Trade and Welfare Effects of Deep Regional Integration: Evidence from the Mainland–Hong Kong CEPA*

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Abstract

This paper quantifies the trade and welfare effects of the Mainland–Hong Kong Closer Economic Partnership Arrangement (CEPA), a deep regional agreement between two highly integrated economies. We first estimate CEPA's direct bilateral trade effects using the synthetic control method and then map the implied trade-cost changes into a Melitz-style structural gravity model to quantify general equilibrium outcomes. The synthetic-control estimates show that CEPA increased bilateral trade in both directions, with larger effects on Hong Kong's exports to the Mainland, consistent with the agreement's asymmetric liberalization. The counterfactual results imply welfare gains for both economies, especially Hong Kong: in the benchmark specification, CEPA raises 2012 real output by 0.147% for the Mainland and 2.474% for Hong Kong. Most gains come from reductions in non-tariff and fixed market-access frictions rather than tariff reductions alone, while spillovers to third economies are economically small. The findings show that deep integration can generate sizable gains even for economies that are already closely connected.

Keywords: CEPA; Trade and Welfare Effects; Synthetic Control Method
JEL Classification: F13; F14; F17; F50

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1 Introduction

Deep regional trade agreements increasingly go beyond tariff cuts. They also address rules of origin, customs procedures, services, investment, and other institutional frictions that shape market access (Mattoo et al., 2022). These provisions may be especially important for economies that already trade intensively, where remaining barriers are often administrative, regulatory, or fixed-cost in nature (Antràs and Staiger, 2012). A central question is therefore whether deep integration can still generate sizable trade and welfare gains between economies that are already closely connected.

The Mainland–Hong Kong Closer Economic Partnership Arrangement (CEPA) provides a useful setting in which to answer this question. The Mainland and Hong Kong are institutionally linked but operate as separate customs territories, and CEPA is their first free trade agreement.[1] The agreement reduced barriers asymmetrically: Hong Kong was already a free port, whereas the Mainland granted zero-tariff treatment to qualifying goods of Hong Kong origin and expanded market access in services and other areas. This asymmetry predicts a larger trade response for Hong Kong's exports to the Mainland, but the magnitude and welfare relevance of that response remain empirical questions.

This paper quantifies the trade and welfare effects of CEPA. We first estimate CEPA's direct bilateral trade effects using the synthetic control method (SCM) of Abadie and Gardeazabal (2003). We then map the implied trade-cost changes into a Melitz-style structural gravity model and solve for general equilibrium trade and welfare effects using exact hat algebra (Melitz, 2003; Dekle et al., 2007). This two-step design separates the measurement of CEPA's direct trade effects from the simulation of its general equilibrium consequences.

The empirical analysis uses annual data from 1996 to 2017. We construct synthetic controls for directional Mainland–Hong Kong trade flows from untreated bilateral trade pairs that did not sign FTAs with either the Mainland or Hong Kong during the sample period. The predictor set includes pre-treatment bilateral trade, output and expenditure terms, multilateral-resistance components, tariffs, and standard gravity variables. This design makes the counterfactual trade path data-driven while reducing the risk that the estimated CEPA effect is confounded by overlapping trade agreements.

The synthetic controls closely match actual trade flows before CEPA became fully effective. After 2006, actual trade rises above the synthetic benchmark in both directions, and the gap is larger for Hong Kong's exports to the Mainland. This pattern is consistent with CEPA's institutional design: the Mainland implemented the larger goods-market liberalization, while Hong Kong had limited room for additional tariff reductions. The finding is robust to using

[1] For brevity, we refer to the Mainland of China and the Hong Kong Special Administrative Region of China as the Mainland and Hong Kong, respectively, throughout the paper.

simple-average tariffs, restricting the donor pool, and aggregating directional flows into symmetric bilateral trade.

To quantify economy-wide effects, we embed the estimated trade gaps in a Melitz-style structural gravity framework (Melitz, 2003). The model includes asymmetric bilateral trade costs, ad valorem tariffs, firm entry, fixed market-access costs, and multilateral resistance. We calibrate the factual CEPA equilibrium year by year and then remove CEPA-related shocks counterfactually. The counterfactual exercises decompose CEPA into a tariff channel, a non-tariff and fixed-cost channel, and their combined effect.

The general equilibrium results show that CEPA raised welfare for both participants, with larger effects for Hong Kong. In the benchmark specification using weighted-average tariffs, real output in 2012 increases by 0.147% for the Mainland and 2.474% for Hong Kong. The gains are driven mainly by the non-tariff and fixed-cost component rather than by tariff reductions alone. CEPA also raises imports, exports, entrant mass, and export participation for the two participants, while spillover effects on major third economies and the rest of the world are economically negligible.

The paper is related to three strands of literature. First, it contributes to the literature on CEPA. Existing evidence remains mixed. Some studies find positive effects: Ching et al. (2012) predict sizable labor-market gains for Hong Kong, and Li et al. (2009) find that CEPA raised Hong Kong's total factor productivity (TFP) by 1.5% per year. In contrast, Zhou (2019) finds limited trade creation effects. We add to this debate by using a synthetic-control counterfactual for directional bilateral trade and showing that CEPA generated substantial trade creation for the two participating economies, the Mainland and Hong Kong. By translating the estimated partial trade effects into a general equilibrium quantitative trade model, we further show that CEPA increased real output, real income, trade flows, entrant mass, and the proportion of exporting firms in both economies.

Second, the paper speaks to quantitative studies of trade liberalization and regional agreements. Related work studies the global efficiency effects of FTAs (Anderson and Yotov, 2016), heterogeneous FTA effects (Baier et al., 2019), China's WTO accession (Brandt et al., 2017), and the Regional Comprehensive Economic Partnership (Jin et al., 2025). Much of this literature focuses on the trade or welfare effects of tariff reductions, whereas non-tariff and fixed-cost channels receive less attention.[2] Our contribution is to quantify a deep agreement between two highly integrated economies and to separate tariff reductions from broader non-tariff and fixed-cost channels. Building on the Melitz-style model, we further quantify CEPA's effects on entrant mass and the proportion of exporting firms, which enriches the understanding of how trade liberalization and regional agreements affect extensive margins.

[2]There are some exceptions: for example, Dhingra et al. (2023) and Chang et al. (2026) study the impact of non-tariff barriers and deep integration on trade and welfare.

Third, the paper adds to applications of the synthetic control method in international trade. Most empirical studies in international trade rely on gravity equations, and many gravity studies use ordinary least squares (OLS) or Poisson pseudo-maximum likelihood (PPML) estimation (Silva and Tenreyro, 2006; Head and Mayer, 2014; Shepherd and Zylkin, 2026). Only a few studies use the synthetic control method to examine trade topics such as the euro (Saia, 2017) and the Belt and Road Initiative (Gao et al., 2024). SCM provides a credible, transparent, and data-driven counterfactual, especially when a major policy or event affects a single treated unit (Abadie et al., 2010, 2015). In our setting, SCM is useful because post-CEPA Hong Kong–Mainland trade can be compared with a synthetic trade pair constructed from other bilateral pairs that had similar pre-CEPA characteristics but did not experience CEPA. We extend this approach by using SCM estimates as inputs into a structural gravity counterfactual. This approach links a transparent empirical estimate of bilateral trade effects to welfare, trade diversion, and general equilibrium adjustment.

The rest of the paper is organized as follows. Section 2 describes the institutional background of CEPA and Mainland–Hong Kong trade. Section 3 presents the empirical analysis, including the data, synthetic control method, and SCM results. Section 4 presents the quantitative analysis of CEPA's general equilibrium effects, including the theoretical framework, counterfactual design, and welfare and trade effects. Section 5 concludes.

2 Institutional Background: CEPA and Mainland–Hong Kong Trade

The Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA) is the first free trade agreement (FTA) between the Mainland of China and the Hong Kong Special Administrative Region of China, signed on 29 June 2003. CEPA entered into force on 1 January 2004 and was subsequently deepened through a sequence of supplements and follow-up agreements. Unlike a narrow tariff agreement, CEPA combines liberalization in trade in goods with services opening, investment provisions, and economic and technical cooperation (Trade and Industry Department, Government of the Hong Kong Special Administrative Region, 2026a). It therefore provides an institutional framework for strengthening Mainland–Hong Kong economic integration while preserving the two economies' status as separate customs territories.

The goods component is central for our analysis. Under CEPA, the Mainland progressively granted zero-tariff treatment to goods of Hong Kong origin that satisfy CEPA rules of origin; since 1 January 2006, this zero-tariff arrangement has applied to imported goods of Hong Kong origin in accordance with those rules (Zhou, 2019; Trade and Industry Department, Government of the Hong Kong Special Administrative Region, 2026b). Because Hong Kong is a free port and had already maintained a low-tariff regime before CEPA, goods-

market tariff liberalization was asymmetric: the main tariff concessions came from the Mainland. CEPA also reduced non-tariff trade costs by clarifying rules of origin, certification procedures, and administrative requirements for claiming preferential treatment.

Beyond goods, CEPA gives qualified Hong Kong service suppliers preferential access to the Mainland market in many service sectors (Trade and Industry Department, Government of the Hong Kong Special Administrative Region, 2026c). These commitments include lower entry thresholds, broader business scopes, and simplified approval procedures, and were later expanded through additional CEPA supplements and agreements. CEPA's investment and cooperation provisions further promote customs facilitation, standards and testing cooperation, mutual recognition, and policy coordination. Given the intensity of Mainland–Hong Kong economic links, CEPA provides a useful setting for evaluating whether a deep regional agreement can generate sizable trade and welfare gains between already closely connected economies.

The asymmetric effect estimated below is therefore consistent with the institutional design of CEPA. Since Hong Kong entered the agreement with limited room for further tariff reduction, the largest expected bilateral trade-cost reduction operated on the Mainland's imports from Hong Kong. The removal of these barriers predicts a larger response in Hong Kong's exports to the Mainland, which is the pattern we examine in the empirical analysis.

3 Empirical Analysis

3.1 Data Description

We use annual data for 1996–2017 to estimate the partial trade effects of CEPA and conduct the counterfactual analysis. Table 1 reports summary statistics for the main variables.

We construct trade-cost predictors from both time-varying and time-invariant components. The multilateral-resistance-transformed versions of these variables, which are used as predictors in the synthetic-control estimation, are reported in Table 1. The time-varying variables are RTA_{ijt} and GSP_{ijt}. Information on regional trade agreements (RTA) and Generalized System of Preferences (GSP) schemes is collected from the Database on Economic Integration Agreements constructed by Scott Baier and Jeffrey Bergstrand, the WTO databases on regional and preferential trade agreements, and the UNCTAD database on GSP schemes. The time-invariant variables are from CEPII and the CIA World Factbook, including $LnDist_{ij}$, $ComLang_{ij}$, $Comcol_{ij}$, $Landlocked_{ij}$, $Island_{ij}$, $Border_{ij}$, and $ComLeg_{ij}$.

In addition to the gravity controls, we account for bilateral trade policy using tariff measures. Specifically, we use trade-flow-weighted average effectively applied tariffs, AHS^{wa}_{ijt}, as the benchmark and simple-average effectively applied tariffs, AHS^{sa}_{ijt}, as a robustness check.

Table 1: Summary statistics.

Panel A: Raw terms

Variable	Description	Mean	S.D.	Obs.
$\ln X_{ijt}$	Log of bilateral trade flows (million US \$)	2.740	3.191	194140
$CEPA_{ijt}$	CEPA indicator between the Mainland and Hong Kong	0	0.016	194140
RTA_{ijt}	Regional-trade-agreement indicator	0.300	0.458	194140
GSP_{ijt}	Generalized System of Preferences indicator	0.198	0.398	194140
$\ln(AHS^{sa}_{ijt}+1)$	Log of simple-average effectively applied trade-pair tariffs	2.005	1.052	9707
$\ln(AHS^{wa}_{ijt}+1)$	Log of weighted-average effectively applied trade-pair tariffs	1.846	1.084	9707
$LnDist_{ij}$	Log of population-weighted bilateral distance (km)	8.043	1.966	9707
$Comcol_{ij}$	Common-colonizer term	0.074	0.262	9707
$Landlocked_{ij}$	Landlocked-country term	0.299	0.505	9707
$Island_{ij}$	Island-country term	0.245	0.466	9707
$ComLang_{ij}$	Common-language term	0.145	0.352	9707
$Border_{ij}$	Contiguity term	0.032	0.177	9707
$ComLeg_{ij}$	Common-legal-origin term	0.329	0.470	9707
$\ln E_{jt}$	Log of expenditure (million US \$)	10.829	2.269	3020
$\ln Y_{it}$	Log of gross output (million US \$)	10.807	2.286	3020
GDP_{it}	GDP (million US \$)	338000	1400000	3020
β_{it}	Value-added share	0.490	0.033	3020

Panel B: Multilateral-resistance-transformed terms

Variable	Description	Mean	S.D.	Obs.
RTA_{ijt}	MR-transformed regional-trade-agreement indicator	-0.259	0.227	194140
GSP_{ijt}	MR-transformed Generalized System of Preferences indicator	-0.267	0.332	194140
$LnDist_{ij}$	MR-transformed log of population-weighted bilateral distance (km)	-8.369	1.749	9707
$Comcol_{ij}$	MR-transformed common-colonizer term	-0.021	0.026	9707
$Landlocked_{ij}$	MR-transformed landlocked-country term	-0.298	0.503	9707
$Island_{ij}$	MR-transformed island-country term	-0.268	0.453	9707
$ComLang_{ij}$	MR-transformed common-language term	-0.173	0.274	9707
$Border_{ij}$	MR-transformed contiguity term	-0.014	0.071	9707
$ComLeg_{ij}$	MR-transformed common-legal-origin term	-0.269	0.188	9707

Notes: This table reports summary statistics for the main variables used in the analysis. Panel A reports the raw variables, and Panel B reports the trade-cost variables after the Baier–Bergstrand multilateral-resistance transformation used to construct the synthetic-control predictors. Here, i denotes the exporter, j denotes the importer, and t denotes the year.

The tariff data come from the Trade Analysis Information System (TRAINS), accessed through the World Integrated Trade Solution (WITS).

Directional bilateral trade flows X_{ijt} are from the CEPII BACI dataset (Gaulier and Zignago, 2010) and the International Trade dataset maintained by the Correlates of War Project.

GDP data are from the World Bank's World Development Indicators. The value-added share β_{it} is constructed using the STAN database, the OECD Input–Output database, and the World Input–Output Database Socio-Economic Accounts. We obtain gross output Y_{it} by dividing GDP by the value-added share. We define tariff-exclusive bilateral trade flows as $M_{ijt} = X_{ijt}/(1 + t_{ijt})$, where t_{ijt} is the ad valorem tariff rate. Trade deficits are then constructed from tariff-exclusive imports and exports as $D_{jt} = \sum_i M_{ijt} - \sum_i M_{jit}$. Tariff revenue is $T_{jt} = \sum_i M_{ijt} t_{ijt}$, and aggregate expenditure is defined as $E_{jt} = Y_{jt} + D_{jt} + T_{jt}$.

3.2 Synthetic Control Method

Following Abadie and Gardeazabal (2003) and Gao et al. (2024), we use the synthetic control method to estimate the direct effects of CEPA on bilateral trade flows between the Mainland and Hong Kong. Under CEPA, the Mainland gradually granted zero-tariff treatment to imports of Hong Kong origin, with the zero-tariff arrangement effectively completed by 2006. For exposition, consider exports from the Mainland to Hong Kong, denoted by $X_{t,CHN\text{-}HKG}$. The CEPA-induced log increase in this bilateral trade flow is defined as

$$\eta_{t,CHN\text{-}HKG} = \ln X_{t,CHN\text{-}HKG} - \ln X'_{t,CHN\text{-}HKG}, \tag{1}$$

where $X'_{t,CHN\text{-}HKG}$ is the counterfactual export value from the Mainland to Hong Kong in year t in the absence of CEPA.[3] The same definition applies to the reverse direction, namely exports from Hong Kong to the Mainland.

Because $X'_{t,CHN\text{-}HKG}$ is unobserved, we approximate it using a weighted average of untreated bilateral trade pairs. Let $p = 1, \ldots, Q$ index the donor-pool trade pairs, and let w_p denote the corresponding synthetic-control weight, with $w_p \geq 0$ and $\sum_{p=1}^{Q} w_p = 1$. The CEPA-induced log increase can then be estimated by

$$\widehat{\eta}_{t,CHN\text{-}HKG} = \ln X_{t,CHN\text{-}HKG} - \sum_{p=1}^{Q} w_p \ln X_{t,p}. \tag{2}$$

To isolate the effect of the Mainland–Hong Kong CEPA, we exclude bilateral trade pairs involving economies that signed FTAs with either the Mainland or Hong Kong during the sample period. This restriction helps avoid confounding from overlapping trade agreements.[4]

[3] Bilateral trade flows are modeled using the structural gravity framework of Melitz (2003). The baseline theoretical framework and counterfactual system are presented in Sections 4.1 and 4.2, respectively. Larch et al. (2025) provide a comprehensive and pedagogical guide to gravity estimation.

[4] Specifically, we exclude all bilateral trade pairs involving economies that signed FTAs with the Mainland or Hong Kong during 1996–2017.

We then choose the synthetic-control weight vector $W \equiv (w_1, \ldots, w_Q)'$ by solving

$$\widehat{W} = \underset{W \in \mathcal{W}}{\operatorname{argmin}} \sqrt{(Z_{CHN\text{-}HKG} - Z_p W)' V (Z_{CHN\text{-}HKG} - Z_p W)}, \tag{3}$$

where $\mathcal{W}$ is the simplex defined by the non-negativity and adding-up constraints on the weights. The vector $Z_{CHN\text{-}HKG}$ contains the pre-treatment predictors for the treated trade flow, and Z_p collects the corresponding predictors for the donor-pool trade pairs. The matrix V is a positive semidefinite weighting matrix that reflects the relative importance of each predictor in matching pre-treatment trade patterns. The predictor vector includes standard gravity variables: gravity trade-cost controls, tariff measures, the exporter's gross output $\ln Y_{it}$, the importer's total expenditure $\ln E_{jt}$, pre-CEPA bilateral trade flows from exporter i to importer j, and the multilateral-resistance terms $\ln \Pi_{it}$ and $\ln P_{jt}$.

A gravity specification must also account for multilateral-resistance terms (Anderson and van Wincoop, 2003; Anderson and Yotov, 2010). Following Baier and Bergstrand (2009), we approximate $(\ln \Pi_{it} + \ln P_{jt})$ using a first-order Taylor expansion in standard trade-cost variables:

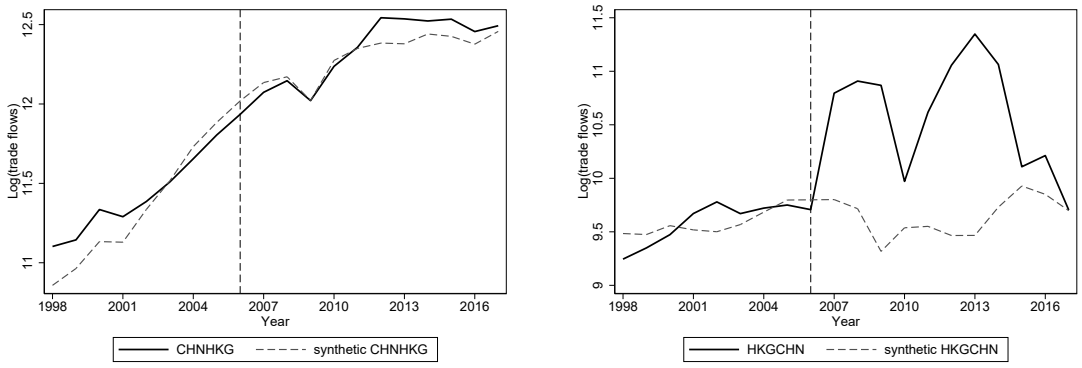
$$BB\tau_{ijt} = \sum_{l=1}^{N} s_{lt}\tau_{ljt} + \sum_{k=1}^{N} e_{kt}\tau_{ikt} - \sum_{k=1}^{N}\sum_{l=1}^{N} s_{lt}e_{kt}\tau_{lkt}, \tag{4}$$

where s_{lt} is economy l's share of world output and e_{kt} is economy k's share of world expenditure in year t. We include this approximation among the predictors used to construct the synthetic control and then estimate the CEPA-induced trade gap in Equation (2).

3.3 Baseline SCM Results

Figure 1 plots the actual trade flows between the Mainland and Hong Kong against their synthetic counterparts, as defined in Equation (2). The solid lines denote actual trade flows, while the dashed lines denote synthetic trade flows. For both directions of bilateral trade, the actual and synthetic series closely track each other before CEPA became fully effective, suggesting that the synthetic controls provide a good approximation of the counterfactual pre-CEPA trade patterns.

After CEPA became fully effective, the actual and synthetic series diverge. The actual export series from the Mainland to Hong Kong remains above its synthetic counterpart for most post-implementation years, indicating that CEPA increased bilateral trade flows between the Mainland and Hong Kong. The divergence is even more pronounced for exports from Hong Kong to the Mainland, as shown in the right panel. This pattern indicates that CEPA substantially increased bilateral trade, with a stronger effect on Hong Kong's exports to the Mainland. The asymmetry is consistent with CEPA's institutional design. Hong Kong had already maintained a near-zero-tariff regime before CEPA, so the additional trade-cost re-



(a) CHN–HKG (b) HKG–CHN

Figure 1: Trade flows between the Mainland and Hong Kong vs. synthetic counterfactuals.

Notes: This figure reports the baseline SCM results. The solid black lines show actual log bilateral trade flows, while the dashed gray lines show the corresponding synthetic trade flows. The vertical dashed line marks 2006, the year in which CEPA became fully effective. The left panel reports exports from the Mainland to Hong Kong (CHN–HKG), and the right panel reports exports from Hong Kong to the Mainland (HKG–CHN).

duction for Mainland exports to Hong Kong was relatively limited. By contrast, the Mainland removed more substantial trade barriers on imports from Hong Kong, generating a larger trade response in Hong Kong's exports to the Mainland.

Table A.1 reports the estimated synthetic-control weights for the Mainland's exports to Hong Kong, corresponding to Figure 1, under the baseline specification that controls for weighted-average tariffs. The weights indicate that the synthetic control for the treated pair CHN–HKG is composed of CHN–USA (with weight 0.750) and JPN–HKG (with weight 0.250). Similarly, Table A.2 reports the estimated synthetic-control weights for Hong Kong's exports to the Mainland. The synthetic control for HKG–CHN is composed of HKG–USA (0.569), JPN–CHN (0.170), CHN–USA (0.138), HKG–MAC (0.118), and JPN–HKG (0.005). Overall, the selected donor pairs and weights are intuitive. The main counterfactual units involve Japan or the United States, which are relatively close to the Mainland or Hong Kong in terms of economic size and trade volume.

3.4 Robustness Checks for SCM

We conduct three robustness checks in addition to the baseline specification described above: using simple-average tariffs instead of weighted-average tariffs, using an alternative and more restricted donor pool, and using symmetric rather than directional bilateral trade flows.

Using Simple-Average Tariffs First, we use simple-average tariffs as the trade-policy measure instead of the baseline weighted-average tariff measure. Figure A.1 shows the SCM re-

sults. Actual trade flows continue to diverge from their synthetic counterfactuals after CEPA became effective. This pattern is unsurprising because the aggregate trade-policy measures—weighted-average and simple-average tariffs—are close in magnitude, as shown in Table 1. The synthetic weights under simple-average tariffs are also very similar to those under weighted-average tariffs, as shown in Tables A.1 and A.2.

Alternative Donor Pool Second, we modify the donor pool used to construct the synthetic control. Taking exports from the Mainland to Hong Kong as an example, the benchmark donor pool contains four types of bilateral trade pairs (Controls 1–4), as summarized in Table A.3. As an alternative, we restrict the donor pool to two directional groups: exports from the Mainland to other economies (Control 2) and exports from other economies to Hong Kong (Control 4). We then re-estimate the synthetic control using this restricted donor pool. Figure A.2 shows that actual exports remain above synthetic exports for most years after 2006, consistent with the baseline results.

Symmetric Trade Flows Lastly, we examine symmetric bilateral trade flows by abstracting from trade directions (Rose, 2004; Saia, 2017). Specifically, we use the average of the two directional trade flows and the corresponding averaged control variables. As shown in Figure A.3, actual symmetric trade remains consistently above its synthetic counterpart after 2006, regardless of whether we use the simple-average or weighted-average tariff measures. Taken together, these robustness checks confirm that CEPA's effect on trade is not driven by a specific tariff measure, a particular donor-pool definition, or the directional treatment of bilateral trade. We therefore conclude that CEPA had an economically meaningful and robust direct effect on bilateral trade flows between the Mainland and Hong Kong.

4 Quantitative Analysis

4.1 Theoretical Framework

We use a Melitz-style structural framework to map the direct trade effects of CEPA into general equilibrium trade and welfare effects. The framework follows Melitz (2003), with asymmetric bilateral trade barriers, ad valorem tariffs, and firms drawing productivity from a Pareto distribution. It also follows the structural gravity literature in using market-clearing conditions to obtain a gravity representation with multilateral resistance terms (Anderson and van Wincoop, 2003; Anderson and Yotov, 2010; Head and Mayer, 2014; Chang et al., 2026). The model is solved year by year; to simplify notation, we suppress the time subscript in this subsection.

Each country i is endowed with a fixed labor supply L_i. Buyers have CES preferences over differentiated varieties with elasticity of substitution $\sigma > 1$. Let c_i denote the unit cost of the input bundle in country i, and let N_i denote the mass of entrants. Each entrant pays an entry cost $c_i F_i$ and draws productivity from a Pareto distribution with shape parameter $\theta > \sigma - 1$. A firm from country i that serves country j pays a fixed market-entry cost $c_i f_{ij}$, faces an iceberg trade cost $\tau_{ij} > 1$, and pays an ad valorem import tariff t_{ij} imposed by destination j.

Let a_{ij} be the cutoff cost draw for a firm from i serving j. The zero-profit condition is

$$\frac{1}{\sigma}\frac{1}{1+t_{ij}}\left(\frac{\sigma}{\sigma-1}\frac{c_i\tau_{ij}(1+t_{ij})a_{ij}}{P_j}\right)^{1-\sigma}E_j = c_i f_{ij}, \tag{5}$$

where P_j is the aggregate price index and E_j is total nominal expenditure in destination j. Country j's tariff-inclusive expenditure on varieties from country i is

$$X_{ij} = \left(\frac{\sigma}{\sigma-1}\frac{c_i\tau_{ij}(1+t_{ij})}{P_j}\right)^{1-\sigma}E_j N_i V_{ij}, \tag{6}$$

where

$$V_{ij} \equiv \int_0^{a_{ij}} a^{1-\sigma} dG_i(a) \tag{7}$$

is the market-share-weighted proportion of firms from i that serve j. The corresponding price index is

$$P_j^{1-\sigma} = \sum_i \left(\frac{\sigma}{\sigma-1}c_i\tau_{ij}(1+t_{ij})\right)^{1-\sigma} N_i V_{ij}. \tag{8}$$

Because tariffs are paid at the destination, we distinguish tariff-inclusive expenditure from tariff-exclusive delivered value:

$$M_{ij} = \frac{X_{ij}}{1+t_{ij}}. \tag{9}$$

Let Y_i denote total tariff-exclusive sales by country i to all destinations. Market clearing implies

$$Y_i = \sum_j M_{ij}. \tag{10}$$

Combining the cutoff condition, the Pareto distribution, and market clearing yields a modified structural gravity equation:

$$M_{ij} = \frac{Y_i E_j}{Y_w}\frac{\Lambda_{ij}}{\chi_i \zeta_j}, \tag{11}$$

where $Y_w \equiv \sum_i Y_i$, $s_i \equiv Y_i/Y_w$, and $e_j \equiv E_j/Y_w$. The bilateral trade kernel is

$$\Lambda_{ij} \equiv \tau_{ij}^{-\theta} f_{ij}^{-\frac{\theta}{\sigma-1}+1}(1+t_{ij})^{-\frac{\sigma\theta}{\sigma-1}}. \tag{12}$$

This kernel summarizes the trade-cost components that are relevant for our counterfactual analysis. The first term is the variable trade-cost margin, the second is the fixed market-entry-cost margin, and the third is the tariff margin. Thus, the model allows CEPA to affect trade not only through tariff reductions, but also through broader market-access and fixed-cost channels.

The outward and inward resistance terms are defined as

$$\chi_i = \sum_j \frac{\Lambda_{ij}}{\zeta_j} e_j, \tag{13}$$

$$\zeta_j = \sum_i \frac{\Lambda_{ij}(1+t_{ij})}{\chi_i} s_i. \tag{14}$$

The additional $(1+t_{ij})$ term in Equation (14) reflects the distinction between tariff-exclusive delivered value M_{ij} and tariff-inclusive user-price expenditure X_{ij}.

The aggregate budget constraint allows for trade imbalances and tariff rebates:

$$E_j = Y_j + D_j + T_j, \qquad T_j = \sum_i M_{ij} t_{ij}, \tag{15}$$

where D_j is the nominal trade deficit of country j, with positive values denoting net imports, and T_j is tariff revenue rebated to households. The input bundle combines labor and intermediate inputs with value-added share β_i:

$$c_i = w_i^{\beta_i} P_i^{1-\beta_i}. \tag{16}$$

Free entry implies

$$\frac{\sigma - 1}{\sigma \theta} Y_i = N_i F_i c_i, \tag{17}$$

and labor-market clearing requires

$$w_i L_i = \beta_i Y_i. \tag{18}$$

Equations (5)–(18) characterize the equilibrium in levels used for the quantitative exercise.

4.2 Counterfactual Design

Using the direct effects of CEPA estimated from the synthetic-control analysis, we quantify their general equilibrium implications by rewriting the structural system in changes. This exact-hat approach follows Dekle et al. (2007) and is standard in quantitative trade counterfactuals with trade imbalances. The baseline economy is the factual equilibrium with CEPA. A counterfactual economy is obtained by removing one or more CEPA-related shocks and solving for the new equilibrium relative to the baseline.

Let x denote the factual value of a variable and x' its counterfactual value. Define

$$\widehat{x} \equiv \frac{x'}{x}.$$

In our model, exogenous bilateral shocks enter through two objects: the tariff factor, $\widehat{(1+t_{ij})}$, which is measured directly from tariff data; and the non-tariff component of the composite trade-friction kernel, $\widehat{\Lambda}_{ij}$, which is obtained after netting out $\widehat{(1+t_{ij})}$. In levels, Λ_{ij} summarizes exporter i's bilateral access to destination j:

$$\Lambda_{ij} = \tau_{ij}^{-\theta} f_{ij}^{-\frac{\theta}{\sigma-1}+1} (1+t_{ij})^{-\frac{\sigma\theta}{\sigma-1}}.$$

A higher Λ_{ij} means easier access from i to j. It rises when variable trade costs τ_{ij} fall, when fixed market-entry costs f_{ij} fall, or when tariffs t_{ij} fall. Therefore, CEPA can change Λ_{ij} through both explicit tariff liberalization and broader reductions in non-tariff and fixed market-access frictions.

The corresponding exact-hat shock is

$$\widehat{\Lambda}_{ij} = \widehat{\tau}_{ij}^{-\theta} \widehat{f}_{ij}^{-\frac{\theta}{\sigma-1}+1} \widehat{(1+t_{ij})}^{-\frac{\sigma\theta}{\sigma-1}}. \tag{19}$$

This object is the key shock used in the counterfactual model. It measures how the bilateral access kernel changes when CEPA-related frictions are removed.

The first block of equilibrium conditions describes how bilateral shocks affect outward and inward market-access terms. The outward term χ_i summarizes exporter i's access to all destinations, while the inward term ζ_j summarizes importer j's sourcing access from all origins. Their exact-hat counterparts are

$$\widehat{\chi}_i = \sum_j \omega_{ij}^{\chi} \widehat{\Lambda}_{ij} \widehat{\zeta}_j^{-1} \widehat{e}_j, \qquad \omega_{ij}^{\chi} \equiv \frac{\Lambda_{ij} e_j / \zeta_j}{\chi_i}, \tag{20}$$

and

$$\widehat{\zeta}_j = \sum_i \omega_{ij}^{\zeta} \widehat{\Lambda}_{ij} \widehat{(1+t_{ij})} \widehat{\chi}_i^{-1} \widehat{s}_i, \qquad \omega_{ij}^{\zeta} \equiv \frac{\Lambda_{ij}(1+t_{ij}) s_i / \chi_i}{\zeta_j}. \tag{21}$$

The weights ω_{ij}^{χ} and ω_{ij}^{ζ} are baseline shares. The term $\widehat{(1+t_{ij})}$ appears in the inward-access equation because expenditure is measured at user prices, while M_{ij} is tariff-exclusive delivered value.

Given the changes in market-access terms, tariff-exclusive bilateral trade changes accord-

ing to

$$\widehat{M}_{ij} = \frac{\widehat{Y}_i \widehat{E}_j \widehat{\Lambda}_{ij}}{\widehat{Y}_w \widehat{\chi}_i \widehat{\zeta}_j}. \tag{22}$$

Thus, bilateral trade responds directly to the removed CEPA shock and indirectly through changes in exporter size, importer expenditure, world output, and multilateral resistance terms.

Country output is the weighted average of its bilateral sales changes:

$$\widehat{Y}_i = \sum_j \alpha_{ij} \widehat{M}_{ij}, \qquad \alpha_{ij} \equiv \frac{M_{ij}}{Y_i}. \tag{23}$$

World output, output shares, and expenditure shares change according to

$$\widehat{Y}_w = \sum_i s_i \widehat{Y}_i, \qquad \widehat{s}_i = \frac{\widehat{Y}_i}{\widehat{Y}_w}, \qquad \widehat{e}_i = \frac{\widehat{E}_i}{\widehat{Y}_w}. \tag{24}$$

The counterfactual budget constraint is written in levels:

$$E_i \widehat{E}_i = Y_i \widehat{Y}_i + D_i + T_i', \tag{25}$$

where counterfactual tariff revenue is

$$T_i' = \sum_j M_{ji} \widehat{M}_{ji} \left[(1 + t_{ji}) \widehat{(1 + t_{ji})} - 1 \right]. \tag{26}$$

We keep the trade deficit fixed at its baseline value, so the counterfactual trade-balance condition is

$$\sum_j M_{ji} \widehat{M}_{ji} = \sum_j M_{ij} \widehat{M}_{ij} + D_i. \tag{27}$$

The production block closes the system. The input-bundle cost changes as

$$\widehat{c}_i = \widehat{w}_i^{\beta_i} \widehat{P}_i^{1-\beta_i}. \tag{28}$$

Free entry implies

$$\widehat{N}_i = \frac{\widehat{Y}_i}{\widehat{c}_i}, \tag{29}$$

and labor-market clearing gives

$$\widehat{w}_i = \widehat{Y}_i. \tag{30}$$

Because the system is homogeneous of degree zero in nominal variables, we impose the

world-GDP numeraire:

$$\sum_i w_i L_i \widehat{w}_i = \sum_i w_i L_i. \tag{31}$$

A counterfactual equilibrium in exact-hat form is a collection

$$\left\{\widehat{\chi}_i, \widehat{\zeta}_i, \widehat{M}_{ij}, \widehat{Y}_i, \widehat{Y}_w, \widehat{s}_i, \widehat{e}_i, \widehat{E}_i, \widehat{c}_i, \widehat{N}_i, \widehat{w}_i\right\}_{i,j}$$

that satisfies Equations (20)–(31) for given bilateral shocks $\{\widehat{\Lambda}_{ij}, \widehat{(1+t_{ij})}\}_{i,j}$, calibrated fundamentals, and parameters.

We calibrate the factual equilibrium using the data described in Section 3.1. Bilateral trade flows X_{ij} come from CEPII BACI and the Correlates of War international trade data. Given tariffs, tariff-exclusive bilateral values are

$$M_{ij} = \frac{X_{ij}}{1+t_{ij}}.$$

Gross output is $Y_i = \sum_j M_{ij}$, tariff revenue is $T_i = \sum_j M_{ji} t_{ji}$, and total expenditure is $E_i = Y_i + D_i + T_i$. Trade deficits are constructed from tariff-exclusive imports and exports:

$$D_i = \sum_j M_{ji} - \sum_j M_{ij}.$$

We then compute the model shares α_{ij}, s_i, and e_i from the calibrated M_{ij}, Y_i, and E_i. The value-added share β_i is constructed from production-side data using STAN, OECD input-output tables, and WIOD socio-economic accounts. GDP data come from the World Bank's World Development Indicators. Following Head and Mayer (2014), we set $\sigma = 5$ in the benchmark. We set $\theta = 5$ in the benchmark calibration and report robustness results for alternative (σ, θ) values.

We split the CEPA shock in Equation (19) into two components. The first is the tariff component, $\widehat{(1+t_{ij})}$, which measures the change in explicit ad valorem tariffs. We compute it directly from tariff data as

$$\widehat{(1+t_{ij})} = \frac{1+t'_{ij}}{1+t_{ij}},$$

where t_{ij} is the factual tariff under CEPA and t'_{ij} is the counterfactual tariff after removing the CEPA tariff reduction. We construct this tariff shock using two aggregation methods: a simple-average tariff measure and a weighted-average construction. The simple-average version gives equal weight to tariff lines, while the weighted-average version aggregates product-level tariff changes using trade-flow weights.

The second component is the non-tariff and fixed-cost component (non-tariff barrier hence-

forth),

$$\widehat{\tau}_{ij}^{-\theta}\widehat{f}_{ij}^{-\frac{\theta}{\sigma-1}+1}.$$

This component captures the part of CEPA's trade effect that is not directly accounted for by tariff reductions. It includes changes in iceberg trade costs, fixed market-access costs, customs and administrative frictions, and other deep-integration channels. We infer this component from the synthetic-control estimates in Section 3.2. Let $\widehat{\eta}_{t,i-j}^{SCM}$ be the estimated CEPA-induced log trade gap for the directional flow from i to j in year t. Because the counterfactual removes the CEPA-induced increase in trade, we set

$$\widehat{\tau}_{ijt}^{-\theta}\widehat{f}_{ijt}^{-\frac{\theta}{\sigma-1}+1} = \exp\left(-\widehat{\eta}_{t,i-j}^{SCM}\right). \tag{32}$$

For all untreated bilateral pairs, both the tariff component and the non-tariff/fixed-cost component are set to one.

We consider three counterfactual exercises. Case 1 removes only the tariff component:

$$\widehat{\Lambda}_{ijt}^{Tariff} = \widehat{(1+t_{ijt})}^{-\frac{\sigma\theta}{\sigma-1}}, \qquad \widehat{\tau}_{ijt}^{-\theta}\widehat{f}_{ijt}^{-\frac{\theta}{\sigma-1}+1} = 1. \tag{33}$$

Case 2 removes only the non-tariff and fixed-cost component:

$$\widehat{\Lambda}_{ijt}^{NTB} = \exp\left(-\widehat{\eta}_{t,i-j}^{SCM}\right), \qquad \widehat{(1+t_{ijt})}^{-\frac{\sigma\theta}{\sigma-1}} = 1. \tag{34}$$

Case 3 removes both components:

$$\widehat{\Lambda}_{ijt}^{Total} = \exp\left(-\widehat{\eta}_{t,i-j}^{SCM}\right)\widehat{(1+t_{ijt})}^{-\frac{\sigma\theta}{\sigma-1}}. \tag{35}$$

These cases decompose CEPA into a tariff channel, a non-tariff and fixed-cost channel, and their combined effect.

For each case, the model gives $z_i' = z_i\widehat{z}_i$. Since the factual economy is the CEPA equilibrium, we report the ex post CEPA effect as

$$100\left(\frac{1}{\widehat{z}_i}-1\right) = 100\frac{z_i - z_i'}{z_i'}. \tag{36}$$

Because the reported effect is the percentage difference between the factual CEPA equilibrium and a counterfactual equilibrium in which the corresponding shock is removed, a positive value indicates that the CEPA shock raises the outcome. In the next subsection, we report effects on real output (Y_i/P_i), real income (E_i/P_i), imports ($\sum_{j\neq i} M_{ji}$), exports ($\sum_{j\neq i} M_{ij}$), entrant mass (N_i), and exporter i's export-weighted proportion of exporting firms, where V_{ij}

is weighted by bilateral exports M_{ij}. Table A.4 reports the characteristics of the economies included in the pseudo world used for the counterfactual analysis.

4.3 General Equilibrium Welfare and Trade Effects

Figure 2 provides an overview of CEPA's country-level general equilibrium effects over time. The figure summarizes the benchmark specification with $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs, and reports total effects on real output, real income, imports, exports, entrant mass, and exporter i's export-weighted proportion of exporting firms. We highlight the Mainland and Hong Kong as the two CEPA participants, report the United States, the United Kingdom, and Japan as major third economies, and use the 25th, 50th, and 75th percentiles to summarize the distribution of effects for the rest of the world.

The figure shows a clear country pattern. CEPA's effects are concentrated in the two participating economies and are proportionally larger for Hong Kong than for the Mainland. This pattern is consistent with the institutional background discussed above: Hong Kong was already a free port, whereas the Mainland granted more substantial market-access improvements to goods from Hong Kong. Over time, the effects are generally stronger in the middle of the post-implementation period, especially for trade-related outcomes and firm-extensive-margin measures. By contrast, responses among major third economies and the rest-of-world percentiles remain small, suggesting that the main general equilibrium adjustment operates through deeper Mainland–Hong Kong integration rather than large third-country spillovers.

Tables 2 and 3 provide detailed welfare effects measured by real output and real income, respectively. The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles of welfare changes for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Panel A of Table 2 shows that CEPA generated welfare gains for both the Mainland and Hong Kong in most post-implementation years. Measured by real output, Hong Kong experienced particularly large gains, peaking at 2.474% in 2012 and remaining above 1% during 2012–2016. The Mainland also gained, although by a smaller magnitude, with its real-output gain peaking at 0.147% in 2012. This difference is consistent with the relative economic size of the two economies and with the asymmetric trade-cost reductions shown in Figure 1. Because Hong Kong is much smaller and its exports to the Mainland faced larger pre-CEPA trade barriers, a given bilateral trade-cost reduction translates into a larger proportional welfare gain for Hong Kong.

To illustrate the magnitude of the welfare gains, consider the real-output effects in 2012. Hong Kong's real GDP was 285.20 billion US dollars, and its real GDP per capita was 39,887.83

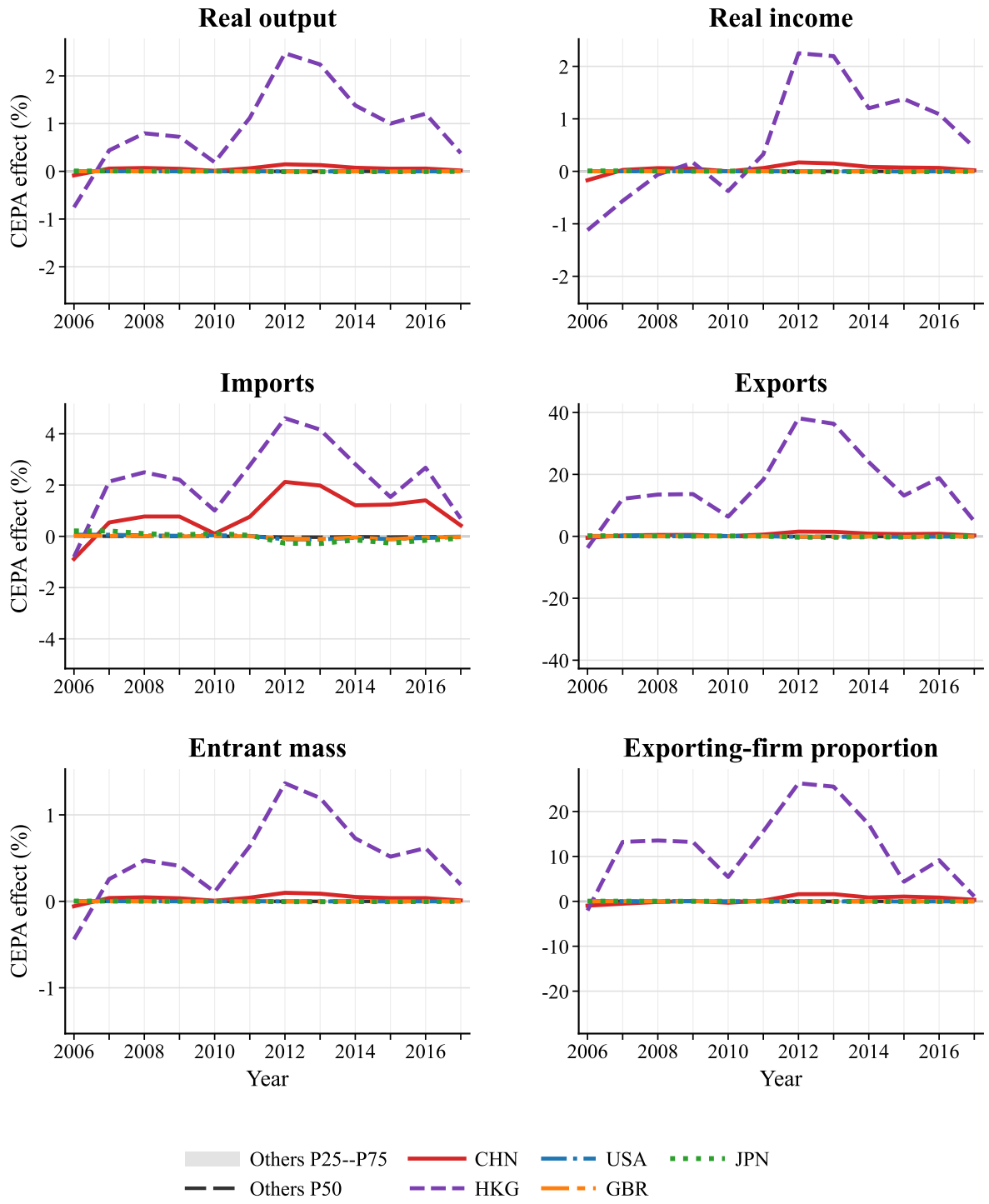


Figure 2: General equilibrium effects of CEPA.

Notes: This figure reports the general equilibrium effects of CEPA. We report effects on real output (Y_i/P_i), real income (E_i/P_i), imports ($\sum_{j\neq i} M_{ji}$), exports ($\sum_{j\neq i} M_{ij}$), entrant mass (N_i), and exporter i's export-weighted proportion of exporting firms, where V_{ij} is weighted by bilateral exports M_{ij}. The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world.

Table 2: General equilibrium welfare effects: Real output (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.08543	-0.75361	0.00213	0.00029	0.00635	-0.00161	0.00083	0.00205
2007	0.05765	0.43893	0.00244	0.00045	0.00720	-0.00143	0.00073	0.00229
2008	0.06993	0.79703	0.00155	0.00042	0.00415	-0.00091	0.00060	0.00144
2009	0.05296	0.72252	0.00070	-0.00027	0.00143	-0.00028	0.00028	0.00068
2010	0.01074	0.18947	0.00154	0.00001	0.00344	-0.00052	0.00058	0.00138
2011	0.06324	1.11997	0.00081	0.00041	0.00158	-0.00043	0.00032	0.00080
2012	0.14670	2.47415	-0.00332	-0.00334	-0.00842	-0.00333	-0.00131	0.00091
2013	0.13075	2.23930	-0.00343	-0.00397	-0.01003	-0.00363	-0.00109	0.00146
2014	0.07501	1.38133	-0.00154	-0.00147	-0.00509	-0.00151	-0.00049	0.00084
2015	0.05509	1.00016	-0.00291	-0.00460	-0.00882	-0.00335	-0.00129	0.00062
2016	0.05748	1.20770	-0.00140	-0.00112	-0.00407	-0.00215	-0.00092	0.00076
2017	0.01677	0.38108	-0.00080	-0.00092	-0.00233	-0.00104	-0.00041	0.00025
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.02932	0.29541	0.00025	-0.00002	0.00065	-0.00017	0.00010	0.00024
2007	0.02833	0.33538	0.00029	0.00003	0.00079	-0.00015	0.00011	0.00029
2008	0.02184	0.33444	0.00029	0.00006	0.00073	-0.00020	0.00012	0.00026
2009	0.01292	0.22585	0.00020	-0.00008	0.00042	-0.00009	0.00008	0.00019
2010	0.01176	0.23186	0.00021	-0.00005	0.00043	-0.00012	0.00008	0.00020
2011	0.01504	0.34484	0.00032	0.00017	0.00065	-0.00021	0.00013	0.00029
2012	0.01566	0.37391	0.00032	0.00025	0.00074	-0.00020	0.00013	0.00029
2013	0.01333	0.32875	0.00028	0.00024	0.00075	-0.00019	0.00010	0.00029
2014	0.00966	0.24663	0.00021	0.00016	0.00063	-0.00021	0.00007	0.00024
2015	0.00523	0.12649	0.00012	0.00018	0.00034	-0.00007	0.00006	0.00014
2016	0.01116	0.29924	0.00027	0.00004	0.00068	-0.00016	0.00014	0.00037
2017	0.00406	0.11752	0.00011	0.00008	0.00028	-0.00006	0.00005	0.00014
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.05992	-0.54342	0.00093	0.00020	0.00282	-0.00068	0.00034	0.00092
2007	0.04969	0.41305	0.00141	0.00027	0.00409	-0.00076	0.00044	0.00132
2008	0.05594	0.64604	0.00100	0.00027	0.00264	-0.00059	0.00041	0.00093
2009	0.04317	0.58718	0.00056	-0.00021	0.00114	-0.00022	0.00023	0.00054
2010	0.00554	0.08874	0.00077	0.00003	0.00172	-0.00025	0.00029	0.00069
2011	0.04428	0.77927	0.00061	0.00032	0.00121	-0.00032	0.00025	0.00059
2012	0.09574	1.66362	-0.00132	-0.00138	-0.00347	-0.00131	-0.00057	0.00042
2013	0.08614	1.53136	-0.00139	-0.00168	-0.00416	-0.00147	-0.00046	0.00065
2014	0.04830	0.90640	-0.00059	-0.00059	-0.00202	-0.00059	-0.00022	0.00036
2015	0.02655	0.48074	-0.00150	-0.00235	-0.00452	-0.00171	-0.00066	0.00042
2016	0.02850	0.58608	-0.00074	-0.00056	-0.00213	-0.00110	-0.00048	0.00039
2017	0.00645	0.13538	-0.00046	-0.00050	-0.00131	-0.00059	-0.00023	0.00014

Notes: This table reports the welfare effects of CEPA measured by real output (Y_i/P_i). The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table 3: General equilibrium welfare effects: Real income (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.16966	-1.12024	0.00216	-0.00079	0.00737	-0.00260	0.00079	0.00295
2007	0.02597	-0.56340	0.00295	0.00009	0.00825	-0.00289	0.00118	0.00337
2008	0.06092	-0.06259	0.00201	0.00031	0.00451	-0.00186	0.00086	0.00258
2009	0.05215	0.16805	0.00099	-0.00037	0.00157	-0.00045	0.00059	0.00132
2010	-0.00150	-0.37673	0.00176	-0.00046	0.00385	-0.00123	0.00068	0.00179
2011	0.06288	0.32572	0.00123	0.00063	0.00173	-0.00127	0.00079	0.00182
2012	0.16969	2.24974	-0.00255	-0.00070	-0.00860	-0.00468	-0.00025	0.00372
2013	0.14978	2.19418	-0.00269	-0.00251	-0.00996	-0.00443	-0.00004	0.00445
2014	0.08445	1.20292	-0.00108	-0.00048	-0.00496	-0.00225	0.00020	0.00265
2015	0.07201	1.37784	-0.00257	-0.00289	-0.00968	-0.00473	-0.00109	0.00301
2016	0.06486	1.08931	-0.00100	0.00042	-0.00477	-0.00270	-0.00064	0.00211
2017	0.01881	0.45441	-0.00067	-0.00032	-0.00266	-0.00119	-0.00030	0.00100
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.01084	0.08014	0.00041	-0.00003	0.00070	-0.00055	0.00013	0.00050
2007	0.01074	0.08700	0.00045	0.00006	0.00086	-0.00044	0.00018	0.00061
2008	0.00792	0.08869	0.00043	0.00008	0.00079	-0.00047	0.00020	0.00056
2009	0.00460	0.05666	0.00028	-0.00012	0.00046	-0.00014	0.00015	0.00037
2010	0.00429	0.05334	0.00030	-0.00006	0.00047	-0.00023	0.00014	0.00039
2011	0.00544	0.07817	0.00044	0.00019	0.00070	-0.00036	0.00024	0.00061
2012	0.00582	0.08018	0.00045	0.00027	0.00079	-0.00052	0.00020	0.00056
2013	0.00516	0.06729	0.00038	0.00025	0.00081	-0.00035	0.00016	0.00047
2014	0.00368	0.04926	0.00029	0.00020	0.00067	-0.00034	0.00011	0.00038
2015	0.00204	0.02452	0.00017	0.00018	0.00036	-0.00011	0.00009	0.00024
2016	0.00296	0.06492	0.00036	0.00001	0.00074	-0.00023	0.00024	0.00059
2017	0.00102	0.02406	0.00014	0.00008	0.00031	-0.00012	0.00006	0.00022
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.09015	-0.59840	0.00085	-0.00032	0.00330	-0.00118	0.00016	0.00136
2007	0.03622	-0.22683	0.00176	0.00013	0.00466	-0.00154	0.00079	0.00219
2008	0.05263	0.03540	0.00135	0.00024	0.00286	-0.00117	0.00054	0.00176
2009	0.04291	0.14067	0.00079	-0.00029	0.00125	-0.00035	0.00048	0.00104
2010	0.00104	-0.18778	0.00088	-0.00020	0.00193	-0.00058	0.00034	0.00089
2011	0.04461	0.21335	0.00091	0.00046	0.00132	-0.00085	0.00056	0.00134
2012	0.10752	1.24793	-0.00079	0.00003	-0.00350	-0.00172	-0.00001	0.00218
2013	0.09562	1.21165	-0.00087	-0.00090	-0.00406	-0.00177	0.00039	0.00258
2014	0.05309	0.65323	-0.00028	-0.00005	-0.00192	-0.00104	0.00028	0.00145
2015	0.03615	0.69985	-0.00133	-0.00148	-0.00496	-0.00244	-0.00061	0.00152
2016	0.03408	0.54965	-0.00054	0.00023	-0.00249	-0.00142	-0.00035	0.00105
2017	0.00895	0.21751	-0.00040	-0.00019	-0.00149	-0.00071	-0.00016	0.00049

Notes: This table reports the welfare effects of CEPA measured by real income (E_i/P_i). The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table 4: General equilibrium trade effects: Imports (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.88169	-0.79967	0.06142	0.02346	0.21089	-0.00358	0.01394	0.02667
2007	0.54079	2.13693	0.06049	0.01458	0.20957	-0.01053	0.00378	0.01889
2008	0.77288	2.49804	0.03305	0.00860	0.10583	-0.01048	0.00116	0.00865
2009	0.77203	2.21005	0.01863	-0.00340	0.05135	-0.00670	-0.00102	0.00251
2010	0.10282	1.00634	0.04413	0.00917	0.11814	-0.00438	0.00367	0.01493
2011	0.76308	2.76856	0.01396	0.00238	0.03888	-0.01035	-0.00260	0.00088
2012	2.12180	4.60649	-0.11476	-0.08699	-0.26997	-0.06309	-0.03323	-0.01202
2013	1.98088	4.16335	-0.12277	-0.10272	-0.28260	-0.06316	-0.03559	-0.00829
2014	1.21036	2.81855	-0.05883	-0.04458	-0.14129	-0.03036	-0.01754	-0.00487
2015	1.23821	1.53314	-0.10923	-0.11527	-0.26626	-0.05682	-0.02976	-0.00828
2016	1.40334	2.67734	-0.06142	-0.04004	-0.15442	-0.03720	-0.02096	-0.00785
2017	0.42604	0.69385	-0.03147	-0.02383	-0.07664	-0.01780	-0.00848	-0.00208
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.37561	0.81586	0.00445	-0.00084	0.01852	-0.00284	-0.00077	0.00024
2007	0.38023	0.92326	0.00533	-0.00049	0.02095	-0.00335	-0.00101	0.00008
2008	0.31647	0.88403	0.00504	0.00027	0.01748	-0.00268	-0.00060	0.00051
2009	0.23923	0.67788	0.00552	-0.00093	0.01510	-0.00196	-0.00026	0.00079
2010	0.18526	0.59713	0.00464	-0.00076	0.01339	-0.00202	-0.00035	0.00068
2011	0.22889	0.86788	0.00664	0.00219	0.01727	-0.00309	-0.00031	0.00121
2012	0.26231	0.97558	0.00666	0.00329	0.01912	-0.00346	-0.00043	0.00131
2013	0.23321	0.88393	0.00617	0.00358	0.01736	-0.00305	-0.00050	0.00145
2014	0.18383	0.68529	0.00466	0.00227	0.01414	-0.00289	-0.00035	0.00110
2015	0.13244	0.36573	0.00314	0.00322	0.00874	-0.00103	0.00009	0.00084
2016	0.31842	0.90869	0.00735	0.00141	0.02153	-0.00252	0.00033	0.00297
2017	0.11280	0.35586	0.00291	0.00147	0.00804	-0.00102	0.00001	0.00098
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.66328	-0.86534	0.02835	0.01277	0.09544	-0.00059	0.00745	0.01379
2007	0.48551	1.59426	0.03351	0.00725	0.11770	-0.00695	0.00131	0.00951
2008	0.62135	1.90173	0.02026	0.00443	0.06614	-0.00735	0.00014	0.00465
2009	0.62692	1.78513	0.01478	-0.00280	0.04084	-0.00542	-0.00087	0.00192
2010	0.04497	0.48412	0.02204	0.00485	0.05907	-0.00207	0.00185	0.00745
2011	0.52794	1.93125	0.01110	0.00242	0.03039	-0.00708	-0.00163	0.00112
2012	1.34854	3.36690	-0.05128	-0.04062	-0.11676	-0.03210	-0.01808	-0.00765
2013	1.27048	3.14650	-0.05486	-0.04771	-0.12246	-0.03018	-0.01858	-0.00712
2014	0.76265	1.99174	-0.02580	-0.02065	-0.05935	-0.01493	-0.00971	-0.00336
2015	0.58860	0.68255	-0.05579	-0.05886	-0.13632	-0.02882	-0.01501	-0.00421
2016	0.67646	1.25299	-0.03188	-0.02040	-0.08043	-0.01911	-0.01081	-0.00394
2017	0.15917	0.17581	-0.01722	-0.01268	-0.04241	-0.00952	-0.00443	-0.00082

Notes: This table reports the trade effects of CEPA measured by imports ($\sum_{j \neq i} M_{ji}$). The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table 5: General equilibrium trade effects: Exports (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.47560	-3.70086	0.11649	0.03267	0.18502	-0.00808	0.01719	0.03362
2007	0.28979	12.11876	0.10763	0.02001	0.17985	-0.02058	0.00527	0.02258
2008	0.43777	13.48497	0.05635	0.01144	0.10238	-0.01451	0.00168	0.01209
2009	0.45876	13.64018	0.02935	-0.00471	0.04733	-0.01161	-0.00150	0.00365
2010	0.06677	6.34711	0.07266	0.01286	0.10763	-0.00918	0.00667	0.01922
2011	0.55770	18.32229	0.02201	0.00340	0.04101	-0.01187	-0.00452	0.00088
2012	1.51590	38.13004	-0.17681	-0.12732	-0.28816	-0.08099	-0.04321	-0.01827
2013	1.45763	36.36275	-0.18753	-0.12542	-0.31196	-0.08359	-0.04647	-0.02049
2014	0.86340	23.98085	-0.08932	-0.06238	-0.15650	-0.04293	-0.02349	-0.00823
2015	0.70966	13.15844	-0.17115	-0.16643	-0.25755	-0.07852	-0.04345	-0.01365
2016	0.82867	18.82318	-0.09862	-0.06427	-0.13791	-0.05147	-0.03078	-0.01576
2017	0.26842	4.89131	-0.04978	-0.03569	-0.06964	-0.02342	-0.01229	-0.00408
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.20144	4.01289	0.00843	-0.00117	0.01625	-0.00450	-0.00092	0.00023
2007	0.20390	4.96055	0.00948	-0.00068	0.01799	-0.00510	-0.00152	0.00007
2008	0.17960	4.46311	0.00860	0.00036	0.01691	-0.00412	-0.00092	0.00068
2009	0.14246	3.88276	0.00870	-0.00129	0.01392	-0.00329	-0.00033	0.00119
2010	0.12027	3.68689	0.00764	-0.00107	0.01220	-0.00327	-0.00057	0.00096
2011	0.16752	5.20301	0.01047	0.00314	0.01822	-0.00338	-0.00055	0.00164
2012	0.18839	6.44685	0.01027	0.00482	0.02041	-0.00397	-0.00056	0.00244
2013	0.17238	6.20856	0.00943	0.00438	0.01917	-0.00407	-0.00069	0.00189
2014	0.13151	5.04474	0.00708	0.00317	0.01566	-0.00378	-0.00058	0.00133
2015	0.07626	2.88723	0.00492	0.00465	0.00846	-0.00173	0.00012	0.00129
2016	0.18885	5.78743	0.01180	0.00227	0.01922	-0.00402	0.00052	0.00455
2017	0.07115	2.45875	0.00460	0.00221	0.00731	-0.00160	0.00001	0.00148
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.35742	-3.99519	0.05376	0.01778	0.08374	-0.00133	0.00926	0.01701
2007	0.26023	8.82226	0.05960	0.00995	0.10102	-0.01301	0.00195	0.01172
2008	0.35217	10.00985	0.03455	0.00589	0.06399	-0.01041	0.00012	0.00656
2009	0.37275	10.78570	0.02329	-0.00387	0.03764	-0.00941	-0.00130	0.00280
2010	0.02921	2.97187	0.03630	0.00679	0.05382	-0.00450	0.00339	0.00953
2011	0.38609	12.22156	0.01750	0.00347	0.03205	-0.00817	-0.00292	0.00119
2012	0.96554	25.65680	-0.07903	-0.05947	-0.12464	-0.03993	-0.02352	-0.01161
2013	0.93660	25.55241	-0.08383	-0.05826	-0.13520	-0.04026	-0.02452	-0.01363
2014	0.54472	15.98131	-0.03917	-0.02889	-0.06575	-0.02045	-0.01285	-0.00739
2015	0.33827	5.50818	-0.08744	-0.08501	-0.13185	-0.03999	-0.02200	-0.00601
2016	0.40062	8.12916	-0.05120	-0.03275	-0.07182	-0.02686	-0.01525	-0.00761
2017	0.10038	1.20194	-0.02724	-0.01899	-0.03853	-0.01260	-0.00593	-0.00155

Notes: This table reports the trade effects of CEPA measured by exports ($\sum_{j \neq i} M_{ij}$). The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table 6: General equilibrium effects: Entrant mass (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.05695	-0.43955	0.00097	0.00014	0.00298	-0.00081	0.00042	0.00103
2007	0.03864	0.25719	0.00111	0.00021	0.00344	-0.00073	0.00036	0.00117
2008	0.04674	0.47436	0.00072	0.00020	0.00204	-0.00046	0.00029	0.00074
2009	0.03532	0.41064	0.00030	-0.00013	0.00066	-0.00014	0.00014	0.00035
2010	0.00720	0.10988	0.00068	0.00001	0.00161	-0.00025	0.00030	0.00069
2011	0.04258	0.63887	0.00036	0.00020	0.00076	-0.00022	0.00017	0.00041
2012	0.09887	1.36570	-0.00150	-0.00161	-0.00404	-0.00169	-0.00066	0.00050
2013	0.08867	1.19522	-0.00156	-0.00192	-0.00485	-0.00182	-0.00055	0.00074
2014	0.05064	0.72832	-0.00070	-0.00070	-0.00248	-0.00077	-0.00025	0.00043
2015	0.03705	0.51639	-0.00129	-0.00218	-0.00418	-0.00168	-0.00066	0.00029
2016	0.03731	0.61590	-0.00062	-0.00052	-0.00188	-0.00106	-0.00044	0.00038
2017	0.01063	0.19383	-0.00036	-0.00044	-0.00110	-0.00052	-0.00021	0.00013
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.01954	0.17192	0.00011	-0.00001	0.00030	-0.00008	0.00005	0.00013
2007	0.01899	0.19655	0.00013	0.00001	0.00038	-0.00007	0.00005	0.00015
2008	0.01459	0.19923	0.00013	0.00003	0.00036	-0.00010	0.00006	0.00013
2009	0.00862	0.12850	0.00009	-0.00004	0.00019	-0.00005	0.00004	0.00010
2010	0.00788	0.13446	0.00010	-0.00002	0.00020	-0.00006	0.00004	0.00010
2011	0.01012	0.19703	0.00014	0.00008	0.00031	-0.00011	0.00007	0.00015
2012	0.01055	0.20735	0.00015	0.00012	0.00035	-0.00010	0.00007	0.00015
2013	0.00904	0.17624	0.00013	0.00012	0.00036	-0.00010	0.00005	0.00014
2014	0.00652	0.13038	0.00010	0.00008	0.00031	-0.00011	0.00004	0.00012
2015	0.00352	0.06544	0.00005	0.00008	0.00016	-0.00004	0.00003	0.00007
2016	0.00724	0.15294	0.00012	0.00002	0.00031	-0.00008	0.00007	0.00018
2017	0.00257	0.05981	0.00005	0.00004	0.00013	-0.00004	0.00002	0.00007
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.03994	-0.31681	0.00042	0.00010	0.00132	-0.00034	0.00018	0.00047
2007	0.03331	0.24204	0.00064	0.00013	0.00196	-0.00039	0.00022	0.00066
2008	0.03739	0.38461	0.00046	0.00013	0.00130	-0.00030	0.00020	0.00047
2009	0.02880	0.33382	0.00024	-0.00010	0.00052	-0.00011	0.00011	0.00028
2010	0.00371	0.05148	0.00034	0.00001	0.00080	-0.00012	0.00015	0.00034
2011	0.02982	0.44484	0.00027	0.00015	0.00058	-0.00016	0.00013	0.00030
2012	0.06453	0.91993	-0.00060	-0.00067	-0.00167	-0.00067	-0.00029	0.00021
2013	0.05842	0.81868	-0.00063	-0.00081	-0.00201	-0.00072	-0.00024	0.00033
2014	0.03261	0.47844	-0.00027	-0.00029	-0.00099	-0.00030	-0.00011	0.00018
2015	0.01785	0.24852	-0.00067	-0.00112	-0.00215	-0.00087	-0.00033	0.00020
2016	0.01850	0.29934	-0.00032	-0.00026	-0.00099	-0.00056	-0.00024	0.00020
2017	0.00409	0.06890	-0.00020	-0.00024	-0.00062	-0.00030	-0.00012	0.00007

Notes: This table reports the effects of CEPA measured by entrant mass (N_i). The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table 7: General equilibrium effects: Proportion of exporting firms (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.96568	-2.03094	0.02268	0.00343	0.03104	-0.00201	0.00174	0.00422
2007	-0.51983	13.23575	0.02255	0.00304	0.03127	-0.00281	0.00187	0.00438
2008	-0.12732	13.54519	0.01218	0.00197	0.01772	-0.00183	0.00125	0.00291
2009	0.08143	13.21663	0.00674	-0.00124	0.00860	-0.00135	0.00053	0.00159
2010	-0.30730	5.41731	0.01418	0.00061	0.01756	-0.00134	0.00145	0.00337
2011	0.16688	15.58573	0.00550	0.00123	0.00792	-0.00104	0.00050	0.00149
2012	1.59416	26.29538	-0.02730	-0.01580	-0.03900	-0.00939	-0.00350	0.00173
2013	1.60140	25.54125	-0.02876	-0.01495	-0.04242	-0.00904	-0.00309	0.00115
2014	0.85528	17.13789	-0.01375	-0.00743	-0.02175	-0.00466	-0.00163	0.00058
2015	1.06291	4.38013	-0.02774	-0.02328	-0.03501	-0.01043	-0.00449	0.00039
2016	0.84183	9.15983	-0.01555	-0.00733	-0.01843	-0.00654	-0.00275	0.00004
2017	0.34757	1.09795	-0.00836	-0.00464	-0.00974	-0.00328	-0.00120	0.00021
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.03895	0.79665	0.00207	-0.00013	0.00300	-0.00056	0.00019	0.00041
2007	0.03951	0.98930	0.00229	0.00005	0.00322	-0.00051	0.00014	0.00053
2008	0.03540	0.89908	0.00204	0.00017	0.00299	-0.00045	0.00018	0.00049
2009	0.02862	0.79803	0.00196	-0.00038	0.00246	-0.00041	0.00014	0.00046
2010	0.02403	0.76335	0.00170	-0.00027	0.00212	-0.00037	0.00015	0.00039
2011	0.03365	1.06075	0.00229	0.00062	0.00323	-0.00037	0.00022	0.00060
2012	0.03789	1.29901	0.00231	0.00097	0.00371	-0.00044	0.00025	0.00067
2013	0.03468	1.26473	0.00209	0.00087	0.00346	-0.00054	0.00018	0.00067
2014	0.02654	1.04692	0.00158	0.00060	0.00275	-0.00057	0.00015	0.00048
2015	0.01555	0.60349	0.00105	0.00083	0.00146	-0.00024	0.00012	0.00039
2016	0.03886	1.19898	0.00247	0.00013	0.00329	-0.00070	0.00032	0.00113
2017	0.01469	0.52146	0.00097	0.00033	0.00123	-0.00025	0.00010	0.00038
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.04168	-0.81167	0.00998	0.00183	0.01313	-0.00080	0.00075	0.00194
2007	0.06370	2.31800	0.01254	0.00159	0.01713	-0.00172	0.00099	0.00249
2008	0.07284	2.80236	0.00762	0.00113	0.01106	-0.00121	0.00083	0.00177
2009	0.07390	3.38303	0.00535	-0.00100	0.00683	-0.00108	0.00042	0.00128
2010	0.01361	0.63039	0.00700	0.00034	0.00856	-0.00063	0.00072	0.00167
2011	0.07509	3.17886	0.00423	0.00101	0.00605	-0.00076	0.00038	0.00114
2012	0.17121	7.00055	-0.01187	-0.00730	-0.01714	-0.00424	-0.00162	0.00077
2013	0.16581	7.54529	-0.01261	-0.00682	-0.01880	-0.00448	-0.00175	0.00022
2014	0.09596	4.32502	-0.00572	-0.00330	-0.00899	-0.00231	-0.00082	0.00026
2015	0.04956	1.17235	-0.01454	-0.01221	-0.01872	-0.00546	-0.00228	0.00038
2016	0.06776	1.69092	-0.00821	-0.00377	-0.00986	-0.00345	-0.00147	0.00003
2017	0.01404	0.26749	-0.00468	-0.00250	-0.00553	-0.00188	-0.00063	0.00024

Notes: This table reports the effects of CEPA measured by exporter i's export-weighted proportion of exporting firms, where V_{ij} is weighted by bilateral exports M_{ij}. The specification uses $\sigma = 5$, $\theta = 5$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

US dollars.[5] A welfare gain of 2.474% therefore corresponds to an increase of 7.056 billion US dollars in real GDP and 986.825 US dollars in real GDP per capita. For the Mainland, real GDP was 9,104 billion US dollars and real GDP per capita was 6,723.19 US dollars in 2012. A welfare gain of 0.147% corresponds to an increase of 13.383 billion US dollars in real GDP and 9.883 US dollars in real GDP per capita. In dollar terms, the gains are substantial, especially for Hong Kong on a per capita basis.

Panel B of Table 2 reports the tariff component of CEPA's total real-output effects, while Panel C reports the non-tariff-barrier component. Most of the welfare effects come from the non-tariff-barrier component. For example, Hong Kong's non-tariff-barrier effect in 2012 was 1.664%, relative to the total effect of 2.474%, accounting for 67% of its real-output gains. The non-tariff-barrier share for the Mainland in 2014 is similar, at 64% (calculated as 0.048/0.075). Hence, most welfare gains for the Mainland and Hong Kong come from reductions in non-tariff barriers, such as variable trade costs and fixed market-entry costs. Evaluating the realized effects of CEPA therefore requires accounting for both tariff reductions and reductions in non-tariff barriers.

Beyond the two CEPA participants, we also report real-output changes for the United States, the United Kingdom, and Japan, together with the 25th, 50th, and 75th percentiles for the rest of the world (ROW). We find minor negative spillover effects for the United States, the United Kingdom, and Japan, likely through trade diversion, and minor positive spillover effects for the 75th percentile of the ROW, likely through trade creation. Overall, these spillover effects are economically negligible.

Because tariff revenues and trade imbalances are present, gross output need not equal total expenditure. Table 3 therefore reports the welfare effects of CEPA measured by real income, in addition to the real-output measure reported in Table 2. We find that these two welfare measures are generally very similar. For example, the Mainland's real output in 2013 increased by 0.131%, 0.013%, and 0.086% in Panels A, B, and C of Table 2, respectively. Its real income in 2013 increased by 0.150%, 0.005%, and 0.096% in Panels A, B, and C of Table 3, respectively. Thus, tariff revenues and trade imbalances do not materially alter the welfare effects when real income is used instead of real output.

Tables 4 and 5 report the general equilibrium trade effects for the same economies, measured by imports and exports, respectively. CEPA increased trade for both participating economies in most post-implementation years, as shown in Table 4. Hong Kong's imports increased by about 2–5% in most post-implementation years and peaked at 4.606% in 2012. The Mainland also experienced positive import effects, with increases of around 0.5–2% in several years and a peak of 2.122% in 2012. These numbers are in line with the SCM results and the welfare effects discussed above. Similar to the welfare results, most trade effects come from

[5] Real GDP and real GDP per capita are in constant 2010 US$, from World Bank WDI via FRED.

the non-tariff-barrier component. In addition, spillover effects for other economies, whether positive or negative, tend to be negligible in magnitude.

Turning to exports in Table 5, we find that Hong Kong's exports rose much more than its imports. Exports increased by 10–30% in most post-CEPA years, with a peak of 38% in 2012. These numbers may appear surprisingly large, but they are reasonable given Hong Kong's long-standing role as an entrepôt linking the Mainland with other economies. The bilateral trade relationship is exceptionally close: the Mainland accounted for 57.69% of Hong Kong's total exports in 2012, whereas Hong Kong's exports to the Mainland were about 15.6% of China's total imports in 2012. Thus, tariff and non-tariff-barrier reductions contributed to a large export increase for Hong Kong, particularly to the Mainland.

Combining the results in Tables 2–5, we find that CEPA generated persistent positive effects on both trade and welfare for the two participating economies. The gains are especially large for Hong Kong, reflecting its smaller economic size and the larger reduction in trade costs faced by its exports to the Mainland. Spillover effects on non-participating economies are limited, suggesting that CEPA mainly operated through bilateral liberalization rather than through large third-market reallocations.

Because our analytical framework builds on a heterogeneous-firms Melitz model with firm entry and extensive margins, it also allows us to examine changes in entrant mass and the proportion of exporting firms. Table 6 reports the effects of CEPA measured by entrant mass. We find that changes in entrant mass closely mirror the welfare changes. For example, entrant mass increased by 0.099% for the Mainland and 1.366% for Hong Kong in 2012, which is similar to the real-output increases of 0.147% for the Mainland and 2.474% for Hong Kong. This finding is consistent with the theoretical prediction that firm entry moves with the real wage in the Melitz model according to $\widehat{N}_i = (\widehat{w}_i/\widehat{P}_i)^{1-\beta_i}$, where β_i is the value-added share (Chang et al., 2022).

Table 7 further reports the effects of CEPA measured by exporter i's export-weighted proportion of exporting firms. This measure captures changes in V_{ij} weighted by bilateral exports M_{ij}, and can therefore be interpreted as a mixed average of changes in entrant mass and bilateral export participation. The numbers in Table 7 align closely with those in Table 5.

In sum, CEPA generated large positive effects for the Mainland and Hong Kong on real output, real income, exports, imports, entrant mass, and exporters' export-weighted proportion of exporting firms. These positive effects are stronger for Hong Kong than for the Mainland, while spillover effects on third countries are negligible.

4.4 Robustness Checks for General Equilibrium Effects

To assess the sensitivity of CEPA's general equilibrium welfare and trade effects, we conduct three robustness checks. First, we use simple-average tariffs instead of weighted-average

tariffs. Second, we increase the Pareto shape parameter θ from 5 to 10. Third, holding $\theta = 10$, we increase the elasticity of substitution σ from 5 to 10.

General Equilibrium Effects with Simple-Average Tariffs We first recompute CEPA's general equilibrium welfare and trade effects using simple-average tariffs. As shown in Table 1, simple-average and weighted-average tariffs are very similar in magnitude. The SCM estimates under the two tariff measures are also similar, as shown in Figures A.1 and 1. Consequently, the CEPA shock in Equation (19)—including the tariff component, $\widehat{(1+t_{ij})}$, and the non-tariff and fixed-cost component, $\widehat{\tau}_{ij}^{-\theta}\widehat{f}_{ij}^{-\frac{\theta}{\sigma-1}+1}$—is nearly identical under the two tariff measures. As a result, the general equilibrium welfare and trade effects are also very close. Tables A.5, A.6, A.7, and A.8 report the changes in real output, real income, imports, and exports under simple-average tariffs, respectively. Comparing these results with their weighted-average counterparts in Tables 2, 3, 4, and 5 shows that the magnitudes are very similar.

General Equilibrium Effects with $\sigma = 5$ and $\theta = 10$ Quantitative trade models show that general equilibrium effects depend on trade elasticities (Arkolakis et al., 2012; Costinot and Rodríguez-Clare, 2014; Melitz and Redding, 2015). Holding the elasticity of substitution fixed at $\sigma = 5$, we increase the Pareto shape parameter from $\theta = 5$ to $\theta = 10$ and re-solve the model. Tables A.9 and A.10 report the welfare effects of CEPA with $\theta = 10$, measured by real output and real income, respectively. The effects decline uniformly relative to the benchmark results with $\theta = 5$ in Tables 2 and 3.

General Equilibrium Effects with $\sigma = 10$ and $\theta = 10$ Finally, we test the robustness of the general equilibrium effects to the elasticity of substitution. Holding the Pareto shape parameter fixed at $\theta = 10$, we increase the elasticity of substitution from $\sigma = 5$ to $\sigma = 10$. Tables A.11 and A.12 show that the effects are smaller than those obtained with $\sigma = 5$ in Tables A.9 and A.10. This pattern is intuitive because varieties become closer substitutes as the elasticity of substitution increases. Taken together, CEPA's general equilibrium welfare and trade effects are quantitatively similar under weighted-average and simple-average tariffs, and they are qualitatively unchanged, although smaller in magnitude, when the Pareto shape parameter or the elasticity of substitution is larger.

5 Conclusion

This paper quantifies the trade and welfare effects of the Mainland–Hong Kong Closer Economic Partnership Arrangement. CEPA is a useful setting for studying deep regional integra-

tion because the two economies were already highly connected before the agreement, while the policy changes were asymmetric and operated through both tariff and non-tariff channels. To measure these effects, we combine synthetic-control estimates of CEPA's direct bilateral trade effects with a structural gravity counterfactual that maps the estimated trade-cost changes into general equilibrium outcomes.

The empirical results show that CEPA increased bilateral trade between the Mainland and Hong Kong. Actual trade flows track their synthetic counterfactuals closely before CEPA became fully effective, but rise above the synthetic benchmark after 2006. The effect is stronger for Hong Kong's exports to the Mainland, consistent with CEPA's institutional design: Hong Kong already maintained a low-tariff regime, while the Mainland granted more substantial market-access improvements to goods and services from Hong Kong. These results are robust to alternative tariff measures, donor-pool restrictions, and symmetric trade-flow specifications.

The structural counterfactuals imply that CEPA generated welfare gains for both participants. In the benchmark specification with weighted-average tariffs, real output in 2012 increases by 0.147% for the Mainland and 2.474% for Hong Kong. The gains are larger for Hong Kong because of its smaller economic size and the larger reduction in trade costs faced by its exports to the Mainland. The decomposition further shows that non-tariff and fixed-cost channels account for much of the overall effect, suggesting that CEPA mattered not only through explicit tariff reductions but also through broader improvements in market access. Spillover effects on major third economies and the rest of the world are economically small.

These findings highlight the importance of evaluating deep trade agreements beyond their direct tariff provisions. Even when economies are already closely integrated, institutional arrangements that reduce administrative, regulatory, and fixed market-access frictions can produce meaningful trade and welfare gains. Future work could extend the analysis by using more disaggregated product- or firm-level data, examining services liberalization more directly, or studying the dynamic effects of later CEPA supplements and follow-up agreements.

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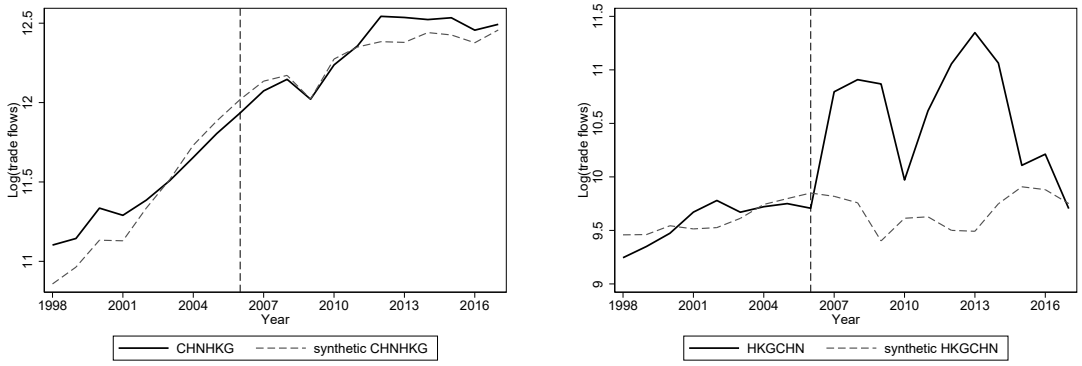
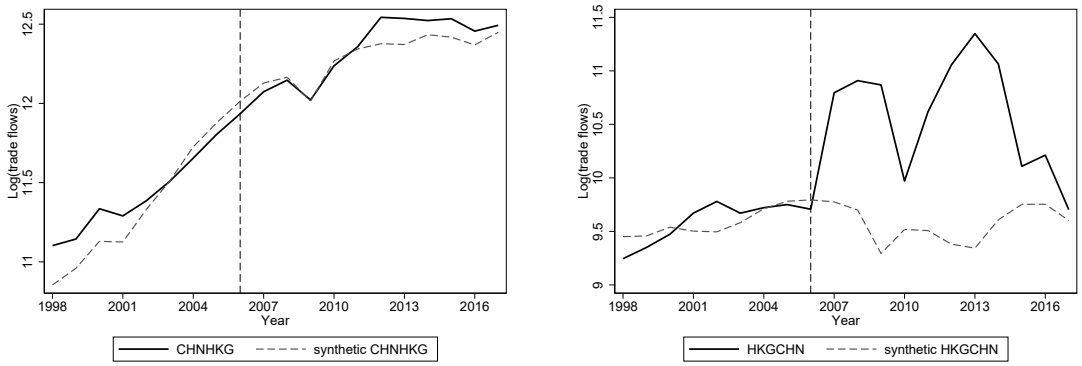
Appendix



(a) CHN–HKG (b) HKG–CHN

Figure A.1: SCM results with simple-average tariffs

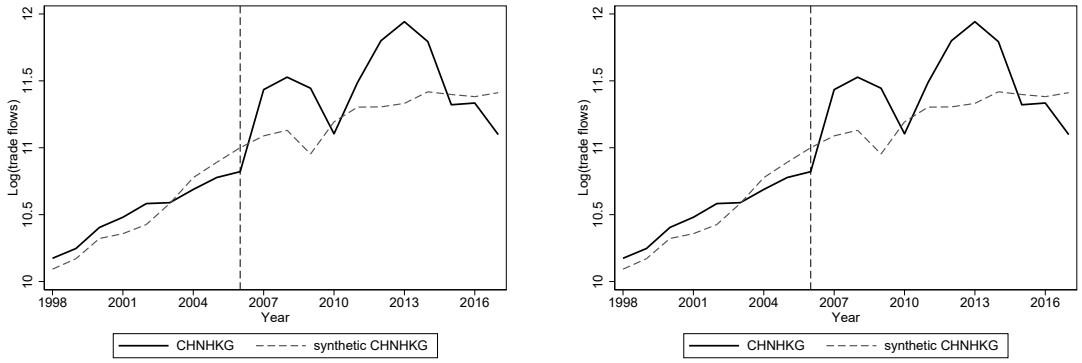
Notes: This figure reports the SCM results with simple-average tariff measures. The solid black lines show actual log bilateral trade flows, while the dashed gray lines show the corresponding synthetic trade flows. The vertical dashed line marks 2006, the year in which CEPA became fully effective. The left panel reports exports from the Mainland to Hong Kong (CHN–HKG), and the right panel reports exports from Hong Kong to the Mainland (HKG–CHN).



(a) CHN–HKG (b) HKG–CHN

Figure A.2: SCM results with restricted donor pool.

Notes: This figure reports the SCM results with restricted donor pool. The restricted donor pool includes only two directional groups: exports from the Mainland to other economies and exports from other economies to Hong Kong, as shown in Table A.3. The solid black lines show actual log bilateral trade flows, while the dashed gray lines show the corresponding synthetic trade flows. The vertical dashed line marks 2006, the year in which CEPA became fully effective. The left panel reports exports from the Mainland to Hong Kong (CHN–HKG), and the right panel reports exports from Hong Kong to the Mainland (HKG–CHN).



(a) Simple-average tariffs (b) Weighted-average tariffs

Figure A.3: SCM results with symmetric trade flows.

Notes: This figure reports the SCM results with the symmetric-trade specification, which abstracts from trade directions by averaging the two directional trade flows and the corresponding control variables. The solid black lines show actual log bilateral trade flows, while the dashed gray lines show the corresponding synthetic trade flows. The vertical dashed line marks 2006, the year in which CEPA became fully effective. Panel (a) uses the simple-average tariff measure. Panel (b) uses the weighted-average tariff measure, in which the counterfactual trade flow is approximated using a weighted average of untreated bilateral trade pairs.

Table A.1: Estimated synthetic-control weights: CHN–HKG.

Panel A: Baseline

Donor	Simple-average tariff	Weighted-average tariff
CHN–USA	0.750	0.750
JPN–HKG	0.250	0.250

Panel B: Alternative donor pool

Donor	Simple-average tariff	Weighted-average tariff
CHN–USA	0.747	0.747
JPN–HKG	0.253	0.253

Panel C: Symmetric trade

Donor	Simple-average tariff	Weighted-average tariff
CHN–USA	0.458	0.512
HKG–USA	0.317	0.269
CHN–JPN	0.225	0.188
GBR–HKG	0.000	0.030

Notes: This table reports the estimated synthetic-control weights for Mainland's exports to Hong Kong. The second column uses the simple-average tariff measure, and the third column uses the weighted-average measure. Panel A reports the baseline specification, Panel B reports the alternative donor-pool specification, and Panel C reports the symmetric-trade specification.

Table A.2: Estimated synthetic-control weights: HKG–CHN.

Panel A: Baseline

Donor	Simple-average tariff	Weighted-average tariff
HKG–USA	0.543	0.569
JPN–CHN	0.219	0.170
CHN–USA	0.110	0.138
HKG–MAC	0.068	0.118
HKG–ARE	0.061	0.000
JPN–HKG	0.000	0.005

Panel B: Alternative donor pool

Donor	Simple-average tariff	Weighted-average tariff
HKG–USA	0.602	0.595
JPN–CHN	0.320	0.322
HKG–MAC	0.078	0.062
HKG–ARE	0.000	0.021

Notes: This table reports the estimated synthetic-control weights for Hong Kong's exports to the Mainland. The second column uses the simple-average tariff measure, and the third column uses the weighted-average measure. Panel A reports the baseline specification, and Panel B reports the alternative donor-pool specification.

Table A.3: Composition of the treated unit and donor pool.

Importer \ Exporter	Mainland	Hong Kong	Other economies
Mainland		Treated	Control 1
Hong Kong			Control 4
Other economies	Control 2	Control 3	

Notes: This table demonstrates the composition of the treated unit and donor pool. For the example of trade flows from the Mainland to Hong Kong, the benchmark donor pool includes four categories as shown in this table.

Table A.4: Coverage of the pseudo world.

Year	Countries	GDP share	Import share
1998	175	0.981	0.925
1999	175	0.985	0.945
2000	191	0.985	0.939
2001	191	0.985	0.943
2002	194	0.985	0.943
2003	193	0.986	0.945
2004	194	0.986	0.942
2005	193	0.986	0.938
2006	193	0.986	0.938
2007	193	0.986	0.947
2008	193	0.985	0.948
2009	193	0.986	0.946
2010	195	0.985	0.935
2011	197	0.981	0.942
2012	197	0.982	0.946
2013	197	0.983	0.938
2014	197	0.984	0.940
2015	196	0.980	0.931
2016	196	0.980	0.938
2017	195	0.979	0.948

Notes: This table reports the number of economies included in the pseudo world and its shares of global GDP and global imports by year.

Table A.5: General equilibrium welfare effects with simple-average tariffs: Real output (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.11055	-0.92398	0.00204	0.00036	0.00607	-0.00161	0.00076	0.00189
2007	0.05672	0.37796	0.00246	0.00048	0.00716	-0.00146	0.00080	0.00233
2008	0.06977	0.73605	0.00154	0.00041	0.00409	-0.00089	0.00059	0.00138
2009	0.05342	0.68192	0.00068	-0.00027	0.00138	-0.00027	0.00028	0.00066
2010	0.00702	0.11559	0.00150	0.00001	0.00335	-0.00063	0.00056	0.00134
2011	0.06309	1.04755	0.00076	0.00037	0.00148	-0.00039	0.00032	0.00075
2012	0.14922	2.39918	-0.00341	-0.00340	-0.00865	-0.00346	-0.00134	0.00094
2013	0.13311	2.17729	-0.00353	-0.00404	-0.01027	-0.00377	-0.00116	0.00150
2014	0.07649	1.33583	-0.00160	-0.00149	-0.00525	-0.00158	-0.00052	0.00082
2015	0.05678	0.99348	-0.00296	-0.00462	-0.00894	-0.00335	-0.00132	0.00059
2016	0.05666	1.12399	-0.00150	-0.00111	-0.00432	-0.00223	-0.00098	0.00076
2017	0.01518	0.33133	-0.00086	-0.00095	-0.00249	-0.00113	-0.00045	0.00023
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.02358	0.22296	0.00020	-0.00001	0.00050	-0.00014	0.00008	0.00019
2007	0.02273	0.25278	0.00023	0.00003	0.00061	-0.00011	0.00009	0.00021
2008	0.01806	0.25974	0.00023	0.00004	0.00058	-0.00015	0.00009	0.00021
2009	0.01102	0.18169	0.00017	-0.00007	0.00034	-0.00007	0.00006	0.00016
2010	0.01012	0.18728	0.00017	-0.00005	0.00036	-0.00009	0.00007	0.00016
2011	0.01315	0.28304	0.00027	0.00014	0.00054	-0.00018	0.00011	0.00025
2012	0.01375	0.30683	0.00027	0.00021	0.00061	-0.00017	0.00011	0.00025
2013	0.01174	0.27223	0.00024	0.00020	0.00064	-0.00016	0.00009	0.00025
2014	0.00852	0.20437	0.00018	0.00013	0.00053	-0.00017	0.00006	0.00020
2015	0.00532	0.12313	0.00012	0.00017	0.00033	-0.00006	0.00006	0.00014
2016	0.00919	0.22981	0.00021	0.00002	0.00053	-0.00012	0.00012	0.00031
2017	0.00363	0.09862	0.00009	0.00007	0.00024	-0.00005	0.00004	0.00012
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.06908	-0.58915	0.00090	0.00022	0.00275	-0.00073	0.00031	0.00089
2007	0.04955	0.37322	0.00141	0.00029	0.00406	-0.00079	0.00046	0.00131
2008	0.05548	0.59563	0.00098	0.00026	0.00257	-0.00056	0.00040	0.00090
2009	0.04288	0.54569	0.00053	-0.00021	0.00108	-0.00021	0.00022	0.00052
2010	0.00294	0.04137	0.00074	0.00003	0.00165	-0.00027	0.00028	0.00066
2011	0.04329	0.71389	0.00057	0.00028	0.00111	-0.00027	0.00024	0.00054
2012	0.09710	1.60144	-0.00139	-0.00142	-0.00362	-0.00139	-0.00057	0.00047
2013	0.08758	1.47942	-0.00144	-0.00172	-0.00431	-0.00153	-0.00047	0.00063
2014	0.04917	0.87224	-0.00062	-0.00061	-0.00212	-0.00063	-0.00022	0.00037
2015	0.02751	0.48109	-0.00152	-0.00236	-0.00457	-0.00175	-0.00068	0.00037
2016	0.02818	0.54957	-0.00078	-0.00055	-0.00224	-0.00117	-0.00052	0.00039
2017	0.00567	0.11460	-0.00048	-0.00051	-0.00138	-0.00066	-0.00025	0.00014

Notes: This table reports the welfare effects of CEPA measured by real output (Y_i/P_i). The specification uses $\sigma = 5$, $\theta = 5$, and the simple-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.6: General equilibrium welfare effects with simple-average tariffs: Real income (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.20746	-1.16682	0.00207	-0.00067	0.00688	-0.00236	0.00051	0.00300
2007	0.03477	-0.58030	0.00307	0.00010	0.00801	-0.00277	0.00108	0.00326
2008	0.07041	-0.08109	0.00205	0.00015	0.00438	-0.00217	0.00079	0.00243
2009	0.05960	0.15653	0.00098	-0.00054	0.00147	-0.00052	0.00058	0.00130
2010	-0.00338	-0.39459	0.00170	-0.00071	0.00371	-0.00133	0.00068	0.00182
2011	0.07034	0.30665	0.00119	0.00052	0.00161	-0.00121	0.00072	0.00169
2012	0.18574	2.23209	-0.00271	-0.00062	-0.00881	-0.00491	-0.00045	0.00427
2013	0.16350	2.18033	-0.00286	-0.00246	-0.01018	-0.00487	-0.00006	0.00513
2014	0.09402	1.19266	-0.00116	-0.00049	-0.00515	-0.00240	0.00023	0.00269
2015	0.07874	1.37605	-0.00266	-0.00296	-0.00975	-0.00508	-0.00112	0.00310
2016	0.07157	1.07048	-0.00114	0.00060	-0.00503	-0.00266	-0.00068	0.00201
2017	0.01888	0.44409	-0.00076	-0.00029	-0.00283	-0.00147	-0.00033	0.00108
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.01272	0.06021	0.00033	-0.00001	0.00053	-0.00042	0.00011	0.00038
2007	0.01244	0.06518	0.00036	0.00005	0.00065	-0.00034	0.00014	0.00046
2008	0.00946	0.06819	0.00035	0.00004	0.00062	-0.00039	0.00016	0.00046
2009	0.00565	0.04518	0.00024	-0.00015	0.00037	-0.00014	0.00013	0.00031
2010	0.00531	0.04262	0.00025	-0.00008	0.00038	-0.00019	0.00011	0.00031
2011	0.00678	0.06330	0.00037	0.00013	0.00058	-0.00031	0.00017	0.00049
2012	0.00744	0.06525	0.00038	0.00021	0.00066	-0.00044	0.00017	0.00046
2013	0.00645	0.05528	0.00033	0.00020	0.00068	-0.00034	0.00013	0.00038
2014	0.00455	0.04046	0.00025	0.00016	0.00057	-0.00028	0.00010	0.00032
2015	0.00276	0.02366	0.00017	0.00018	0.00036	-0.00012	0.00009	0.00024
2016	0.00422	0.04938	0.00029	-0.00006	0.00058	-0.00020	0.00017	0.00048
2017	0.00159	0.02002	0.00012	0.00005	0.00026	-0.00010	0.00006	0.00019
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.10927	-0.61059	0.00084	-0.00028	0.00314	-0.00124	0.00007	0.00140
2007	0.04373	-0.23813	0.00183	0.00014	0.00451	-0.00149	0.00067	0.00199
2008	0.05966	0.02020	0.00136	0.00014	0.00275	-0.00128	0.00056	0.00161
2009	0.04821	0.12919	0.00077	-0.00042	0.00116	-0.00039	0.00047	0.00103
2010	-0.00078	-0.19916	0.00084	-0.00032	0.00183	-0.00065	0.00033	0.00091
2011	0.04885	0.19660	0.00086	0.00037	0.00120	-0.00087	0.00052	0.00122
2012	0.11854	1.23309	-0.00088	0.00004	-0.00364	-0.00179	-0.00003	0.00227
2013	0.10538	1.19983	-0.00096	-0.00090	-0.00419	-0.00195	0.00039	0.00262
2014	0.05930	0.64542	-0.00033	-0.00006	-0.00203	-0.00111	0.00032	0.00157
2015	0.03947	0.69968	-0.00137	-0.00151	-0.00498	-0.00259	-0.00063	0.00164
2016	0.03717	0.54114	-0.00060	0.00033	-0.00260	-0.00139	-0.00037	0.00103
2017	0.00863	0.21322	-0.00045	-0.00017	-0.00156	-0.00084	-0.00018	0.00050

Notes: This table reports the welfare effects of CEPA measured by real income (E_i/P_i). The specification uses $\sigma = 5$, $\theta = 5$, and the simple-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.7: General equilibrium trade effects with simple-average tariffs: Imports (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-1.13527	-1.26504	0.06001	0.02486	0.20673	-0.00321	0.01513	0.02787
2007	0.50853	1.96671	0.06072	0.01528	0.21197	-0.01095	0.00410	0.01936
2008	0.75855	2.33963	0.03285	0.00905	0.10566	-0.01015	0.00120	0.00869
2009	0.76448	2.09116	0.01810	-0.00281	0.05032	-0.00589	-0.00099	0.00265
2010	0.04851	0.81468	0.04366	0.01018	0.11672	-0.00368	0.00408	0.01502
2011	0.74772	2.59332	0.01297	0.00202	0.03657	-0.00970	-0.00263	0.00076
2012	2.12062	4.42200	-0.11766	-0.08912	-0.27881	-0.06482	-0.03394	-0.01206
2013	1.98331	4.00651	-0.12547	-0.10509	-0.29068	-0.06533	-0.03663	-0.00798
2014	1.21959	2.70021	-0.06061	-0.04533	-0.14634	-0.03167	-0.01807	-0.00489
2015	1.26762	1.52222	-0.11124	-0.11600	-0.27138	-0.05841	-0.03084	-0.00833
2016	1.35570	2.42661	-0.06461	-0.04122	-0.16353	-0.03897	-0.02159	-0.00785
2017	0.38894	0.54505	-0.03329	-0.02478	-0.08149	-0.01877	-0.00888	-0.00193
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.29871	0.61629	0.00344	-0.00063	0.01459	-0.00213	-0.00057	0.00016
2007	0.30138	0.69669	0.00413	-0.00034	0.01641	-0.00257	-0.00076	0.00020
2008	0.25946	0.68837	0.00402	0.00027	0.01405	-0.00213	-0.00048	0.00044
2009	0.20179	0.54656	0.00456	-0.00064	0.01258	-0.00144	-0.00021	0.00071
2010	0.15644	0.48378	0.00387	-0.00056	0.01118	-0.00153	-0.00024	0.00060
2011	0.19663	0.71490	0.00559	0.00184	0.01463	-0.00244	-0.00026	0.00100
2012	0.22126	0.80199	0.00557	0.00277	0.01612	-0.00294	-0.00037	0.00109
2013	0.19832	0.73321	0.00521	0.00304	0.01473	-0.00245	-0.00041	0.00123
2014	0.15886	0.56901	0.00396	0.00187	0.01202	-0.00232	-0.00027	0.00095
2015	0.13388	0.35691	0.00314	0.00314	0.00874	-0.00100	0.00008	0.00084
2016	0.25318	0.69894	0.00579	0.00117	0.01700	-0.00194	0.00023	0.00234
2017	0.09786	0.29926	0.00251	0.00126	0.00692	-0.00087	0.00002	0.00088
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.74899	-0.99356	0.02806	0.01322	0.09499	-0.00030	0.00772	0.01455
2007	0.46967	1.48501	0.03353	0.00761	0.11869	-0.00737	0.00160	0.00965
2008	0.60740	1.77201	0.01995	0.00468	0.06542	-0.00716	0.00018	0.00473
2009	0.61118	1.66300	0.01413	-0.00229	0.03938	-0.00470	-0.00084	0.00205
2010	0.00888	0.36182	0.02158	0.00536	0.05768	-0.00169	0.00211	0.00746
2011	0.50671	1.77204	0.01015	0.00209	0.02807	-0.00648	-0.00159	0.00086
2012	1.33809	3.21273	-0.05303	-0.04182	-0.12192	-0.03282	-0.01854	-0.00761
2013	1.26396	3.01387	-0.05647	-0.04903	-0.12712	-0.03115	-0.01895	-0.00723
2014	0.76510	1.90265	-0.02681	-0.02113	-0.06222	-0.01548	-0.00990	-0.00341
2015	0.60610	0.68792	-0.05672	-0.05913	-0.13867	-0.02945	-0.01527	-0.00413
2016	0.65771	1.14732	-0.03329	-0.02093	-0.08450	-0.02008	-0.01101	-0.00380
2017	0.14285	0.11415	-0.01805	-0.01310	-0.04460	-0.01022	-0.00460	-0.00081

Notes: This table reports the trade effects of CEPA measured by imports ($\sum_{j \neq i} M_{ji}$). The specification uses $\sigma = 5$, $\theta = 5$, and the simple-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.8: General equilibrium trade effects with simple-average tariffs: Exports (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.59079	-5.84214	0.11446	0.03475	0.18304	-0.00560	0.01768	0.03474
2007	0.26293	11.30829	0.10846	0.02105	0.18386	-0.01866	0.00596	0.02267
2008	0.41406	12.91284	0.05612	0.01207	0.10289	-0.01336	0.00181	0.01235
2009	0.43930	13.16281	0.02867	-0.00391	0.04689	-0.01013	-0.00152	0.00353
2010	0.03062	5.24008	0.07243	0.01430	0.10746	-0.00760	0.00776	0.01937
2011	0.53053	17.65184	0.02059	0.00289	0.03890	-0.01118	-0.00423	0.00068
2012	1.49229	37.29930	-0.18251	-0.13068	-0.29898	-0.08364	-0.04438	-0.01841
2013	1.43904	35.62201	-0.19345	-0.12849	-0.32347	-0.08411	-0.04748	-0.02118
2014	0.84623	23.47566	-0.09274	-0.06332	-0.16301	-0.04409	-0.02437	-0.00819
2015	0.70871	13.35567	-0.17569	-0.16726	-0.26454	-0.07949	-0.04482	-0.01458
2016	0.78391	17.31329	-0.10452	-0.06603	-0.14711	-0.05499	-0.03079	-0.01515
2017	0.24027	3.89115	-0.05290	-0.03703	-0.07464	-0.02493	-0.01234	-0.00353
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.15438	3.05687	0.00655	-0.00088	0.01292	-0.00345	-0.00073	0.00016
2007	0.15598	3.78214	0.00737	-0.00047	0.01424	-0.00366	-0.00114	0.00024
2008	0.14195	3.54103	0.00687	0.00036	0.01368	-0.00316	-0.00069	0.00061
2009	0.11623	3.18516	0.00723	-0.00090	0.01172	-0.00256	-0.00029	0.00104
2010	0.09869	3.05719	0.00641	-0.00078	0.01029	-0.00252	-0.00041	0.00082
2011	0.13974	4.39848	0.00888	0.00264	0.01556	-0.00280	-0.00046	0.00148
2012	0.15657	5.37843	0.00865	0.00406	0.01729	-0.00329	-0.00048	0.00203
2013	0.14459	5.22212	0.00803	0.00372	0.01640	-0.00330	-0.00052	0.00164
2014	0.11058	4.26584	0.00606	0.00261	0.01340	-0.00325	-0.00050	0.00116
2015	0.07522	2.87492	0.00496	0.00454	0.00851	-0.00174	0.00015	0.00132
2016	0.14707	4.51912	0.00937	0.00187	0.01529	-0.00288	0.00055	0.00351
2017	0.06052	2.10483	0.00398	0.00189	0.00634	-0.00133	0.00003	0.00133
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.38904	-4.63455	0.05351	0.01848	0.08412	-0.00071	0.00949	0.01717
2007	0.24289	8.35120	0.05988	0.01048	0.10296	-0.01156	0.00242	0.01174
2008	0.33178	9.54088	0.03409	0.00625	0.06370	-0.00965	0.00024	0.00660
2009	0.35143	10.24034	0.02239	-0.00319	0.03671	-0.00806	-0.00129	0.00263
2010	0.00560	2.27184	0.03580	0.00753	0.05311	-0.00358	0.00391	0.00968
2011	0.35977	11.52591	0.01610	0.00300	0.02986	-0.00758	-0.00269	0.00105
2012	0.94376	24.95086	-0.08229	-0.06134	-0.13076	-0.04058	-0.02400	-0.01161
2013	0.91888	24.91966	-0.08710	-0.05995	-0.14149	-0.04167	-0.02521	-0.01378
2014	0.53161	15.60902	-0.04102	-0.02952	-0.06931	-0.02129	-0.01301	-0.00706
2015	0.33984	5.67321	-0.08961	-0.08528	-0.13517	-0.04071	-0.02268	-0.00682
2016	0.38142	7.60326	-0.05387	-0.03352	-0.07600	-0.02800	-0.01571	-0.00724
2017	0.08833	0.79401	-0.02868	-0.01958	-0.04085	-0.01318	-0.00607	-0.00142

Notes: This table reports the trade effects of CEPA measured by exports ($\sum_{j \neq i} M_{ij}$). The specification uses $\sigma = 5$, $\theta = 5$, and the simple-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.9: General equilibrium welfare effects with $\sigma = 5$ and $\theta = 10$: Real output (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.03693	-0.23559	0.00121	0.00004	0.00374	-0.00093	0.00052	0.00124
2007	0.02531	0.24610	0.00124	0.00013	0.00384	-0.00091	0.00040	0.00114
2008	0.03418	0.41746	0.00078	0.00013	0.00214	-0.00078	0.00027	0.00073
2009	0.02640	0.36815	0.00035	-0.00023	0.00072	-0.00023	0.00013	0.00035
2010	0.00537	0.13502	0.00083	-0.00007	0.00188	-0.00038	0.00030	0.00075
2011	0.03228	0.57881	0.00041	0.00014	0.00078	-0.00038	0.00011	0.00041
2012	0.07920	1.23568	-0.00178	-0.00175	-0.00463	-0.00195	-0.00082	0.00036
2013	0.07053	1.11612	-0.00185	-0.00210	-0.00548	-0.00208	-0.00069	0.00066
2014	0.04010	0.69480	-0.00083	-0.00080	-0.00278	-0.00092	-0.00035	0.00040
2015	0.03241	0.52755	-0.00151	-0.00235	-0.00467	-0.00183	-0.00075	0.00033
2016	0.03257	0.65106	-0.00071	-0.00062	-0.00212	-0.00112	-0.00050	0.00040
2017	0.01072	0.22964	-0.00038	-0.00046	-0.00116	-0.00054	-0.00022	0.00009
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.02638	0.25759	0.00021	-0.00008	0.00054	-0.00026	0.00006	0.00022
2007	0.02531	0.29065	0.00024	-0.00002	0.00066	-0.00023	0.00006	0.00025
2008	0.01945	0.28934	0.00024	0.00000	0.00061	-0.00025	0.00007	0.00022
2009	0.01137	0.19452	0.00017	-0.00012	0.00036	-0.00012	0.00006	0.00017
2010	0.01035	0.19950	0.00018	-0.00009	0.00036	-0.00015	0.00006	0.00016
2011	0.01322	0.29728	0.00027	0.00011	0.00055	-0.00024	0.00009	0.00026
2012	0.01378	0.32213	0.00028	0.00019	0.00063	-0.00026	0.00010	0.00025
2013	0.01155	0.28098	0.00024	0.00018	0.00064	-0.00023	0.00007	0.00025
2014	0.00841	0.21034	0.00018	0.00013	0.00054	-0.00025	0.00005	0.00021
2015	0.00464	0.11004	0.00011	0.00015	0.00029	-0.00006	0.00005	0.00013
2016	0.00958	0.25454	0.00023	0.00000	0.00057	-0.00020	0.00010	0.00035
2017	0.00352	0.10037	0.00009	0.00006	0.00024	-0.00007	0.00003	0.00013
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.03458	-0.27099	0.00049	0.00010	0.00157	-0.00033	0.00020	0.00056
2007	0.02216	0.21186	0.00070	0.00007	0.00214	-0.00050	0.00024	0.00063
2008	0.02710	0.32827	0.00049	0.00007	0.00133	-0.00050	0.00016	0.00046
2009	0.02133	0.29629	0.00028	-0.00018	0.00057	-0.00018	0.00010	0.00027
2010	0.00175	0.04640	0.00040	-0.00001	0.00091	-0.00016	0.00015	0.00036
2011	0.02197	0.39279	0.00030	0.00011	0.00058	-0.00026	0.00009	0.00029
2012	0.05067	0.83037	-0.00073	-0.00075	-0.00196	-0.00092	-0.00037	0.00015
2013	0.04555	0.76411	-0.00076	-0.00091	-0.00232	-0.00088	-0.00034	0.00024
2014	0.02528	0.45326	-0.00033	-0.00033	-0.00114	-0.00038	-0.00016	0.00015
2015	0.01508	0.23920	-0.00079	-0.00122	-0.00244	-0.00095	-0.00038	0.00017
2016	0.01521	0.29280	-0.00039	-0.00032	-0.00117	-0.00064	-0.00028	0.00020
2017	0.00369	0.06725	-0.00024	-0.00026	-0.00070	-0.00032	-0.00012	0.00009

Notes: This table reports the welfare effects of CEPA measured by real output (Y_i/P_i). The specification uses $\sigma = 5$, $\theta = 10$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.10: General equilibrium welfare effects with $\sigma = 5$ and $\theta = 10$: Real income (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.08889	-0.51568	0.00138	-0.00067	0.00462	-0.00176	0.00071	0.00199
2007	0.00565	-0.26473	0.00158	-0.00016	0.00470	-0.00193	0.00059	0.00205
2008	0.02835	-0.01720	0.00106	0.00000	0.00249	-0.00148	0.00044	0.00146
2009	0.02586	0.09072	0.00053	-0.00035	0.00085	-0.00048	0.00025	0.00074
2010	-0.00255	-0.17395	0.00106	-0.00030	0.00224	-0.00088	0.00045	0.00110
2011	0.03186	0.17390	0.00065	0.00021	0.00092	-0.00088	0.00033	0.00093
2012	0.09406	1.12094	-0.00163	-0.00054	-0.00508	-0.00282	-0.00047	0.00181
2013	0.08300	1.09159	-0.00170	-0.00148	-0.00586	-0.00261	-0.00055	0.00227
2014	0.04612	0.60181	-0.00071	-0.00043	-0.00292	-0.00148	-0.00013	0.00143
2015	0.04244	0.69008	-0.00152	-0.00176	-0.00544	-0.00299	-0.00089	0.00168
2016	0.03653	0.55456	-0.00059	-0.00001	-0.00261	-0.00176	-0.00049	0.00110
2017	0.01172	0.23476	-0.00035	-0.00023	-0.00140	-0.00076	-0.00022	0.00054
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.01351	0.07341	0.00034	-0.00016	0.00064	-0.00070	0.00012	0.00044
2007	0.01298	0.07905	0.00038	-0.00003	0.00078	-0.00063	0.00015	0.00056
2008	0.00969	0.08064	0.00037	-0.00000	0.00071	-0.00061	0.00013	0.00051
2009	0.00552	0.05119	0.00026	-0.00019	0.00042	-0.00026	0.00011	0.00037
2010	0.00507	0.04825	0.00028	-0.00011	0.00042	-0.00025	0.00012	0.00038
2011	0.00638	0.07092	0.00040	0.00011	0.00064	-0.00050	0.00016	0.00053
2012	0.00679	0.07254	0.00041	0.00019	0.00072	-0.00062	0.00015	0.00055
2013	0.00570	0.06039	0.00035	0.00018	0.00074	-0.00044	0.00013	0.00043
2014	0.00416	0.04414	0.00026	0.00017	0.00061	-0.00048	0.00009	0.00038
2015	0.00245	0.02241	0.00016	0.00016	0.00034	-0.00017	0.00008	0.00025
2016	0.00365	0.05808	0.00033	0.00000	0.00067	-0.00027	0.00018	0.00068
2017	0.00136	0.02167	0.00013	0.00007	0.00028	-0.00015	0.00004	0.00023
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.05232	-0.29841	0.00050	-0.00019	0.00196	-0.00066	0.00015	0.00103
2007	0.01372	-0.10574	0.00092	-0.00006	0.00261	-0.00127	0.00038	0.00125
2008	0.02487	0.02540	0.00069	0.00001	0.00154	-0.00105	0.00028	0.00096
2009	0.02116	0.07499	0.00042	-0.00028	0.00067	-0.00037	0.00020	0.00059
2010	-0.00107	-0.09107	0.00050	-0.00012	0.00109	-0.00039	0.00022	0.00053
2011	0.02210	0.11221	0.00047	0.00016	0.00069	-0.00065	0.00024	0.00066
2012	0.05829	0.62505	-0.00056	-0.00011	-0.00213	-0.00138	-0.00013	0.00099
2013	0.05170	0.60606	-0.00061	-0.00059	-0.00245	-0.00125	0.00003	0.00122
2014	0.02833	0.32781	-0.00022	-0.00012	-0.00117	-0.00075	0.00001	0.00073
2015	0.02088	0.34775	-0.00081	-0.00092	-0.00284	-0.00143	-0.00047	0.00085
2016	0.01855	0.27470	-0.00035	-0.00000	-0.00143	-0.00092	-0.00030	0.00052
2017	0.00524	0.10799	-0.00024	-0.00015	-0.00084	-0.00046	-0.00011	0.00027

Notes: This table reports the welfare effects of CEPA measured by real income (E_i/P_i). The specification uses $\sigma = 5$, $\theta = 10$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.11: General equilibrium welfare effects with $\sigma = 10$ and $\theta = 10$: Real output (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.01802	-0.15494	0.00103	0.00016	0.00307	-0.00064	0.00040	0.00095
2007	0.01915	0.29648	0.00103	0.00015	0.00314	-0.00070	0.00025	0.00088
2008	0.02280	0.41434	0.00062	0.00012	0.00175	-0.00048	0.00014	0.00049
2009	0.01717	0.35110	0.00028	-0.00019	0.00059	-0.00017	0.00007	0.00023
2010	0.00452	0.16564	0.00069	-0.00002	0.00155	-0.00029	0.00023	0.00059
2011	0.02044	0.54698	0.00031	0.00010	0.00063	-0.00030	0.00008	0.00022
2012	0.04725	1.03327	-0.00161	-0.00171	-0.00392	-0.00152	-0.00065	0.00010
2013	0.04154	0.93374	-0.00165	-0.00191	-0.00464	-0.00160	-0.00064	0.00024
2014	0.02410	0.59963	-0.00075	-0.00075	-0.00236	-0.00068	-0.00027	0.00019
2015	0.01855	0.40922	-0.00133	-0.00212	-0.00392	-0.00147	-0.00058	0.00009
2016	0.02106	0.56216	-0.00065	-0.00064	-0.00179	-0.00088	-0.00042	0.00011
2017	0.00713	0.18705	-0.00035	-0.00043	-0.00098	-0.00044	-0.00019	0.00004
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.01731	0.22205	0.00014	-0.00005	0.00041	-0.00019	0.00004	0.00012
2007	0.01642	0.25095	0.00017	-0.00002	0.00050	-0.00014	0.00004	0.00014
2008	0.01273	0.24766	0.00017	0.00000	0.00046	-0.00016	0.00004	0.00013
2009	0.00756	0.17047	0.00013	-0.00009	0.00027	-0.00008	0.00003	0.00011
2010	0.00682	0.17544	0.00013	-0.00007	0.00028	-0.00010	0.00003	0.00010
2011	0.00868	0.26337	0.00020	0.00008	0.00041	-0.00015	0.00006	0.00015
2012	0.00901	0.28941	0.00020	0.00014	0.00047	-0.00014	0.00006	0.00017
2013	0.00752	0.25614	0.00017	0.00014	0.00049	-0.00015	0.00005	0.00016
2014	0.00552	0.19270	0.00013	0.00009	0.00041	-0.00017	0.00002	0.00013
2015	0.00305	0.10104	0.00008	0.00011	0.00022	-0.00005	0.00003	0.00009
2016	0.00683	0.23373	0.00017	-0.00000	0.00044	-0.00015	0.00006	0.00022
2017	0.00259	0.09250	0.00007	0.00005	0.00019	-0.00005	0.00002	0.00009
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.01956	-0.20945	0.00044	0.00014	0.00131	-0.00022	0.00017	0.00042
2007	0.01563	0.23272	0.00057	0.00008	0.00175	-0.00038	0.00015	0.00050
2008	0.01779	0.31923	0.00039	0.00007	0.00108	-0.00030	0.00010	0.00031
2009	0.01386	0.28272	0.00022	-0.00015	0.00047	-0.00014	0.00005	0.00018
2010	0.00163	0.06572	0.00034	0.00001	0.00076	-0.00011	0.00011	0.00028
2011	0.01396	0.37430	0.00023	0.00008	0.00047	-0.00021	0.00007	0.00017
2012	0.03060	0.72141	-0.00068	-0.00076	-0.00167	-0.00064	-0.00032	0.00002
2013	0.02719	0.66787	-0.00070	-0.00084	-0.00198	-0.00066	-0.00030	0.00006
2014	0.01536	0.40471	-0.00031	-0.00033	-0.00098	-0.00028	-0.00016	0.00004
2015	0.00855	0.18154	-0.00069	-0.00110	-0.00204	-0.00077	-0.00031	0.00005
2016	0.00974	0.25226	-0.00036	-0.00032	-0.00098	-0.00048	-0.00024	0.00008
2017	0.00233	0.04960	-0.00021	-0.00024	-0.00059	-0.00026	-0.00011	0.00004

Notes: This table reports the welfare effects of CEPA measured by real output (Y_i / P_i). The specification uses $\sigma = 10$, $\theta = 10$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.

Table A.12: General equilibrium welfare effects with $\sigma = 10$ and $\theta = 10$: Real income (%).

Panel A: Total								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.07066	-0.49515	0.00125	-0.00052	0.00394	-0.00145	0.00067	0.00174
2007	-0.00342	-0.28474	0.00135	-0.00018	0.00402	-0.00172	0.00052	0.00171
2008	0.01481	-0.05603	0.00087	-0.00006	0.00209	-0.00126	0.00033	0.00116
2009	0.01566	0.05857	0.00044	-0.00036	0.00073	-0.00046	0.00017	0.00050
2010	-0.00409	-0.18423	0.00091	-0.00029	0.00192	-0.00071	0.00036	0.00097
2011	0.01932	0.12775	0.00050	0.00009	0.00076	-0.00078	0.00017	0.00066
2012	0.06134	1.02310	-0.00155	-0.00060	-0.00438	-0.00244	-0.00059	0.00118
2013	0.05348	1.00933	-0.00160	-0.00133	-0.00504	-0.00222	-0.00062	0.00162
2014	0.02975	0.55256	-0.00069	-0.00044	-0.00251	-0.00120	-0.00026	0.00100
2015	0.02844	0.65160	-0.00139	-0.00152	-0.00469	-0.00241	-0.00084	0.00132
2016	0.02467	0.50791	-0.00058	-0.00006	-0.00228	-0.00144	-0.00051	0.00081
2017	0.00801	0.21792	-0.00033	-0.00020	-0.00122	-0.00064	-0.00018	0.00044
Panel B: Tariff								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	0.00189	0.04578	0.00025	-0.00015	0.00050	-0.00053	0.00009	0.00030
2007	0.00174	0.04826	0.00028	-0.00005	0.00061	-0.00046	0.00011	0.00040
2008	0.00137	0.04894	0.00027	-0.00003	0.00054	-0.00054	0.00007	0.00036
2009	0.00093	0.03160	0.00020	-0.00017	0.00033	-0.00021	0.00008	0.00023
2010	0.00087	0.02934	0.00021	-0.00011	0.00033	-0.00021	0.00008	0.00025
2011	0.00109	0.04397	0.00030	0.00005	0.00049	-0.00038	0.00011	0.00039
2012	0.00124	0.04542	0.00030	0.00011	0.00056	-0.00056	0.00009	0.00038
2013	0.00108	0.03847	0.00026	0.00012	0.00057	-0.00035	0.00007	0.00030
2014	0.00082	0.02812	0.00020	0.00011	0.00047	-0.00035	0.00004	0.00026
2015	0.00057	0.01425	0.00012	0.00011	0.00027	-0.00012	0.00005	0.00017
2016	0.00033	0.03841	0.00025	-0.00004	0.00053	-0.00025	0.00013	0.00045
2017	0.00022	0.01418	0.00010	0.00004	0.00022	-0.00012	0.00003	0.00016
Panel C: Non-tariff barrier								
Year	CHN	HKG	USA	GBR	JPN	Others		
						P_{25}	P_{50}	P_{75}
2006	-0.03605	-0.27139	0.00049	-0.00013	0.00170	-0.00051	0.00021	0.00081
2007	0.00520	-0.12364	0.00078	-0.00008	0.00223	-0.00102	0.00027	0.00100
2008	0.01400	-0.00528	0.00056	-0.00004	0.00130	-0.00087	0.00023	0.00071
2009	0.01292	0.04918	0.00035	-0.00029	0.00058	-0.00035	0.00014	0.00040
2010	-0.00143	-0.09396	0.00044	-0.00012	0.00093	-0.00034	0.00017	0.00045
2011	0.01364	0.08120	0.00037	0.00007	0.00057	-0.00051	0.00013	0.00047
2012	0.03762	0.56082	-0.00058	-0.00020	-0.00185	-0.00114	-0.00021	0.00052
2013	0.03291	0.55121	-0.00061	-0.00056	-0.00212	-0.00099	-0.00019	0.00076
2014	0.01813	0.29633	-0.00024	-0.00016	-0.00102	-0.00058	-0.00009	0.00044
2015	0.01437	0.33049	-0.00073	-0.00079	-0.00244	-0.00126	-0.00045	0.00067
2016	0.01302	0.25419	-0.00033	-0.00002	-0.00124	-0.00078	-0.00030	0.00039
2017	0.00392	0.10313	-0.00021	-0.00012	-0.00072	-0.00039	-0.00009	0.00024

Notes: This table reports the welfare effects of CEPA measured by real income (E_i/P_i). The specification uses $\sigma = 10$, $\theta = 10$, and the weighted-average tariffs. We focus on the Mainland, Hong Kong, the United States, the United Kingdom, and Japan, and report the 25th, 50th, and 75th percentiles for the rest of the world. Panel A reports the total effect, Panel B reports the tariff component, and Panel C reports the non-tariff-barrier component.