

# Cross-border Travel, “Soft Information”, and International Trade

Bingzhan Shi, Zhi Xiong\*

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**Abstract:** This paper focuses on the economic effect of cross-border travel, and discusses how it promotes the development of Chinese import trade through the transmission of “soft information”. In terms of identification strategy, this paper uses the Chinese visa-free entry policy as a verifiable quasi-natural experiment, and adopts the Difference-in-differences (DID) method to identify the impact of cross-border travel on the imports of Chinese goods. The results of the study show that the facilitation of cross-border travel increases firms’ import along the extensive margin, and promotes general trade, high-tech products and capital goods trade. The mechanism is the decline of information cost due to “soft information” flow, which reduces search cost to screen high-quality trade relations and trust cost to continuously expand the positive trade effect. Furthermore, the impact benefits from the complementarity of modern information and communication technology, and from the facilitation of domestic travel. This study indicates that “soft information” is an important resource in the digital economy era, and the flow of people is vital for the development of high-quality opening-up.

**Keywords:** Cross-border Travel, “Soft Information”, Import Trade, Visa-free Entry Policy

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## I. INTRODUCTION

Since joining the WTO, China’s degree of opening-up has been increasing, with increasingly frequent cross-border flow of goods and capital. Currently, China is already the world’s largest trader of goods and the second largest

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recipient of foreign investment. However, an often neglected essential fact is that the size of China’s cross-border travel is substantial. In 2019, the Chinese mainland received 163 million visitors, a figure that ranked second only to the United States, which saw an influx of 166 million. Among these, foreigners accounted for 49,113,600 visits to China. Compared with the population of China’s 23 provinces and 5 autonomous regions, the number of foreigners would rank 12<sup>th</sup>, marginally exceeding the total population of Yunnan Province. From the longitudinal dimension of time, there was a significant increase in inbound arrivals, with a rise of nearly 213 times compared to 229,600 recorded in 1978.<sup>1</sup> However, only a limited amount of literature examines the economic effects of cross-border travel in China. Compared with international trade and investment, the academic community has paid insufficient attention to cross-border (inbound) travel.

In this paper, cross-border travel is defined as “passengers who journey to countries or regions distinct from their habitual place of residence, remain for a period not exceeding 12 consecutive months, and ultimately relocate back to their original residence”.<sup>2</sup> In essence, the cross-border travel of individuals is primarily face-to-face interaction between people from different countries or regions. It introduces “soft information” that cannot be accurately conveyed through non-direct methods such as telegraphs, telephones, the Internet and other information communication technologies. This process diminishes the information cost between economic entities, augments trust levels, and consequently fosters mutual transactions. Furthermore, it enhances the performance level of these economic entities.<sup>3</sup> The significant reduction in cross-border travel due to the COVID-19 pandemic has precipitated an

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1 The data on the total amount of entry into China by country are from the World Bank database, and the information of foreigners’ entry into China can be referred to *China Statistical Yearbook*.

2 According to the *China Tourism Statistical Yearbook*, (the entry of) foreigners includes overseas Chinese and Chinese citizens or residents of Hong Kong, Macao and Taiwan regions and on the land border of China, but does not include immigrants. The biggest difference between migrants and cross-border travel is that migrants are residents (born in a foreign country) while cross-border travel are not residents (living in a foreign country all the time).

3 Nune Hovhannisyan and Wolfgang Keller, International Business Travel: An Engine of Innovation, *Journal of Economic Growth*, Vol. 20, 2015, pp. 75–104; Filipe Campante and David Yanagizawa-Drott, Long-range Growth: Economic Development in the Global Network of Air Links, *The Quarterly Journal of Economics*, Vol. 133, No. 3, 2018, pp. 1395–1458; Camilo Umana-Dajud, Do Visas Hinder International Trade in Goods? *Journal of Development Economics*, Vol. 140, 2019, pp. 106–126.

economic recession, thereby making the study of cross-border travel and its economic implications a pivotal area of academic inquiry. For example, Antràs et al. (2023) explored the relationship between economic globalization and pandemic spread,<sup>4</sup> and Fajgelbaum et al. (2021) investigated the optimal dynamic lockdown strategies that cities adopted in response to the pandemic,<sup>5</sup> China significantly emphasizes the cross-border travel. On many important occasions, General Secretary Xi Jinping stressed the importance of cross-border travel. Especially in the context of the pandemic, Xi proposed to “promote the implementation of the ‘Initiative on Facilitating the Cross-border Flow of People and Goods’, ensure the safe and smooth flow of industrial and supply chains, and help countries resume work, production, and economic recovery”.<sup>6</sup> During the 27<sup>th</sup> APEC Economic Leaders’ Meeting, Xi emphasized that China would “persist in constructing a network to expedite the personnel mobility”.<sup>7</sup>

Furthermore, the proactive expansion of imports is pivotal for enhancing the integration of domestic and international markets. It facilitates the establishment of dual circulation that encompasses both domestic and international sectors. Moreover, it is a strategic measure designed to ensure the security of China’s supply chain and maintain economic stability. However, nowadays, when the costs of traditional international trade, represented by tariffs, have declined significantly, non-tariff barriers continue to impede its development. A crucial factor contributing to this hindrance is the restriction on cross-border travel.<sup>8</sup> In recent years, the Chinese government has introduced policies and measures to encourage imports, focusing more on the role of cross-border travel. For instance, China successfully hosted the International Import Expo, inviting foreign personnel including politicians from other countries, businesspeople, exhibitors, and professional purchasers to participate. In 2020,

4 Pol Antràs, Stephen J. Redding and Esteban Rossi-Hansberg, Globalization and Pandemics, *American Economic Review*, Vol. 113, No. 4, 2023, pp. 939–981.

5 Pablo D. Fajgelbaum et al., Optimal Lockdown in a Commuting Network, *American Economic Review: Insights*, Vol. 3, No. 4, 2021, pp. 503–522.

6 Please refer to the full text of Xi Jinping’s speech at the 12<sup>th</sup> meeting of the BRICS leaders, <https://m.mofcom.gov.cn/article/i/jyjl/1/202011/20201103016684.shtml> (Last Visited on January 17, 2025).

7 [http://www.gov.cn/xinwen/2020-11/21/content\\_5563112.htm](http://www.gov.cn/xinwen/2020-11/21/content_5563112.htm) (Last Visited on January 17, 2025).

8 Edwar E. Leamer, A Flat World, a Level Playing Field, a Small World After All, or None of the Above? A Review of Thomas L. Friedman’s *The World Is Flat*, *Journal of Economic Literature*, Vol. 45, No. 1, 2007, pp. 83–126; *Supra* n. 3, Camilo Umana-Dajud (2019).

the General Office of the State Council required in the Opinions on Further Improving Foreign Trade and Foreign Investment Stability to “enhance the convenience of foreign business personnel to visit China”. Therefore, in the context of synchronized growth in cross-border travel (to China) and import scale, is there a causal relationship between these two factors? This paper focuses on the impact of cross-border travel on China’s import trade, providing a new perspective for studying its determinants.

A concern is the problem of endogeneity caused by bidirectional causality between cross-border travel and international trade, making it difficult to accurately identify the trade effects of cross-border travel. However, the Chinese government has contributed towards a large increase in the number of foreign visitors to China. Since 2000, it has introduced policies aimed to relax restrictions on the entry of foreigners, continuously improving its foreign entry system. Especially in the second half of 2003, China unilaterally implemented a visa-free entry policy for ordinary Singaporean and Japanese passport holders. This policy was characterized by its wide target audience, long duration, and multiple accessible regions. Since 2000, the combined annual average number of entries from these two countries has accounted for 17% of the total foreign entries, which resembles the sum of entries from six G7 member countries: the United States, the United Kingdom, France, Germany, Italy, and Canada.<sup>9</sup> Meanwhile, economic and trade relations do not impact this policy, but non-economic factors such as national politics and security have impact on it. This provides a quasi-natural experiment for studying the relationship between cross-border travel, “soft information” and China’s import trade. This paper divides the import sources into treatment and control groups based on whether China unilaterally grants visa-free status to the import source and compares the changes in the scales of import from the treatment and control groups by Chinese firms before and after the implementation of this policy to identify the causal effect of cross-border travel on China’s import trade.

The first category of literature related to this paper is the cross-border travel and trade. The spatial geographical distribution of individuals has become a research hotspot in the field of international trade, with existing

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<sup>9</sup> The entry of foreigners can be referred to the annual data in *China Tourism Statistical Yearbook* over the years.

studies primarily emphasizing long-term human mobility, namely, migration networks.<sup>10</sup> Some scholars also study international trade issues from the perspective of short-term cross-border travel. They highlight the significant role of cross-border travel and its positive impact on trade, suggesting that cross-border travel can overcome information friction in international trade.<sup>11</sup> However, these studies did not clarify the essential differences between cross-border travel in the digital economy era and modern information communication technology during information transmission, overlooking the indispensability of personnel mobility. For instance, the global COVID-19 pandemic led to a shift in production and lifestyle towards an online model characterized by remote work and video conferencing. The research on cross-border travel presented in this paper provided compelling evidence for understanding how this transformation caused economic stagnation.

The second category of literature related to this paper is that related to “soft information”. Since Stein (2002),<sup>12</sup> scholars have proposed that information can be structurally divided into “soft information” and “hard information”. “Soft information” is a type of non-standardized information that is difficult to quantify, typically presented in oral and textual forms. Its content often embodies subjective uncertainty, and its interpretation and understanding cannot be separated from the collector and the collection environment. Therefore, its transmission method relies on direct human contact or face-to-face communication. “Hard information” is easily quantifiable and has

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10 David M. Gould, Immigrant Links to the Home Country: Empirical Implications for US Bilateral Trade Flows, *Review of Economics Statistics*, Vol. 76, No. 2, 1994, pp. 302–316; James E. Rauch and Vitor Trindade, Ethnic Chinese Networks in International Trade, *Review of Economics Statistics*, Vol. 84, No. 1, 2002, pp. 116–130; Paulo Bastos and Joana Silva Bastos, Networks, Firms, and Trade, *Journal of International Economics*, Vol. 87, No. 2, 2012, pp. 352–364; Yinghua Meng, Hongbo Cai and Jianzhong Huang, Study on the Influence of Immigration Network on the Export Performance of Chinese Firmss, *Journal of Management World*, 2015, No. 10, pp. 54–64; Rudai Yang and Yan Li, Migrant Networks and Dynamic Evolution of Firm’s Export Margins, *Economic Research Journal*, 2016, Vol. 76, No. 3, pp. 163–175.

11 Anca D. Cristea, Buyer-seller Relationships in International Trade: Evidence from US States’ Exports and Business-class Travel, *Journal of International Economics*, Vol. 84, No. 2, 2011, pp. 207–220; Meredith Startz, The Value of Face-to-face: Search and Contracting Problems in Nigerian Trade, *SSRN Working Paper*, No. 3096685, 2016; *Supra* n. 3, Camilo Umana-Dajud (2019); Thierry Mayer, Hillel Rapoport and Camilo Umana-Dajud, Free Trade Agreements and the Movement of Business People, *CEPII Working Paper*, 2021.

12 Jeremy C. Stein, Information Production and Capital Allocation: Decentralized versus Hierarchical Firms, *The Journal of Finance*, Vol. 57, No. 5, 2002, pp. 1891–1921.

definite and objective content, making it suitable for dissemination through information and communication technology.<sup>13</sup> As numbers do not fully capture the nuances of product quality, counterparty risk, managerial reputation, and potential for success in transactions,<sup>14</sup> most research focuses on high-value attributes of “soft information”. For example, the flow of “soft information” can affect banks’ credit supply,<sup>15</sup> influence the efficiency of corporate human capital management,<sup>16</sup> promote venture capital investment in high-speed rail cities,<sup>17</sup> reduce the negative impact of global export contraction on export firms<sup>18</sup> and help oligopolistic firms to achieve market collusion.<sup>19</sup> Therefore, “soft information” is an important resource in the digital economy era, but there is little literature on the significance of cross-border travel of “soft information” on trade.

In summary, considering the large scale of cross-border travel in China, this paper examines the impact of cross-border travel on international trade in the context of the visa-free quasi-natural experiment from the perspective of “soft information” theory. Its potential marginal contributions are mainly reflected in the following aspects. Firstly, it examines the determinants of China’s import trade from the perspective of personnel mobility, expanding

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13 Mitchell A. Petersen and Raghuram G. Rajan, Does Distance Still Matter? The Information Revolution in Small Business Lending, *The Journal of Finance*, Vol. 57, No. 6, 2002, pp. 2533–2570; Allen N. Berger et al., Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks, *Journal of Financial Economics*, Vol. 76, No. 2, 2005, pp. 237–269; Jianghui Liu and Min Zhu, Does Geography Affect the IPO Costs in China? An Analysis Based on Asymmetry Soft-information, *Economic Management*, Vol. 37, No. 10, 2015, pp. 31–41; José María Liberti and Mitchell A. Petersen, Information: Hard and Soft, *Review of Corporate Finance Studies*, Vol. 8, No. 1, 2019, pp. 1–41.

14 William N. Goetzmann, S. Abraham Ravid and Ronald Sverdløve, The Pricing of Soft and Hard Information: Economic Lessons from Screenplay Sales, *Journal of Cultural Economics*, Vol. 37, 2013, pp. 271–307.

15 Enrico Sette and Giorgio Gobbi, Relationship Lending during a Financial Crisis, *Journal of the European Economic Association*, Vol. 13, No. 3, 2015, pp. 453–481.

16 Augustin Landier, Vinay B. Nair and Julie Wulf, Trade-offs in Staying Close: Corporate Decision Making and Geographic Dispersion, *The Review of Financial Studies*, Vol. 22, No. 3, 2009, pp. 1119–1148.

17 Yu Long et al., High-speed Railway and Venture Capital Investment, *Economic Research Journal*, Vol. 52, No. 4, 2017.

18 Giovanni Ferri, Raoul Minetti and Pierluigi Murro, Credit Relationships in the Great Trade Collapse: Micro Evidence from Europe, *Journal of Financial Intermediation*, Vol. 40, 2019, No. 100809.

19 Andreas Freitag, Catherine Roux and Christian Thöni, Communication and Market Sharing: An Experiment on the Exchange of Soft and Hard Information, *International Economic Review*, Vol. 62, No. 1, 2021, pp. 175–198.

existing literature on this subject. The introduction of the factor of high-speed rail supplements the process of cross-border travel within China, providing a complete chain of the joint influence of domestic and foreign personnel movements on commodity flow, and presenting a complete picture of personnel movement and China's foreign trade development. Secondly, it describes the theoretical mechanism from the perspective of "soft information", explores the complementarity between "soft information" and "hard information", enriching the field of information and China's foreign trade. Thirdly, in terms of identification strategy, China's unilateral policy allowing visa-free entry for Singaporean and Japanese ordinary passport holders is applied as a quasi-natural experiment to verify the exogeneity of this policy.

The remainder of this paper is organized as follows: The second part introduces the visa system and discusses the exogeneity of policy shocks. The third part is the theoretical hypothesis. The fourth part introduces the design of econometric models and the selection of indicators and data. The fifth part analyzes the econometric results. The sixth part further demonstrates the intermediate mechanisms and conducts in-depth research in conjunction with modern information communication technology and the facilitation of domestic travel. The final part consists of the conclusions and policy implications.

## II. VISA SYSTEM AND THE EXOGENEITY OF POLICY SHOCKS

### A. Visa System

A visa is a document issued by a country's government according to its laws and regulations for foreigners who apply for entry or exit or transit in that country. It is linked to national sovereignty and territorial integrity.<sup>20</sup> As a form of entry control, visas enable states to pre-screen individuals before they arrive at their borders and help to distinguish between "trustworthy individuals" and "dangerous individuals", meaning that visas are often regarded as the "first line

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20 Sarah Collinson, Visa Requirements, Carrier Sanctions, "Safe Third Countries" and "Readmission": The Development of an Asylum "Buffer Zone" in Europe, *Transactions of the Institute of British Geographers*, Vol. 21, No. 1, 1996, pp. 76-90.

of defense in protecting national security".<sup>21</sup> For example, they are intended to stop illegal immigration and terrorism. However, the existence of visa also hinders cross-border travel, severely affecting the development of international trade and investment, especially posing a significant obstacle for developing countries to benefit from economic globalization.<sup>22</sup>

Although China's visa system is strict, it has been gradually relaxed in the wave of globalization, including but not limited to 24-hour visa-free direct transit. Since 2000, Hainan Province has provided 15-day visa-free entry for group tourism from 21 countries. Foreigners visiting Hong Kong and Macao regions of China can travel in groups to Guangdong Province for six days without a visa. Since 2013, some cities have offered 72-hour visa-free transit to citizens of 45 countries. However, the above policies only allow short-term entry into a few Chinese cities or provinces, and is mainly for transit passengers and tourists. Therefore, its impact on bilateral cross-border travel is limited. The visa-free policy for ordinary passports is characterized by a wide target audience and longer duration, and it allows entry into most Chinese cities, greatly enhancing cross-border travel. In 2003, the Chinese government announced a unilateral 15-day visa-free policy for Singapore and Japan on the basis of ordinary passports. This stipulated that Singaporean and Japanese citizens who come to China for business, tourism, visiting relatives or friends, or transit with ordinary passports, and whose stay does not exceed 15 days from the date of entry, are exempted from visa requirements. They can enter and exit through Chinese ports of entry open to foreigners. In addition, China signed mutual visa-free agreements with multiple countries.<sup>23</sup> In summary, this paper uses the visa-free policy for ordinary passports, rather than other entry facilitation policies as an exogenous policy shock.

## B. The Exogenous Impact of the Visa-free Policy on Singapore and Japan

The validity of the quasi-natural experiment setup in this paper is discussed

21 Steffen Mau et al., *Liberal States and the Freedom of Movement: Selective Borders, Unequal Mobility*, New York: Palgrave Macmillan, 2012, pp. 11–24.

22 Mathias Czaika and Eric Neumayer, Visa Restrictions and Economic Globalisation, *Applied Geography*, Vol. 84, 2017, pp. 75–82; *Supra* n. 3, Camilo Umana-Dajud (2019).

23 For specific information on China's visa regime and visa-free policies, please refer to the website of the Chinese Consulate Service, <http://cs.mfa.gov.cn> (Last Visited on January 17, 2025).

as follows. Firstly, as a sovereign state with diplomatic independence and autonomy, China grants Singapore and Japan visa-free policies for ordinary passport holders mainly for political purposes and does not depend on economic factors. In terms of visa nature, a government can restrict individuals from entering its territory by considering national security and territorial sovereignty. This prevents illegal immigration, criminal entry, and foreign interference. It can also lift visa restrictions on allies with long-standing cultural and historical ties.<sup>24</sup> In fact, some countries (such as the United States) also have close economic and trade cooperation with China, but China does not implement a visa-free entry policy for ordinary passports to them. On the contrary, it implements a visa-free policy for ordinary passports to countries who have limited economic and trade exchanges with China, such as Brunei, the United Arab Emirates, Belarus, Qatar, and Serbia. Therefore, whether a country adopts preferential entry policies depends on historical, cultural, security and other factors, and is not significantly correlated with international trade or other economic factors. This can eliminate concerns about reverse causality. Secondly, the outside world cannot make predictions about China's unilateral policy of visa-free entry for ordinary passport holders. Prior to this, China relied on bilateral agreements to implement mutual visa-free entry with other countries for its citizens and had no precedent of unilateral ordinary passport visa-free entry.<sup>25</sup> This makes it impossible for other economic entities to anticipate the implementation of unilateral visa-free entry policies, let alone accurately predict when and for which country China will implement unilateral visa-free entry. Therefore, it is difficult to predict China's adoption of unilateral visa-free entry policies. In the case of Japan, after several years of interrupted formal diplomatic ties, in August 2003, high-ranking Chinese and Japanese diplomats suddenly visited each other. The issue of visa-free entry for Japanese citizens to China was a significant topic during the visit of Zhaoxing Li, the then Chinese Minister of Foreign Affairs,

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24 Eric Neumayer, Unequal Access to Foreign Spaces: How States Use Visa Restrictions to Regulate Mobility in a Globalized World, *Transactions of the Institute of British Geographers*, Vol. 31, No. 1, 2006, pp. 72–84; *Supra* n. 21; John Torpey, *The Invention of the Passport: Surveillance, Citizenship and the State*, Cambridge: Cambridge University Press, 2018, pp. 4–20.

25 For example, in 1985, China and the Republic of San Marino signed an agreement on mutual remission of ordinary passports.

to Japan.<sup>26</sup> Since then, the Chinese government has not announced a unilateral visa-free policy for ordinary passports to other countries. Finally, the policy in this paper is at the national level, while the regression model uses micro-data of firms. It is difficult for the micro-behaviors of firms to influence a country's macro policies, thus weakening the reverse causality.

The exogeneity test was conducted simultaneously referring to the method of Malgouyres et al. (2021),<sup>27</sup> and the results proved that there is no endogeneity problem in this paper. The dependent variable in Table 1 is a dummy variable, representing whether China allows its citizens to enter with a ordinary passport without a visa. The dependent variable and import trade data are at the country-year level. Columns (1), (2), and (5) only include control and treatment countries. To avoid sample selection bias, columns (3) and (4) expand the sample countries to the global level based on columns (1) and (2) respectively, and consider the events of China granting ordinary passport visa-free entry to other countries.<sup>28</sup> Column (1) shows the  $R^2$  value that only includes country and year fixed effects, indicating that these explain 74.1% of the variance in the dependent variable. This is mainly because the country fixed effects control for factors such as security (e.g., whether to recognize dual citizenship) and culture (e.g., religious distance, whether these countries are within the Confucian cultural sphere), which profoundly influence China's political decision on

26 Since Junichiro Koizumi, the then Japanese Prime Minister visited the Yasukuni Shrine in 2001, the Sino-Japanese political relations had plummeted to a freezing point. However, on August 9, 2003, Yasuo Fukuda, the then Chief Cabinet Secretary of Japan, suddenly visited China and met with the then Chinese President Hu Jintao at the Great Hall of the People. Przystup (2003) described the visit as unexpected and considered it an important step in the normalization process of Sino-Japanese relations. On August 11 of the same year, then Chinese Foreign Minister Zhaoxing Li began a visit to Tokyo to attend the 25<sup>th</sup> anniversary of the signing of the Treaty of Friendship between China and Japan, during which it was discussed and agreed that China would implement a visa-free policy for Japan. The specific process can be referred to: James J. Przystup, Bridges to the Future, Reflections on the Past, *Comparative Connections, Pacific Forum CSIS*, 2003, pp. 119-128. On September 1, 2003, the official government of China announced that it would implement a visa-free policy for Japan. In February and April of the following year, Japan announced visa-free entry for citizens of the Hong Kong and Macao regions of China respectively.

27 Clément Malgouyres, Thierry Mayer and Clément Mazet-Sonilhac, Technology-induced Trade Shocks? Evidence from Broadband Expansion in France, *Journal of International Economics*, Vol. 133, 2021, 103520.

28 The selection of import source countries for the processing firms will be introduced later in this paper; during the sample period, China has valid mutual visa-free entry agreements with the Bahamas, Mauritius, Seychelles, and San Marino. Even if these countries are excluded from the sample, it would not affect the conclusions of this section.

whether to adopt a visa-free policy for ordinary passport holders.<sup>29</sup> Column (2) incorporates a first-order lag variable of import trade based on the column (1). Although the model's fit increased by 1.1%, the estimated coefficient of the import trade variable was not significant.<sup>30</sup> Moreover, the value of the F-statistic is very small, accepting the null hypothesis that the coefficient of the explanatory variable is zero. This implies that after controlling for country and year fixed effects, import trade cannot explain whether China will implement a visa-free policy for ordinary passports to a certain country, indicating that there is no issue of reverse causality. The  $R^2$  in column (3) is 0.675, and the estimated coefficient of the explanatory variables in column (4) is not significant and the F-statistic is very small, indicating that these conclusions remain robust. Column (5) incorporates additional major economic factor control variables based on column (1). The  $R^2$  slightly increases, but the F-statistic result accepts the null hypothesis that all explanatory variables are zero. This suggests that whether a country adopts a visa-free policy for ordinary passports does not depend on economic factors, which is also consistent with the logic presented earlier in the text. Furthermore, to address the potential issue of omitted variables, subsequent empirical studies will control for fixed effects and incorporate other observable variables. These practices will not affect the robustness of the baseline results. Therefore, this paper makes the following judgment on the omitted variable problem. Although endogenous analysis cannot completely prove that unobservable variables will not cause bias in the baseline regression results, there is a slight possibility of omitted variables related to the core explanatory variables of the baseline model, not controlled by fixed effects, and unrelated to all observable control variables in this study.

<sup>29</sup> It is noteworthy that the control countries selected in this paper are all developed economies in Europe and America. The historical and cultural ties between Singapore and Japan and China may affect whether they adopt a visa-free policy, which could potentially lead to sample self-selection issues in this study. However, these historical and cultural connections are formed over a long period of time and are difficult to change over time. See Luigi Guiso, Paola Sapienza, and Luigi Zingales, Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives*, Vol. 20, No. 2, 2006, pp. 23–48. For instance, factors such as whether there is a common language, religion, or whether they are part of the Confucian cultural sphere can be controlled by using country fixed effects in the subsequent baseline model.

<sup>30</sup> Import trade data is aggregated from firm micro-data to the country-year level, and the imports of firms along with other economic variables listed in column (5) will be detailed in section IV of this paper.

Accordingly, this paper regards China’s visa-free entry policy to Singapore and Japan as an exogenous shock, investigating the impact of researchers’ cross-border travel on Chinese firms’ imports.

Table 1: Exogeneity Analysis

|                         | (1)<br>Country + Year<br>Fixed Effect | (2)<br>(1) + Trade | (3)<br>Country + Year<br>Fixed Effect | (4)<br>(3) + Trade | (5)<br>(1) + Other<br>Variables |
|-------------------------|---------------------------------------|--------------------|---------------------------------------|--------------------|---------------------------------|
| $\ln import_{t-1}$      |                                       | -0.163<br>(-1.551) |                                       | 0.000<br>(0.417)   |                                 |
| Adjusted R <sup>2</sup> | 0.741                                 | 0.752              | 0.675                                 | 0.731              | 0.818                           |
| F-statistic             |                                       | 2.41               |                                       | 0.17               | 0.79                            |

Notes: The main economic factors control variables include the lagged 1-period variables of  $\ln gdp$ ,  $\ln conflict$ ,  $\ln internet$ , and  $\ln mres$ ; The global sample includes a total of 152 countries or regions.

### III. THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

Trade costs have always been an important area of study in international trade. In the trade gravity model, the trade flow between two countries is determined by trade costs represented by geographical distance and the economic scale of the two countries. Geographical distance can be in forms such as transportation costs and information costs, which has a significant role.<sup>31</sup> However, existing literature often focuses on “hard information” transmitted over long distances by information and communication technology (ICT), neglecting the flow of “soft information” caused by face-to-face cross-border travel between individuals. The rapid development of ICT, represented by the Internet, has undeniably changed the modes of social production and consumption, becoming a significant force in shaping the world’s economic and trade landscape.<sup>32</sup>

31 James E. Anderson and Eric Van Wincoop Anderson, Trade Costs, *Journal of Economic Literature*, Vol. 42, No. 3, 2004, pp. 691–751; Treb Allen, Information Frictions in Trade, *Econometrica*, Vol. 82, No. 6, 2014, pp. 2041–2083.

32 Caroline L. Freund and Diana Weinhold, The Effect of the Internet on International Trade, *Journal of International Economics*, Vol. 62, No. 1, 2004, pp. 171–189; Carsten Fink, Aaditya Mattoo and Ileana Cristina Neagu, Assessing the Impact of Communication Costs on International Trade, *Journal of International Economics*, Vol. 67, No. 2, 2005, pp. 428–445; Bingzhan Shi, Internet and International Trade – Empirical Evidence Based on Bilateral and Bidirectional Hyperlinks Data, *Economic Research Journal*, Vol. 51, No. 5, 2016, pp. 172–187; Yong Tan et al., Internet, Information Spillovers and Import Welfare: Theoretical and Empirical Analysis, *The Journal of World Economy*, Vol. 42, No. 12, 2019, pp. 77–98.

However, as the most effective method of information transmission, ICT has not replaced face-to-face communication since it lacks an advantage in transmitting “soft information”. On the contrary, the dissemination of “soft information” depends more on face-to-face interpersonal contact.<sup>33</sup> Therefore, “soft information” provides a new theoretical perspective for researchers to study cross-border travel and trade.

#### A. Cross-border Travel and Trade Information Cost

Cross-border travel primarily consists of face-to-face contact between individuals from different countries or regions, making it a significant method for transmitting “soft information”. Besides, “hard information”, in digital form, is more cost-effectively transmitted through modern ICT. Face-to-face communication cannot accurately transmit “hard information” and can lead to higher costs. Cross-border travel can reduce information costs in international trade by promoting the flow of “soft information”, which reduces search and trust costs. On one hand, cross-border travel improves the efficiency of communication between trading parties, effectively solving market matching problems by reducing search costs. Current goods trade involves many differentiated products.<sup>34</sup> As international vertical specialization deepens,<sup>35</sup> increasingly more technology- or knowledge-intensive products are added to trade, making international trade increasingly dependent on information transmission, including “soft information”.<sup>36</sup> For instance, import companies must have detailed discussions with suppliers on issues such as product design, production process, company capacity, and product transportation. This involves a large amount of “soft information” in the form of oral and textual communication, which requires higher efficiency in communication between both parties. However, ICT cannot facilitate comprehensive, systematic, and tangible negotiations and discussions, making it inevitable for the use of face-

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<sup>33</sup> *Supra* n. 12.

<sup>34</sup> James E. Rauch, Networks versus Markets in International Trade, *Journal of International Economics*, Vol. 48, No. 1, 1999, pp. 7–35.

<sup>35</sup> David Hummels, Jun Ishii and Kei-Mu Yi, The Nature and Growth of Vertical Specialization in World Trade, *Journal of International Economics*, Vol. 54, No. 1, 2001, pp. 75–96.

<sup>36</sup> *Supra* n. 11, Anca D. Cristea (2011).

to-face communication between trading entities.

On the other hand, the success of trade is affected by trust costs,<sup>37</sup> such as contract enforcement problems<sup>38</sup> and bilateral political conflicts.<sup>39</sup> The establishment of trust between trading parties requires face-to-face communication, and the role of ICT in reducing trust costs is limited,<sup>40</sup> mainly because “soft information” is crucial for forming trust.<sup>41</sup> For instance, the buyer may not be able to understand the seller’s production and operation status to determine whether the seller can deliver on time, or the seller may find it difficult to ascertain the buyer’s ability to repay and finance to determine whether the buyer can pay on time. Moreover, face-to-face communication can build new networks of relationships and enhance bilateral cooperation that trading parties value, thus reducing breaches.<sup>42</sup>

## B. Cross-border Travel and Expanding Margins

Research has found that changes in information costs have a more pronounced impact on the extensive margin (new trade links).<sup>43</sup> Cross-border travel also primarily affects the extensive margin since a large amount of “soft information” is involved in establishing new trade links,<sup>44</sup> which must be transmitted through face-to-face communication. Specifically, to gain a competitive advantage in the destination market, exporters not only must promote their products to importers but also must reduce uncertainty by

37 Rachel E. Kranton and Deborah F. Minehart, A Theory of Buyer-seller Networks, *American Economic Review*, Vol. 91, No. 3, 2001, pp. 485–508; *Supra* n. 8, Edwar E. Leamer (2007).

38 James E. Rauch, Business and Social Networks in International Trade, *Journal of Economic Literature*, Vol. 39, No. 4, 2001, pp. 1177–1203.

39 Yi Che et al., Once an Enemy, Forever an Enemy? The Long-run Impact of the Japanese Invasion of China from 1937 to 1945 on Trade and Investment, *Journal of International Economics*, Vol. 96, No. 1, 2015, pp. 182–198.

40 Runjuan Liu et al., The Complexity of Outsourced Services and the Role of International Business Travel, *Journal of Economic Geography*, Vol. 17, No. 3, 2017, pp. 661–684.

41 Patrick Bolton et al., Relationship and Transaction Lending in a Crisis, *The Review of Financial Studies*, Vol. 29, No. 10, 2016, pp. 2643–2676.

42 Rocco Macchiavello and Ameet Morjaria, The Value of Relationships: Evidence from a Supply Shock to Kenyan Rose Exports, *The American Economic Review*, Vol. 105, No. 9, 2015, pp. 2911–2945.

43 *Supra* n. 32, Caroline L. Freund and Diana Weinhold (2004); Shuzhong Ma and Chao Fang, Cross-border E-commerce and New Export Growth in China: Based on the Dual Perspective of Information Costs and Economies of Scale, *Economic Research Journal*, Vol. 56, No. 6, 2021, pp. 159–176.

44 *Supra* n. 4.

researching the market of the export destination. A lack of detailed supplier information can cause importing enterprises to worry about supply chain stability. Supply factors such as difficulties in delivery requirements, supplier bankruptcy, and supplier monopoly pricing can all create supply chain risks,<sup>45</sup> which affect the production and operation of import firms. However, this information is often difficult to quantify and standardize, and its collection and analysis depend on economic entities themselves. Exporters can reduce information asymmetry when establishing trade relationships by using cross-border travel to conduct face-to-face communication or host meetings with importers, thereby matching buyers and sellers and establishing trust-based relationships. Therefore, the reduction of information cost resulting from cross-border travel is crucial for establishing new trade links, that is, cross-border travel increases trade scale by extensive margins.

The direction of the effect of cross-border travel on the intensive margin (old trade ties) is unclear. An increase in cross-border travel implies more direct interaction between existing trade partners, such as better after-sales service and more detailed feedback on consumer information, enhancing existing bilateral trade ties and deepening bilateral cooperation.<sup>46</sup> However, cross-border travel reduces information costs and allows more import firms to enter the market. Seller firms rematch with import firms considering their limited production capacity and profit maximization, reducing or interrupting old trade ties. In other words, trade diversion between firms ultimately has a negative impact on the intensive margin.<sup>47</sup>

### C. Cross-border Travel and Modern Information Communication Technology

The influence of information on trade is a significant issue in the digital economy era. Understanding the crucial role of cross-border travel in this era requires an in-depth analysis of the relationship between cross-border travel and modern ICT during cross-border information flow, that is, whether they

45 Rao Tummala and Tobias Schoenherr, Assessing and Managing Risks Using the Supply Chain Risk Management Process (SCRMP), *Supply Chain Management: An International Journal*, Vol. 16, No. 6, 2011, pp. 474–483.

46 *Supra* n. 42.

47 Martina Lawless, Deconstructing Gravity: Trade Costs and Extensive and Intensive Margins, *Canadian Journal of Economics*, Vol. 43, No. 4, 2010, pp. 1149–1172.

substitutes or complements each other.

This paper analyzes these issues from the perspective of the relationship between “soft information” and “hard information”. Statically, “soft information” refers to non-standardized and vague information that is difficult to quantify; on the other hand, “hard information” is digitalized, verifiable, and standardized information. Therefore, logically speaking, the two are complementary rather than substitutable.<sup>48</sup> From a dynamic perspective, although technological advancement can help transform “soft information” into “hard information”, some information or content will be lost during conversion. Therefore, while “hard information” is easy to obtain, it may lead to information deficiency, whereas “soft information” has a higher acquisition cost but a higher degree of completeness.<sup>49</sup> The latter can make up for the shortcomings of the former, especially providing higher-value information that profoundly affects the subject’s decision-making behavior.<sup>50</sup> Therefore, whether from a static or dynamic perspective, “soft information” and “hard information” are generally complementary. Since “soft information” is disseminated through face-to-face communication between individuals, while the transmission of “hard information” relies on ICT, this study follows this logic when studying the relationship between cross-border travel of researchers and modern ICT. Moreover, the cost differences also reflect the complementarity of the two modes of information transmission in international trade. This is because “hard information” is digital, making modern ICT more cost-effective in transmitting it. However, cross-border travel often involves higher time costs and additional economic expenses. Nevertheless, the high value attribute of “soft information” can compensate for the extra costs of cross-border travel. Therefore, the two modes of information dissemination can compensate for each other’s shortcomings, forming an information cross-border travel system. Based on this analysis, this paper proposes the following hypotheses.

Hypothesis 1: The facilitation of cross-border travel, represented by visa-free entry policies, has a positive impact on the imports of Chinese firms.

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48 Jennie Bai and Massimo Massa, Is Hard and Soft Information Substitutable? Evidence from Lockdowns, *CERP*, No. DP15744, 2021.

49 *Supra* n. 13, José María Liberti and Mitchell A. Petersen (2019).

50 *Supra* n. 18; *Supra* n. 19.

Hypothesis 2: The facilitation of cross-border travel primarily reduces information friction in international trade processes by promoting the flow of “soft information”, manifested as reduced search and trust costs.

Hypothesis 3: The flow of “soft information” can reduce information costs in establishing new trade links, but its impact on old trade links is unclear. Therefore, facilitating cross-border travel primarily increases the import scale of Chinese firms along the extensive margin.

Hypothesis 4: Cross-border travel and ICT have qualitative differences in the types and costs of information transmitted, so they are complementary rather than substitutable in promoting imports of enterprises.

## IV. ECONOMETRIC MODELS, INDICATORS, AND DATA

### A. Econometric Model

This paper applies the policy of visa-free entry for ordinary Singaporean and Japanese passport holders as an exogenous policy shock in China, employing the difference-in-differences (DID) method to identify the impact of facilitating cross-border travel on China’s import trade. A core issue with DID is finding a reasonable control group for the treatment group countries (Singapore and Japan). To address this, several factors have been considered in selecting the control group. Firstly, it is not a country that benefits from the same visa-free entry policy for ordinary passports as Singapore and Japan, which is a key characteristic of the control group countries. Secondly, before China implemented visa-free entry for Singapore and Japan, the control group countries need to have the same entry facilitation policies as these two countries to avoid the influence of other facilitation policies on empirical results. The only potential entry policy that may affect the results of empirical research is that before 2001, members of group tourism from 21 countries including Singapore and Japan could enter Hainan Province without a visa. Therefore, the control group was limited to these countries. Thirdly, like Singapore and Japan, the control group countries did not implement visa-free entry policies for China to eliminate the impact of external visa-free policies on China’s imports. Therefore, samples from the Republic of Korea and Indonesia were excluded.

Fourthly, these countries are developed countries like the control group to control the factors that reflect the social development status affecting the cross-border travel, such as illegal immigrants. Based on these conditions, this paper selects 13 countries as the control group, including Germany, the United Kingdom, France, Austria, Italy, Switzerland, Sweden, Spain, the Netherlands, the United States, Canada, Australia, and New Zealand.<sup>51</sup> The sample in this paper includes 15 developed countries, including G7 members. China maintains close economic ties with these countries. For instance, in 2020, imports from these countries accounted for approximately 40% of China’s total imports. Therefore, the conclusions drawn in this paper are general and representative. It refers to the research method of Umana-Dajud (2019)<sup>52</sup> and constructs the following DID model:

$$\ln imp_{fctit} = \alpha_0 + \alpha_1 Treat_c \times Post04_t + \beta_1 X_{cit} + \delta_{ft} + \delta_{cf} + \delta_{it} + \varepsilon_{fctit} \quad (1)$$

In this context,  $f$ ,  $c$ ,  $i$ , and  $t$  respectively represent the firm, country, HS6-digit product, and year. The dependent variable  $\ln imp_{fctit}$  is the logarithm of the value of product  $i$  imported by Chinese firm  $f$  from country  $c$  in period  $t$ .  $Treat_c$  represents whether it is a treatment group, where  $Treat_c$  equals 1 if China adopts visa-free entry policy for this trade partner, otherwise equals 0.  $Post04_t$  is a dummy variable for policy, taking the value of 1 if  $t \geq 2004$ , otherwise it is 0.<sup>53</sup> The interaction term  $Treat_c \times Post04_t$  is the core explanatory variable of this study, and its coefficient  $\alpha_1$  will measure the difference in the change of import value of firms in the treatment group and control group before and after China implemented a visa-free entry policy. If the estimated value of  $\alpha_1$  is greater than 0, it indicates that compared with the control group countries, the facilitation of cross-border travel helps Chinese firms import from the treatment group countries.  $X_{cit}$  is a set of control variables that may affect firm imports.  $\delta_{ft}$  is the firm-year fixed effect that control for certain factors that vary with both firm and year, such as firm productivity.  $\delta_{cf}$  is the country-firm fixed effect that control for certain factors that vary with both country and firm, such as firm-

51 Developed countries catalogue available from the official document of International Monetary Fund (IMF), 21 countries except Malaysia, Thailand, the Republic of Korea, Philippines, Indonesia and Russia.

52 *Supra* n. 3.

53 Since China began to waive visa requirements for Singapore and Japan in July and September of 2003 respectively, both within the second half of 2003, to avoid potential policy implementation lags, this paper sets the policy start time as 2004.

specific preferences for a particular importing country.  $\delta_{it}$  is the product-year fixed effect, which controls for certain factors that vary with product categories and years, such as product import tariffs or government policies related to a specific industry in a given year to affect the import and export of products in that industry.  $\varepsilon_{fciit}$  is a random disturbance term.

## B. Indicators and Data

### 1. Dependent Variable

The firm import scale ( $\ln imp$ ) data is from the General Administration of Customs (GAC) of China. The GAC product codes are at the HS8-digit level and the product classification standards adopted in different years are not consistent, adopting the HS1996 classification standard and defining products at the HS6-digit level. This paper ultimately obtains import trade data samples from four dimensions: firm, country, product, and year, with the sample time range being 2001–2013.

### 2. Control Variables

The  $X_{cit}$  variable set consists of: (1) The gross domestic product ( $\ln gdp$ ), measured in terms of the logarithm of the importing country's gross domestic product, which is obtained from the World Development Indicators (WDI) published by the World Bank; (2) Internet penetration ( $internet$ ), measured as the number of Internet users per hundred inhabitants in trading partners' countries, to control for the effect of facilitating "hard information" flows, from the International Telecommunication Union (ITU) database; (3) Bilateral political conflict ( $\ln conflict$ ), refer to Li et al. (2021).<sup>54</sup> Excluding trade, business, and other economic events, and summing up the Goldstein scores of political conflicts between China and country  $c$  in period  $t$ . The values are taken as negative numbers before being log-transformed. The data is sourced from the GDELT database; (4) Multilateral resistance ( $\ln mres$ ), following the approach of Kancs (2007),<sup>55</sup> this paper uses the reciprocal of a country's foreign

54 Yuhua Li et al., How Political Conflicts Distort Bilateral Trade: Firm-level Evidence from China, *Journal of Economic Behavior and Organization*, Vol. 183, 2021, pp. 233–249.

55 D'Artis Kancs, Trade Growth in a Heterogeneous Firm Model: Evidence from South Eastern Europe, *World Economy*, Vol. 30, No. 7, 2007, pp. 1139–1169.

trade freedom to represent its multilateral resistance — a larger value indicates a lower overall degree of opening-up in a country's foreign trade and a higher overall cost of foreign trade. (5) The Herfindahl-Hirschman Index (*HHI*), represents the market competition of a certain product in the importing country. This data is measured by the sum of the squares of the market shares held by all importers of a certain product from a country, i.e.,  $HHI_{cit} = \sum_j (imp_{jcit}/imp_{cit})^2$ . A smaller index indicates a greater degree of market competition for the imported product. The descriptive statistics of the main variables are shown in Table 2.

Table 2: Descriptive Statistics of the Main Variables

| Variables                    | Meaning of Variable                           | Sample Size | Mean Value | Standard Deviation |
|------------------------------|-----------------------------------------------|-------------|------------|--------------------|
| <i>lnimp</i>                 | The Logarithm of The Firm's Import Scale      | 17 770 420  | 8.389      | 2.801              |
| <i>Treat</i> × <i>Post04</i> | Implementation Variable of Visa-free Policy   | 17 770 420  | 0.296      | 0.456              |
| <i>Treat</i>                 | Whether It Is a Process Group                 | 17 770 420  | 0.366      | 0.482              |
| <i>Post04</i>                | Whether to Implement Visa-free Policy         | 17 770 420  | 0.830      | 0.376              |
| <i>lngdp</i>                 | The Logarithm of Gross Domestic Product       | 17 770 420  | 28.880     | 1.077              |
| <i>internet</i>              | Internet Penetration Rate                     | 17 770 420  | 68.440     | 14.300             |
| <i>lnconflict</i>            | The Logarithm of Bilateral Political Conflict | 17 770 420  | 7.445      | 1.667              |
| <i>lnmres</i>                | The Logarithm of Multilateral Resistance      | 17 770 420  | 4.772      | 0.982              |
| <i>HHI</i>                   | Herfindahl-Hirschman Index                    | 17 770 420  | 0.145      | 0.184              |

### 3. Descriptive Analysis

Figure 1 shows the trend of changes in the logarithmic average value of firm imports for countries in the treatment and control groups, where treatment groups 1 and 2 represent firm imports from Japan and Singapore respectively. The trends of imports in the treatment and control groups before the implementation of the policy in 2004 were basically consistent, both showing a decrease followed by an increase. However, after the policy implementation, the import growth rate of firms in both treatment groups exceeded that of the control group. Furthermore, this disparity with the control group continued to expand over time. Consequently, this paper tentatively posits that the marked increase in imports by firms within the treatment group, relative to the control

group, can be attributed to the introduction of the visa-free policy in 2004.

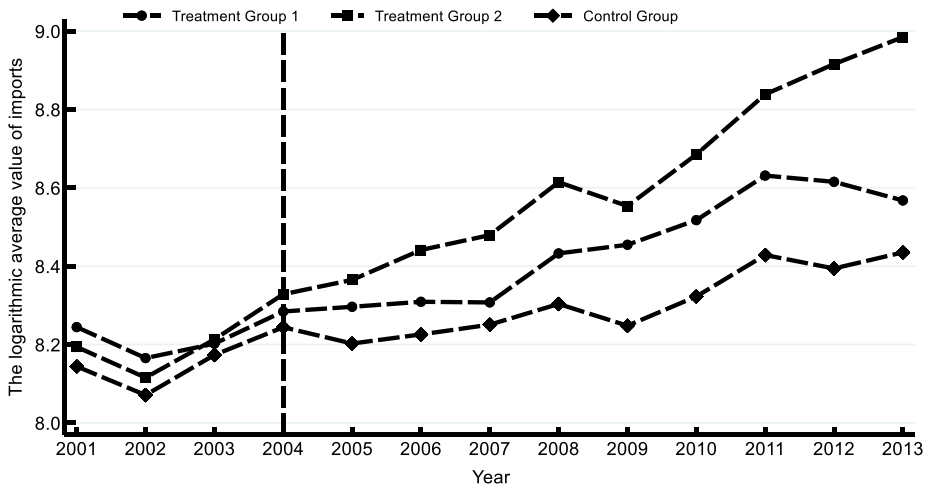


Figure 1: The Trend of Changes in the Logarithmic Average Value of Imports for Firms in the Treatment and Control Groups

## V. EMPIRICAL RESULTS AND ANALYSIS

### A. Baseline Regression Results

Based on the setting of equation (1), column (1) of Table 3 controls for  $Treatment \times Post04$  and fixed effects  $\delta_{fi}$  and  $\delta_{cf}$ ; column (2) further introduces the fixed effect  $\delta_{it}$ ; column (3) adds other control variables; and column (4) clusters to the firm level. Compared with the control group, China's visa-free entry policy significantly increased the import value of firms from the treatment group. The estimated coefficient of  $Treat \times Post04$  in column (1) of Table 3 is significantly positive at the 1% level. Columns (2)–(4) show that the estimated coefficient of  $Treat \times Post04$  increases after the stepwise introduction of control variables and fixed effects as well as clustering. This means that, after controlling for various factors and considering the issue of sequence autocorrelation, the import promotion effect of facilitating cross-border travel remains significant. That is to say, compared to the control group, after the implementation of visa-free entry policies, the average imports from treatment

group countries by Chinese firms will increase by 8.8%. This validates Hypothesis 1 proposed in this paper.

Table 3: Baseline Regression Results

|                               | (1)                        | (2)                                     | (3)                                     | (4)                                     |
|-------------------------------|----------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| <i>Treat</i> × <i>Post</i> 04 | 0.030***<br>(4.634)        | 0.053***<br>(9.092)                     | 0.088***<br>(14.350)                    | 0.088***<br>(6.488)                     |
| <i>lngdp</i>                  |                            |                                         | 0.148***<br>(14.070)                    | 0.148***<br>(7.471)                     |
| <i>internet</i>               |                            |                                         | 0.000*<br>(1.811)                       | 0.000<br>(0.938)                        |
| <i>lnconflict</i>             |                            |                                         | -0.021***<br>(-10.543)                  | -0.021***<br>(-6.452)                   |
| <i>lnmres</i>                 |                            |                                         | -0.007***<br>(-7.574)                   | -0.007***<br>(-6.247)                   |
| <i>HHI</i>                    |                            |                                         | -0.886***<br>(-176.190)                 | -0.886***<br>(-47.162)                  |
| Fixed Effect                  | $\delta_{ft}, \delta_{cf}$ | $\delta_{ft}, \delta_{cf}, \delta_{it}$ | $\delta_{ft}, \delta_{cf}, \delta_{it}$ | $\delta_{ft}, \delta_{cf}, \delta_{it}$ |
| Clustering                    |                            |                                         |                                         | firm                                    |
| Number of Samples             | 17 227 047                 | 17 225 216                              | 17 225 216                              | 17 225 216                              |
| Adjusted R <sup>2</sup>       | 0.247                      | 0.387                                   | 0.388                                   | 0.380                                   |

Notes: \*, \*\*, \*\*\* represent statistical significance at the levels of 10%, 5%, and 1% respectively; The values in parentheses are t-values; Unless otherwise specified, subsequent tables will be the same.

In addition, the estimated coefficient of the exporting country’s gross domestic product is significantly positive at the 1% level, which is also consistent with the basic concept of the trade gravity model. The coefficient of bilateral political conflict is significantly negative, indicating that a more intense bilateral political conflict with the trading partner country will result in a smaller scale of China’s imports from that country. This is consistent with the conclusion of Li et al. (2021).<sup>56</sup> The multilateral resistance regression result is significantly negative, indicating that when the exporting party has higher overall foreign trade costs or a lower degree of opening-up to the outside world, Chinese enterprises have a smaller scale of imports from this trading partner. The regression coefficient of HHI is significantly negative, indicating that a

<sup>56</sup> *Supra* n. 54.

greater degree of product market competition results in a larger scale of firm imports.

## B. Effectiveness Test of Dynamic Effect Analysis and DID Method Setting

### 1. Dynamic Effect Analysis

The parallel trend assumption is a prerequisite for DID analysis. In this paper, it means that before China implemented its visa-free policy, the trend of import volume changes from the treatment and control group countries by firms was basically consistent. Furthermore, the regression results of equation (1) reflect the average impact of facilitating cross-border travel on import firms, without identifying the differences in the effects of visa-free policies across different years. Therefore, this paper refers to the event study approach proposed by Jacobson et al. (1993) to test the dynamic effects of visa-free policies,<sup>57</sup> and draws on the methods of Malgouyres et al. (2021) to construct the following two types of dynamic effect models:<sup>58</sup>

$$\ln imp_{fcit} = \alpha_2 + \sum_{\substack{t=2001 \\ t \neq 2003}}^{2014} \alpha_t Treat_c \times Year_t + \beta_2 X_{cit} + \delta_{ft} + \delta_{cf} + \delta_{it} + \varepsilon_{fcit} \quad (2)$$

$$\ln imp_{fcit} = \alpha_3 + \sum_{t=2004}^{2014} \alpha_t Treat_c \times Year_t + \beta_3 X_{cit} + \delta_{ft} + \delta_{cf} + \delta_{it} + \varepsilon_{fcit} \quad (3)$$

In this context, equation (2) represents the full dynamic effect, using 2003 as the base year before policy implementation. Equation (3) represents the semi-dynamic effect, considering all years prior to policy implementation as base years, with the same control variables and fixed effects set as in equation (1). Figures 2a and 2b respectively plot the estimated results of the interaction term coefficient within a 95% confidence interval. As indicated in Figure 2a, there is no significant difference between the treatment and control groups before the implementation of the policy, as confirmed by the parallel trend test. However, starting from 2004, the interaction term coefficient is significantly positive, and as time progresses, this effect gradually increases and then stabilizes. Although

57 Louis S. Jacobson, Robert J. LaLonde and Daniel G. Sullivan, Earnings Losses of Displaced Worker, *American Economic Review*, Vol. 83, No. 4, 1993, pp. 685–709.

58 *Supra* n. 27.

semi-dynamic regression should theoretically estimate more effectively,<sup>59</sup> the result shown in Figure 2b indicates that its standard error is very close to that of fully dynamic condition, demonstrating the reliability of the dynamic results. It is worth considering that the effect of this policy has gradually increased and lasted for a long time, nearly quadrupling from 2004 to 2010. This medium-to-long-term dynamic upward trend is rare in previous literature on policy evaluation.

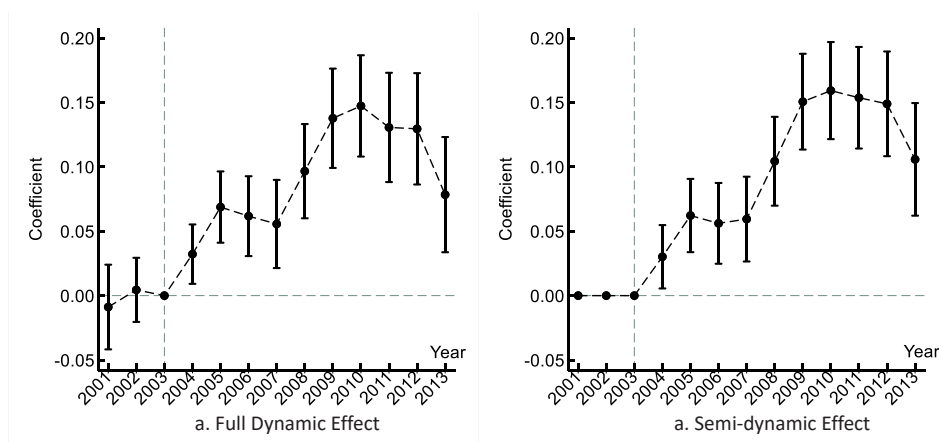


Figure 2: The Dynamic Effects of Visa-free Entry Policy on Imports by Chinese firms

The reason is that cross-border travel can maintain and develop trade ties by reducing trust costs. After the establishment of trade ties, one party may breach or violate ethics for short-term self-interested reasons. This not only may disrupt existing trade contracts but also could become a significant obstacle to deepening development of cooperation between both parties.<sup>60</sup> The increase in cross-border travel implies more direct interactions among existing trade partners, reducing mutual distrust based on enhanced understanding, causing both trading parties to further emphasize long-term cooperation and thus reduce short-term self-interested behaviors.<sup>61</sup> It is worth noting that the trade effect resulting from the reduction of this trust costs continues to expand, mainly from the new trade links established after the implementation of the

<sup>59</sup> *Supra* n. 27.

<sup>60</sup> *Supra* n. 40.

<sup>61</sup> *Supra* n. 42.

policy. The theoretical analysis suggested that although the reduction of trust costs promotes both new and old trade ties, search costs can lead to trade diversion between firms, thereby having a negative impact on old trade ties. The empirical results also indicate that cross-border trade mainly promotes firm imports along the extensive margin (new trade links) but inhibits the growth of the intensive margin (old trade links).

## 2. Expected Validity Test

This paper continues to examine whether there is a predictable effect, ensuring the validity of the DID setting. Prior to implementing the visa-free policy in China, businesses may form expectations about this policy and use them to adjust their transaction behavior. To control the impact of firm expectations, this paper interacts the dummy variable *PrePost*, which represents the year before China implemented visa-free entry policy, with *Treat*, and incorporates it into equation (1). The regression result is shown in column (1) of Table 4. The core explanatory variable remains significantly positive, while the newly added interaction term is not significant, indicating that firms did not form expectations to adjust their import behavior before China implemented a visa-free policy.

## 3. Controlling the Time Trend

As a result of the potential influence of unobserved country-specific characteristics on firm import behavior, which may lead to bias in estimated coefficients, this paper must further control for the time trend across different countries. Column (2) of Table 4 shows the regression result after adding country-specific linear time trend terms to the baseline model. The estimated coefficient of the interaction term *Treat*×*Post04* remains significantly positive, indicating that after controlling for country-specific linear time trends, unobserved country-specific factors have not affected the core conclusion of this paper. Easing restrictions on foreign personnel entry can increase firm imports.

## 4. Placebo Test

The statistically significant positive results of the core explanatory variables may be due to the omission of other random factors. To eliminate the

interference of these factors, this paper randomly selects the experimental group for 500 baseline regressions, and the distribution of the estimated coefficients is shown in Figure 3. The two dashed lines represent  $-0.03$  and the baseline regression coefficient of  $0.088$ , respectively. The coefficients of the interaction terms in the randomly generated experimental groups mainly follow a normal distribution around  $-0.03$ , with only a few estimated coefficients exceeding the estimated coefficient of the baseline regression. Therefore, the actual estimation and placebo test results are significantly different, indicating that the baseline regression results of this paper are reliable.

Table 4: Validity Test of the Difference-in-differences (DID) Method

|                               | (1)<br>Anticipation Effect | (2)<br>Control the Time Trend |
|-------------------------------|----------------------------|-------------------------------|
| <i>Treat</i> × <i>Post</i> 04 | 0.095***<br>(5.962)        | 0.051***<br>(4.089)           |
| <i>Treat</i> × <i>PrePost</i> | 0.016<br>(1.298)           |                               |
| Other Control Variables       | Control                    | Control                       |
| Number of Samples             | 17 225 216                 | 17 225 216                    |
| Adjusted R <sup>2</sup>       | 0.380                      | 0.380                         |

Notes: All regressions control for fixed effects  $\delta_{it}$ ,  $\delta_{et}$ , and  $\delta_{it}$ , and are clustered at the firm level; Unless otherwise specified, subsequent tables follow the same convention.

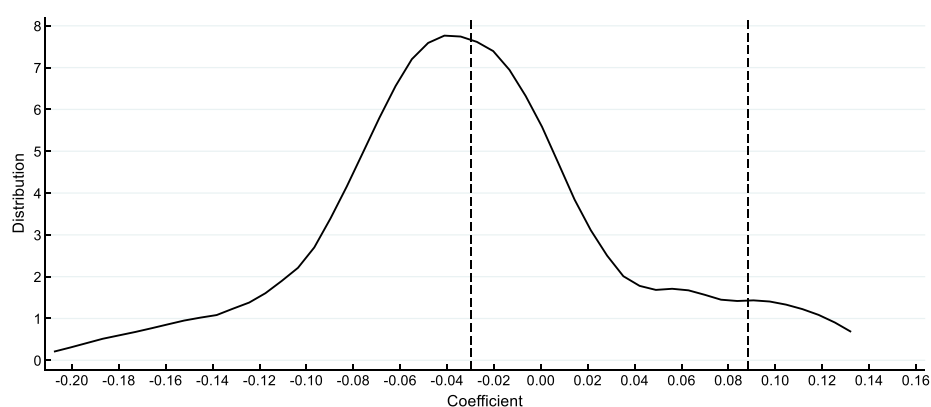


Figure 3: Placebo Test

### C. Heterogeneity

Although the facilitation of cross-border travel has significantly promoted China's import trade, will this promotional effect vary due to different sample classification standards? Answering this question can help to further understand the correlation between cross-border travel and firm imports. Therefore, based on equation (1), this paper establishes equation (4), where *Var* is a dummy variable representing different sample classification standards. The specific regression results are shown in Table 5. The following sections will further analyze this by using continuous variables to replace *Var*.

$$\ln imp_{jit} = \theta_0 + \theta_1 Treat_c + Post04_t + \theta_2 Treat_c \times Post04_t \times Var + \theta_3 Treat_c \times Var + \theta_4 Post04_t \times Var + \theta_5 Var + \phi X_{cit} + \delta_{jt} + \delta_{cj} + \delta_{it} + \varepsilon_{jit} \quad (4)$$

#### 1. Processing Trade and General Trade

Based on different forms and modes of trade, this paper divides trade into processing and general trade. *Var* value of 1 indicates processing trade, while a value of 0 indicates general trade. Column (1) of Table 5, reports the regression result. This is because processing trade firms generally have established connections with foreign trade firms, and do not need in-depth communication on import product issues, making the processing trade's reflection of information costs insignificant. If the processing trade firm has newly entered the market, it needs more information than general trade firms. Therefore, this paper excluded new samples of processing trade relationships. The result showed that the coefficient of the triple interaction term remained significantly negative, indicating that the new processing trade firms did not affect the reliability of the results.<sup>62</sup>

#### 2. High-tech and Non-high-tech Products

Following the method of Lall (2000),<sup>63</sup> this paper categorizes products into

62 The exclusion criteria is that if a processing trade firm imported a certain product from a certain country only in the years of 2004 and later, then the data of this type of firm-country-product level processing trade relationship will be excluded in all years. At this time, the estimated coefficient and t-value are -0.116 and -4.138 respectively. Further excluding new general trade firm samples based on this benchmark, the estimation results remain significantly negative, with coefficient and t-value of -0.155 and -5.628 respectively.

63 Sanjaya Lall, *The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-98*, Oxford Development Studies, Vol. 28, No. 3, 2000, pp. 337-369.

high-tech and non-high-tech products. When a product is classified as high-tech, *Var* is assigned a value of 1; otherwise, it is assigned a value of 0. The regression result is reported in column (2) of Table 5. The estimation result in column (2) indicates that the facilitation of cross-border travel has a more pronounced promoting effect on the import of high-tech products. The reason lies in the high information costs of high-tech products, which needs the transmission of “soft information” between exporters and importers to fully understand product characteristics. Therefore, it is greatly affected by cross-border travel. The characteristics of non-high-tech products are simpler, making them less affected by information costs. Therefore, when China implements a visa-free policy, positive contact between trading parties becomes more convenient, information costs are significantly reduced, and the promotion effect on the import of high-tech products is more pronounced.

Table 5: Heterogeneity

|                                           | (1)<br>Whether It Is Processing<br>Trade | (2)<br>Whether It Is a High-tech<br>Good | (3)<br>Whether It Is a Capital Good |
|-------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------------|
| <i>Treat</i> × <i>Post04</i> × <i>Var</i> | -0.213***<br>(-7.276)                    | 0.190***<br>(4.893)                      | 0.045***<br>(3.996)                 |
| <i>Treat</i> × <i>Post04</i>              | 0.195***<br>(12.736)                     | 0.085***<br>(6.252)                      | 0.067***<br>(4.407)                 |
| Other Control Variables                   | Control                                  | Control                                  | Control                             |
| Number of Samples                         | 17 225 216                               | 17 225 216                               | 17 225 216                          |
| Adjusted R <sup>2</sup>                   | 0.384                                    | 0.380                                    | 0.380                               |

Note: Due to space limitations, the coefficients of other interaction terms are not reported.

### 3. Capital Goods and Non-capital Goods

According to the broad economic classification (BEC) standard, this paper divides products into capital and non-capital goods, where non-capital goods include intermediate and consumer goods. When the product is a capital good, the value of *Var* is 1, otherwise it is 0. Column (3) of Table 5 presents the estimation result. This shows that the estimated coefficient of *Treat*×*Post04* and the triple interaction term are both significantly positive, indicating that the impact of cross-border travel facilitation on capital imports is more intense. This is primarily because capital goods such as machinery and equipment have higher technical levels. The lower technical level of importing firms cannot

integrate with high-end equipment imported, necessitating close communication and interaction between importing and exporting firms to convey “soft information”. Therefore, once the policy of facilitating cross-border travel is implemented, the transaction costs of capital goods will decrease significantly, and the trade promotion effect on these products will intensify.

#### D. The Impact on the Margin of Firm Imports

The previous section demonstrated that the facilitation of cross-border travel effectively enhances the scale of firm imports. The following sections will further examine the impact of cross-border travel facilitation on firm import behavior.

##### 1. The Impact of Cross-border Travel Facilitation on Import Prices and Quantities

This paper decomposes the import value (*import*) at the firm-country-product level into quantity (*quantity*) and price (*price*), where the product of quantity and price equals the import value.<sup>64</sup> This can help to analyze the impact of implementing a visa-free entry policy on the value, quantity, and price of imports. The regression results are shown in Table 6. The coefficients of the core explanatory variables are all significantly positive, indicating that this relaxation of personnel entry policies mainly causes trade partners to export to China by increasing prices and enhancing quantities. This is because the facilitation of cross-border travel can help reduce the search costs of trade partners, fully understand the Chinese market’s demand, and match importers

Table 6: Import Quantity and Price

|                               | (1)<br><i>import</i> | (2)<br><i>quantity</i> | (3)<br><i>price</i> |
|-------------------------------|----------------------|------------------------|---------------------|
| <i>Treat</i> × <i>Post</i> 04 | 0.088***<br>(6.488)  | 0.065***<br>(5.015)    | 0.023***<br>(2.852) |
| Other Control Variables       | Control              | Control                | Control             |
| Number of Samples             | 17 225 216           | 17 225 216             | 17 225 216          |
| Adjusted R <sup>2</sup>       | 0.380                | 0.558                  | 0.727               |

<sup>64</sup> The product price can be obtained by dividing the import value by quantity. However, since some products under the same product code have multiple quantity counting units, to ensure price comparability, only the samples with the most counting units under the same product code are retained.

with exporters. While increasing export volume, trade partners can identify companies with higher reservation prices, raise their export prices to Chinese firms, and thereby increase the total export value to these firms.

## 2. Import Expansion of Extensive and Intensive Margin

To analyze the dual marginal situations at the firm-product-country level, this paper follows the approach of Qian and Xiong (2010),<sup>65</sup> defining the intensive margin as the trade flow that continues to appear in subsequent years from the base period (old trade links), and defining the extensive margin as the trade flow that does not exist in the base period but appears in subsequent years (new trade links). The specific approach is to consider 2001 as the base year. If a firm imported a certain product from a certain country in 2001, then it will be investigated whether the firm still imports this product from that country in subsequent years. If imported, the import scale is the value of intensive margin, otherwise this margin is set as 0. Conversely, the extensive margin is set as the firm-product-country combination that did not exist in 2001 but existed in 2002–2013. Due to the substantial addition of zero trade flows, a logarithmic transformation is applied to the import value plus one to avoid the exclusion of zero trade values. The specific regression results can be found in columns (1) and (2) of Table 7.

Table 7: New and Old Trade Links

|                               | (1)<br>Extended Margin | (2)<br>Intensive Margin | (3)<br>Extended Margin | (4)<br>Intensive Margin |
|-------------------------------|------------------------|-------------------------|------------------------|-------------------------|
| <i>Treat</i> × <i>Post</i> 04 | 0.029***<br>(5.011)    | −0.215***<br>(−14.211)  | 0.113***<br>(23.766)   | −0.065***<br>(−6.075)   |
| Other Control Variables       | Control                | Control                 | Control                | Control                 |
| Number of Samples             | 104 868 068            | 11 608 361              | 87 628 785             | 28 790 690              |
| Adjusted R <sup>2</sup>       | 0.222                  | 0.458                   | 0.244                  | 0.361                   |

The estimated coefficient of the extensive margin is significantly positive, while that of the intensive margin is significantly negative, indicating that the facilitation of cross-border travel mainly enhances the scale of imports through

<sup>65</sup> Xuefeng Qian and Ping Xiong, The Dual Margin of China Export Growth and Its Determinants, *Economic Research Journal*, Vol. 45, No. 1, 2010, pp. 65–79.

the extensive margin. The impact of cross-border travel on the intensive margin is negative since cross-border travel promotes the flow of “soft information”, reducing information search costs to more precisely match buyers with sellers. This means making companies unable to pay higher prices to exit the market, retaining old and forming new trade relationships with higher transaction prices, i.e., increasing high-quality trade relationships. This also indirectly reflects that “soft information” filters out high-quality trade relationships, demonstrating its high value. To avoid the influence of standards for dividing old and new trade links on the reliability of these conclusions, this paper changes the base year to the time range of 2001–2003. That is, the intensive margin is defined as the trade flow that continues to appear in subsequent years from 2001–2003 (old trade links), and the extensive margin is defined as the trade flow that does not exist in 2001–2003 but appears in subsequent years (new trade links). The specific results are shown in columns (3) and (4) of Table 7. The coefficients of the extensive margin and intensive margin are significantly positive and negative respectively, implying that these conclusions are reliable, proving hypothesis 3 of this paper.

### E. Robustness Test

To assess the robustness of the regression coefficient in Table 3 of the *Treat*×*Post04*, this paper starts from the issues of omitted variables and sample selection, and selects other alternative methods for re-estimation. The first is the issue of omitted variables. (i) Control the number of incoming and outgoing immigrants to avoid interference from immigration factors. (ii) Consider the subtle changes in cultural distance before and after policy implementation, drawing on Pierce and Schott (2016)’s approach,<sup>66</sup> adding an interaction term between cultural distance and *Post04* to equation (1).<sup>67</sup> (iii) The proportions of state-owned enterprises (SOEs) and foreign-funded enterprises importing a

66 Justin R. Pierce and Peter K. Schott, The Surprisingly Swift Decline of US Manufacturing Employment, *The American Economic Review*, Vol. 106, No. 7, 2016, pp. 1632–1662.

67 This study uses the six cultural indicators provided by the Hofstede official website (<https://geerthofstede.com/>, Last Visited on January 17, 2025) to calculate the weighted average of the cultural distance between the sample countries and China,  $culturedist_c = \sum_{k=1}^6 (index_{c,k} - index_k^{CHN})^2 / 6V_k$ . Here,  $index_{c,k}$  represents the score of trade partner  $c$  on the  $k$ -th indicator,  $index_k^{CHN}$  represents the score of China on the  $k$ -th indicator, and  $V_k$  represents the variance of the  $k$ -th indicator.

certain product from a certain country are introduced separately to consider the impact of SOE reform and foreign investment control on the result. The second is the sample selection issue. On one hand, the samples are trimmed at the 1% and 99% levels based on the baseline regression; on the other hand, trade data at the firm-product-country level is aggregated to the firm-country level, and a large number of zero trade data samples are supplemented. The Poisson Pseudo-Maximum Likelihood (PPML) method is used for re-estimation. After considering potential omitted variables and sample selection issue, the conclusion that the facilitation of cross-border travel promotes firm imports remains robust.<sup>68</sup>

## VI. FURTHER RESEARCH

### A. Discussion on the Status of Personnel Entry

The above results indicate that the policy facilitating personnel entry has a significant promoting effect on China's import trade. Which types of incoming personnel have benefited from the visa-free policy? This paper illustrates this issue by using the data on the number of foreigners entering China for different purposes provided by the *China Tourism Statistical Yearbook*. The purposes of entry include meetings/business, sightseeing and leisure, visiting relatives and friends, service staff, and others. This paper chooses the number of entries as the dependent variable, continues to use *Treat*×*Post*04 as the core explanatory variable, and adds country-year level control variables of the baseline regression, as well as controls for country and year fixed effects. The specific regression results are shown in Table 8. The core explanatory variables in columns (1)–(4) of Table 8 are significantly positive, while the estimated coefficient in column (5) is negative but not significant, indicating that the visa-free policy will increase the number of entries for meetings/business, sightseeing and leisure, visiting relatives and friends, and service staff. Therefore, in the context of the visa-free policy, the causal relationship between cross-border travel and international trade studied in this paper is fully reasonable.

<sup>68</sup> Due to space limitations, the specific regression results are not reported.

Table 8: Heterogeneity of Immigration Purposes

|                         | (1)<br>Meetings/<br>Business | (2)<br>Sightseeing<br>and Leisure | (3)<br>Visiting Relatives<br>and Friends | (4)<br>Service Staff | (5)<br>Other<br>Purposes |
|-------------------------|------------------------------|-----------------------------------|------------------------------------------|----------------------|--------------------------|
| <i>Treat×Post04</i>     | 0.055*<br>(1.834)            | 0.413**<br>(2.713)                | 0.010***<br>(3.055)                      | 0.020***<br>(5.018)  | -0.004<br>(-0.084)       |
| Other Control Variables | Control                      | Control                           | Control                                  | Control              | Control                  |
| Clustering              | Country                      | Country                           | Country                                  | Country              | Country                  |
| Number of Samples       | 169                          | 169                               | 169                                      | 169                  | 169                      |
| Adjusted R <sup>2</sup> | 0.970                        | 0.898                             | 0.690                                    | 0.918                | 0.918                    |

Notes: All regressions control for country and year fixed effects; Due to the absence of inbound passenger data for Austria and Spain in the *China Tourism Statistical Yearbook*, samples from these two countries were excluded based on the baseline regression.

It is noteworthy that visa-free policies can enable business personnel to enter China for purposes such as meetings/business and service staff, as well as non-business personnel for leisure travel and visiting relatives and friends. Although existing literature focuses more on the important role of cross-border travel of business personnel in international trade,<sup>69</sup> the movement of non-business personnel can also promote the cross-border travel of “soft information” to reduce information costs.<sup>70</sup> Therefore, if research only emphasizes the perspective of business personnel mobility, it cannot fully assess the trade effects of visa-free policies. In the following mechanism analysis, this paper ignores the heterogeneity of entry personnel statuses and mainly focuses on whether cross-border travel can promote the flow of “soft information” to reduce information costs (i.e., the commonality of cross-border travel with different statuses).

## B. Mechanism Test

The above research results indicate that the facilitation of cross-border travel significantly promotes China’s import trade. Based on existing literature, the flow of “soft information” is an intermediate channel, but the abstract nature of its flow makes it impossible to measure. However, this flow relies on face-to-face communication and reduces search and trust costs in trade. Therefore, this

<sup>69</sup> *Supra* n. 11, Meredith Startz (2016); *Supra* n. 4.

<sup>70</sup> N. Kulendran and Kenneth Wilson, Is There a Relationship between International Trade and International Travel? *Applied Economics*, Vol. 32, No. 8, 2000, pp. 1001–1009; Emanuela Marrocu and Raffaele Paci, They Arrive with New Information, Tourism Flows and Production Efficiency in the European Regions, *Tourism Management*, Vol. 32, No. 4, 2011, pp. 750–758.

paper argues that cross-border travel can promote this flow.

### 1. Face-to-face Communication

The cross-border travel of individuals overcomes geographical barriers, enabling positive contact or face-to-face communication between different spatial economic entities, thereby promoting the transmission of “soft information”. Cristea (2011) estimated the elasticity of cross-border face-to-face communication demand in different export industries.<sup>71</sup> Therefore, this paper borrows his estimates of the elasticity in the US manufacturing industry for mechanism test. A greater level of elasticity implies that a higher frequency of cross-border face-to-face communication is required for that industry’s exports. This paper refers to Pierce and Schott (2009) to match HS industry codes with three-digit North American Industry Classification System (NAICS) industry codes.<sup>72</sup> Then, based on equation (4), it replaces  $Var$  with face-to-face demand elasticity ( $Ftf$ ). The result of the triple interaction term in column (1) of Table 9 indicates that for export industries with higher face-to-face demand elasticity (for Chinese firm exports), facilitating cross-border travel has a higher trade promotion effect, and “soft information” is an intermediate channel for cross-border travel.

### 2. Search Costs

To verify that the flow of “soft information” reduces search costs, this paper estimates product substitution elasticity according to the method of Broda and Weinstein (2006) to characterize the degree of product differentiation.<sup>73</sup> A lower product substitution elasticity represents a higher degree of product differentiation, and a higher degree of homogenization. As with the above method,  $Var$  is replaced by substitution elasticity ( $Sigma$ ). Column (2) of Table 9 shows the estimation results of substitution elasticity. The estimated coefficients of the triple interaction term are significantly negative,

<sup>71</sup> *Supra* n. 11, Anca D. Cristea (2011).

<sup>72</sup> Justin R. Pierce and Peter K. Schott, Concorcing US Harmonized System Categories over Time, *NBER Working Papers*, 2009, No. 14837; The industry matching method is described in detail at: [https://search.r-project.org/CRAN/refmans/concordance/html/hs2\\_naics.html](https://search.r-project.org/CRAN/refmans/concordance/html/hs2_naics.html) (Last Visited on January 15, 2025).

<sup>73</sup> Christian Broda and David E. Weinstein, Globalization and the Gains from Variety, *Quarterly Journal of Economics*, Vol. 121, No. 2, 2006, pp. 541–585.

indicating that the facilitation effect of cross-border travel on imports with greater substitution elasticity is weaker than that on imports with smaller substitution elasticity. As differentiated products rely more on information than homogenized products, cross-border travel can promote firm imports by reducing search costs.

Table 9: Mechanism Test: Face-to-face Communication and Search Costs

|                                             | (1)                 | (2)                   |
|---------------------------------------------|---------------------|-----------------------|
| <i>Treat</i> × <i>Post04</i> × <i>Ftf</i>   | 0.482*<br>(1.790)   |                       |
| <i>Treat</i> × <i>Post04</i> × <i>Sigma</i> |                     | -0.002***<br>(-2.951) |
| <i>Treat</i> × <i>Post04</i>                | 0.068***<br>(3.807) | 0.097***<br>(6.953)   |
| Other Control Variables                     | Control             | Control               |
| Number of Samples                           | 16 893 270          | 17 181 081            |
| Adjusted R <sup>2</sup>                     | 0.368               | 0.380                 |

### 3. Trust Costs

This paper continues to interact the visa-free policy with political conflict (*Inconflict*) and institutional quality (*rle*) respectively to determine whether there is a trust cost channel. On one hand, some scholars have shown that trust crises during inter-state political conflict inhibit trade development.<sup>74</sup> In other words, more tense bilateral political relations mean higher trust costs for trading firms.<sup>75</sup> The result of column (1) in Table 10 shows that the regression coefficient of the triple interaction term is significantly positive, indicating that facilitating cross-border travel can resist the trust crisis resulting from bilateral political conflict. On the other hand, dysfunctional institutions can also affect contract enforcement. Rauch (2001),<sup>76</sup> Rauch and Trindade (2002),<sup>77</sup> and Nunn (2007) suggest that social networks can reduce default

74 Andreas Fuchs and Nils-Hendrik Klann, Paying a Visit: The Dalai Lama Effect on International Trade, *Journal of International Economics*, Vol. 91, No. 1, 2013, pp. 164–177; Yingxin Du et al., Bilateral Trade and Shocks in Political Relations: Evidence from China and Some of Its Major Trading Partners, 1990–2013, *Journal of International Economics*, Vol. 108, 2017, pp. 211–225; *Supra* n. 54.

75 *Supra* n. 39; Kilian Heilmann, Does Political Conflict Hurt Trade? Evidence from Consumer Boycotts, *Journal of International Economics*, Vol. 99, 2016, pp. 179–191.

76 *Supra* n. 38.

77 *Supra* n. 10, James E. Rauch and Vitor Trindade (2002).

behavior through reputational punishment systems.<sup>78</sup> Cross-border travel can help economic agents build spatially extensive relationships, thereby reducing trust costs in international trade. Therefore, this paper introduces a legal system score variable (*rle*) following Bailey et al. (2021) and expects that the trade-promoting effect of cross-border travel will be stronger under more dysfunctional legal systems.<sup>79</sup> According to the result of column (2) in Table 10, the estimated coefficient of the interaction term between *rle* and the core explanatory variable is significantly negative, which is consistent with this paper’s expectations. In summary, hypothesis 2 of this paper is confirmed.

Table 10: Mechanism Test: Trust Costs

|                                                  | (1)                   | (2)                   |
|--------------------------------------------------|-----------------------|-----------------------|
| <i>Treat</i> × <i>Post04</i> × <i>Inconflict</i> | 0.034***<br>(4.879)   |                       |
| <i>Treat</i> × <i>Post04</i> × <i>rle</i>        |                       | -0.119**<br>(-2.099)  |
| <i>Treat</i> × <i>Post04</i>                     | -0.191***<br>(-3.818) | 0.241***<br>(3.111)   |
| <i>Inconflict</i>                                | -0.022***<br>(-4.759) | -0.022***<br>(-6.546) |
| <i>rle</i>                                       |                       | 0.010<br>(0.286)      |
| Other Control Variables                          | Control               | Control               |
| Number of Samples                                | 17 225 216            | 17 225 216            |
| Adjusted R <sup>2</sup>                          | 0.380                 | 0.380                 |

### C. Cross-border Travel and Modern Information Communication Technology

The previous section demonstrated that the facilitation of cross-border travel can influence the imports of Chinese firms. Therefore, it is important to determine whether modern ICT can replace the role of cross-border travel. Based on the complementary relationship between the soft and hard information, this paper uses Internet penetration rate and fixed broadband subscription variables as proxies for ICT, replacing the *Var* variable in equation

78 Nathan Nunn, Relationship-specificity, Incomplete Contracts, and the Pattern of Trade, *Quarterly Journal of Economics*, Vol. 122, No. 2, 2007, pp. 569–600.

79 Michael Bailey et al., International Trade and Social Connectedness, *Journal of International Economics*, Vol. 129, 2021, No. 103418.

(4) for regression.<sup>80</sup> This thereby proves the theoretical hypothesis that the relationship between cross-border travel and modern ICT is complementary rather than substitutable.

The estimated coefficients in columns (1) and (2) of Table 11 are significantly positive, indicating that when ICT is more developed, cross-border travel has a stronger trade-promoting effect, while more convenient cross-border travel means that ICT has a higher trade effect. This paper further considers the development status of modern ICT on the import side, using the number of CN domain names in each province and municipality annually published by the China Internet Network Information Center (CNNIC) and using its logarithm, interacting with *Treat*×*Post04*, and then regressing again to obtain the result shown in column (3) of Table 11.<sup>81</sup> The triple interaction term is still significantly positive, indicating that the conclusion of the complementary relationship between cross-border travel and modern ICT is reliable, proving hypothesis 4 of this paper.

Table 11: The Complementarity of Cross-border Travel Facilitation and Modern Information and Communication Technology

|                                                | (1)<br>Internet Penetration | (2)<br>Fixed Broadband<br>Subscription | (3)<br>Number of CN Domain Names<br>in the Region |
|------------------------------------------------|-----------------------------|----------------------------------------|---------------------------------------------------|
| <i>Treat</i> × <i>Post04</i> × <i>internet</i> | 0.000<br>(0.027)            | 0.012***<br>(4.642)                    |                                                   |
| <i>Treat</i> × <i>Post04</i> ×ln <i>CN</i>     |                             |                                        | 0.018*<br>(1.855)                                 |
| <i>Treat</i> × <i>Post04</i>                   | -0.021<br>(-0.248)          | -0.121***<br>(-3.770)                  | -0.109<br>(-1.190)                                |
| <i>internet</i>                                | 0.001**<br>(2.567)          | 0.007***<br>(3.238)                    | 0.000<br>(0.665)                                  |
| Other Control Variables                        | Control                     | Control                                | Control                                           |
| Number of Samples                              | 17 225 216                  | 17 225 216                             | 17 225 216                                        |
| Adjusted R <sup>2</sup>                        | 0.380                       | 0.380                                  | 0.380                                             |

80 Fixed broadband subscriptions, the number of people per 100 who have a fixed subscription for high-speed access to the public Internet (via TCP/IP connection), are derived from the International Telecommunication Union database (ITU).

81 The CN domain is a concept of China on the Internet. Owning a CN domain can enable Chinese firms to better go international. Many foreign businesses, when seeking Chinese partners, tend to search for websites under .CN. Therefore, the CN domain not only represents the level of informatization in various regions but also reflects the richness of “hard information” about Chinese firms that foreign businesses can obtain from different regions.

#### D. Domestic High-speed Railways and the Cross-border Travel and “Soft Information”

The previous section demonstrated that cross-border travel promotes the flow of “soft information”, which influences the transnational movement of goods. However, research has only compared trade of different importing countries. This section introduces the domestic high-speed rail factor to fully explain the process by which cross-border travel affects international trade both domestically and abroad. Existing studies suggest that high-speed rail can reduce the spatiotemporal constraints on travel, promoting the flow of “soft information” and reducing the cost of international trade.<sup>82</sup> However, past research has not answered how domestic high-speed rail participates in the linkage process between domestic and foreign information. To address this issue, this paper will explore it from the perspective of the interaction between cross-border travel and domestic travel. It argues that policies facilitating cross-border travel help foreigners enter China, and high-speed rail can change the spatiotemporal constraints of these foreigners’ movement within China. Therefore, high-speed rail can participate in the domestic part of cross-border travel, promoting the flow of “soft information”, and thereby affecting import trade. If this viewpoint is correct, then developing high-speed rail will help enhance the trade promotion effect of facilitating cross-border travel.

Therefore, this paper uses  $hstrain_{st}$  to replace the  $Var$  variable in equation (4) for ordinary least squares (OLS) regression, where  $hstrain_{st}$  is a dummy variable indicating whether province  $s$  has developed high-speed rail.<sup>83</sup> The result of column (1) in Table 12 shows that the coefficient of the triple interaction term is significantly positive, indicating that after developing high-speed rail, the promotion effect of cross-border travel on trade will increase. In column (2), based on column (1), the samples of municipalities are eliminated, and the estimated coefficient of  $Treat \times Post04 \times hstrain$  remains significantly positive. However, this practice may identify some prefecture-level cities without high-speed rail as having their province develop high-speed rail. To reflect the

82 *Supra* n. 17; Yihong Tang et al., China’s High-speed Railway, Trade Cost and Firm Export, *Economic Research Journal*, Vol. 54, No. 7, 2019, pp. 158–173.

83 High-speed rail station information comes from the China Railway Corporation, with the Beijing-Tianjin Intercity Railway being the earliest high-speed rail in China.

differences between high-speed rail cities, column (3) replaces  $hstrain_{st}$  with a variable  $hstrain_{rt}$  indicating whether cities at or above the prefecture level  $r$  have developed high-speed rail, based on column (2). The result shows that the coefficient of the triple interaction term is still significantly positive, so the trade promotion effect of facilitating cross-border travel is also complemented by facilitating domestic travel. In other words, the combined cross-border travel within and outside the country promotes the influence of “soft information” flow on international trade.

Table 12: Facilitation of Domestic Travel

|                                      | (1)<br>Provincial Level | (2)<br>Provincial Level | (3)<br>Urban Level  |
|--------------------------------------|-------------------------|-------------------------|---------------------|
| $Treat \times Post04 \times hstrain$ | 0.055***<br>(5.391)     | 0.054***<br>(4.373)     | 0.035***<br>(2.734) |
| $Treat \times Post04$                | 0.072***<br>(5.621)     | 0.079***<br>(5.002)     | 0.090***<br>(5.371) |
| Other Control Variables              | Control                 | Control                 | Control             |
| Number of Samples                    | 17 225 216              | 10 261 077              | 10 261 077          |
| Adjusted R <sup>2</sup>              | 0.380                   | 0.396                   | 0.396               |

## VII. CONCLUSIONS AND POLICY IMPLICATIONS

This paper employs a quasi-natural experiment, leveraging China’s visa-free entry policy for ordinary Singaporean and Japanese passport holders. The paper utilizes DID to examine the correlation between cross-border travel, “soft information” flow, and trade. The facilitation of cross-border travel enables firms to achieve growth along the extensive margin in imports, promoting general trade, capital goods and high-tech product trade on the product side. The mechanism is that the flow of “soft information” leads to a decrease in information costs, thereby reducing search costs to screen for high-quality trade relationships and reducing trust costs to dynamically and continuously expand trade effects. The trade-promoting effect of cross-border travel is considered after accounting for immigration, domestic reforms, outliers, developing country factors, and zero trade. Moreover, the ICT has not replaced the role of information transmission in cross-border travel; instead, they complement each other. By introducing the factor of domestic high-speed rail, this paper also

finds that facilitating domestic travel can enhance the trade promotion effect of cross-border travel.

The policy implications of this paper are as follows. Firstly, since cross-border travel affects the scale, spatial structure, and pattern of import trade by promoting the flow of “soft information”, it is highly crucial for China to expand imports, promote balanced trade development, and share market opportunities with the world by simplifying procedures and abolishing restrictions on the normal entry of foreigners into China. After the end of the pandemic and the resumption of global economic and trade exchanges, the Chinese government should promote the goal of economic globalization towards the free flow of people, information, and goods. This paper proposes the establishment of a comprehensive e-visa system utilizing Internet plus and big data technology to digitize visa application materials and enhance evaluation efficiency. The researchers advocate for the active exploration of international trade rules, incorporating provisions for the free movement of individuals across borders in bilateral or multilateral free trade agreement negotiations. Furthermore, they will persist in promoting negotiations with other governments regarding the visa-free policy for ordinary passports, with the goal of reducing restrictions on cross-border travel between China and other nations. Secondly, focusing on personnel mobility does not mean neglecting the role of modern ICT. These two elements are synergistic in information transmission; they can offset each other’s limitations, thereby forming a comprehensive information transmission system in the digital economy era. Consequently, China still needs to strengthen its information infrastructure and seize the opportunities of the digital technology revolution to promote higher level of opening-up.