisiin kilpailijoihin verrattuna. Näiden tietojen perusteella edes Kanadan julkisten hankintojen lähes täydellinen avaaminen EU-maiden vientiyrityksille tuskin tuottaa näille suuria markkinaosuuksia. Verrattuna nykytilanteeseen, jossa Kanadaan ei käytännössä osteta ulkomaisia hyödykkeitä julkisiin hankintoihin, CETA-sopimuksella kuitenkin luodaan mahdollisuuksia huomattavaan julkisen tuonnin suhteellisen osuuden kasvuun. EU:n julkisten hankintojen markkinat ovat olleet jo käytännössä hyvin avoimet kanadalaisille yrityksille, joten tähän suuntaan vaikutusten voidaan olettaa jäävän minimaalisiksi.

Tarkasteltaessa yritysten heterogeenisuutta ja työvoiman rakennetta niillä toimialoilla, joihin CETA-sopimus todennäköisesti eniten vaikuttaa, havaitaan pienten ja keskisuurten yritysten osuus Suomen viennissä Kanadaan pienemmäksi kuin muihin vientimaihin keskimäärin. Näillä toimialoilla vain keskimääräistä tuottavammat ja suuremmat vientiyritykset ovat tähän mennessä toimineet Kanadan markkinoilla. Viennin kiinteiden ja rajakustannusten lasku CETA-sopimuksen seurauksena avanee Kanadan markkinoita nykyistä useammalle pienelle ja keskisuurelle yritykselle, mutta uusien Kanadan markkinoille tulevien yritysten määrää ei voida nykytiedoin tarkemmin arvioida. Pienten ja keskisuurten yrityksen lisäksi myös jo nyt Kanadan markkinoilla toimivat suomalaiset vientiyritykset todennäköisesti hyötyvät sopimuksesta, vaikka toimialatasolle koituvien hyötyjen jakautumista jo markkinoilla olevien ja sinne uutena tulevien yritysten kesken ei käytettävissä olevilla aineistoilla voidakaan arvioida. Työvoiman osalta todennäköisiä hyötyjä CETA-sopimuksesta ovat sopimuksesta eniten hyötyvillä toimialoilla työskentelevät korkeasti koulutetut, teollisuustyöntekijät ja miehet. Vaikutukset esimerkiksi reaali-palkkoihin ovat kuitenkin useimpien toimialojen kohdalla pienehköjä.

Asiasanat: EU:n ja Kanadan välinen kauppasopimus CETA, Suomi, taloudelliset vaikutukset, ex-ante

JEL-luokat: F13, F17

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1. Introduction

The European Union (EU) and Canada finalised the negotiations on a Comprehensive Economic and Trade Agreement (CETA²) in autumn 2014. The agreement aims to remove various non-tariff measures (NTMs)³ on trade stemming from regulatory practices in addition to the nearly full elimination of tariffs between the two economic areas. For example, with regards to services trade liberalisation and investments, CETA constitutes the most comprehensive trade agreement the EU has concluded until now. In addition, the agreement would open e.g. the Canadian public procurement markets more to EU companies than what Canada has agreed with any of its other trading partners. The European Parliament voted in favour of the agreement in early 2017. However, the national parliaments of the EU countries must also approve the agreement before it will come fully in to effect.

The expected impacts of the CETA agreement have been analysed mostly at EU level until now. This study analyses the expected economic impacts of the agreement to the Finnish economy. The study is limited to analysing only the direct potential economic impacts in Finland. It does not include analyses on the social and environmental impacts of the agreement in Finland or on the potential indirect effects these aspects might have on the economy.

Subsection 1.1 includes first details on the recent trade relations between Finland and Canada and subsection 1.2 continues by discussing some of the main trade barriers between the two countries. The CETA agreement was formed with the aim to optimise its benefits to the partners based on the current trade relations and trade barriers. Therefore, we describe shortly the main components of the CETA agreement after the first parts in subsection 1.3.

Section 2 continues by discussing the potential impact channels of the CETA agreement on the Finnish economy according to the latest literature on international economics (subsection 2.1), previous literature on the expected impacts of CETA (subsection 2.2.) and presents the GTAP model used to estimate the sector level effects (subsection 2.3). Section 3 includes the main empirical results on the potential impacts at macro, sector and firm level. Section 4 concludes.

² Hereafter referenced as the CETA, CETA or the Agreement.

³ Non-tariff measures include all barriers to trade, which are not direct tariffs. As a term it is wider than Non-tariff barriers, which include only barriers that are clearly protectionist and against the WTO rules.

1.1 Recent trade relations between Finland and Canada

Figure 1 provides a view on the recent export structure from Finland to Canada based on the domestic value added created by the exports in total. Due to the increasing fragmentation of production processes, the main figures are based on the domestic value added generated by the gross exports. For comparison, figure A1 in the appendixes presents also the gross exports from Finland to Canada, but the comparison to figure 1 shows immediately e.g. the significantly lower relevance of oil exports in value added basis compared to the gross export figures. The gross export values of oil products consist mostly of the value of foreign raw oil and only the processing margin is left to the Finnish economy. Therefore we concentrate on the domestic value added generated by the exports, which is also the main way the flows generate welfare and jobs in Finland. Figure A2 in the appendixes shows also the recent changes in Canada's exports to Finland and figure A3 on the shares of different commodities in the creation of Finnish exports' domestic value added.

Figure 1 shows that most of the domestic value added in the exports from Finland to Canada⁴ depend on services exports. Their importance has increased significantly over time with the share of total value added originating from services exports rising from 20 percent in 2002 to nearly 50 percent in 2008 and 2015 (see figure A3 in the appendixes). While service commodities were important, it should be noticed that a significant share of these service exports originated from manufacturing industries. For example, according to the OECD TiVA Statistics the share of domestic value added from the exports of service industries in Finland accounted for some 10 percent of total in 2011, while during the same year service commodities' exports accounted for around 30 percent of total. See figure 2 and A3 in the appendixes. In addition to services, the exports of machinery and equipment and electronics have been important sources of value added in the exports from Finland to Canada. Together these 3 sources accounted for some 60-70 percent of the total during the last years. In this respect, the ambitious liberalisation of services exports in CETA can boost Finnish service exports to Canada even further.

In total the value added generated by the direct exports from Finland to Canada are not very large compared to the Finnish GDP. It accounted for some 0.2-0.3 percent of GDP. In total the value added generated to Finland by the Canadian

⁴ See Haaparanta et al. (2017), for the methodology to calculate the commodity-firm specific exports' domestic total value added. The figures on the Finnish exports to Canada are based on the actual domestic value added shares based on the microdata on goods and services flows, but the total gross exports used behind the figures are based on publicly available data on the trade flows from Customs Finland, Statistics Finland and UN Comtrade data on services flows.

final use through the direct, but also indirect exports to Canada, was somewhat higher, 0.3-0.38 percent of GDP annually.⁵

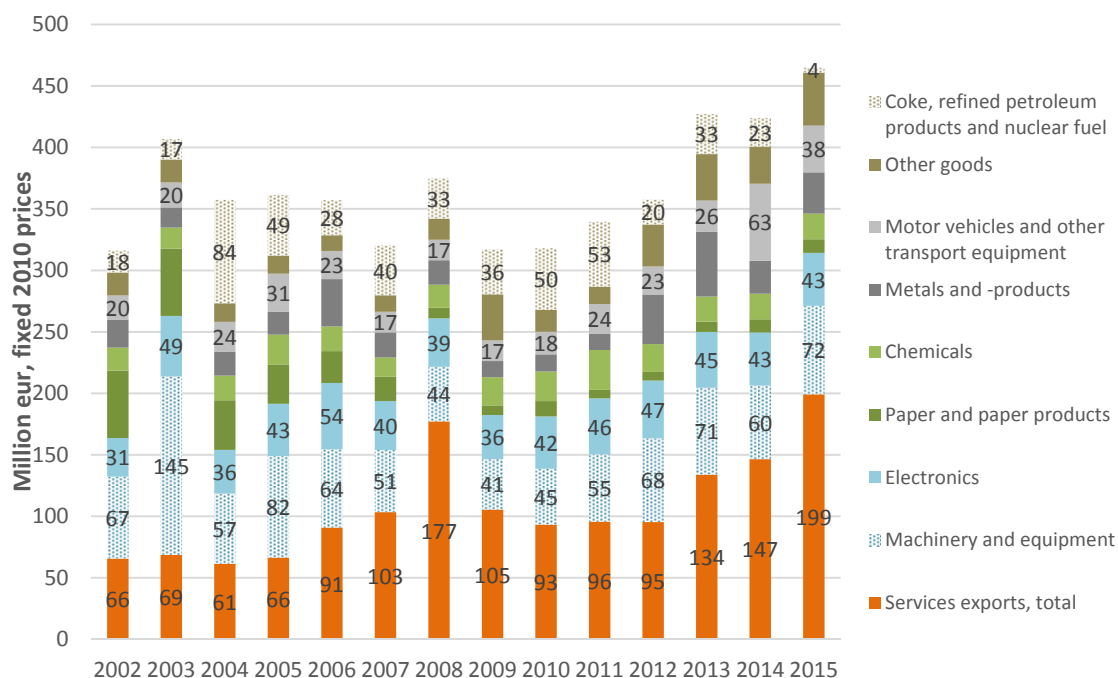
The trade between Finland and Canada has been mostly somewhat in surplus for Finland both in gross and in value added terms since year 2000.⁶ However, the exports structures of the two countries differ from each other. See Figures A1 and A2 in the appendixes. While Canada has exported also extensively services to Finland, mining products have been equally or more important in Canadian gross and value added exports to Finland during various years. In addition, Canada has exported especially transport equipment, electronics and machinery to Finland. In total, services, mining product and transport equipment exports have accounted for some 65-80 percent of Canadian total gross exports to Finland during the past years.

Compared to the EU average, the Finnish exports to Canada and the domestic value added they generate seem to stem in larger extent from the manufacturing industries and wholesale sectors' exports (which trades mostly goods). The share of these industries in the creation of the total exports domestic value added was around 80-90 percent for Finland and around 70 percent for EU-28 on average. See Figure 2. However, as Figure 1 and A3 show, the share of domestic value added from service commodities has been also around 30 percent at various years and also above that. The main difference to other EU countries is that in Finland a significant share of the manufacturing industries exports to Canada are actually services, not goods. The share of service industries in the creation of exports domestic value added was largest in the exports from Canada to EU-28, amounting to around 40 percent on average.

⁵ Based on TiVA statistics on the Finnish domestic value added embodied in the final demand of Canada.

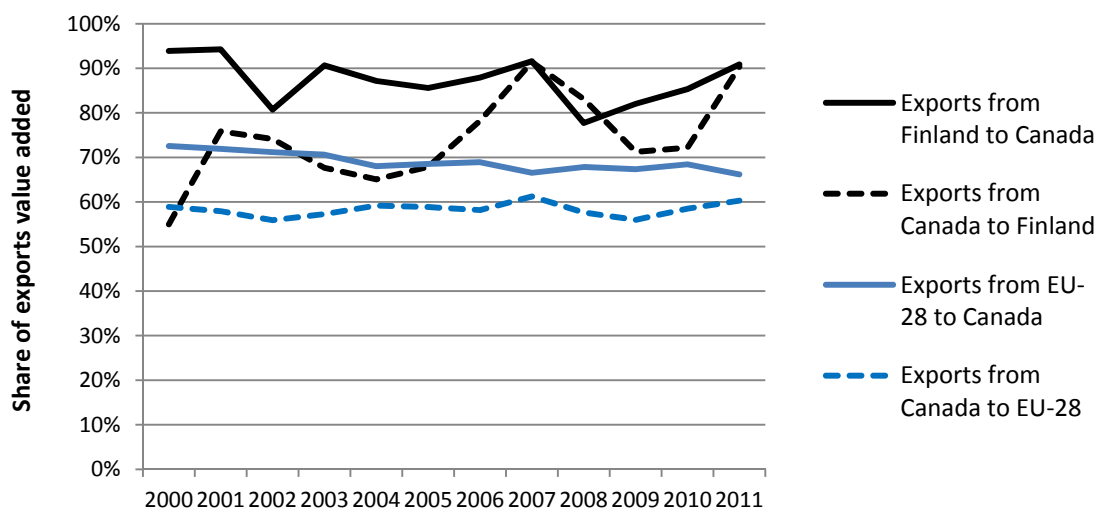
⁶ Based on TiVA statistics from 2000 to 2011 and the Finnish statistics presented in figures A1 and A2 (in the appendixes) from 2011 onwards.

Figure 1: Domestic value added created by the Finnish exports to Canada, aggregated commodity groups, values in fixed 2010 prices, million EUR



Sources: Customs Finland statistics, Statistics Finland balance of payment for services export 2006-2015, UN Comtrade services trade statistics 2002-2005. Exports' domestic value added shares based on microdata analyses. See Haaparanta et al. (2017).

Figure 2: Share of manufacturing industries and wholesale industry in the creation of exports value added

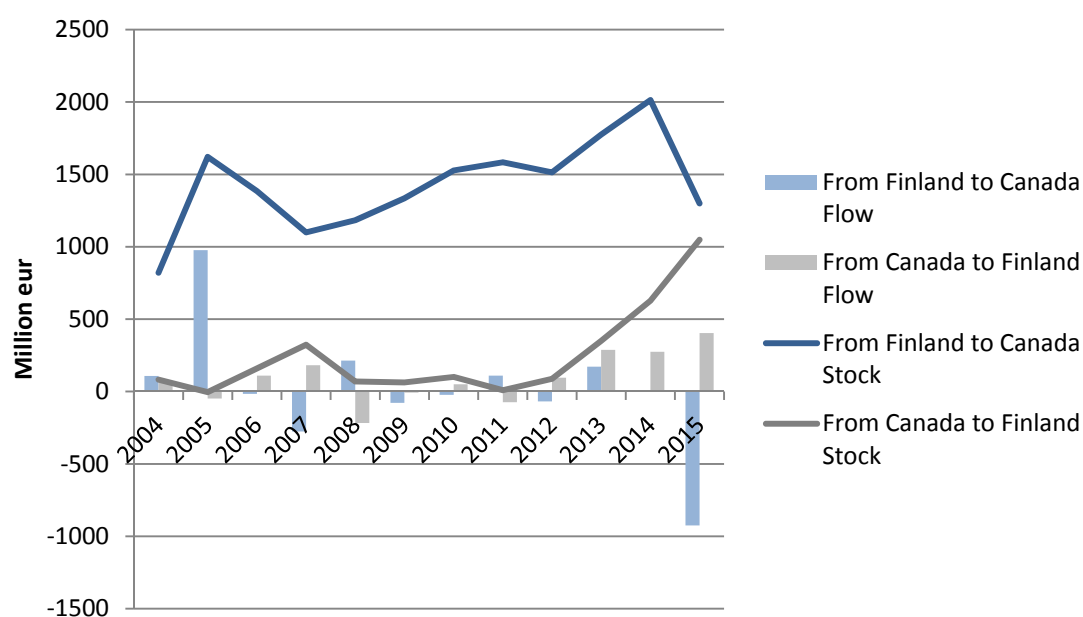


Sources: OECD Trade in Value Added –statistics 2000-2011, domestic value added content of gross exports by industry and country-pair. Wholesale industry is included with manufacturing

since most of the wholesale industry's gross exports in TiVA reflect actually goods exports by manufacturing industries, which are assisted abroad by the wholesale sector.

The annual foreign direct investment (FDI) flows from Finland and Canada have mostly been relatively small with the exceptions of a few years with very large investments or divestments (selling of previous investments, which appear as negative FDI flows). See Figure 3. However, the total Finnish FDI stock in Canada has been over 1 billion euros since 2005 and close to or over 1.5 billion since 2010. The Canadian stock of FDI in Finland was significantly lower than the Finnish stock in Canada during 2004-2014. However, between 2013 and 2015 the Canadian FDI investments to Finland were between 270-400 million euros annually. These investments increased the stock of Canadian FDI in Finland also to over 1 billion euros. Finland made again some disinvestments in 2015 and therefore, the final stocks were relatively similar in value in 2015. Compared to their direct exports to Finland (see Figure A2 in the appendixes), the FDI flows from Canada to Finland in the recent years were substantial.

Figure 3: Foreign direct investment (FDI) stocks and flows, million EUR



Sources: Statistics Finland, FDI –statistics by country, 2004-2015

Table 1 presents the number of Finnish firms that exported goods and/or services (excluding transport and tourism service exports) to Canada. In total, some 800-1200 firms exported directly from Finland to Canada during 2002-2014. Most of these firms exported goods, but the number of known services exporters increased from 90 to 150 during the period. In addition, compared to all exporters, somewhat larger share of services' exporters reported flows to Canada during 2002-2014 than goods exporters. The shares of exporters to Canada were rather small, while it is common that the number of firms exporting to more

distant countries is significantly lower than the number of exporters to neighbouring countries and that less firms export to smaller countries compared to larger ones.

Around 6-10 percent of Finnish goods exporters and 10-12 percent of services exporters exported to Canada. In comparison, around 8-10 percent out of goods exporters exported from Finland to Spain and Poland, which have relatively equal population sizes with Canada, but are located nearer and in the EU area with low trade barriers. However, for services even around 15-20 percent of all service exporters exported to Spain or Poland. The lack of services exporters to Canada relative to these comparison markets could reflect also larger market access difficulties in the Canadian service commodity markets in comparison to the EU area.

Table 1: Numbers of Finnish exporters with straight exports to Canada and their shares out of all exporters

| | Total numbers | | | Shares of all exporters | | |
|------|-------------------------|-----------------|---------------------------------|-------------------------|-----------------|--------------------|
| | All exporters to Canada | Goods exporters | Services exporters ¹ | All exporters | Goods exporters | Services exporters |
| 2002 | 815 | 725 | 90 | 7.3% | 6.9% | 9.8% |
| 2003 | 723 | 646 | 111 | 6.9% | 6.4% | 10.3% |
| 2004 | 729 | 646 | 119 | 7.5% | 7.0% | 10.4% |
| 2005 | 764 | 671 | 129 | 8.5% | 8.0% | 11.1% |
| 2006 | 760 | 680 | 107 | 8.3% | 7.8% | 11.7% |
| 2007 | 735 | 660 | 103 | 8.2% | 7.7% | 11.7% |
| 2008 | 731 | 651 | 112 | 8.5% | 8.0% | 11.3% |
| 2009 | 768 | 696 | 106 | 8.9% | 8.5% | 10.5% |
| 2010 | 815 | 741 | 114 | 8.9% | 8.5% | 11.4% |
| 2011 | 883 | 798 | 132 | 9.4% | 9.0% | 10.8% |
| 2012 | 1135 | 1053 | 146 | 10.8% | 10.6% | 10.1% |
| 2013 | 1176 | 1092 | 151 | 8.2% | 8.0% | 10.4% |
| 2014 | 1213 | 1127 | 147 | 8.2% | 8.0% | 9.8% |

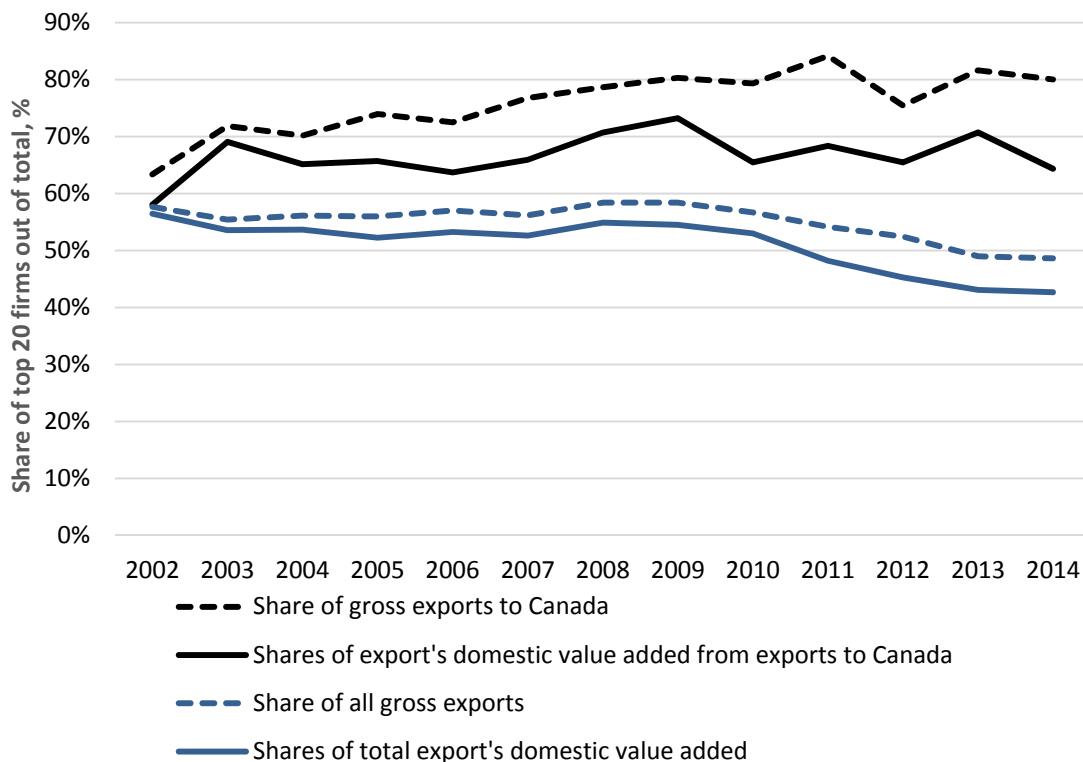
Sources: Customs Finland microdata on goods traders and Statistics Finland microdata on services traders.

¹ The services exporters number does not cover exporters of transport services or tourism, which are not included in the microdata on services trade. In total the microdata on services traders includes some 2000-4000 firms annually out of which about half report that they export services.

The exports to Canada from Finland have been also relatively dependent during the past decade on the exports of a few larger exporters. See Figure 4, which presents the share of the 20 biggest exporters out of the total gross exports (including both goods and services trade) and the total domestic value added

generated by the exports from Finland to Canada.⁷ Compared to all Finnish exports, the exports to Canada have been significantly more concentrated both in gross and in value added terms. While the 20 largest firms accounted for some 40 percent of all domestic value added generated by all Finnish exports in 2014, in the exports to Canada the same share was over 60%. Around 80-85 percent of Finnish exporters to Canada were small or medium sized firms during 2002-2014. Yet, this is a lower share than in all exporting firms on average, where even over 90 percent of all exporters are SMEs.

Figure 4: *The share of the 20 largest exporters out of the total*



Sources: Customs Finland statistics, Statistics Finland balance of payment for services export 2006-2015, UN Comtrade services trade statistics 2002-2005. Exports' domestic value added shares based on microdata analyses. See Haaparanta et al. (2017), for the methodology.

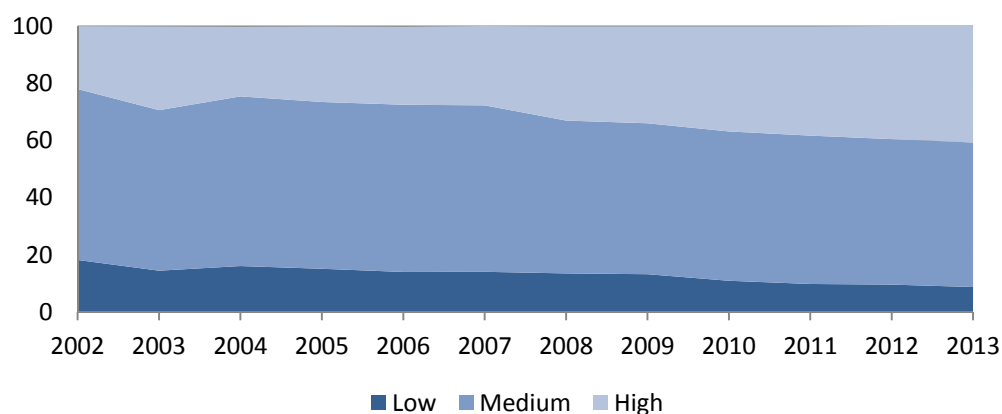
Figures 5 and 6 present the workforce changes in the firms that have exported to Canada during 2002-2013 by educational levels and occupational groups. The shares are scaled according to the domestic value added created by the exports to Canada. The share of highly educated employees has increased significantly from 22 percent in 2002 to around 40 percent in 2013. At the same time, the share of employees with low educational level has decreased from 18 percent to 8 percent. The share of medium skilled, which has been largest group during the

⁷ See Haaparanta et al. (2017) for the methodology to calculate the firm specific export's domestic value added.

entire period, has varied between 50-60 percent annually. The share of highly educated workforce in the exporters to Canada was significantly higher than the national average of 29 percent in 2013, and the share of low educated was significantly lower than the national average of 12.7 percent in 2013. Also in some of the main industries, the labour structure in Canadian exporters was significantly more skilled than in other exporters of the same industry (see subsection 3.4). In terms of occupations, the share of high-skilled professional has increased from around 14 percent in 2002 to 23 percent in 2013. At the same time the share of blue collar manufacturing workers decreased from 50 percent to around 40 percent.

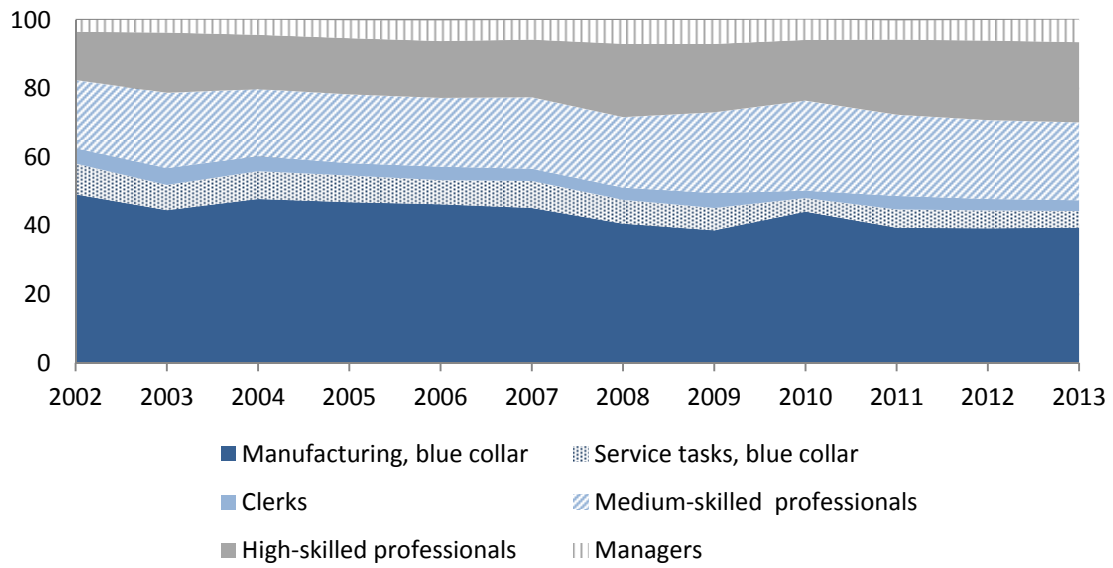
With regards to the sex of the employees, around 65-75 percent of the employees in the Finnish firms exporting directly to Canada were male during 2002-2014. This is similar to the overall sex ratio in all Finnish exporting firms, where around 70 percent of employees are male.

Figure 5: The share of the workers creating the value added from exports to Canada by educational level



Sources: Customs Finland micro databases at firm and firm-employee level. Exports' domestic value added shares based on microdata analyses. See Haaparanta et al. (2017), for the methodology. High educated includes education levels 6-9, middle education levels 3-5 and low educational levels 0-2.

Figure 6: *The share of the workers creating the value added from exports to Canada by occupation*



Sources: Customs Finland micro databases at firm and firm-employee level. Exports' domestic value added shares based on microdata analyses. See Haaparanta et al. (2017), for the methodology.

1.2 Trade barriers between Finland and Canada

Table 2 shows the levels of tariffs and non-tariff measures in ad valorem equivalents. These are also the initial levels of trade barriers assumed in the CGE modelling exercise. A more detailed break-down of tariff and NTM rates is presented in Tables A2 and A3 in the appendices. As the table shows, in most sectors non-tariff measures have generated significantly higher additional trade costs in comparison to tariffs. Notable exceptions are processed food products, especially dairy, which have had substantial tariffs or tariff rate quotas. Other manufacturing sectors with relatively high initial tariffs are textile and motor vehicles industries.

Overall, the tariff protection applied by EU to imports from Canada is somewhat lower than the Canadian protection faced by EU exports, while the non-tariff measures in the EU are estimated higher than those in Canada. Present trade between Finland and Canada to both directions concentrates on products with less protection than average between the EU and Canada.

Table 2: Applied tariff protection and estimated non-tariff measures in trade between the EU and Canada, by sector, ad valorem equivalents (%)

| | Tariff rates | | Non-tariff measures | | |
|-------------------------------------|----------------------|--------------|---------------------|--------------|------|
| | against exports from | Canada to EU | Canada to EU | EU to Canada | |
| Primary products | | 0.7 | 0.5 | 8.2 | 7.8 |
| Food products ex dairy | | 15.6 | 20.9 | 40.4 | 32.6 |
| Dairy products | | 120.8 | 315.7 | 101.2 | 77.8 |
| Beverages and tobacco products | | 2.5 | 0.7 | 18.4 | 15.0 |
| Textiles, wearing apparell, leather | | 8.6 | 10.4 | 12.8 | 11.8 |
| Wood products | | 0.7 | 3.5 | 24.2 | 0.0 |
| Paper products, publishing | | 0.0 | 0.0 | 14.6 | 0.0 |
| Petroleum, coal products | | 2.3 | 1.3 | 16.0 | 16.0 |
| Chemical, rubber, plastic products | | 2.1 | 0.9 | 16.0 | 16.0 |
| Mineral products nec | | 2.7 | 2.9 | 0.0 | 0.0 |
| Metals | | 0.7 | 0.0 | 26.2 | 35.2 |
| Metal products | | 1.3 | 1.8 | 26.2 | 35.2 |
| Motor vehicles and parts | | 9.0 | 7.1 | 66.6 | 65.2 |
| Transport equipment nec | | 1.5 | 0.9 | 37.0 | 46.4 |
| Electronic equipment | | 1.3 | 0.3 | 24.2 | 32.6 |
| Machinery and equipment nec | | 1.8 | 0.4 | 32.0 | 26.8 |
| Manufactures nec | | 0.7 | 3.6 | 0.0 | 0.0 |
| Services | | 0.0 | 0.0 | 28.7 | 33.5 |
| Weighted average (Finland) | | 1.2 | 1.2 | 23.8 | 17.0 |
| Weighted average (EU total) | | 1.1 | 2.2 | 29.4 | 24.1 |

Sources: GTAP database (tariffs), Francois and Pindyuk (2013), European Parliament (2014).

1.3 What is CETA agreement?

Given the recent economic structures and trade barriers between the EU and Canada, the CETA agreement aims to benefit both parties and open new opportunities for firms in all size categories to export and invest in the partner area. It covers various areas related to trade barriers and investment promotion.

In short, the agreement will abolish nearly all existing tariffs between EU and Canada at least within 7 years from the start of the agreement. However, there are a few sensitive commodities (such as chicken meat and eggs), where tariffs will not be fully cut, but these are not very important for the Finnish economy. In total, the tariffs in 98.6% of all Canadian tariff lines and 98.7% of all EU tariff lines will be fully eliminated. Related to the tariffs, the rules of origin, which define what commodities will be considered to be ‘made in EU or Canada’, will follow mostly standard EU rules and the EU and Canada have agreed to undertake simplified and, where possible, automated procedures at customs. In addition, under customs and trade facilitation, CETA will bring an advance ruling system on tariff classifications for goods and a new system for dealing with complaints.

In addition to the tariff cuts, the agreement covers various areas related to non-tariff measures. For example, with regards to technical barriers to trade (TBT), CETA will improve the recognition of conformity assessment, which will allow EU certification bodies to certify for the Canadian market and therefore will reduce the costs from double-testing. In addition, EU and Canadian organisations related to TBT will improve transparency and cooperation related to testing, certification and accreditation. With regards to sanitary- and phytosanitary measures (SPS), CETA aims to streamline the approval processes. However, given the current structure of Finnish exports to Canada, there are otherwise no major changes from the Finnish perspective and the WTO SPS agreement will be used as the basis. It should also be noted that the agreement will not amend either the European or Canadian SPS rules and all products will need to fully comply with the SPS rules of the importing country. Therefore, there will also be no changes to e.g. protection of consumers, environment or food safety.

CETA will liberate services trade substantially. In practice, all services trade will be liberalised, except for exemptions mentioned in specific annexes I and II.⁸ This means, for example, significant improvements in the temporary entry of EU citizens to Canada for work purposes and there will be a framework for the

⁸ These annexes specify restrictions to services liberalisation. Annex I includes lists of existing measures and restrictions that the parties want to maintain, but in those sectors no other restrictions than those listed will apply. Annex II includes measures and restrictions that parties want to maintain, but where they reserve also the right to adopt new and even more restricting measures. These include e.g. the right of EU member states to keep public monopolies in services considered as public utilities.

mutual recognition of professional qualifications, which will make it even easier for EU professionals to work in Canada (temporary assignments of professional are included in mode 4 of services trade). Canada has also agreed to liberalisation e.g. in postal services and telecom without transition period and to extensive set of binding disciplines with respect to domestic regulations ensuring fairness and equitable treatment with domestic suppliers. Also for public procurement, CETA includes significant improvements in the access of EU firms to the Canadian public procurements markets expect for energy utilities in 2 provinces and public transportation. This means that public procurement markets will be roughly equally open, as the EU market has been already de facto open to Canadian firms. It has been also agreed to build a new single electronic procurement website for the tracking of public tenders, which should facilitate especially SMEs access to the public procurement markets easier.

With regards to investments, CETA includes a new approach to dispute settlement, which aims to ensure a high level of protection for investors, while fully preserving the right of governments to regulate and pursue legitimate public policy objectives such as the protection of health, safety, or the environment. With regards to Intellectual Property Rights, CETA will improve e.g. the current level of protection for pharmaceutical products. More detailed information on the content of the CETA agreement can be obtained e.g. from European commission website: <http://ec.europa.eu/trade/policy/in-focus/ceta/ceta-chapter-by-chapter/>

2. How CETA can affect the Finnish economy?

2.1 Main impact channels

Analyses on trade agreements' economic impacts before they take place, i.e. ex-ante, are necessary in order to provide the negotiators and decision makers some idea on the potential impacts while the negotiations are still ongoing and the agreement can be changed with regards to potentially harmful and significant areas. Ex-ante analyses are by default theoretical since no agreement has been made yet and their real impacts, i.e. ex-post impacts, cannot be estimated. However, ex-ante methodologies for the estimation of trade agreements' potential impacts are constantly fine-tuned in order to take in to account the ex-post findings on the ways the agreements have actually affected economies.

In general, according to the most recent trade literature (see below) the impacts of trade agreements will depend significantly on the content of the agreement and on the ways it will affect different sectors, different firms, marginal and fixed trading costs, and market access. In general, the different impact channels can be summarised as follows:

1. *Reductions in tariffs or transport costs affect directly the marginal costs of trading, but not the fixed costs of trading.* In other words, the reduction in costs will be similar for each unit sold.⁹
2. *Reductions in NTMs that increase exporting costs of goods or services can lower either the fixed costs of exporting or the marginal costs.* For example NTMs related to e.g. licensing and standard requirements increase typically fixed costs if firms have to bear these costs once in order to be able to export. In this case, the higher is the volume of the firms' exports, the lower is the per unit costs of this type of fixed costs. In general costs from NTMs have typically been found to be higher for SMEs, which indicates that they have increased especially the fixed costs of exporting.¹⁰ However, NTMs can also be related to variable costs if they e.g. force the firms to use more costly intermediate inputs or go through a test for each unit sold. (Fontagné et al, 2015.)

⁹ Irarrazabal et al. (2015) point out that there are though differences in the effects of marginal cost reductions depending on whether the costs are additive, i.e. constant for each unit, or multiplicative, i.e. a constant fraction of the price of the product or producer price. Additive costs reductions increase welfare more than reductions in multiplicative costs in a heterogeneous firms' trade model.

¹⁰ See e.g. Felbermayr (2013), Kaitila and Kotilainen (2013), USITC (2014), and EC (2015).

3. *Reductions in NTMs that have blocked market access* simply open up previously (mostly) blocked markets and increase competition in these markets.
4. *Reduction in investment costs or improvements in investment protection* reduce mostly the fixed costs related to investments.¹¹

Based on both ex-ante and ex-post literature on trade agreements' impacts, wide agreements covering multiple sectors and issues affect different industries significantly differently. Therefore the impact analyses have typically concentrated on the sector level and macro level effects with computable general equilibrium (CGE) models used as a tool in these analyses. CGE models have been used since they can account for both the direct and indirect effects to different sectors and they can be used to model both the effects of tariff cuts and NTM reduction at the same time. For these reasons we will also analyse the main impacts of CETA to Finland with the GTAP CGE model. See sub-section 2.3.

However, according to the latest trade theories and empirical work, firm heterogeneity within sectors (i.e. the differences between firms operating in a sector) and the dynamics in it after trade liberalisation play also an important role in determining the effects of trade liberalisation on the economy. While these impacts are very difficult to estimate ex-ante empirically and would require combined CGE-microsimulation models, which does not yet exist in Finland, we describe the main theoretical channels here and reflect these to the Finnish empirics at micro level and the estimated sector level impacts in sub-section 3.4.

In the case of trade cost reductions (lowering of tariffs or NTMs that have affected marginal or fixed trade costs), the impacts at firm level are twofold. First, the productivity level required for firms to survive in the market increases, which decreases the total number of firms present in the domestic market. Second, due to the lower trading costs a larger fraction of the firms operating in the market will be able to export and the share of exporters will go up (See e.g. Melitz, 2003, or Melitz and Ottaviano, 2008). These dynamics mean that e.g. labour force will move from less productive firms to more productive ones both within and between industries. Older trade theories have emphasised mostly just reallocation of resources between sectors depending on the initial protection levels, the extent the trade barriers are reduced and the relative competitiveness of the sectors.

¹¹ However, it should be noted that IPR protection has not been identified to be mostly a major issue for EU firms in the Canadian markets and therefore no major effects are expected in that regard except for pharmaceuticals and protection of geographical indications (referring to food products and wines mainly, where they control e.g. who can call their cheese "feta").

Based on the more complicated trade models with monopolistic competition and endogenous mark-ups, trade liberalisation will also bring down consumer prices and mark-ups (and hence the excess profits of firms), but increase the number of product variety and the average productivity in the economy since only relatively more productive firms will survive in the market (Melitz and Ottaviano, 2008, Bernard et al, 2003). Antoniades (2015) emphasises also the potential increases in product quality after trade liberalisation due to the larger potential for product differentiation in case innovation capacity in the country is relatively high.

NTMs that have blocked market access affect the economy in a relatively similar way as quotas. Compared to trade protection based on tariffs (or NTMs that merely raise the costs of exporting), quotas and full market access blocks raise prices in the domestic market more than tariffs and generate additional profits to the firms that do have access to the protected market. Therefore, for example the WTO has opted for a preference for tariffs over quotas (van Marrewijk, 2012, chapters 11-12). The liberalisation of market access is hence expected to lower prices for consumers¹², bring wider range of varieties to the market, but also to decrease the excessive profits of the firms that have operated in the protected market. The mechanisms are therefore similar to what would happen if you break a monopoly.

Empirical ex-post work on the effects of trade policies is wide and most of the analyses are based on the gravity model of trade. The results seem to vary significantly, while most of the studies find positive impacts from RTAs and PTAs on trade flows. Cipollina and Salvatici (2010), conducted a meta-analysis on 85 articles on the impacts of trade agreements including over 1800 results. They find an average increase of 40% in bilateral trade flows following RTAs after controlling e.g. for publication bias and conclude that the estimates have become even larger during the recent years likely due to the deepening of trade agreements. Dur et al. (2014) obtain similar results while controlling for the depth of the trade agreements in more detail. They estimate that also deep trade agreements (such as CETA) increase the bilateral trade flows on average around 40 percent in the mid-term.

The effects of trade agreements and trade barriers on firm level export flows have been analysed in a few studies recently with an emphasis on the division of the impacts on the extensive margin, i.e. the number of exporters, and on the intensive margin of trade, i.e. on the volume of trade per firm. The results confirm that the effects seem to differ depending on what kind of costs or barriers

¹² When quality of products is taken in to consideration as well, with very high levels of competition in terms of the total number of firms operating in the market and the number of potential customers, product differentiation in terms of improved quality can also raise average prices and average mark-ups somewhat. The country wide consumer welfare still increases thanks to the improved product quality. In addition, firms will benefit from the increased mark-ups. (Antoniades, 2015)

the trade agreement affects. For example Buono & Lalanne (2012), conclude that the small tariff reductions after the Uruguay Round, which affected only the marginal costs of trade, did increase total exports, but this increase rose from the intensive margin. They had no robust effect on the number of exporters most likely due to high fixed costs of exporting. On the other hand, Fontagne et al. (2015), research the effects of sanitary & phytosanitary measures (SPS) on trade flows at firm level, which could affect either fixed or variable costs of trade. They find that SPS concerns affect significantly the number of exporters to a market, i.e. the extensive margin of trade, in addition to the intensive margin of trade. Both of these effects are significantly larger for smaller firms in line with the previous literature on the effects of NTMs on SMEs, most likely due to the dominance of decreases in fixed costs of exporting. Crivelli and Groeschl (2016) obtain a similar result on the effect of SPS measures on the extensive margin of trade using country level export data.

Handley and Limao (2015) estimate the impact of the European Community accession to Portugal. They find that the reduction in trade policy uncertainty plays also an important role in the general impacts of trade agreements and this effect can explain why some of the empirical ex-post findings on PTAs effects have been considerably larger than what would be expected from the mere removal of trade barriers ex-ante. For example in Portugal the EU accession was characterised by a considerable entry of Portuguese firms exporting into EU markets even in industries where applied tariffs did not change.

While trade liberalisation is expected to bring benefits to the entire economy on average, the benefits are typically not evenly distributed. Even in the sectors which gain on aggregate level, firm heterogeneity effects can drive up total income inequality and unemployment somewhat. This is due to the fact that, while there can be even more firms that can participate in foreign trade, the least productive firms drop out of the competition and their employees need to find new jobs. However, the more productive firms that do stay in the business typically need less employees to produce the same output. In addition, the wage and capital gains that exporting firms obtain from trade liberalisation can increase total income inequality. (E.g. Egger and Kreickemeier, 2012)

However, the absolute magnitude of the effect from trade liberalisation on income inequality and unemployment are still under research. For example Jaumotte et al. (2013) conclude that on average Gini indexes in advanced nations have increased some 0.5 percent annually during 1987-2003, out of which globalisation accounted for some 0.3 percent and technology for over 0.5 percent (with few other factors having a decreasing effect on the Gini's). However, in their paper, globalisation refers both to trade openness and to financial openness, of which especially financial openness is linked to increases in income inequality, while e.g. tariff liberalisations are not. In developing countries the contribution of globalisation was also even smaller. Similarly, Van Reenen

(2011) finds that technological changes have driven the UK and US labour market inequalities since 1990's, yet partially the technological changes are also linked to open trade.

Box 1: Few examples on how Finnish firms could benefit from CETA

Example 1: Tariff reductions on motor vehicles and equipment

Canada is an important destination for motor vehicles manufactured in Finland. Among manufacturing sectors for both the EU and Canada, the industry is detected as one of the likely clear winners from tariff and NTM removals. Moreover, the market environment and detailed decomposition of trade in this sector have some distinctive features that are interesting from the CETA point of view. Within the five-year period from 2012 to 2016, value of Finnish motor vehicle exports to Canada consisted 47 percent of snowmobiles, 31 percent of trucks, and 17 percent of tanks or other armoured fighting vehicles (Customs Finland, 2017). Whilst the trade values for military vehicles fluctuate greatly from year to year, exports of other two main product groups have remained relatively stable.

The direct benefits for Finnish industry from the tariff reductions would be less significant than for most other EU countries, as snowmobiles and military vehicles already face zero-tariffs for imports from EU to Canada. The nature of public procurement for military equipment also implies that the trade flows are sporadic and not likely to be greatly affected by trade agreements. Exports of trucks would directly benefit from the removal of the Canadian import tariffs currently at 6.1 percent on the value.

The snowmobile industry is globally highly concentrated and closely intertwined in Finland and Canada. Looking at Canada's motor vehicle exports to Finland reveals that snowmobiles account for about half of them, and various motor vehicle parts (under Harmonised System subheading 87.04) for nearly 40 percent. Since the Finnish snowmobile industry is also a major recipient of FDI from Canada, we can reasonably assume that a significant part of the trade occurs within firms. In the joint study by EU Commission and the Government of Canada (EC – GC, 2008), industry respondents noted that tariffs can constitute an additional cost on intra-firm trade weakening supply chain efficiencies and competitiveness. Thus, removing the EU tariffs on motor vehicle parts imported from Canada, ranging from 3.0 to 4.5 percent for subheading 87.04 tariff lines, could reduce the costs of snowmobile manufacturing in Finland.

On the other hand, removal of the EU tariff of 5 percent on fully assembled snowmobiles could increase their imports from Canada more than the imports of parts. Moreover, the increased cost efficiency in intra-firm trade may lead to even

further integration of the industry and increase of the monopoly power and profits.

Example 2: Labour mobility and trade on services

Some of the most significant barriers to EU-Canada services are related to movement of people. The mobility issues affecting trade include difficulties in obtaining visas for temporary workers and intra-company transfers, even at the executive level, and the recognition of professional qualifications (Cai and Lemaire, 2006). Decreasing such obstacles may be of particular relevance to the exports of Finnish services. While at the EU level services exports to Canada are dominated by financial and insurance sectors, Finland's service exports to a large extent are various technical services closely associated with manufacturing sectors. In total some 30-50 percent of the total domestic value added obtained from exports to Canada originated from service exports and a large fraction of these were exported from manufacturing industries.

Easier movement of workers can increase the efficiency and competitiveness of manufacturing firms, which in turn may further benefit the trade on products manufactured by those firms and increase investment incentives both in Finland and in Canada. It may also open entirely new business opportunities in provision of services related to the products.

2.2 Previous literature on the expected impacts of CETA

To the best of our knowledge, there are no major studies on the potential impacts of the CETA agreement on Finland. Therefore, we summarise here few of the analyses on the expected general impacts at the EU level.

The first larger analysis on the expected impact of CETA was the Joint study by the European Commission and the Government of Canada in 2008 (EC – GC, 2008). According to EC-GC study there have been relatively higher trade barriers between the EU and Canada especially in different service sectors cumulating around 5-10 percent additional costs to trade, while tariffs and NTMs in goods trade have been already lower in various manufacturing sectors. The final GDP impacts of the agreement would be yet relatively low (around 0.08%) for the EU, as Canada is not as important trade partner for EU as what the EU is for Canada.

The extensive Trade Sustainability Impact Assessment (TSIA) of the CETA agreement (Development solutions, 2011) estimates also that the expected real GDP impacts of the Agreement in the EU area will be rather modest, around 0.02 percent in the long run. They estimate total exports from the EU area to Canada to rise by some 0.05-0.07 percent with most of the improvements stemming from

extensive liberalisations in services trade. In addition to service sectors, the agreement is expected to benefit somewhat EU dairy industry, manufacture of motor vehicles on both sides of the Atlantic and potentially textile industry in longer term. Improved IPR enforcements could also benefit EU producers. However, according to the TSIA the average effects on goods trade are expected to be small compared to the benefits to services trade.

Francois and Pindyak (2013) estimated the effects of CETA to Austria, which has exported mostly goods to Canada with global CGE model based on GTAP data. They obtain an estimated 0.2 percent increase in Austrian GDP following the agreement with most of the benefits stemming from the lowering of NTMs on goods. At sector level the agreement is expected to benefit especially motor vehicles, electronics, construction and other business service sectors in Austria according to their GDP estimates. Bilateral exports between Austria and Canada are expected to increase on average by some 50-70 percent following CETA.

2.3 GTAP model and scenario building

The GTAP Database 9 (Aguiar et al., 2016) includes disaggregated data on all EU member countries, hence allowing the analysis of any country of interest. The database comprises several types of data: behavioural parameters that include elasticities of substitution between domestic and imported goods, and elasticities of substitution between sources of imports via Armington (1969) elasticities. The database represents the world economy as flows of goods and services measured in millions of 2011 US dollars. Additional data are provided for capital stocks, population and savings. The database includes five endowments (i.e. production factors) – land, skilled labour, unskilled labour, natural resources, and capital – with 140 countries/regions and 57 commodities/sectors. Trade policy instruments are represented in the GTAP database as ad valorem taxes and subsidies. The GTAP database and CGE models are widely used in research on international trade.

In addition to international trade flows, the database and model represent domestic production and consumption in each GTAP region. Production structure for a particular commodity is assumed constant with regard to use of intermediary products, while previously mentioned five endowments can substitute one another to an extent specified by model parameters. Labour, which is further divided to five skill categories, can move between sectors but the mobility is limited in short and medium run. Employment is not explicitly observed, which implies that the model results on real wage changes can also reflect changes in employment rather than actual wage levels.

The original GTAP database has been modified for the purposes of this analysis by introducing explicit non-tariff protection to international trade flows. Using ad valorem equivalent NTM estimates presented in Table 3, additional costs have

been allocated to trade of goods and services between the EU, Canada and the USA. Following the reasoning in Francois and Pindyuk (2013), half of the costs are assumed generating regional revenue (equivalent to the effects of tariff rate quotas) and the other half is allocated to dead-weight loss. Corresponding variables are also introduced to the simulation model.

TSIA (2011) used same estimates on potential cost savings in services trade as the Joint study.

Scenarios

The main scenario assessed with the GTAP model in this study features lowering of both tariff and non-tariff barriers in the trade between the EU and Canada. Tariffs are completely removed for all other sectors but food products. Tariffs are lowered by 25 percent for the most sensitive dairy sector products and cut to half for other food products. NTBs for all products are cut by 25 percent, in equal shares for rent-generating and dead-weight barriers. The scenario assumes moderate degree of imperfect competition in manufacturing sectors and perfect competition in other sectors. Whilst modelling of the full implications of Brexit is outside the scope of this study, in the main scenario we exclude the United Kingdom from the trade policy changes brought by the CETA. In other words, no change is implemented to the trade barriers between the UK and the rest of the EU,¹³ and the CETA agreement tariff and NTM cuts are not applied to the trade between the UK and Canada. Similarly, in the reporting of scenario results for the aggregate EU, we do not include the UK.

Three alternative scenarios are analysed to illustrate the importance of the different policies and the assumptions made. “Only tariffs” scenario has same assumptions as the Main scenario, but only the traditional tariff barriers are lowered and NTBs are not affected. In the “UK in” scenario, all policy changes of the Main scenario are also applied to the trade between United Kingdom and Canada. The “Perfect competition” uses the standard GTAP model assumption of perfectly competitive economy across all sectors within in each modelled region.¹⁴

¹³ This is in practice similar to “soft Brexit” where a free trade agreement is reached between the EU and the UK. Trade barriers between the UK and the EU do not increase from the present levels.

¹⁴ The perfect competition in the GTAP modelling framework refers to each regional market: there are no suppliers of any commodity that can exercise monopoly power over users and hence no pure profits. Imperfect substitution of production factors as well as commodities from different sources results from preferences and actual or perceived differences between those commodities.

Table 4: Summary of the scenario features

| | Tariff cuts | NTB cuts | Competition (manufacturing sectors) | UK included |
|----------------------------|--------------------|-----------------|---|--------------------|
| Main scenario | Yes | Yes | Imperfect | No |
| Only tariffs | Yes | No | Imperfect | No |
| UK in | Yes | Yes | Imperfect | Yes |
| Perfect competition | Yes | Yes | Perfect | No |

3. Expected economic impacts of CETA in Finland

3.1 Economic effects at macro level

At the whole economy level, impacts of the CETA are modest in the EU, with an increase of 0.03 percent in the GDP. Benefits to Finland are slightly higher than the EU average, at around 0.04 percent. Impacts on Canada, in contrast, are clearly positive. Majority of the regional differences in the gains from trade liberalisation is explained by asymmetry in the relative importance of the agreement regions as bilateral trade partners.

In the GTAP database, the EU accounts for 11 percent of Canada's total exports, and 14 percent of Canada's total imports. For the EU, Canada has 1.0 percent share of exports and 0.8 percent share of imports. For Finland, Canada has 1.2 percent share of exports and 0.8 percent share of imports.

Both tariffs and NTBs applied to EU commodities imported to Canada are higher than those applied to Canadian imports to the EU. Levels of protection in trade between Finland and Canada are below the EU average for both directions (see Tables 2 and 3).

Three factors contribute to Finland's higher than EU average gains from the CETA: (1) Commodities imported from Canada to Finland have relatively low initial NTBs, which results in only small losses of regional revenue generated by the protection measures; (2) Canada is more important as an export destination for Finland, with 25 percent higher initial share, than for the EU as a whole; and (3) The present commodity structure of Finnish exports to Canada includes some product groups, especially in motor vehicles industry, that are among the most important likely beneficiaries from the Agreement. These sector level implications are explained further in the section 3.2.

Table 5 shows the percentage changes of real GDP, value of total exports, value of total imports, and real wages in the Main scenario in different regions. In all CETA regions, trade increases more than the GDP, and imports increase more than exports. In the EU, real wages also grow faster than the GDP, which can be interpreted as major part of the gains being allocated to the labour force either in form of higher pay or increased employment.

Table 5: Percentage changes of main macro variables in different regions, Main scenario

| | Real GDP | Value of exports | Value of imports | Real wages |
|-----------------------|-----------------|-------------------------|-------------------------|-------------------|
| Finland | 0.039 % | 0.081 % | 0.136 % | 0.098 % |
| EU27 (excl UK) | 0.026 % | 0.087 % | 0.133 % | 0.064 % |
| Canada | 0.341 % | 0.845 % | 1.813 % | 0.276 % |

Sensitivity to assumptions: different scenarios

The results acquired from the GTAP model are subject to a number of assumptions and issues of various significance. Common to all trade models of this type, the most restrictive factor is the base data, which relies heavily on structure of economies and trade flows as observed presently (or rather a few years before). The main implication of the data limitation is that while the model can quite reliably predict the short-term impacts following the changes to already significant commodity flows, it is much less capable of capturing emerging trading opportunities for products entirely new to a particular, bilateral trade relation. In this study, this limits particularly the assessment of the services trade between Finland and Canada.

Another obvious source of uncertainty lies in the estimation of the initial non-tariff barriers and the degree to which they can be removed with the Agreement, as discussed in section 1.2. However, the implications of this are mainly at the level of precision. Qualitatively, the results are unlikely to change even if the initial NTB rates differ from the ones assumed, while the effects do change more or less proportionally to the estimated initial NTMs or degree of liberalisation.

In the context of the present day European Union, the status of the United Kingdom within the EU and as a party to the trade agreement has some relevance to the anticipated effects. Among the EU28, the UK is the single most important trading partner with Canada, accounting for about 20 per cent of EU's total exports to, and about 40 percent of imports from Canada.

Finally, the model parameters and modelling choices have impacts on the results. Most important among such parameters are the price elasticities of substitution between different origins of imported commodities, as well as between domestic and imported commodities ("Armington elasticities", Armington 1969), reflecting imperfect substitution between commodities from different origins. In case of aggregated commodity groups, the imperfect substitution is partly a result of preferences (e.g. favouring domestic products), partly reflects the factual heterogeneity within such commodity group. The Main scenario also includes imperfect competition and endogenous mark-ups in manufacturing, which affect the total gains from trade liberalisation (see subsection 2.1).

To assess the importance of these issues to the overall results, we compare the Main scenario results to the three alternative scenarios, and conduct a systematic sensitivity analysis with respect to the trade elasticity parameters. Table 6 shows the impact on real GDP in the different scenarios for Finland, the European Union (excluding UK), and Canada.

Table 6: Changes in real GDP in different regions and scenarios

| | Tariffs only | Main scenario | UK in | Perfect competition |
|-----------------------|---------------------|----------------------|--------------|----------------------------|
| Finland | 0.008 % | 0.039 % | 0.036 % | 0.042 % |
| EU27 (excl UK) | 0.004 % | 0.026 % | 0.022 % | 0.036 % |
| Canada | 0.074 % | 0.341 % | 0.495 % | 0.276 % |

Reflecting the low relative importance of traditional tariff measures for the major EU-Canada trade flows, the “Tariffs only” scenario has a very small effect on real GDP Figures. Other scenarios have real GDP effects not very different from the Main scenario. However, we observe that the inclusion of the UK in the Agreement slightly reduces gains for Finland and the rest of the EU. Conversely, the gains for Canada and the UK are significantly larger than in the Main scenario, as can be expected based on the major initial bilateral trade between these countries. Under perfect competition, gains for Finland and the EU appear slightly greater than in the Main scenario, whereas the results for Canada change into the opposite direction.

The systematic sensitivity analysis on the trade elasticity parameters indicates that the macro level results are rather robust, with standard deviations ranging from 6 to 16 percent of the GDP changes when the elasticity parameters are allowed to change by 50 percent to both directions. For Finland, this implies that with 95 percent certainty the GDP change in the Main scenario would be between 0.03 and 0.06 percent. At a more detailed sector level, larger variations are found, but for the most important commodity groups the qualitative results do not change.

3.2 Effects at sector level in Finland

In this section, we look into sector level effects in Finland based on the results of the Main scenario. The impacts on value added and trade flows are reviewed in value terms (Millions of Euro)¹⁵ for groups of commodities. The detailed

¹⁵ For presentation purposes, the values in the GTAP database in 2011 US dollars have been converted to Euro with the rate 1 EUR = 1.2 USD.

composition of the commodity groups are presented in appendix, Table A1. Due to the recent significant reduction of oil refinery industry products from Finland to Canada, which is not reflected in the model database, this sector in Finland has been excluded from the policy scenario experiments and the reporting.

Changes in value added and total exports and imports are presented in Table 7. Tables 8 and 9 show the decomposition of imports and exports changes by regions of origin and destination respectively. Corresponding relative changes in total trade and trade between Finland and Canada are presented in Figures 7 and 8.

Table 7: Value added, total exports and imports by commodity group, Finland, Change in Millions of Euro, Main scenario

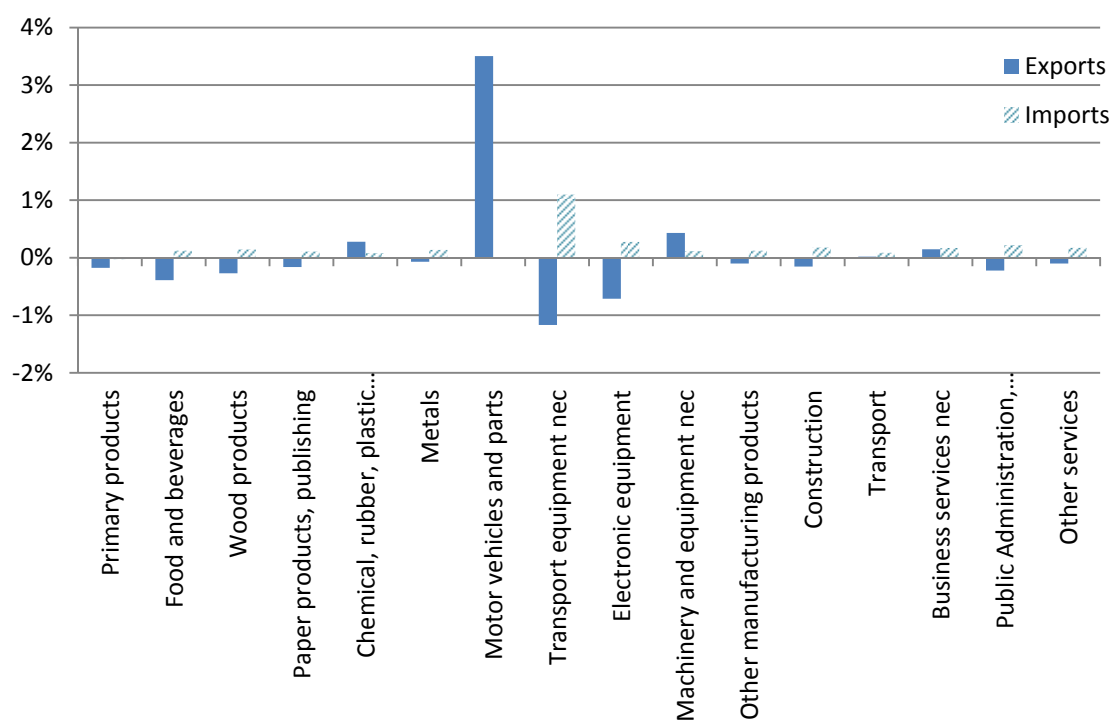
| | Value added | Exports | Imports |
|------------------------------------|--------------------|----------------|----------------|
| Primary products | -6.2 | -2.6 | -4.0 |
| Food and beverages | 1.1 | -7.1 | 5.8 |
| Wood products | -1.6 | -8.3 | 2.3 |
| Paper products, publishing | -3.5 | -22.4 | 1.6 |
| Chemical, rubber, plastic products | 10.4 | 26.6 | 9.3 |
| Metals | 1.6 | -8.7 | 11.3 |
| Motor vehicles and parts | 15.3 | 68.9 | 0.8 |
| Transport equipment nec | -10.3 | -12.7 | 10.8 |
| Electronic equipment | -16.0 | -30.4 | 16.5 |
| Machinery and equipment nec | 34.0 | 72.4 | 16.0 |
| Other manufacturing products | 6.1 | -2.4 | 8.8 |
| Construction | 27.7 | -0.8 | 0.9 |
| Transport | 11.5 | 1.2 | 3.1 |
| Business services nec | 16.2 | 7.5 | 21.8 |
| Other services | 25.1 | -10.0 | 7.3 |

In terms of value added, most sectors in Finland increase as a result of the CETA. This follows partly from the overall increase in real wages, which constitute a major part of value added in all sectors. With the exception of primary products, the value of imports increases for all commodity groups. The picture is more mixed for exports where a few commodity groups (Chemical products, Motor vehicles, Other machinery and equipment) show significant increase, offset by decreases in some others (Paper products, Electronic equipment).

Figure 7 presents the same above total export and import changes by sector in percentages. Due to the relatively small total export and import flows between Finland and Canada, the changes are relatively small in the totals. Only with regard to motor vehicle exports and the export and import of other transport equipment are the changes in totals above 1 percent. For example in machinery

and equipment the 72 million change in export accounts only for around 0.5 percent change in total exports of these commodities, while for motor vehicles the 68 million change accounts for 3.5 percent changes in total exports due to their significantly smaller total export value to all countries.

Figure 7: Total export and import changes to/from all countries, % changes, Main scenario



The results on export changes by destination in Table 8 show both trade creation and trade diversion effects. For the majority of commodity groups, the increase in exports to Canada is partly offset or even exceeded by the decrease in intra-EU exports and exports to the rest of the world. A notable exception of this is the Motor vehicles industry, where we observe increased exports to all destinations. The results for this sector are also quite robust with respect to import elasticity parameters.

Table 8: Exports from Finland by destination and commodity group, Finland, change in Millions of Euro, Main scenario

| | EU | Canada | Rest of the World | Total |
|------------------------------------|-------|--------|----------------------|-------|
| Primary products | -1.8 | 0.1 | -0.9 | -2.6 |
| Food and beverages | -4.6 | 1.2 | -3.7 | -7.1 |
| Wood products | -4.3 | 1.1 | -5.1 | -8.3 |
| Paper products, publishing | -12.0 | 0.3 | -10.7 | -22.4 |
| Chemical, rubber, plastic products | -4.9 | 39.4 | -7.9 | 26.6 |
| Metals | -15.0 | 23.1 | -16.7 | -8.7 |
| Motor vehicles and parts | 4.8 | 61.8 | 2.3 | 68.9 |
| Transport equipment nec | -10.0 | 0.5 | -3.1 | -12.7 |
| Electronic equipment | -19.2 | 8.8 | -20.1 | -30.4 |
| Machinery and equipment nec | -8.2 | 111.2 | -30.5 | 72.4 |
| Other manufacturing products | -2.9 | 3.8 | -3.3 | -2.4 |
| Construction | 0.0 | 0.0 | -0.8 | -0.8 |
| Transport | -2.7 | 6.9 | -3.1 | 1.2 |
| Business services nec | -5.9 | 18.8 | -5.4 | 7.5 |
| Other services | -4.1 | 4.5 | -10.4 | -10.0 |

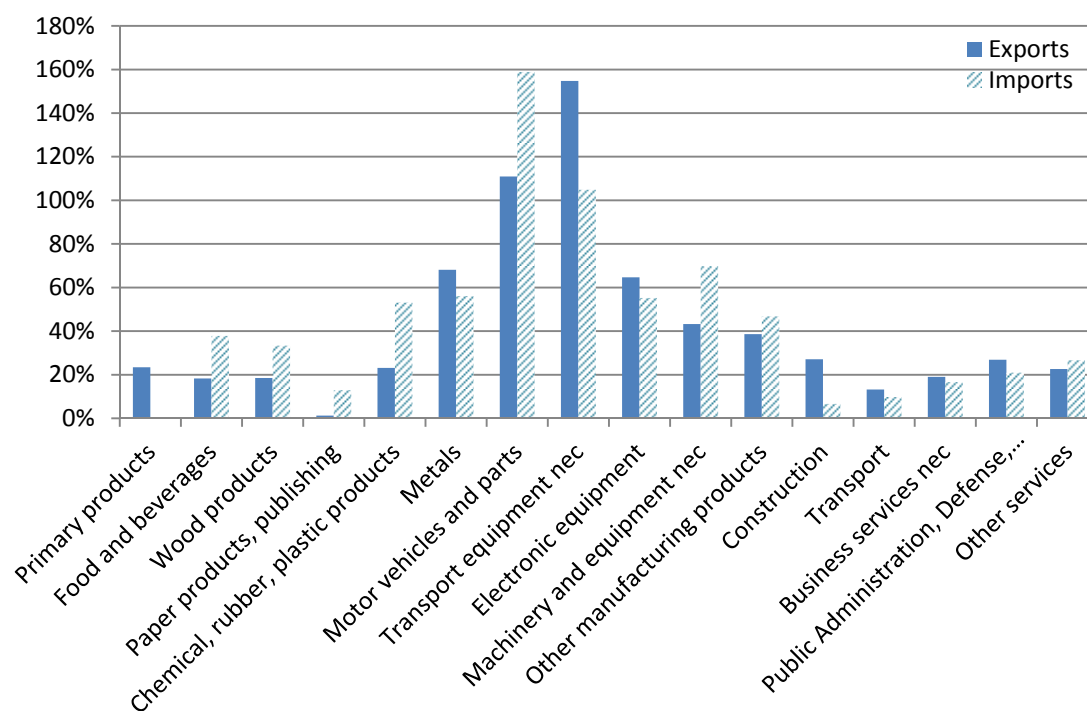
As seen in Table 9, changes in imports by origin have similar overall pattern as exports by destination. Imports from Canada increase for all commodity groups, but are in most cases reflected in decrease of imports from other sources. Exceptions include food products and paper products where some increase is observed from all sources. For many commodity groups, the decrease in imports occurs in intra-EU trade. Imports from the rest of the world also increase for most commodity groups, and for electronic equipment even more than from Canada in Euro terms to meet the demand after decreased domestic production in Finland.

Figure 8 presents the above export and import changes in million euros again compared to the total export and import values. This time the changes represent, however, only the percentage change in the bilateral flows between Finland and Canada resulting from CETA. Similar to previous findings on the effects of CETA and on deep RTAs in general, the bilateral export and import flows are expected to increase by several dozen percentages. The highest bilateral changes are found for motor vehicles and transport equipment where both exports and imports will increase by over 100 percent. In addition, for metal and electronic equipment Finnish exports to Canada will increase by over 60 percent and for machinery and equipment the Canadian exports to Finland by some 70 percent. However, it should be noticed that the large percentage increases in some cases result from very small initial flows.

Table 9: Imports to Finland by origin and by commodity group, change in Millions of Euro, Main scenario

| | EU | Canada | Rest of the World | Total |
|------------------------------------|-------|--------|-------------------|-------|
| Primary products | -1.7 | 0.4 | -2.7 | -4.0 |
| Food and beverages | 0.7 | 3.5 | 1.6 | 5.8 |
| Wood products | -0.8 | 1.6 | 1.5 | 2.3 |
| Paper products, publishing | 0.1 | 0.7 | 0.8 | 1.6 |
| Chemical, rubber, plastic products | -16.3 | 19.4 | 6.2 | 9.3 |
| Metals | -8.6 | 12.4 | 7.4 | 11.3 |
| Motor vehicles and parts | -77.1 | 86.0 | -8.1 | 0.8 |
| Transport equipment nec | -13.3 | 36.3 | -12.2 | 10.8 |
| Electronic equipment | -0.8 | 4.6 | 12.7 | 16.5 |
| Machinery and equipment nec | -33.2 | 39.0 | 10.2 | 16.0 |
| Other manufacturing products | -4.3 | 5.5 | 7.6 | 8.8 |
| Construction | 0.1 | 0.0 | 0.8 | 0.9 |
| Transport | -0.2 | 1.4 | 1.9 | 3.1 |
| Business services nec | -9.3 | 25.1 | 6.0 | 21.8 |
| Other services | -0.2 | 4.4 | 3.2 | 7.3 |

Figure 8: Export and import changes between Finland and Canada, % changes per sector, Main scenario



3.3 Effects on public procurement

The effects on public procurement cannot be estimated as precisely as the impacts on main industries since first of all, the data on export and import flows in public procurement markets is scarce. The European Union has provided data on public procurement tenders and their winners in their area available for research (so called TED transaction data), but for example detailed data on Canadian public procurement imports seems harder to find. However, based on the global input-output data (WIOD), we can obtain some estimates on the magnitude of public sector export and import flows for Finland and Canada. According to the 2016 release of WIOD, the absolute value of imports and exports between Finland and Canada going to public demand in the partner country were practically non-existing during 2000-2014. In total, some 2 percent of the total Finnish public demand was met with imported commodities and around 0.05-0.1 percent of the Canadian public demand during 2010-2014. Interestingly, the UK exports to the Canadian public sector were roughly as large as the US exports based during the same time period. In total the Canadian public demand has been around 400 billion USD.

The estimates from European Commission (2017) for 2009-2015 on average provide a somewhat larger estimate on the direct public sector imports of Finland from Canada, but still the estimated value was around 2 million euros per year (0.4% of all public sector imports, which were 0.5 billion euros). Most of the Finnish public sector imports originate from the EU area, yet also some 13% of all Finnish public sector imports originate directly from US. In general, the import penetration in the public procurement in Finland has been rather low also according to this data source, at around 2.9 percent of all contract's value.

To obtain some rough idea on what might happen to public procurement markets following the CETA agreement, we can take conjecture that most likely the effects will be at least smaller than what they have been in the EU resulting from the formation of the single market. Canadian firms have already had a relatively good access to the EU public procurement markets, but the opening of the Canadian market to EU producers is new.

According to EC (2017) the general access of foreign firms on the public procurement markets of EU countries has been low despite the Single market. The average share of foreign firms in winning contracts was 1.7 percent and the share of contract's value around 3 percent. There has been small overall increase in the share of direct imports in public procurement markets in the EU area from 2.5 percent of contracts' value in 2009 to 3.5 percent in 2015 (and 1.5 to 2 percent in the number of awards), but the shares are still small. However, in case awards won by local subsidiaries of foreign firms are also taken in to account, the shares of this type of indirect imports in the public procurement markets are substantially higher at around 20 percent. Most direct foreign bids are won by

other EU member firms (EC, 2017). Herz and Varela-Irimia (2017) find also that in the EU public procurement markets local firms have still been over 900 times more likely to win a contract than foreign firms during 2010-2014. The disadvantage of foreign firms is somewhat smaller in the provision of goods and larger in the provision of services.

Based on these figures it seems that even nearly total opening of public procurement markets to EU exporters in Canada is not likely to result in a large market shares for EU firms. However, compared to the current situation of nearly non-existing imports in the Canadian public sector, the CETA provisions do have a potential to increase the imports substantially in percentage terms. Yet, even if the Canadian public imports would increase to the EU area average of around 3 percent from the current 0.1 percent, the absolute value of the imports would remain relatively low at 12 billion USD, out of which the Finnish share would be most likely tiny. Yet, in comparison to the current situation of nearly no access for Finnish firms to the Canadian markets, there is potential for some increase.

3.4 Effects vs. firm heterogeneity and labour markets

As mentioned in section 2.1., trade liberalisation is expected to affect different types of firms in the liberalised industries differently. In case of the CETA agreement there is a possibility that the number of especially SME exporters to Canada can increase since the agreement will cut somewhat the fixed costs of exporting. In addition, the firms that have already operated in the Canadian market are likely to benefit.

In order to obtain a rough estimate on the possible effects at firm level, we have provided some descriptive information on the firms that exported recently to Canada in comparison to all other exporters in Table 10. It summarises the number of exporters, the median share of exports in revenue, the median number of employees per firm, the total number of employees in all firms, average labour productivity (log), and the shares of high skilled, medium skilled, low skilled, managers, high skilled professionals and blue collar production workers in a few industries. The industries represented include the most affected sectors according to the value added effects in million euros (see Table 7), with the exclusion of a few industries with too few exporting firms to Canada to present any results. Out of the presented industries, chemicals & plastic production, machinery and equipment, motor vehicles and all service industries are expected to benefit from the agreement at industry level. Electronic equipment industry, on the other hand, is expected to face higher competition and to have a small negative impact on their value added in Finland.

Table 10 shows that firms that exported to Canada in 2014¹⁶ were somewhat bigger, more export intensive, more productive, and more skill intensive than all exporting firms on average in the same main sector.¹⁷ In addition, compared to the number of all employees in exporting firms, in many sectors the exporters to Canada accounted for a significant share of the total number of employees in all exporting firms (see indicator 5 in Table 10). The relative number of firms exporting to Canada (see indicator 1) was significantly lower than the share of employees in these firms compared to all workers in exporting firms (see indicator 5). For example in motor vehicle production only 6 firms out of the 66 exporters in total were exporting to Canada in 2014, while these 6 firms (9 percent) accounted for some 24 percent of all workers in motor vehicle exporters.

These descriptive statistics show that currently there have been less small and medium sized firms exporting from Finland to Canada compared to all Finnish exporters to all markets. This means that in these sectors in particular only more productive and bigger Finnish exporters have entered the Canadian market until now. This could have resulted from high trade barriers in Canada, especially in comparison to the main European export markets, which might have hindered especially SMEs' exports (e.g. high fixed costs of exporting related to standards, market structures or market info). Another potential explanation is the lack of interest in smaller firms to enter the Canadian market due to mere distance. However, just the distance is not likely to have affected the firms very heavily, since there are relatively more SMEs exporting to US than to Canada according to the same data sources. In other words, the cut of fixed and marginal costs of exporting in the CETA agreement is likely to open the Canadian market better to more SME exporters. In line with the theoretical predictions (see section 2.1) the share of Finnish exporting firms in the Canadian market is likely to increase especially in the sectors, which are benefiting on average from the agreement. However, it is not possible to calculate exactly how many new exporters might enter the Canadian market. In addition to the SMEs, the current exporters to Canada are likely to benefit from the agreement, but it is also not clear how the sector level aggregate benefit might be divided between the firms that already export to Canada (i.e. in the intensive margin) compared to the benefits going to potential new entrants (i.e. the extensive margin).

For the electronics sector the increased competition can result, again, in some firm closures and job losses especially in the less productive firms operating in the industry in Finland. On the other hand, it is also possible that most impacts in the electronics industry will face only the current exporters, since the total

¹⁶ Similar comparisons were also made for 2002 to 2013 and the main results have been similar also during these years.

¹⁷ The sectors follow TOL 2002 classification at 2 digit level with the exemption of electronics, which includes industries 31-33 of the mentioned classification.

increase in electronics imports is rather small (0.2 percent) and lower than the decrease in exports (-0.7 percent). It should be also noted that the decrease in the export value is rather small in total.

Table 10: Descriptive information on exporting firms to Canada compared to all exporters, 2014 values

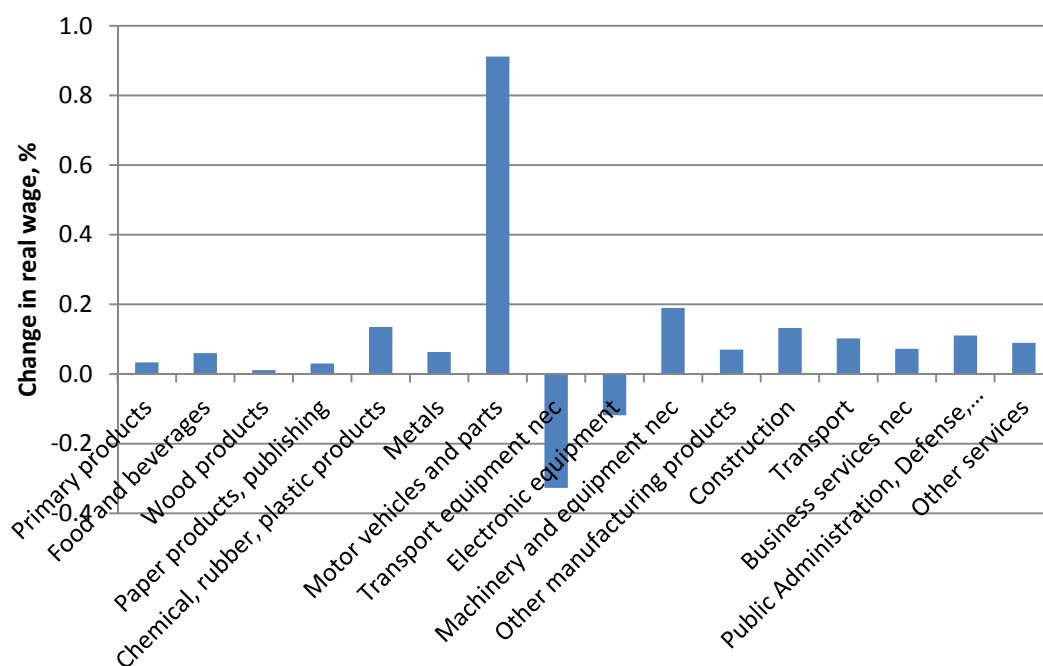
| Indicator | Exporters to | Industry | | | | | | |
|--|--------------|----------------------------|---------------------|--------------------|----------------|----------|-----------|----------------------|
| | | Chemicals, rubber, plastic | Machinery & equipt. | Electronic equipt. | Motor vehicles | IT serv. | R&D serv. | Other business serv. |
| 1. No of firms | Canada | 47 | 180 | 123 | 6 | 56 | 21 | 106 |
| | All | 162 | 600 | 438 | 66 | 365 | 98 | 925 |
| 2. Exports' share of revenue | Canada | 51.2% | 58.6% | 54.1% | 63.1% | 22.5% | 39.5% | 14.4% |
| | All | 26.2% | 21.1% | 15.5% | 20.0% | 3.7% | 5.9% | 2.6% |
| 3. No of employees per firm, median | Canada | 35 | 66 | 42 | 162 | 34 | 15 | 21 |
| | All | 18 | 20 | 14 | 31 | 17 | 10 | 6 |
| 4. Labour productivity, log | Canada | 11.6 | 11.3 | 11.3 | 11.4 | 11.5 | 11.3 | 11.3 |
| | All | 11.5 | 11.2 | 11.2 | 11.0 | 11.4 | 11.1 | 11.2 |
| 5. All employees in total | Canada | 9,448 | 34,028 | 29,925 | 1,300 | 13,569 | 1,797 | 19,338 |
| | All | 15,571 | 48,152 | 36,841 | 5,428 | 28,809 | 3,259 | 49,213 |
| 6. Share of highly ¹ educated | Canada | 37.5% | 44.1% | 53.1% | 27.1% | 56.9% | 70.6% | 51.8% |
| | All | 34.8% | 37.6% | 49.2% | 16.8% | 59.5% | 68.2% | 46.7% |
| 7. Share of primary educated | Canada | 8.4% | 6.5% | 8.5% | 7.2% | 5.4% | 7.6% | 11.8% |
| | All | 9.6% | 7.6% | 9.0% | 11.3% | 6.1% | 8.1% | 12.8% |
| 8. Share of high skilled professionals | Canada | 19.5% | 22.1% | 33.9% | 8.8% | 45.1% | 60.6% | 34.3% |
| | All | 17.2% | 19.6% | 31.3% | 6.5% | 44.6% | 57.2% | 28.5% |
| 9. Share of blue collar prod. workers | Canada | 44.0% | 37.1% | 26.2% | 57.7% | 2.1% | 3.3% | 3.1% |
| | All | 42.2% | 42.3% | 30.2% | 67.3% | 2.6% | 2.5% | 4.1% |
| 10. Share of male | Canada | 56.5% | 81.2% | 72.3% | 85.2% | 70.7% | 78.5% | 58.0% |
| | All | 57.9% | 83.0% | 72.0% | 85.4% | 72.9% | 66.5% | 54.1% |

Source: Statistics Finland microdata including goods and services exporters by partner country.

¹ Highly educated refers to employees with university degrees.

In terms of the labour market structures, the above descriptive information and the earlier shown sector level effects mean that especially high-skilled employees, blue collar production worker and males working in exporting firms are likely to benefit from CETA. However, for example the estimated average real wage effects are mostly not very large. In motor vehicles sector the increase is estimated to be the largest, +0.9 percent (see Figure 9), while in all other industries the increase is less than 0.2 percent. In transport equipment and electronic industries real wages will decrease by some -0.2-0.3 percent. Therefore, the benefits on current employees are yet not expected to be large, while there can be some heterogeneity in them within sectors as well.

Figure 9: *Change in real wages, %, per industry, Main scenario*



4. Conclusions

The CETA agreement aims at removing especially various non-tariff measures (NTMs) on trade and investment stemming from regulatory practices, in addition to the nearly full elimination of tariffs between the EU and Canada. With regard to services trade liberalisation and investments, CETA constitutes the most comprehensive trade agreement the EU has concluded until now. In addition, the agreement would open e.g. the Canadian public procurement markets more to EU companies than what Canada has agreed with any of its other trading partners.

This study analyses the expected economic impacts of the agreement to the Finnish economy. The study is limited to analysing only the direct potential economic impacts in Finland. It doesn't include analyses on the social and environmental impacts of the agreement in Finland.

Direct exports from Finland to Canada generated some 350-450 million euros of domestic value added during 2011–2015. In 2015 nearly 50 percent of the 450 million euros of exports' domestic value added originated from services exports, showing a substantial increase from the share of 20 percent in 2002. A significant part of these service exports originate from manufacturing industries. In addition, the exports of machinery goods and electronics have been important sources of value added in the exports from Finland to Canada. In total the domestic value added generated by the direct exports from Finland to Canada accounted for some 0.2–0.3 percent compared to Finnish GDP and the Canadian final use (including also indirect exports) for around 0.3–0.4 percent of Finnish GDP annually. Canada has exported mainly mining products, services and transport equipment to Finland in gross terms.

For Finland, trade with Canada has accounted for around 1.2 percent share of gross exports and 0.8 percent share of imports. The EU as a whole accounts for 11 percent of Canada's total exports and 14 percent of Canada's total imports, while exports from EU to Canada account for 1 percent share of exports. The annual foreign direct investment (FDI) flows from Finland and Canada have been relatively small, but the stocks of FDI bilaterally were around 1-1.5 billion euro in 2015. Some 800-1200 firms exported directly from Finland to Canada during 2002-2014. Most of these firms exported goods, but the number of known services exporters increased from 90 to 150 during the period. Compared to the total number of exporters, some 6-10 percent of goods exporters and 10-12 percent of services exporters exported to Canada. In terms of employee structure, highly educated employees accounted for ~40% of the Finnish exports domestic value added in 2013, while primary educated employees accounted for 8 percent. The labour force in the exporting firms to Canada was significantly higher educated than on average in Finland and around 70 percent of the employees were male.

Both tariffs and NTMs applied to EU commodities imported to Canada are lower than those applied to Canadian imports to the EU. Average tariffs applied by EU on imports from Canada amount to 1.2 percent and estimated NTMs to 29 percent, while tariffs and NTMs applied by Canada on imports from the EU average 1.2 percent and 24 percent respectively. Levels of protection in trade between Finland and Canada are below the EU average for both directions.

According to international research literature, the impacts of trade agreements in general depend significantly on their content and on the ways they affect different sectors, firms, marginal and fixed costs of exporting and market access. The expected effects are typically modelled ex-ante with computable general equilibrium (CGE) models such as the GTAP model used to estimate the impacts for Finland in this study. In general, ex-post studies have found that regional trade agreements increased bilateral exports between the parties by an average of 40 percent. At firm level, tariff reductions lower only marginal costs of trading, but not fixed costs, and therefore they benefit mostly the firms that are already exporting. Small tariff reductions, such as what most sectors will experience with CETA, have not been found to increase the number of exporting firms. On the contrary, reductions in NTMs and improvements in market access have been found to increase the number of exporting firms since they cut the fixed costs of exporting. These types of trade barrier reductions benefit smaller firms more than larger firms. Due to the emphasis on NTM reductions and market access improvements in CETA, it is expected to increase the share of exporting firms and help especially smaller firms in foreign market access. Increased competition in the markets can, however, also decrease the total number of firms present in the market, but a larger fraction of the surviving firms will be able to export and the general productivity in the economy will rise.

In light of the GTAP model simulation results, impacts of the CETA are modest in the EU at the whole economy level, with an increase of 0.03 percent in the GDP. The result is in line with the previous literature. Benefits to Finland are slightly higher than the EU average, at around 0.04 percent. Impacts on Canada, in contrast, are clearly positive. Majority of the regional differences in the gains from trade liberalisation is explained by asymmetry in the relative importance of the agreement regions as bilateral trade partners.

Three explanatory factors taken into account in the model simulations contribute to Finland's higher than EU average gains from the CETA: (1) Commodities imported from Canada to Finland have relatively low initial NTMs, which results in only small losses of regional revenue generated by the protection measures; (2) Canada is more important as an export destination for Finland, with 25 percent higher initial share, than for the EU as a whole; and (3) The present commodity structure of Finnish exports to Canada includes some product groups, especially in services and motor vehicles industry, that are among the most important likely beneficiaries from the Agreement.

In terms of value added, most sectors in Finland grow as a result of the CETA. With the exception of primary products, the value of imports increases for all commodity groups. The picture is more mixed for exports where a few commodity groups (Chemical products, Motor vehicles, Other machinery and equipment) show significant increases, offset by decreases in some others (Paper products, Electronic equipment). The extensive liberalisation of services trade is likely to have positive effects for Finland as some 30-50 percent of the Finnish exports' value added originated from service exports in Canadian trade and services trade has been identified to have had relatively high trade barriers in many areas.

Reflecting the modest share of Canada in Finland's total external trade, changes in relative terms in total imports to and exports from Finland are small in most sectors. The changes in totals are above one percent only for motor vehicle exports and the export and import of other transport equipment. The results on export changes by destination indicate both trade creation and trade diversion effects. For the majority of commodity groups, the increase in exports to Canada is partly offset or even exceeded by the decrease in intra-EU exports and exports to the rest of the world. A notable exception of this is the Motor vehicles industry, where we observe increased exports to all destinations.

Changes in imports by origin have similar overall pattern as exports by destination. Imports from Canada increase for all commodity groups, but are in most cases reflected in decrease of imports from other sources. Exceptions include food products and paper products where some increase is observed from all sources. For many commodity groups, the decrease in imports occurs in intra-EU trade, while the imports from the rest of the world increase in some cases more than from Canada.

However, similar to previous findings on the effects of CETA and on deep RTAs in general, relative changes in the bilateral flows between Finland and Canada resulting from CETA are clearly visible. The highest bilateral changes are found for motor vehicles and transport equipment where both bilateral exports and imports will increase by over 100 percent. In addition, for metal and electronic equipment Finnish exports to Canada will increase by over 60 percent and for machinery and equipment the Canadian exports to Finland by some 70 percent. However, the large percentage increases result in some cases from very small initial flows.

It should be noted that the GTAP modelling framework cannot account for the potential increase in smaller exporting firms thanks to improved market access and lower fixed cost of exporting, nor for the effects of the public procurement opening up to the competition. Further, the effects on public procurement are difficult to estimate since the data on export and import flows in public procurement markets is less precise than on other trade flows especially for

Canada. However, based on the available data, imports and exports between Finland and Canada going to public demand in the partner country were practically non-existing during 2000-2014. In total, around 3 percent of the total Finnish public demand was met with imported commodities and around 0.05-0.1 percent of the Canadian public demand during 2010-2014. In total the Canadian public demand has been around 400 billion USD. To obtain a rough idea on what might happen to public procurement markets following the CETA agreement, we take the benchmark that most likely the effects will be at least smaller than what they have been in the EU resulting from the formation of the single market. Recently, the average share of foreign firms winning public procurement contracts was 1.7 percent and the share of their contract's value around 3 percent in the whole EU area. Most foreign public procurement exporters came from another EU member. Local firms have been also found to have still over 900 times higher likelihood to win a public procurement contract in the EU area compared to foreign rivals. Based on these figures it seems that even nearly total opening of public procurement markets to EU exporters in Canada is not likely to result in a large market shares for EU firms. However, compared to the current situation of nearly non-existing imports in the Canadian public sector, the CETA provisions do have a potential to increase the imports substantially at least in percentage terms.

With respect to the current firm heterogeneity and labour market structures in the industries that are most likely to be affected by CETA, we find that recently there has been less small and medium sized firms exporting from Finland to Canada compared to other export markets on average in the most affected industries. In these industries only more productive and bigger Finnish exporters have entered the Canadian market until now. The cut of fixed and marginal costs of exporting in the CETA agreement is likely to open the Canadian market better to more SME exporters. However, it is not possible to calculate exactly how many new exporters might enter the Canadian market. In addition to the SMEs, the current exporters to Canada are likely to benefit from the agreement, but it is also not clear how the sector level aggregate benefits might be divided between the firms that already export to Canada compared to the benefits going to potential new entrants. In terms of the labour market structures, especially higher skilled employees, blue collar production worker and males working in exporting firms in the most affected industries are likely to benefit from CETA. However, for example the estimated average real wage effects are mostly not very large.

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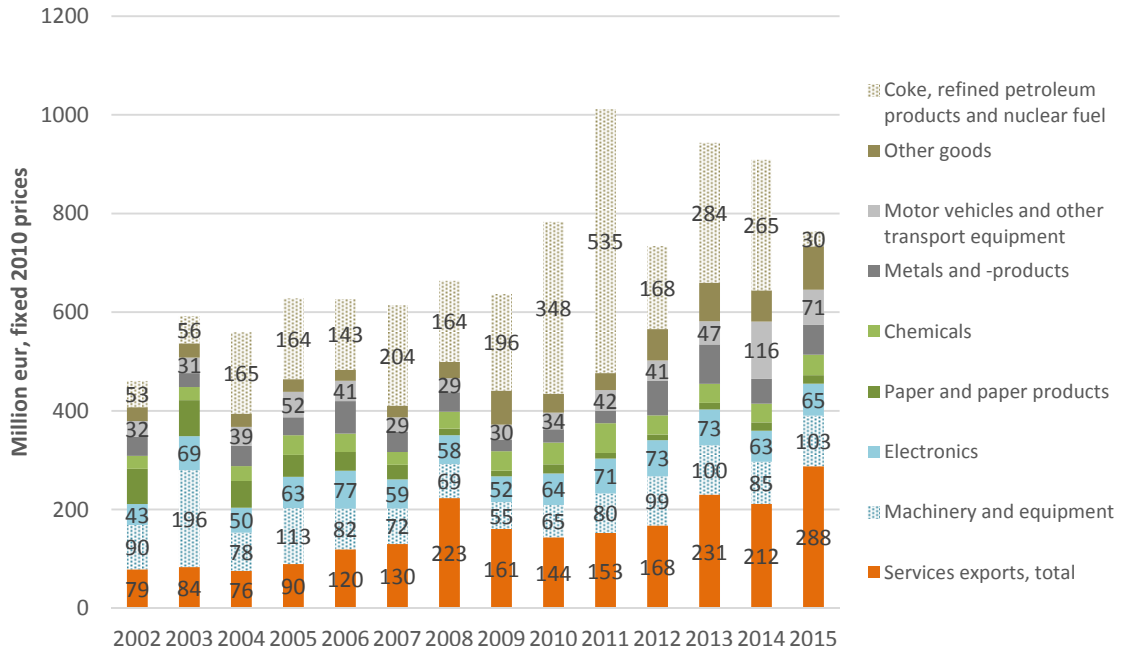
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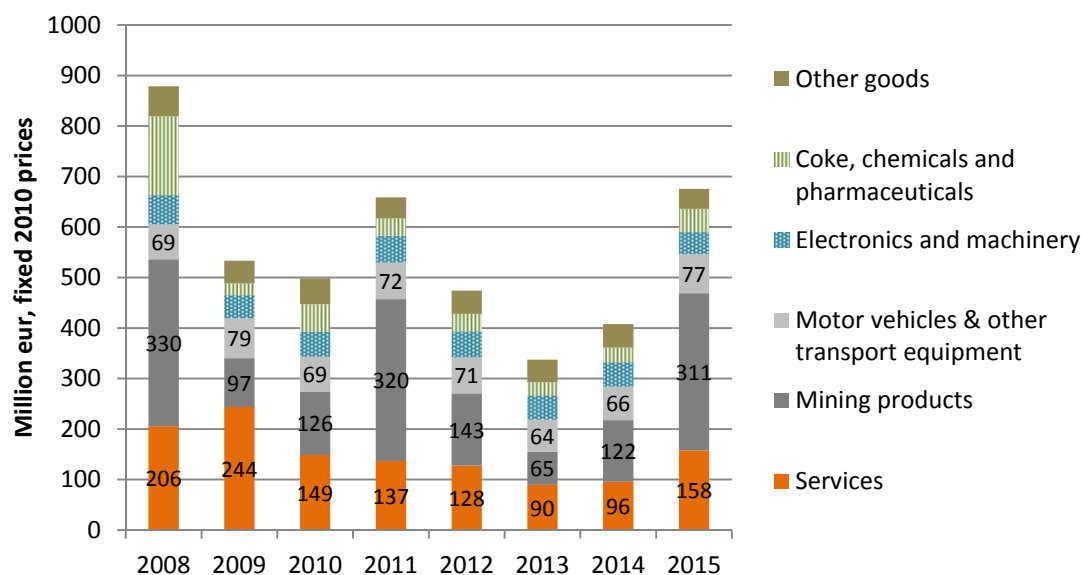
Appendices

Figure A1. Finnish gross exports to Canada by larger commodity groups



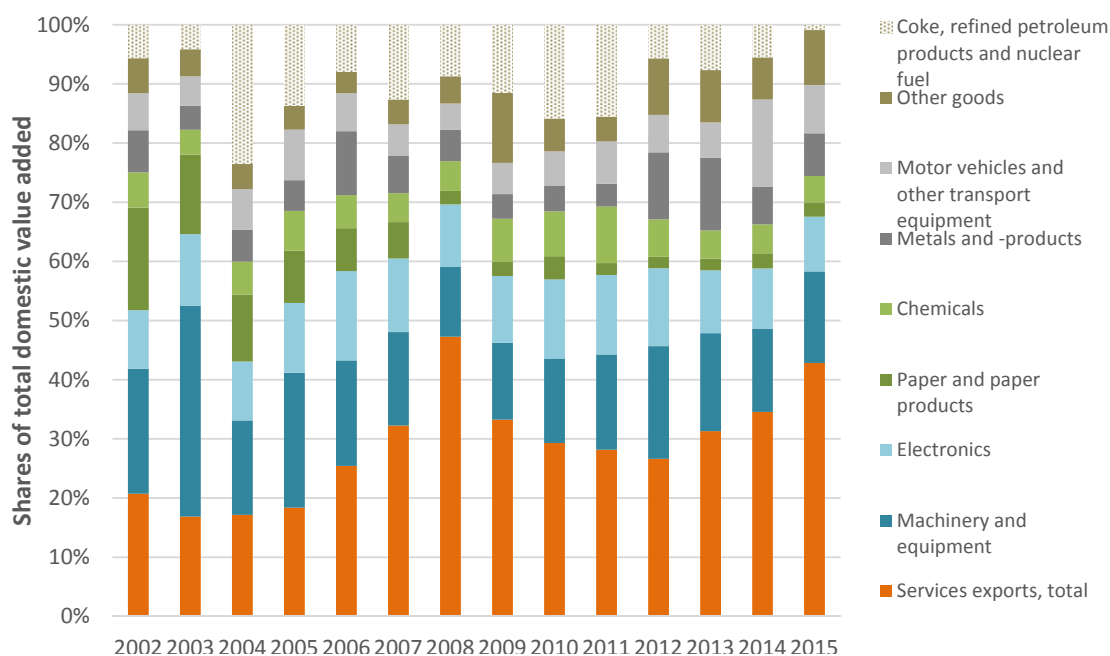
Sources: Customs Finland statistics according to CPA classification, Statistics Finland balance of payment for services export 2006-2015, UN Comtrade services trade statistics 2002-2005. Deflated with export price index of Statistics Finland to 2010 prices.

Figure A2. Canadian gross exports to Finland by larger commodity groups



Sources: Customs Finland statistics according to CPA classification, Statistics Finland balance of payment for services export 2006-2015. Deflated with export price index of Statistics Finland to 2010 prices.

Figure A3. Shares of exports' total domestic value added by commodity



Sources: Customs Finland statistics, Statistics Finland balance of payment for services export 2006-2015, UN Comtrade services trade statistics 2002-2005. Exports' domestic value added shares based on microdata analyses. See Haaparanta et al. (2017).

Table A1. GTAP Commodities

| Reporting Commodity | Aggregated commodity (simulations) | Disaggregated GTAP 9 database commodity |
|----------------------------|---|--|
| Primary products | Primary agriculture and fishing | C_B Sugar cane, sugar beet |
| | | CTL Bovine cattle, sheep and goats, horses |
| | | FSH Fishing |
| | | GRO Cereal grains nec |
| | | OAP Animal products nec |
| | | OCR Crops nec |
| | | OSD Oil seeds |
| | | PDR Paddy rice |
| | | PFB Plant-based fibers |
| | | RMK Raw milk |
| | | V_F Vegetables, fruit, nuts |
| WHT Wheat | | |
| | | WOL Wool, silk-worm cocoons |
| | Forestry | FRS Forestry |
| | Coal | COA Coal |
| | Oil and Natural Gas | GAS Gas |
| | | OIL Oil |
| | Minerals nec | OMN Minerals nec |
| Food and beverages | Food products ex dairy | CMT Bovine meat products |
| | | OFD Food products nec |
| | | OMT Meat products nec |
| | | PCR Processed rice |
| | | SGR Sugar |
| | | VOL Vegetable oils and fats |
| | Dairy products | MIL Dairy products |

| | | |
|---|---|---|
| | Beverages and tobacco products | B_T Beverages and tobacco products |
| Other manufacturing products | Textiles, wearing apparell, leather | LEA Leather products TEX Textiles WAP Wearing apparel |
| Wood products | Wood products | LUM Wood products |
| Paper products, publishing | Paper products, publishing | PPP Paper products, publishing |
| * | Petroleum, coal products | P_C Petroleum, coal products |
| Chemical, rubber, plastic products | Chemical, rubber, plastic products | CRP Chemical, rubber, plastic products |
| Metals | Mineral products nec | NMM Mineral products nec |
| | Ferrous metals | I_S Ferrous metals |
| | Metals nec | NFM Metals nec |
| | Metal products | FMP Metal products |
| Motor vehicles and parts | Motor vehicles and parts | MVH Motor vehicles and parts |
| Transport equipment nec | Transport equipment nec | OTN Transport equipment nec |
| Electronic equipment | Electronic equipment | ELE Electronic equipment |
| Machinery and equipment nec | Machinery and equipment nec | OME Machinery and equipment nec |
| Other manufacturing products | Manufactures nec | OMF Manufactures nec |
| | Electricity | ELY Electricity |
| | Gas and water distribution | GDT Gas manufacture, distribution WTR Water |
| Construction | Construction | CNS Construction |
| Transport | Transport nec | OTP Transport nec |
| | Water transport | WTP Water transport |
| | Air transport | ATP Air transport |
| Business services nec | Business services nec | OBS Business services nec |
| Public Administration, Defense, Education, Health | Public Administration, Defense, Education, Health | OSG Public Administration, Defense, Education, Health |
| Other services | Trade | TRD Trade |

| | |
|---------------------------------|-------------------------------------|
| Communication | CMN Communication |
| Financial services nec | OFI Financial services nec |
| Insurance | ISR Insurance |
| Recreational and other services | ROS Recreational and other services |
| Dwellings | DWE Dwellings |

Table A2: Applied tariffs and protection in trade between the EU and Canada, by detailed sector, ad valorem equivalents

| | Against Canada's exports to EU | Against EU's exports to Canada |
|--|-----------------------------------|-----------------------------------|
| Primary agriculture and fishing | 3.7 | 2.1 |
| Forestry | 1.1 | 0.6 |
| Coal | 0.1 | 0.1 |
| Oil and Natural Gas | 0.1 | 0.1 |
| Minerals nec | 0.1 | 0.1 |
| Food products ex dairy | 15.6 | 20.9 |
| Dairy products | 120.8 | 315.6 |
| Beverages and tobacco products | 2.5 | 0.8 |
| Textiles, wearing apparell, leather | 8.6 | 10.4 |
| Wood products | 0.7 | 3.6 |
| Paper products, publishing | 0.0 | 0.1 |
| Petroleum, coal products | 2.3 | 1.3 |
| Chemical, rubber, plastic products | 2.1 | 0.9 |
| Mineral products nec | 2.8 | 3.0 |
| Ferrous metals | 0.4 | 0.1 |
| Metals nec | 0.8 | 0.1 |
| Metal products | 1.3 | 1.9 |
| Motor vehicles and parts | 9.1 | 7.2 |
| Transport equipment nec | 1.5 | 0.9 |
| Electronic equipment | 1.3 | 0.2 |
| Machinery and equipment nec | 1.9 | 0.4 |
| Manufactures nec | 0.8 | 3.7 |
| Electricity | 0.1 | 0.1 |
| Gas and water distribution | 0.1 | 0.1 |
| Construction | 0.0 | 0.0 |
| Trade | 0.0 | 0.0 |
| Transport nec | 0.0 | 0.0 |
| Water transport | 0.0 | 0.0 |
| Air transport | 0.0 | 0.0 |
| Communication | 0.0 | 0.0 |
| Financial services nec | 0.0 | 0.0 |
| Insurance | 0.0 | 0.0 |
| Business services nec | 0.0 | 0.0 |
| Recreational and other services | 0.0 | 0.0 |
| Public Administration, Defense, Education, Health | 0.0 | 0.0 |
| Weighted average (Finland) | 1.2 | 1.2 |
| Weighted average (EU total) | 1.1 | 2.2 |

Sources: GTAP database.

Table A3: Estimated non-tariff measures in trade between the EU and Canada, by detailed sector, ad valorem equivalents

| | Against Canada's exports to EU | Against EU's exports to Canada |
|--|-----------------------------------|-----------------------------------|
| Primary agriculture and fishing | 32.6 | 40.4 |
| Forestry | 32.6 | 38.0 |
| Coal | | |
| Oil and Natural Gas | | |
| Minerals nec | | |
| Food products ex dairy | 32.6 | 40.4 |
| Dairy products | 77.8 | 101.2 |
| Beverages and tobacco products | 15.0 | 18.4 |
| Textiles, wearing apparell, leather | 11.8 | 12.8 |
| Wood products | | 24.2 |
| Paper products, publishing | | 14.6 |
| Petroleum, coal products | 16.0 | 16.0 |
| Chemical, rubber, plastic products | 16.0 | 16.0 |
| Mineral products nec | | |
| Ferrous metals | 35.2 | 26.2 |
| Metals nec | 35.2 | 26.2 |
| Metal products | 35.2 | 26.2 |
| Motor vehicles and parts | 65.2 | 66.6 |
| Transport equipment nec | 46.4 | 37.0 |
| Electronic equipment | 32.6 | 24.2 |
| Machinery and equipment nec | 26.8 | 32.0 |
| Manufactures nec | | |
| Electricity | | |
| Gas and water distribution | | |
| Construction | 41.6 | 13.2 |
| Trade | 41.6 | 35.2 |
| Transport nec | 28.4 | 15.6 |
| Water transport | 28.4 | 15.6 |
| Air transport | 28.4 | 15.6 |
| Communication | 30.4 | 33.6 |
| Financial services nec | 38.6 | 47.6 |
| Insurance | 22.2 | 85.8 |
| Business services nec | 35.2 | 28.4 |
| Recreational and other services | 41.6 | 35.2 |
| Public Administration, Defense, Education, Health | 41.6 | 35.2 |
| Weighted average (Finland) | 23.8 | 17.0 |
| Weighted average (EU total) | 29.4 | 24.1 |

Sources: Francois and Pindyuk (2013), European Parliament (2013).