

THE IMPACT OF REGIONAL COMPREHENSIVE
ECONOMIC PARTNERSHIP (RCEP) ON EMPLOYMENT
IN CHINA

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UNIVERSITI MALAYA

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**THE IMPACT OF REGIONAL COMPREHENSIVE ECONOMIC
PARTNERSHIP (RCEP) ON EMPLOYMENT
IN CHINA**

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THE IMPACT OF REGIONAL COMPREHENSIVE ECONOMIC PARTNERSHIP (RCEP) ON EMPLOYMENT IN CHINA

ABSTRACT

The Regional Comprehensive Economic Partnership (RCEP) is a free trade agreement (FTA) that will create the world's largest trading bloc and mark a major achievement for China in terms of free international trade. The significant contribution of international trade to employment growth is a constant concern of the labour force, governments, and the World Trade Organisation. The entry into force of the RCEP may have a positive or negative impact on potential employment opportunities in several sectors in China, given whether the RCEP contributes to sectoral potential employment opportunities through trade. This study examines the impact of the RCEP on the number of potential employment opportunities that may be created in various sectors in China, and to examine skill disparities and gender disparities in sectoral potential employment opportunities. The Social Accounting Matrix (SAM) is a consistent square accounting framework that represents the entire economy of a country or region over a defined period, usually one year. It provides a static picture of the economy and can be used as a source of data for various models to assess the impact of shocks or interventions. The latest version of the SAM for China in 2020 includes 153 sectors, which can be used to simulate the impact of RCEP on China as an exogenous variable. In an original social accounting matrix in monetary terms, the employment satellite account is a necessary tool if we want to study the impact of shocks on employment. This study compiles the latest employment satellite accounts based on the latest version of China's Seventh Population Census to calculate the employment multiplier, which indicates the impact of RCEP as an exogenous shock

on employment, i.e. the number of potential employment opportunities created or destroyed. The study found that the RCEP is expected to create 4618,390 potential employment opportunities in China, of which 1915,496 and 270,2894 will be created in China through imports and exports respectively. The largest potential employment opportunities are concentrated in the agricultural products sector, with 1,856,723. The RCEP is expected to create 2,801,178 and 1817212 potential employment opportunities for males and females respectively in China. The RCEP is expected to create 197,0186 sectoral potential employment opportunities for the skilled labour and 2,648,204 for the unskilled labour. This study offers some suggestions and implications to address the gender and skills gap that may exist in the RCEP's potential employment opportunities in China. Firstly, more active trade policies should be pursued, including reducing trade barriers, providing preferential treatment for imports from RCEP member countries, and supporting the internationalization of small and medium-sized enterprises. Secondly, gender differences in potential employment opportunities should be eliminated by enacting laws against discrimination, increasing support for women's vocational training and education, encouraging women's entrepreneurship, assuming childbirth costs, and promoting active caregiving roles for men. Lastly, skill differences can be addressed through increased investment in skills training and education, promoting technological cooperation and transfer, facilitating labor force mobility among RCEP member countries, establishing industry skill standards and certification systems, and aligning school education with industry demands.

Keywords: Regional Comprehensive Economic Partnership, Employment, Social Accounting Matrix, Gender, Skilled Labour.

ABSTRAK

Perkongsian Ekonomi Komprehensif Serantau (RCEP) ialah perjanjian perdagangan bebas (FTA) yang akan mewujudkan blok perdagangan terbesar dunia dan menandakan pencapaian besar bagi China dari segi perdagangan antarabangsa bebas. Sumbangan penting perdagangan antarabangsa kepada pertumbuhan pekerjaan adalah kebimbangan berterusan tenaga buruh, kerajaan, dan Pertubuhan Perdagangan Dunia. Berkuatkuasanya RCEP mungkin mempunyai kesan positif atau negatif ke atas pewujudan pekerjaan di beberapa sektor di China, memandangkan sama ada RCEP menyumbang kepada pewujudan pekerjaan sektoral atau pemusnahan pekerjaan melalui perdagangan. Kajian ini cuba untuk mengkaji kesan RCEP ke atas bilangan pekerjaan yang mungkin diwujudkan dalam pelbagai sektor di China, dan untuk mengkaji perbezaan kemahiran dan perbezaan jantina dalam pekerjaan sektoral. Matriks Perakaunan Sosial (SAM) ialah rangka kerja perakaunan segi empat sama yang konsisten yang mewakili keseluruhan ekonomi sesebuah negara atau wilayah dalam tempoh tertentu, biasanya satu tahun. Ia memberikan gambaran statik ekonomi dan boleh digunakan sebagai sumber data untuk pelbagai model untuk menilai kesan kejutan atau campur tangan. Versi terbaharu SAM untuk China pada tahun 2020 merangkumi 153 sektor, yang boleh digunakan untuk mensimulasikan kesan RCEP ke atas China sebagai pembolehubah eksogen. Dalam matriks perakaunan sosial asal dari segi monetari, akaun satelit pekerjaan adalah alat yang diperlukan jika kita ingin mengkaji kesan kejutan terhadap pekerjaan. Kajian ini menyusun akaun satelit pekerjaan terkini berdasarkan versi terkini Banci Penduduk Ketujuh China untuk mengira pengganda penciptaan pekerjaan, yang menunjukkan kesan RCEP sebagai kejutan eksogen ke atas pekerjaan, iaitu bilangan pekerjaan yang dicipta

atau dimusnahkan. Kajian itu mendapati RCEP dijangka mewujudkan 4618,390 pekerjaan di China, di mana 1915,496 dan 270,2894 pekerjaan akan diwujudkan di China melalui import dan eksport masing-masing. Peluang pekerjaan berpotensi terbesar tertumpu dalam sektor produk pertanian, dengan 1,856,723 pekerjaan. RCEP dijangka mewujudkan 2,801,178 dan 1817212 pekerjaan masing-masing untuk lelaki dan wanita di China. RCEP dijangka mewujudkan 197,0186 pekerjaan sektoral untuk buruh mahir dan 2,648,204 untuk buruh tidak mahir. Tesis ini menawarkan beberapa cadangan dan implikasi untuk menangani jurang jantina dan kemahiran yang mungkin wujud dalam penciptaan pekerjaan RCEP di China. Pertama, dasar perdagangan yang lebih aktif harus diteruskan, termasuk mengurangkan halangan perdagangan, menyediakan layanan keutamaan untuk import dari negara anggota RCEP, dan menyokong pengantarabangsaan perusahaan kecil dan sederhana. Kedua, perbezaan jantina dalam penciptaan pekerjaan harus dihapuskan dengan menggubal undang-undang menentang diskriminasi, meningkatkan sokongan untuk latihan dan pendidikan vokasional wanita, menggalakkan keusahawanan wanita, menanggung kos bersalin, dan mempromosikan peranan pengasuhan yang aktif untuk lelaki. Akhir sekali, perbezaan kemahiran boleh ditangani melalui peningkatan pelaburan dalam latihan dan pendidikan kemahiran, menggalakkan kerjasama dan pemindahan teknologi, memudahkan mobiliti tenaga buruh di kalangan negara anggota RCEP, mewujudkan standard kemahiran industri dan sistem pensijilan, dan menyelaraskan pendidikan sekolah dengan permintaan industri.

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Heaven gave me the talent for a reason. Spend now, riches return in season.

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List of Abbreviations

RCEP: Regional Comprehensive Economic Partnership

SAM: Social Accounting Matrix

ASEAN: Association of Southeast Asian Nations

GDP: Gross Domestic Product

COVID-19: Coronavirus Disease 2019

FTA: Free Trade Agreement

CPTPP: Comprehensive and Progressive Agreement for Trans-Pacific Partnership

SMEs: Small and Medium-Sized Enterprises

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CHAPTER 1: INTRODUCTION

1.1 Introduction

In 2012, the ten ASEAN countries initiated the Regional Comprehensive Economic Partnership (RCEP). On 15 November 2020, the agreement was formally signed by the ten Association of Southeast Asian Nations (ASEAN) countries and 15 Asia-Pacific countries, including China, Japan, South Korea, Australia and New Zealand. On 2 November 2021, the RCEP reached the threshold for the agreement to enter into force. On 1 January 2022, the agreement officially entered into force for the 10 countries that have submitted their instruments of ratification. On 1 February 2022, the RCEP formally entered into force for South Korea. On 18 March 2022, the RCEP formally entered into force for Malaysia. On 1 May 2022, RCEP officially entered into force for Myanmar.

The RCEP covers a population of 2.3 billion (United Nations Population Fund, 2022), a total GDP of US\$26 trillion (World Bank, 2022) and total exports of US\$5.2 trillion (World Trade Organisation, 2022), all representing approximately 30 percent of the global total. Australian Foreign Minister Hon Marise Payne said ratification of RCEP would ensure that Australian farmers and businesses could benefit from the world's largest free trade agreement. Australia became an original party to the world's largest free trade agreement. According to Japanese government estimates, tariff reductions leading to increased trade are expected to increase Japan's real Gross Domestic Product (GDP) by about JPY15 trillion. The economic impact of RCEP on Japan is about twice that of the Trans-Pacific Partnership free trade agreement. It was also noted that the RCEP agreement is Japan's first economic partnership agreement with China and South Korea. Malaysia's export earnings are expected to increase by US\$200 million, the Ministry of

Trade said. Malaysia is expected to be the biggest beneficiary among ASEAN members in export earnings. The RCEP was mentioned as an important tool to recover from the economic devastation caused by the Coronavirus Disease 2019 (COVID-19). Singapore Trade Minister Gan Kin Yong said that with the world's largest trade agreement, Singapore businesses would reap clear benefits from cost savings to greater market access. The Cambodian Ministry of Commerce, which holds the presidency of ASEAN in 2022, expects that Cambodia's agricultural and industrial products, among others, will enjoy preferential tariff treatment under the RCEP framework. Among ASEAN member states, a wage gap between skilled and unskilled workers was observed during the RCEP period, and the polarisation of semi-skilled employment has increased, driven by trade and globalisation. The share of ASEAN member states in semi-skilled employment (mainly white-collar employment) declined significantly compared to unskilled and skilled employment (Kimura et al., 2021). The RCEP could boost Cambodia's GDP by about two percentage points and exports and investment by 7.3 percent and 23.4 percent, respectively. The Report on the Assessment of the Regional Economic Impact of RCEP released by the Research Institute of International Trade and Economic Cooperation of the Ministry of Commerce of China points out that by 2035, RCEP will enable China to increase its exports and imports by a cumulative US\$315.4 billion and US\$306.8 billion respectively. Economic welfare will increase by a cumulative US\$99.6 billion. On the other hand, by increasing openness, the RCEP will promote technological and institutional innovation in China. As the world's most populous free trade agreement with the most diverse membership, the largest economic and trade scale and the greatest potential for development, the entry into force of RCEP will create new opportunities for

deepening regional cooperation, injecting strong momentum into the opening and integration of the world economy and providing a powerful engine for China's continued economic prosperity.

RCEP is currently the world's largest regional trade agreement regarding economic volume. Between 2000 and 2020, the economies of the 15 RCEP members grew from US\$7.84 trillion to US\$25.96 trillion, an average annual growth rate of 6.51 percent, exceeding the global average growth rate of 4.95 percent over the same period. In 2020, RCEP members attracted 37 percent of the world's foreign direct investment, far ahead of other FTAs. RCEP members account for 31.6 percent of the global working population aged 15-64, much higher than the European Union's 6.7 percent and North America's 13.2 percent. At the end of 2021, the combined population of the 15 member countries will be approximately 2.326 billion, with a total GDP of nearly US\$26 trillion and intra-regional trade of US\$10.4 trillion, all indicators accounting for around 30 percent of the global total (Table 1 shows the latest trade and employment data for member countries). The RCEP is also a comprehensive agreement, covering a total of 20 chapters. In its agreement, RCEP mentions that it will significantly reduce trade and investment costs for its members. The total number of products with zero tariffs for trade exceeds 90 percent. These measures will lead to a multiplier effect on intra-regional trade and other trade diversion effects. The expansion of trade will lead to an expansion of production. This will further lead to an expansion of employment (Berndes & Hansson, 2007; Hanson, 1996; Hillebrand et al., 2006). This is what the Chinese government wants to see.

Table 1.1 Economic indicators of RCEP member countries

	GDP (2021, world bank, current \$)	Population (2021, UN data, millions)	GDP per capita (2021, world bank, current \$)	Working-age population (2021, ILO, thousands)	Trade value (2022, WTO, Million \$)
China	17734062645371.40	1 444.22	12556.33312	950436	6309600
Japan	4937421880461.55	126.05	39285.16311	74090	1644162
South Korea	1798533915091.14	51.31	34757.72007	36168	1414955
Australia	1542659899992.54	25.79	59934.12941	16578	721372
Indonesia	1186092991320.04	276.36	4291.812554	187054	529426
Thailand	505981655622.31	69.95	7233.388858	48249	590259
Singapore	396986899888.35	5.90	72794.00302	2775	991380
Philippines	394086419343.06	111.05	3548.828323	68916	223291
Malaysia	372701358820.26	32.78	11371.09902	22893	646931
Vietnam	362637524070.97	98.17	3694.019046	65694	730654
New Zealand	249991512236.53	4.86	48801.68513	3315	99908
Myanmar	65067808984.68	54.81	1187.238484	34178	36548
Cambodia	26961061119.80	16.95	1590.95666	10902	52267
Lao PDR	18827148530.02	7.38	2551.326081	4724	15275
Brunei Darussalam	14006569575.68	0.44	31722.66014	331	23690

The employment situation in China faces a dilemma. China has the largest population in the world, reaching 1.412 billion at the end of 2021, which includes a workforce of 784 million (National Bureau of Statistics, 2021). On the one hand, China has a rich endowment of labour resources. According to data from the 7th National Census, the working-age population of 16-59 years old is a large 880 million in 2020. With more than 10 million births per year, the increase in population is large. According to data published by the United Nations Statistics Division, China accounted for 28.7 percent of global manufacturing output in 2019, and China has become the “world factory”

of manufacturing by 'stacking'. On the other hand, the majority of employment in China are concentrated in the unskilled labour force, and women have always been a vulnerable group in employment (Burnett, 2010; Du & Yang, 2014; Golley & Meng, 2011; Knight et al., 2011; Ngai, 2004). This is also reflected in the fact that although China is a large manufacturing country, it cannot be called a strong one. This is because China's manufacturing supply chain only occupies the middle and low end of the world (Li et al., 2019; Liu et al., 2018; Mahbubani, 2020). The Chinese government has been working to change China's current employment situation through trade to promote the upgrading of the labour industry structure. For China, as the world's second-largest economy and a key participant in the RCEP, the agreement presents both opportunities and challenges, particularly in terms of employment. Proponents argue that the elimination of tariffs and non-tariff barriers under the RCEP could lead to increased trade and investment, potentially resulting in potential employment opportunities across various sectors (Cadot & Ing, 2015; Solís & Urata, 2018). On the other hand, sceptics raise concerns about potential employment displacement and adverse effects on certain industries, particularly if there are skill or gender gaps in the workforce (Bertrand, 2018). Understanding the potential employment impact of the RCEP on China is crucial for policymakers and stakeholders in planning effective labour market strategies. Analysing the potential employment opportunities effects in different industries can help identify areas of growth and opportunities for skill development. Additionally, examining the implications on gender is essential to ensure that any employment gains are inclusive and address gender disparities in the workforce. To assess the impact of RCEP on potential employment opportunities in China, researchers have adopted various methodologies, these analytical

tools enable a comprehensive examination of the potential employment outcomes by considering the interrelationships between economic sectors and the labour market (Gonzales, 2021; Park et al., 2021; Zhou & Xu, 2022). By delving into the impact of RCEP on potential employment opportunities with a specific focus on skills and gender, the research aims to provide valuable insights for policymakers and stakeholders to make informed decisions, promote sustainable economic growth, and ensure equitable opportunities in the labour market.

1.2 Research background

China's active trade policy has led to the employment of 180 million people. On 20 May 2022, China's Ministry of Commerce mentioned in a press conference that China had become the number one country in terms of trade in goods in 2013 and then jumped to the number one position in the world in terms of total trade in goods and services in 2020. In 2021, China's total import and export of goods trade increased by 30 percent year-on-year, crossing the two steps of US\$5 trillion and US\$6 trillion, a new record high. In 2021, the import and export of goods and services contributed 1.7 percentage points to GDP growth, contributing 20.9 percent to GDP growth. The Vice Minister of Commerce highlighted that during this decade, foreign trade, one of the three driving forces of the economy, drove employment for 180 million people in China. This is in line with the World Trade Organisation (2017), which argues that trade will help employment. In addition, China has been actively expanding into emerging markets such as Asia, Latin America and Africa, with a growing number of trading partners. China has signed 19 FTAs with 26 countries and regions, accounting for 35 percent of trade with its FTA partners. China and ASEAN signed the Trade in Goods Agreement in November 2004,

the Trade in Services Agreement in January 2007 and the Investment Agreement in 2009. Upon full implementation, 90 percent of goods have achieved zero tariffs, and China's average tariff to ASEAN has been reduced from 9.8 percent to 0.1 percent. On 18 November 2005, China and Chile signed the China-Chile Free Trade Agreement, the first FTA between China and a Latin American country. On 7 April 2008, China and New Zealand signed the China-New Zealand Free Trade Agreement, which is the first comprehensive free trade agreement signed between China and other countries covering many areas such as trade in goods, services and investment, and the first free trade agreement between China and a developed country. On 6 July 2013, China and Switzerland signed the China-Switzerland Free Trade Agreement, the first FTA signed between China and a continental European country. In addition, trade agreements such as the China-Singapore Free Trade Agreement, the China-Korea Free Trade Agreement and the China-Mauritius Free Trade Agreement have contributed to boosting employment in China. China will also actively promote the process of joining the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and Digital Economy Partnership Agreement (DEPA) and participate deeply in international cooperation on the green, low-carbon, and digital economy. There is no doubt that the RCEP, which will officially enter into force on 1 January 2022 as the first giant FTA in which China participates, will boost China's economic development and optimise its employment structure.

RCEP was born out of necessity. Firstly, the RCEP agreement aligns with China's basic national policy of opening up to the outside world (Jiang & Yu, 2021). China has always adhered to a mutually beneficial and win-win opening-up strategy, co-ordinating

bilateral, multilateral and regional sub-regional openness and cooperation and improving its ability to withstand global economic risks. Secondly, the RCEP agreement is in line with China's foreign policy of "good-neighbourliness, security and enrichment" and with China's view that ASEAN should play a leading role in regional cooperation. Thirdly, the RCEP is conducive to enhancing the region's economic integration, and the development of such integration is conducive to regional stability and prosperity. In recent years, the development of the China-ASEAN FTA has confirmed that the development of regional economic integration is conducive to the common prosperity of the region. Fourthly, the formation of the RCEP is feasible. Presently, ASEAN has five "10+1" FTA agreements as the basis for negotiations. The RCEP does not set too high a standard of access as the CPTPP does. At the Asia-Pacific Economic Cooperation Leaders' Meeting held on 9 September 2012, China's then-President Hu Jintao stressed that "we should advance the process of regional economic integration in the Asia-Pacific region in a gradual and orderly manner, taking into full consideration the differences and diversity of economic development among its members". In January 2022, China's State Council issued the "Opinions on Further Stabilising Foreign Trade with Good Cross-Cycle Adjustment", making the entry into force and implementation of RCEP the key to stabilising foreign trade in the context of the epidemic. According to Economics by Oxford, a leading international think tank, the RCEP is expected to drive member countries' exports, outward investment stock and GDP to grow by 10.4 percent, 2.6 percent and 1.8 percent more than the baseline, respectively, by 2025. China's Ministry of Commerce estimates that by 2035, the RCEP will increase China's real GDP by 0.35 percent more than the baseline, exports by 7.59 percent and imports by 10.55 percent, enabling cumulative

economic benefits to reach US\$100 billion.

China's trade and the RCEP complement each other. According to the State Administration of Foreign Exchange of China, China's international trade in goods earned US\$323.42 billion and spent US\$265.84 billion in 2021. Trade-in services generate US\$338.9 billion in revenue and US\$427 billion in expenditure. In 2021, total trade between China and ASEAN reaches US\$878.2 billion, up 28.1 percent yearly. China's exports to ASEAN amounted to US\$483.69 billion, up 26.1 percent yearly. ASEAN's exports to China amounted to US\$394.51 billion, up 30.8 percent yearly. ASEAN became China's top trading partner for the second consecutive year. In 2021, China's trade with Japan totalled US\$371.4 billion, up 17.1 percent year-on-year. China's exports to Japan were US\$165.85 billion, up 16.3 percent year-on-year. China's imports from Japan will be US\$205.55 billion, up 17.7 percent year-on-year. In 2021, China's trade with South Korea reached US\$362.35 billion, an increase of 26.9 percent year on year. China's exports to South Korea will be US\$148.86 billion, up 32.4 percent year-on-year. Imports from South Korea amounted to US\$213.49 billion, up 23.3 percent yearly. In 2021, China's total import and export trade with New Zealand will be US\$24.72 billion, and China's total import and export trade with Australia will be US\$30.929 billion. China is the top trading partner of Australia and New Zealand. Overall, according to China Customs import and export statistics, China's total import and export trade with the other 14 RCEP member countries in 2021 was US\$1.81 trillion, accounting for 30.9 percent of China's total imports and exports in the same period. Of this, US\$0.84 trillion was exported. Imports were US\$0.96 trillion. Among them, ASEAN is China's top trading partner, while Japan and South Korea are China's fourth and fifth largest trading partners.

In addition, RCEP is the first free trade agreement signed between China and the world's top 10 economies and the first free trade agreement between China and Japan.

However, employment in China is also facing difficulties. The US-China trade dispute, which has been ongoing in recent years, has harmed employment in China (Aslam, 2019; Kaur et al., 2020; Marchant & Wang, 2018). The trade dispute between the US and China is likely to reduce employment in China by 1.1 percent (Chong & Li, 2019). The impact is mainly concentrated in labour-intensive industries (Moeller, 2018; Qiu et al., 2019; Yu, 2020). At the same time, the epidemic and the corresponding strict government controls have limited employment in China. During the discovery period of COVID-19, the Chinese government took immediate and strict regulatory measures, such as the closure of the road, rail and airport departures in Wuhan on 23 January 2020. At the same time, the policy brought almost all of China's businesses to a standstill and prevented the natural movement of people. To this day, China's strict regulatory measures on COVID-19 continue to affect underemployment and unemployment in some sectors (Khudaykulov et al., 2022; Sheng-li & Pan-pan, 2021; Xueliang & Bingni, 2021; G. Zhang et al., 2022).

1.3 Problem statement

On 1 January 2022, the RCEP came into force. As of 1 June 2022, the RCEP has officially entered into force for 13 countries. Only the Philippines and Indonesia have not set an implementation date for the time being. The countries in the RCEP region are all important trading partners for China. The RCEP will strengthen China's trade supply chain with RCEP members and will undoubtedly boost employment in related industries in China (Chang, 2022; Ling & Lv, 2022; Liu et al., 2022; Quan, 2022; Zhu et al., 2022).

Employment in agriculture, manufacturing and services will all be affected by the RCEP (Ding et al., 2022; Estrades Pineyrua et al., 2022; Li & Li, 2022; Ling & Lv, 2022). The RCEP can impact employment in the agriculture sector in different ways. Increased market access and reduced trade barriers can create export opportunities for agricultural products, leading to increased demand and potentially boosting employment in certain agricultural sub-sectors (Binswanger & Lutz, 2000; Unnevehr, 2000). On the other hand, increased competition from imports may put pressure on domestic agricultural producers, leading to a potential decline in employment in some segments of the sector (Skogstad, 2008; Smutka et al., 2016). The manufacturing sector can be influenced by the RCEP through factors such as tariff reductions, market access, and supply chain integration (Gaur, 2022; Lu, 2019; Shi, 2023). Some industries within manufacturing may experience increased employment as they benefit from expanded export markets. The services sector encompasses a wide range of industries, including finance, telecommunications, tourism, professional services, and more. The impact of the RCEP on employment in the services sector can be significant. Liberalization of services trade can create opportunities for service providers to expand their operations into new markets, potentially leading to increased employment in those sectors (Gronroos, 2016). However, increased competition from foreign service providers can also have implications for domestic service industries, which may experience employment losses or changes in employment patterns (Miozzo & Soete, 2001). For example, China is the “world factory” of manufacturing, and the RCEP will drive the manufacturing supply chain, which will further boost manufacturing employment. Specifically, steel, oil, machinery and electronic equipment are all likely to be affected by the RCPE.

The impact of trade on employment has been of interest to scholars. Trade can impact employment through various channels, and one significant factor is the composition of traded goods. The impact on employment can be influenced by the type of goods being traded, whether they are labour-intensive or capital-intensive. Trade in labour-intensive goods refers to the exchange of products that require a significant amount of labour to produce (Guo et al., 2023; Jena & Saini, 2021). When a country specializes in the production and export of labour-intensive goods, it can lead to increased employment opportunities in those sectors (Sinn, 2006; Sugihara, 2007; Taplin et al., 2003). This is because the production of such goods requires a larger workforce, thereby creating more potential employment opportunities. Similarly, importing labour-intensive goods can have an impact on domestic employment, as it may lead to the displacement of domestic industries producing similar goods (Edwards & Jenkins, 2015; Wood, 1998). Trade allows countries to specialize in producing goods in which they have a comparative advantage, meaning they can produce those goods more efficiently and at a lower cost compared to other countries (Costinot, 2009; Wichelns, 2004). This specialization leads to increased productivity and competitiveness, which can positively impact employment. When countries focus on producing goods in which they excel, it can result in higher levels of employment in those sectors. Trade can also have indirect effects on employment through industry linkages (De Janvry & Sadoulet, 2002; Terzi, 2011). Increased trade can stimulate demand for various inputs, such as raw materials, intermediate goods, and services, which are used in the production process. This increased demand can generate employment opportunities in industries that supply these inputs. Trade can also facilitate the transfer of technology, knowledge, and skills between countries (Blomstrom & Kokko,

2001; Hoekman et al., 2005; Ockwell et al., 2008). When countries engage in trade, they are exposed to new technologies and ideas, which can enhance productivity and lead to the adoption of more advanced production methods. This, in turn, can impact employment by creating a demand for skilled workers who can operate and maintain the new technologies. The main approaches considered here include factor content-based, partial equilibrium, social accounting matrix or input-output relations, linear programming, general equilibrium (static and dynamic), and structuralist approaches and models that include household data (Gibson, 2011). David Greenaway (1999) empirically modelled the impact of trade on UK employment in a dynamic labour demand framework (Greenaway et al., 1999). Orbeta (2002) uses factor effects based on the Heckscher-Ohlin model to examine the impact of trade on employment, i.e., whether there is a shift in labour demand given the shift in production structure (Orbeta, 2002). Gnanon (2019) empirically analyses the positive and significant impact of trade in Africa on employment, particularly for women but not for men, based on a two-step systematic generalised method of moments (Gnanon, 2019).

Employment is the rational expectation sought by micro labour households to maximise their income. It is, of course, the primary policy objective of macro-level government regulation. Therefore, in this study, government employment policy makers, employed people pursuing women's employment rights, those working in the trade industry, and consumers of products in the region will feel the consequence.

1.4 Research questions

1. What is the current structure of the Chinese economy and employment patterns, and how can it be analysed using the Social Accounting Matrix and Employment

Satellite Accounts?

2. What are the projected effects of the RCEP on the number and proportion of sectoral potential employment opportunities in China, and how do these effects vary across different sectors?
3. How will the RCEP impact potential employment opportunities in China, specifically focusing on gender (male and female) and skill level (skilled and unskilled) differences, and what are the underlying factors driving these variations?

1.5 Research objectives

General objective: Research on the potential sectoral employment opportunities of RCEP by gender (male and female) and skill level (skilled and unskilled). On this basis, to provide theoretical justification and recommendations for policy makers, economists, employed women, trade practitioners and consumers.

Specific objectives:

1. Analyse the structure of the economy and employment in China through the Social Accounting Matrix and the Employment Satellite Accounts.
2. Examine the number and rate of sectoral potential employment opportunities expected to be affected by the RCEP.
3. Study the gender and skill differences in the amount of potential employment opportunities expected by the RCEP for China.

1.6 Research significance

The RCEP only comes into force on 1 January 2022. Because of the tortuous and complex journey of the agreement's negotiation and India's withdrawal, the framework

of the RCEP has only just been completed. The amount of relevant research is small and not sufficiently in-depth. In particular, the impact of the RCEP on China's employment market is almost a blank slate. This research area is a blue ocean market full of opportunities, but it also faces the challenge of insufficient literature and data. However, meeting the challenges is what makes scholars active in research. It is of great interest to calculate the impact of RCEP on employment in China scientifically so that research papers can be truly applied to livelihood issues.

Employment is a priority interest for governments and citizens. The potential employment opportunities that may be created by the RCEP will be relevant to our lives. For individuals, employment related to manufacturing exports may increase, and a person looking for an employment opportunity can be matched with a more suitable one based on our research. Based on our research, agricultural export workers, whom RCEP may hit, can avoid the risk of unemployment in advance. For society, social resources can be allocated according to need to be based on the number of employment opportunities likely to be created by the RCEP. This will allow maximum utilisation of social resources. For the country, employment policy makers can revise and upgrade their current employment policies based on the likely employment opportunities of the RCEP. This avoids a situation where there is an oversupply of labour in some sectors and unemployment in others.

CHAPTER 2: LITERATURE REVIEW

2.1 The impact of trade on employment

The link between trade and employment always has interested economists and policymakers. Scholars in the fields of international economics and labour economics have conducted a great deal of theoretical verification and empirical evidence on the relationship between international trade and employment. Relevant studies have focused on: 1. the employment effects of trade. 2. the effects of trade on labour wages. 3. the effects of trade on the elasticity of demand for labour.

2.1.1 The employment effects of trade

The theory of factor price equalisation makes clear predictions about the employment effects of international trade. That is, international trade will lead to a contraction of the import-competing sector, an expansion of the export sector and a flow of labour from the import-substituting sector to the export sector. However, full employment is one of the basic assumptions of factor price equalisation theory. Therefore, the analysis of the employment effects of international trade in the presence of unemployment needs to be theorised at the level of institutional factors in the labour market and extended to the general equilibrium analysis of an open economy. Globally, trade and agri-food global value chains generated on average 20-26 percent of the total return to agricultural labour between 2004 and 2014, with labour returns coming from direct participation in trade and indirect participation through other downstream sectors (Greenville et al., 2019). Cheong (2013) analyses the extent to which agricultural trade and trade liberalisation creates or destroys employment in developing countries and how employment in specific sectors of the agricultural sector is affected. For example, market

opportunities for vegetables increased when the North American Free Trade Agreement (NAFTA) impacted Mexican agriculture. Trade increased employment in vegetable farming, but a fall in the real price of maize reduced employment in the maize sector (Cheong et al., 2013). In his analysis of the impact of trade on manufacturing employment in India, Goldar (2009) found that exports had a beneficial effect on industrial employment (Goldar, 2009). The promise of trade liberalisation in the industrial sector lies in its ability to stimulate manufacturing exports to boost employment (McMillan & Verduzco, 1986). Industrialisation and investment have been found to have significantly increased employment in Cameroon. As a recommendation, if Cameroon envisages expanding international trade, it should encourage increased industrialisation, which would lead to increased national productivity (Ngouhouo & Nchofoung, 2021). Chinese OFDI and international trade positively impact employment, with the strongest boosting effects in the real estate, construction and IT sectors (Qi-fu, 2020). The increase in South Korean exports to China has contributed to employment in the local South Korean labour market. This effect occurred mainly in the services and construction sectors rather than manufacturing (Kim & Go, 2022). The overall wage response of firms to trade in services is also positive on average but quantitatively small. Regarding distributional impacts, there is mixed evidence of skill bias in wages associated with the growth of services exports and imports (Lassmann, 2020). Services exports positively contribute to employment in the services sector, especially in high-income countries and among female employees (Ronen, 2021).

2.1.2 The effects of trade on labour wages

The main theoretical basis for studying the impact of international trade on wages is

the general equilibrium theoretical model in a neoclassical framework. In the framework of a standard factor price equalisation analysis of two commodities, two factors of production and imperfect specialisation, it was shown that international trade must reduce the real income of scarce factors of production measured by any one commodity, which is the famous Stolper-Samuelson theorem (Stolper & Samuelson, 1941). In his analysis of regional trade and employment in Economic Community of West African States (ECOWAS), Von Uexkull (2012) found that regional and global exporters were larger, had higher labour productivity and paid higher wages than domestic firms. Regional trade creates quality employment opportunities for ECOWAS (Von Uexkull, 2012) The wage response to trade and trade reforms is generally greater than the impact on employment. Hoekman (2005) argues that a priority area for future research is to examine the employment impact of services trade and investment reforms (Hoekman, 2005). In their evaluation of the impact of trade on employment and wages in the Italian industry, Bella and Quintieri (2000) point out that growing trade and technological progress are closely related processes, and it is difficult to assess their respective impacts (Bella & Quintieri, 2000). Using South Korea as an example, Kim (2021) points out that exports play a key role in raising the wage elasticity of foreign multinationals. In turn, the overseas investment makes labour demand more elastic for foreign and South Korean multinationals (Kim, 2021) Trade increases skill demand and wage inequality in all countries, both in general and in the upper tail of the wage distribution (Sampson, 2014). Industries with inelastic labour demand for trade also exhibit inelastic labour demand for wages (Tuhin, 2015).

2.1.3 The effects of trade on the elasticity of demand for labour

The literature on the effects of trade on the elasticity of demand for labour is an essential area of research that examines how international trade influences the responsiveness of labour demand to changes in wages and economic conditions. According to the theory of factor price equalisation, only trade between a country and another country with different relative factor endowments will change factor prices. However, trade with any country can change factor demand elasticities (Samuelson, 1948). International trade can cause a change in the elasticity of labour demand without changing the price of labour. This also suggests that the wage and employment effects of international trade are no substitute for its effect on the elasticity of labour market demand. Greenaway assessed the impact of trade on United Kingdom employment in a panel of 167 manufacturing industries. An increase in trade volume, either in imports or exports, leads to decreased derived labour demand (Greenaway et al., 1999). Trade may increase labour elasticity through scale effects due to increased competition in output markets and/or substitution effects through expanding firms' production possibility sets to include more inputs (Bruno et al., 2004). Trade policy is important in boosting labour demand in the services sector (Ronen, 2021). By linking trade policy uncertainty to labour demand, Javorcik et al. (2019) indicates that trade policy uncertainty has an important negative impact on the labour market (Javorcik et al., 2019). Apparel trade drives employment in Pereira, while employment in Manizales is driven by food and soft drinks. Labour demand for manufacturing is regionally heterogeneous (Arango et al., 2019). In high-income countries, trade is positively associated with employment. On the other hand, in middle-income countries, international trade is negatively related to employment when measured by backward linkages, suggesting a simple substitution effect (Szymczak & Wolszczak-

Derlacz, 2022). This is consistent with the idea that intermediate imported goods for further production encourage industrial expansion and drive up labour demand (Grossman & Rossi-Hansberg, 2008). Greater trade openness in Tunisia has led to a significant elasticity of labour demand (Haouas et al., 2003). But it is not surprising if the two industries that reject the null hypothesis of no change in elasticity are chemicals and textiles and clothing and leather, as also noted in the latest study (Haouas & Yagoubib, 2008). Trade can affect the skill composition of labour demand, leading to changes in wage inequality (Topel, 1997; Van Reenen, 2011). The study found that industries with higher exposure to trade tend to exhibit a higher elasticity of labour demand, particularly for low-skilled workers (Foster-McGregor et al., 2016; Menéndez González et al., 2023). Trade reforms can lead to changes in the composition of production and, consequently, in labour demand (Su et al., 2022; J. Wang et al., 2021). In particular, industries that become more exposed to trade tend to experience higher elasticities of labour demand. Industries with higher import penetration experienced greater labour demand elasticity, affecting both skilled and unskilled workers (Ashournia et al., 2014; Paz & Kapri, 2019). Additionally, trade openness was associated with an increase in wage inequality between skilled and unskilled workers (Dorn et al., 2022; Murakami, 2021). Industries exposed to higher import competition from China demonstrated a higher elasticity of labour demand (Medina, 2022). Moreover, this effect was particularly pronounced in regions with a higher concentration of industries vulnerable to Chinese imports. Industries experiencing larger tariff reductions had higher labour demand elasticity (Gupta & Helble, 2022; F. Wang et al., 2021). This finding suggests that trade liberalization can lead to greater volatility in labour demand within certain industries (Brutger & Guisinger, 2022; Krishna

et al., 2001). Overall, the literature indicates that international trade can influence the elasticity of labour demand by affecting the composition of production and the level of exposure to foreign competition. Trade liberalization, in particular, tends to increase labour demand elasticity, leading to potential implications for wage inequality and labour market outcomes. Understanding these dynamics is crucial for policymakers seeking to design effective labour market policies in the context of trade openness.

2.2 Skilled and unskilled labour

At the same time, the degree of employment skill has been an area of interest for scholars. The Stolper- Samuelson model predicted that trade would narrow the wage differential between industrialised countries and the rest of the world and widen the wage gap between skilled and unskilled workers in more developed countries (Stolper & Samuelson, 1941). Trade is often associated with the adoption and diffusion of advanced technologies (Hall & Khan, 2003). These technologies tend to complement the skills of highly educated and skilled workers, leading to increased demand for their services. In contrast, they may substitute for or displace certain routine tasks performed by unskilled workers, reducing the demand for their labour, and potentially driving down wages (David, 2013). Trade can lead to changes in the composition of industries within an economy (Balassa, 1966). As countries specialize in sectors where they have a comparative advantage, more skill-intensive industries may expand while labour-intensive ones may shrink. This shift can contribute to a widening wage gap between skilled and unskilled workers, as the former benefit from increased demand in growing sectors. Increased trade exposes domestic industries to international competition (Autor et al., 2013; Autor et al., 2016; Finegold, 2019). In sectors where countries have a

competitive advantage, they may export goods and services and compete with imports in the domestic market. Skilled workers in these export-oriented sectors may see their wages rise due to higher productivity and increased demand (Bair & Gereffi, 2001; Joseph & Harilal, 2001). At the same time, unskilled workers in import-competing industries may face downward pressure on wages as they compete with cheaper foreign imports (Silva & Leichenko, 2004). Trade can create incentives for workers to invest in education and acquire specialized skills to remain competitive in the global market (Estevez-Abe et al., 2001; Finegold, 2019; Wildasin, 2000). Skilled workers with relevant qualifications and technical know-how are better positioned to benefit from trade-induced opportunities, leading to a skill premium- a wage difference between skilled and unskilled workers (Wood, 2018). In some cases, trade can promote capital-intensive production, which can disproportionately benefit skilled workers who are more complementary to capital inputs (Chairassamee & Hean, 2023; Ethiraj & Garg, 2012). Capital-intensive industries may offer higher wages to skilled workers, leading to a wider wage gap (Leamer, 1996; Leamer et al., 1999). However, Wood (1997) points out that unskilled workers in developed countries would also gain from trade. Low-skill intensive goods are not produced in developed countries (Wood, 1997). The increased propensity to export increases the proportion of low-skilled production workers at both the aggregate and manufacturing sub-sector levels (Orbeta, 2002). Trade is more likely to benefit high-skilled employment but negatively affect industry (Terzidis et al., 2019). When unskilled and skilled workers are estimated separately, employment in the former is found to be significantly more responsive to changes in the level of protection than the latter (Mouelhi, 2007). Imports from low-wage countries have contributed significantly to the declining

wage share and relative employment of low-skilled people in the UK (Anderton & Brenton, 1999). Trade can cause skilled agricultural and fishing workers to leave developed countries, but there is little change in developing countries (Maloney & Molina, 2016). The US has an abundance of high-skilled labour and corresponding scarcity of low-skilled labour. This means that international trade tends to make low-skilled workers in the United States worse off, not just temporarily but consistently (Dorn & Hanson, 2016).

2.3 Gender differences in employment

Gender differences in employment, and in particular the protection of the rights of those employed by women, have been the focus of scholarly research. Research has examined how trade liberalization and economic globalization affect women's employment opportunities and quality (Bussmann, 2009; Voumik et al., 2023). Trade agreements and policies may lead to changes in the composition of industries and labour markets, which can have differential impacts on men and women in terms of employment access and wage levels (Blau & Kahn, 2020; England, 2005; Tzannatos, 1999). Some studies have shown that women's employment tends to be concentrated in export-oriented industries, especially in labour-intensive sectors like textiles and garments (Ahmed et al., 2016; Tamborini, 2007; Tejani & Kucera, 2021). The working conditions in these industries, including issues related to wages, safety, and job security, have been areas of concern. Women's participation in informal employment is common in many developing countries (Wilson et al., 2006). Scholars have explored the gender dynamics in informal trade-related activities and the implications for social protection and workers' rights (Cook & Pincus, 2014). Research has investigated the gender wage gap within export-

oriented industries (Berik, 2000; Blecker & Seguino, 2012; Chen et al., 2013). Factors such as occupational segregation, gender bias, and women's access to managerial positions can contribute to disparities in wages between male and female workers in these sectors (England, 2005; Hultin & Szulkin, 1999). Studies have analysed the working conditions of women employed in export-oriented industries and assessed the level of protection of their labour rights (Kabeer & Mahmud, 2004; Lund-Thomsen et al., 2012). Issues like long working hours, lack of job security, and inadequate access to social protection have been examined. Research on global value chains has looked into the gendered division of labour within these chains and how women's participation is often concentrated in low-value-added tasks (Sodano, 2011; Tejani & Fukuda-Parr, 2021). Understanding the power dynamics within global value chains is essential to improve women's economic empowerment and ensure their rights are protected. Trade can influence the demand for labour and may impact women's time allocation between paid work and unpaid care responsibilities (Power, 2020; Stanfors & Jacobs, 2023). Research has explored the relationship between trade and women's unpaid care work burden.

Regarding the structure of employment, the impact of openness on the proportion of women workers is not significant at the aggregate level. However, at the level of the manufacturing sub-sector, the increased propensity to export has been a boon for women workers (Orbeta, 2002). Women have benefited from the increase in service exports, while the increase in imports is estimated to put less pressure on women's wages than men's (Lassmann, 2020). Increasing trade has kept more women in the labour force, reducing the otherwise widening gender employment gap in the long run. Nevertheless, trade has mainly caused a general expansion of female-intensive industries (Wang et al.,

2020). The results of Dikilitas' study suggest that starting to export increases women's employment in manufacturing firms. The increase in female employment is evident in firms operating in low and medium-skill-intensive sectors, low-wage sectors, and labour-intensive commodity export sectors (Dikilitas et al., 2021). The decline in the share of women's employment due to trade is mainly due to inter-sectoral transfers rather than intra-sectoral changes. Women's employment remains highly dependent on changes in "traditional" manufacturing sectors, including food, textiles and clothing (Kızılırmak et al., 2014). When international trade expands into sectors that favour female employment, the female labour force participation rate declines and vice versa. This is because male workers are paid more than women and are always formally employed (Sauré & Zoabi, 2009). Only exports and imports from developed countries help to increase female employment. Furthermore, low-tech exports to developed countries and high-tech imports from developing countries lead to an increase in female employment. Trade links with developed countries can further increase female employment in developing countries that have a larger educated female labour force (Fatima & Khan, 2019).

2.4 Possible negative effects of trade on employment

However, trade or trade conflicts may have additional negative effects. Trade liberalisation has a negative impact on employment in domestically oriented firms (Mouelhi, 2007). Trade openness hurts employment and wages in both the agricultural and manufacturing sectors. Moreover, error shocks from trade openness affect wages more than employment (Asaleye et al., 2021). A trade conflict between the US and China would cost 3.5 million employment opportunities in China and 180,000 in the US. In the case of a bilateral escalation, the potential employment opportunities losses in China

could exceed 8.5 million. Labour-intensive industries, such as agriculture, textiles and electronics, would account for more than 60 percent of total employment opportunities losses (Abiad et al., 2018). Trade protection would cut 19.86 million employment opportunities globally. With trade restrictions, employment in developing countries would be reduced, with China and India losing 45.24 million and 10.1 million employments, respectively. Those engaged in the processing trade of final products face the greatest risk of losing their employment, particularly in manufacturing and services (Bai et al., 2022). Export growth has had a significant positive impact on employment, but increased import competition has had a negative impact, directly or indirectly, through the rationalisation of producers facing foreign competition (Jenkins, 2004). Trade is responsible for the decline in South Africa's ability to create employment, but this also only suggests that trade partially explains the low rate of employment growth (Jenkins, 2008). For developed countries, trade is likely to bind to labour markets. Import competition, especially from developing countries, may exacerbate employment opportunities losses. However, more trade is still preferable to less trade (Tuhin, 2015).

2.5 The impact of RCEP on China

As the largest free trade agreement in terms of total trade and population, RCEP will have a significant impact on China's GDP (Jin & Shao, 2021; Quimba et al., 2021; ZHOU, 2021; L. Zhou et al., 2021), import and export (Junyi & Aslam, 2021; Quan, 2022; L. Zhang et al., 2021), agriculture (Feng et al., 2022; He et al., 2021; Wang & Wang, 2022; ZHOU, 2021), manufacturing (Chang, 2022; Ling & Lv, 2022; Lu, 2021), services (Bashir et al., 2022; Gao, 2021; Qiu & Gong, 2021), and environment (Hassan et al., 2022; Latif et al., 2022; Tu et al., 2022; F. Zhang et al., 2022) to generate positive or negative

shocks in multiple directions. On 5 January 2022, the Institute of International Trade and Economic Cooperation of the Ministry of Commerce of China released a report on assessing the impact of RCEP on the regional economy. This report shows that after the RCEP comes into effect, more than 90 percent of the trade-in goods between member countries will eventually achieve zero tariffs, which will not only significantly boost the economic, trade and investment growth of countries in the Asia-Pacific region but will also have a huge boost to global trade. This report has modelled the effects of the RCEP once it is in operation. The simulation results are that by 2035, the RCEP will have a pulling effect on China's GDP, exports and imports of 0.35 percent, 7.59 percent and 10.55 percent, respectively, with incremental growth to exports reaching US\$315.4 billion and to imports reaching US\$306.8 billion. What industries are likely to be affected by the RCEP from an industry and enterprise level? The first is the labour-intensive light industry sector. Examples include the electrical, mechanical, textile, and garment industries, food manufacturing, and processed rice and leather products. The increase in total output in these sectors will be more pronounced, with the increase in the textile sector mainly due to the local demand effect and the increase in output in the rest of the sectors mainly due to the export effect. As these industries are labour-intensive and are industries in which China has a comparative advantage, the establishment of the RCEP breaks down trade barriers between member countries. It helps improve the competitiveness of these profitable industries in the international market. Take the furniture manufacturing industry as an example. RCEP will promote a more diversified source of raw materials for China's furniture industry. China's furniture industry relies to a large extent on imports of wood. It mainly comes from countries with relatively

abundant forest resources, such as the United States, Canada and Russia. However, some RCEP member countries are also important exporters of wood-based goods in the world, like Vietnam, Thailand, New Zealand, Malaysia, Indonesia and other countries. Therefore, joining the RCEP means that China has to a certain extent, reduced the tariffs and freight costs for importing wooden raw materials from RCEP member countries and will also expand the sales market for China's furniture industry. Secondly, the cross-border e-commerce industry is likely to be more significantly affected. The cross-border e-commerce industry mainly engages in foreign trade, and many are small, medium and micro-enterprises. RCEP will play a huge role in boosting the development of new trade formats such as cross-border e-commerce. Compared to the highly competitive European and American markets, the e-commerce penetration rate in the RCEP region, especially in ASEAN countries, is relatively low and is a vast blue ocean market with huge development potential in the cross-border e-commerce sector.

Conversely, while the RCEP is an opportunity for some industries, it also means that some industries will encounter challenges. For example, China's automotive parts industry is likely to see a drop in output. There will also be an impact on some agricultural and livestock products, livestock meat and their processing industries. Output in these sectors will likely fall. The most critical factor in the agricultural sector is price. There are still many small workshops in China for the production of agricultural, livestock and meat products. Foreign countries, such as New Zealand under the RCEP, are more likely to produce on a large scale, and their agricultural products are more advantageous in terms of price and quality. With the reduction in tariffs, consumers will be more inclined to buy from abroad. As a result, some of our agricultural and livestock products and livestock

meat producers will be affected or even have to reduce production.

In addition, the RCEP will not only remain at the level of a trade agreement but complementary preferential measures in visa, tourism, consumer and other related areas will also be introduced gradually. For example, the RCEP provides visa-on-arrival and visa-free policies between member countries. In the post-epidemic era, this will facilitate the development of China's global tourism industry and future close ties between China and other regions.

2.6 Literature gap

So, what impact will the RCEP have on employment in China? From 2021 onwards, studies in the literature on RCEP focus on trade, environment, law, politics, logistics, renewable energy, financial development, urbanisation, and energy innovation (Erokhin et al., 2021; Hassan et al., 2022; Latif et al., 2022; Tan & Soong, 2021; Wu et al., 2021; Yan et al., 2022; Y. Zhou et al., 2021). Meanwhile, the literature on the impact of RCEP on China has focused on trade in goods, e-commerce, politics, education, agriculture, manufacturing, and supply chains (Chang, 2022; Gong, 2021; Lu, 2021; L. Zhang et al., 2021; Y. Zhang et al., 2021; Zhou & Ding, 2022). Despite significant research on the Chinese economy and employment patterns, there is a noticeable gap in the literature regarding the application of advanced analytical tools like the SAM and Employment Satellite Accounts. The current literature lacks comprehensive analyses that fully exploit the potential of SAM and Employment Satellite Accounts to study the complexities of the Chinese economy and its employment dynamics. The following specific gaps can be identified: Existing studies on the current structure of the Chinese economy and employment patterns often rely on traditional economic models, neglecting the valuable

insights that can be obtained from SAM and Employment Satellite Accounts. These tools offer a more detailed and systematic understanding of intersectoral linkages, income distribution, and employment multipliers, allowing for a more comprehensive analysis of the Chinese economy. While research on the potential effects of the RCEP on the Chinese economy exists, there is a dearth of in-depth investigations into its impact on the number and proportion of sectoral employment opportunities. Using SAM and Employment Satellite Accounts, which consider sectoral interdependencies and employment data, would offer a more precise estimation of employment changes across various industries due to RCEP implementation. The current literature on the employment impact of RCEP in China often overlooks gender (male and female) and skill-level (skilled and unskilled) differences. There is a lack of research that assesses how RCEP may differently affect potential employment opportunities for men and women and skilled and unskilled workers. Failing to address these distinctions could result in an incomplete understanding of the potential gender and skill-level disparities in employment outcomes. The existing literature may not fully explore the underlying factors driving variations in potential employment opportunities in China resulting from RCEP. SAM and Employment Satellite Accounts can help identify the drivers. To bridge these gaps, future research should focus on leveraging SAM and Employment Satellite Accounts to conduct a comprehensive analysis of the Chinese economy's structure, employment patterns, and the potential impact of the RCEP. By incorporating gender and skill-level dimensions, researchers can gain deeper insights into the differential employment effects of RCEP and identify policy measures to address any disparities. Ultimately, such analyses would contribute to more informed policymaking and sustainable economic development.

CHAPTER 3: METHODOLOGY

3.1 Theoretical framework

Trade can theoretically influence employment through various channels and mechanisms. Trade allows countries to specialize in producing goods and services in which they have a comparative advantage (Rauch, 1991; Shen et al., 2022). This specialization can lead to increased production and export of certain goods, which in turn can create employment opportunities in industries where the country is competitive. Increased trade can stimulate the growth of export-oriented industries (Nidhiprabha, 2017). When a country experiences an increase in exports, firms in those industries often need to expand their production capacity and hire additional workers to meet the higher demand from international markets. Trade liberalization can expose domestic industries to greater competition from imported goods. In industries where the country is less competitive, imports may displace domestic production, potentially leading to employment losses (Autor et al., 2013; Sotiriou & Rodriguez-Pose, 2021). This is especially true for sectors with low productivity or where other countries have a comparative advantage. Trade can also have indirect effects on employment through its impact on other sectors of the economy (De Janvry & Sadoulet, 2002; Egger et al., 2020). For example, increased trade can lead to higher demand for inputs and intermediate goods, which can benefit domestic suppliers and industries that support export-oriented sectors. This, in turn, can create additional employment opportunities in those sectors. Trade can facilitate the diffusion of new technologies, knowledge, and ideas across borders (Grossman & Helpman, 2015). This can drive productivity improvements in domestic industries, which may lead to increased output and employment in sectors that adopt and

adapt to new technologies. Global trade often involves complex supply chains, where different stages of production are spread across multiple countries (Kaplinsky, 2000; Strange & Zucchella, 2017). Trade can influence employment through the creation of supply chain networks, where each stage of production contributes to potential employment opportunities in different countries involved in the production process. Trade can also impact overall economic growth, which in turn can affect employment levels (Aghion et al., 1999; Suri & Chapman, 1998). Increased trade can contribute to higher economic output and investment, leading to overall employment opportunities in the economy.

The Social Accounting Matrix (SAM) is a matrix-style economic accounting table that describes the functioning of the economic system and reflects the content of double-entry accounting in the form of a single-entry account. It combines an input-output table describing production with national income and production accounts. The SAM provides a comprehensive picture of the economic cycle in an economic system in which production creates income, income generates demand, and demand leads to production. The SAM provides a clear picture of a country or region's economic and social structure in a given year. SAM appears to be a comprehensive picture of the economic cycle in which production creates income, income generates demand, and demand leads to production. However, behind it lies a constant game between the system and reality. This makes SAM a clear description of not only the economic but also the social structure of a country or region in a given year.

The SAM records transactions between consumers, producers, governments, etc. in an economy. The SAM consists of monetary exchanges. Therefore, all flows are monetary

in value, not in the quantity of goods and services exchanged. These monetary flows represent payments made by one economic agent to another. By recording payments and income between economic agents, SAM records the linkages between production sectors, factors of production (labour and capital) and institutions (households and government). It provides a comprehensive view of the interactions in the economy. In addition to the links between domestic economic agents, SAM also records transactions between the domestic economy and the rest of the world, such as imports and exports.

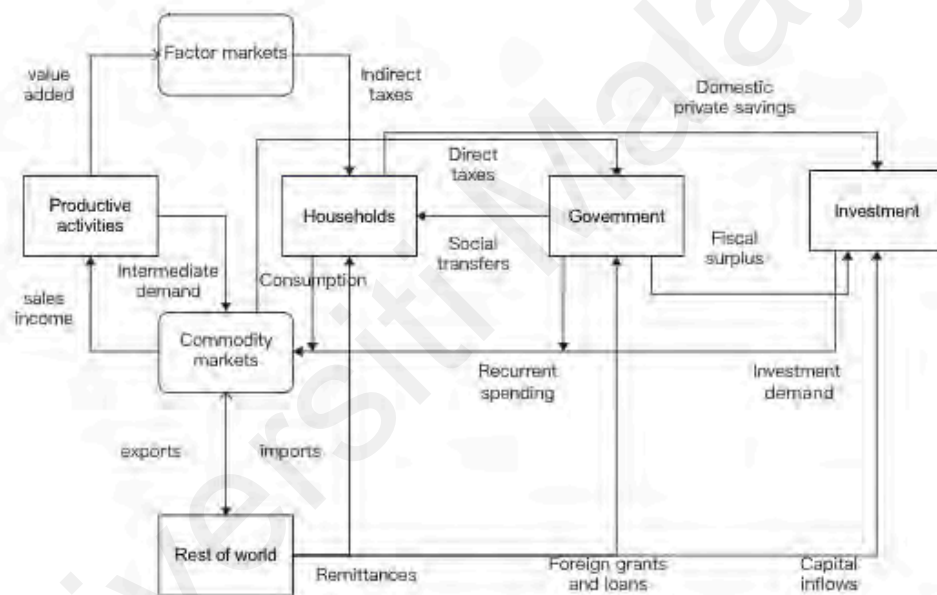


Figure 3.1 Circular flow diagram of the economy

A SAM is a tool used to provide information about the linkages between actors in an economy. One method of illustrating these linkages is through the circular flow of the economy, which tracks monetary transactions between economic actors, as shown in Figure 1. The circular flow model demonstrates the interconnectedness of households, firms, and the government through their economic activities. In this model, households own the factors of production, including labour, land, and capital, which they offer to

firms in exchange for income such as wages, rent, and profits. Firms use these factors to produce goods and services that are sold in the product market, generating revenue for the firms. Households then purchase these goods and services, creating a flow of money between households and firms. The revenue generated by firms is used to pay for factors of production, such as wages, rent, and materials, further contributing to the circular flow. The government also plays a role by collecting taxes from households and firms, which are used to provide public goods and services, and by purchasing goods and services from firms, generating revenue for them. The circular flow of the economy illustrates the interdependence of the different sectors of the economy and the flow of goods, services, and money between them. This model provides a simplified way of understanding how the economy functions and the connections between economic agents. The circular flow model can be represented by the following equations:

$$\text{In the product market: } Y = C + I + G + (X - M)$$

This equation represents the total spending in the economy. C is consumption, I is investment, G is government spending, X is exports, M is imports, and Y is the total income or output.

$$\text{In the factor market: } Y = W + R + I + P$$

This equation represents the total income earned in the economy. Y is the total income or output, W is wages, R is rent, I is interest, and P is profit.

The framework for social accounting matrix is based on the input-output model, which was developed in the 1930s by Wassily Leontief (Leontief, 1936). The input-output model is based on the idea that the economy can be divided into sectors that produce goods and services and use inputs from other sectors to produce their output. The model

assumes that the output of one sector becomes an input for another sector and that each sector requires specific inputs to produce its output. This model allows for the calculation of the total output of an economy and the interdependence of different sectors within the economy. The social accounting matrix builds on the input-output model by incorporating information on income, expenditure, and production for different sectors of the economy. It includes information on production and consumption of different goods and services, taxes, subsidies, transfers, and savings. This information is presented in a matrix format that enables the analysis of the interrelationships between different sectors of the economy. The theoretical framework for social accounting matrix is based on the assumption that the economy is a complex system consisting of different sectors that interact with each other. It recognizes that changes in one sector of the economy can have ripple effects on other sectors and that understanding these relationships is essential for developing effective economic policies.

In general, the economic theoretical framework behind SAM is the circular flow of the economy, which describes the interdependence between different sectors of the economy and the movement of goods, services and capital between them. The theoretical underpinning framework on which SAM is built is the input-output table, where the output of one sector becomes the input of another, and this circular flow of inputs and outputs continues throughout the economy. The input-output model allows for the calculation of the total output of each sector, as well as the total input requirements of each sector. This information can be used to analyse the structure of the economy and to understand how changes in one sector affect other sectors. The SAM provides a powerful tool for economic analysis by allowing researchers to understand the structure of an

economy and the interrelationships between different sectors. It is a valuable tool for policymakers in developing effective economic policies.

3.2 Components of SAM

Also addressing issues related to employment, the world's first SAM was established in 1960 by the Cambridge Growth project team led by Richard Stone and Alan Brown. This SAM provided the basic data for the Cambridge Growth Model, which addressed the issue of economic growth and employment in the UK industrial structure. After a period of silence, in 1973 a team of economic statisticians led by Pyatt, head of the World Bank's external policy research project, produced a social accounting matrix for Sri Lanka. Pyatt and Roe (1977) published a book on the theoretical framework of SAM in 1977, which further formalised SAM (Pyatt & Roe, 1977). Furthermore, it describes the application of SAM to policy analysis and forecasting. In the following two decades, many scholars have taken an interest in SAM as a research method, describing its methods and applications in detail (James & Khan, 1993; Keuning & de Ruuter, 1988; King, 1985; Pyatt, 1985, 1988, 1991; Pyatt & Round, 1977; Pyatt & Round, 1979, 1985; Robinson et al., 2001). In the last decade, SAM has been applied in several fields as one of the classical methods in the field of accounting. Scandizzo and Ferrarese (2015) provided a bootstrap estimation of SAM by combining entropy minimization and Monte Carlo simulation techniques (Scandizzo & Ferrarese, 2015). SAM was used as the research methodology to assess the impact of international tourism on GDP and employment in Turkey (Akkemik, 2012). The SAM also allowed an assessment of the macro impact of COVID-19 on Mozambique (Betho et al., 2021). In addition, the creation of national or regional social accounting matrices is also an area of interest for scholars, for example in South

Africa (van Seventer et al., 2016), India (Pradhan et al., 2013), Chile (Gallardo & Mardones, 2013), Pakistan (Debowicz et al., 2012), Canada (Siddiqi & Salem, 2012), and Kenya (Causapé et al., 2018). The creation of social accounting matrices has contributed significantly to solving local economic, employment, environmental and practical problems.

As an example, we present the resource from Breisinger, Thomas and Thurlow (2009), shown in Figure 2, to introduce each SAM as comprising the following seven structures.

		Expenditures (Columns)								
		Activities	Commodities	Labour	Capital	Households	Government	Savings and Investment	Rest of World	Total
Incomes (Rows)	Activities		Domestic supply							Activities income
	Commodities	Intermediate demand	Transaction cost			Private consumption (C)	Government consumption (G)	Investment demand (I)	Exports (E)	Total demand
	Labour	Value added							Foreign factor earnings	Factor income
	Capital	Value added							Foreign factor earnings	Factor income
	Households			Factor income to households (wages)	Factor income to households (rents)	Inter household transfers	Social transfers		Foreign remittances	Household income
	Government	Production taxes/subsidy	Sales taxes and import tariffs			Direct household taxes	Within public sector transfers		Foreign grants and loans	Total government revenue
	Savings and Investment					Private savings	Fiscal surplus		Current account balance	Total savings
	Rest of World		Import payments (M)	Factor income to RoW	Factor income to RoW	Foreign remittances paid	Government transfers to RoW			Foreign exchange outflow
	Total	Gross output	Total supply	Total factor spending	Total factor spending	Total household spending	Total government expenditure	Total investment spending	Foreign exchange inflow	

Figure 3.2 Representative of a SAM

1. Activity. Each row indicates the income of the department's activity account. Each column represents the expenditure of the department's activity account.
2. Commodity. Each row indicates the costs paid by consumers in the sector for a particular type of consumer goods or services. Each column indicates the direct demand for industry and labour, net indirect taxes and direct imports of non-competitive goods by consumers in the sector.
3. Factors. The factor accounts represent labour and capital. These accounts receive

payments from activities in the form of value added, either as wages for labour or as rent for capital and land.

4. Households. Household accounts represent the private institutions in the economy. They receive the value of their wages in the form of wages, rents from capital and land, and other transfers of domestic and foreign institutions. Households spend their income on consumption of goods and services, income tax, transfers to institutions and savings, which are paid into the “savings and investments” account.

5. Government. The rows and columns indicate government expenditure on recurrent goods or services. Similarly, the goods account represents expenditure on consumer goods or services.

6. Savings and Investment. The “Savings and Investment” account collects savings from the households, the government and the rest of the world and then uses it for investment in commodities.

7. Rest of World. The “Rest of World” account captures the monetary flows between the country and all its foreign partners.

3.3 Interpreting economic structures from SAM

As mentioned earlier, SAM provides a snapshot of the economy in a given year. From this we can derive the main economic aggregates and describe the structure of the economy. In the following discussion, I use the SAM for China in 2020 as an example to explain the structure of the Chinese economy.

1. Intermediate consumption

Intermediate consumption refers to the expenditure on commodities used as inputs in the production process. This includes both domestically produced intermediate inputs

and payment for imported intermediate inputs. In other words, intermediate consumption is the cost of the materials, services, and other inputs that are used to produce a final product, rather than the cost of the final product itself.

In SAM, intermediate consumption is expressed as payment for commodities by activities. In the 2020 SAM in China, the total value of intermediate consumption is 168260.6 billion yuan. In the 2020 China SAM, activity and commodity accounts are divided into 153 sectors in detail, so that more information on intermediate consumption can be obtained from intersectoral payments. For example, the activity sector of agricultural products pays 556.1 billion yuan to the commodity sector of fertilizers, implying the value of intermediate inputs.

2. Value added – GDP at factor cost

Value added is equivalent to GDP at factor cost. Both terms refer to the total value created within an economy by summing up the payments made to factors of production, such as labour and capital. This measure excludes taxes, subsidies, and other costs, providing a more accurate representation of the actual value generated by economic activities. Value added – GDP at factor cost is what activities pay for labour and capital. Total value added is the sum of payments from activities to factors. Value added by activity shows the value added created by the various industries.

In the 2020 China SAM, the activity account pays 5005.4 billion yuan to labour and 125.6 billion yuan to capital. China's GDP at factor cost is therefore 5131 billion yuan in 2020.

3. Government, Taxes and Subsidies

The government's public transactions, taxes and subsidies are recorded in SAM. In

the 2020 China SAM, government accounts pay 17576 billion yuan to commodity accounts, which is recurrent spending. There was a transfer of 5889 billion yuan from government accounts to households, which is a social transfer. Intra-governmental transfers or within public sector transfer was 8635 billion yuan.

The 2020 China SAM recorded a total production tax of 3273 billion yuan, but some sectors of the production account such as agricultural products had a negative production tax of 548.2 billion, which represents government subsidies to production in this sector.

4. Foreign trade

Foreign trade within the SAM framework encompasses both imports and exports. Imports refer to payments made by the commodities account to the “Rest of World” account for imported goods and services. On the other hand, exports represent payments made by the “Rest of World” account to the commodities account for goods and services that are sold to foreign countries.

In the 2020 China SAM, the information available is that China’s imports from the rest of the world in 2020 amount to 14798.9 billion yuan, while its exports amount to 18792.6 billion yuan, indicating a trade surplus of approximately 3993.7 billion yuan.

5. Factor income

Factor income refers to transfers from labour to households and from capital to households. In the 2020 China SAM, transfers from labour to households (52,926.5 billion yuan) and from capital to households (39,727.6 billion yuan).

6. Private and Public spending

The distinction between private and public spending allows for the analysis of different sectors of the economy and their respective contributions to overall economic

activity. Private spending reflects the consumption patterns and choices made by individual households, while public spending represents the government's allocation of resources to meet public needs and provide essential services.

Private spending, also known as household consumption, refers to the payments made by households for the purchase of commodities. These payments represent the expenditure made by individuals or households on goods and services to satisfy their personal needs and wants. In the context of the provided data, private spending is recorded as 1603.5 billion yuan. On the other hand, public spending refers to the payments made by the government for the purchase of commodities. These payments represent the expenditure made by the government on goods and services to fulfil public needs and provide public services. In the given information, government consumption or recurrent spending is recorded as 17576.3 billion yuan. Of course, since the activity and commodity accounts of the 2020 SAM in China are distinguished into 153 sectors, we can obtain from the table the expenditure on different consumption patterns.

3.4 SAM-multiplier analysis

It follows that SAM is a database containing information that is representative of the economy. As a database, the classical method is multiplier analysis when SAM is used to study trade and employment issues. Nobel Prize-winning economist Wassily Leontief developed a multiplier analysis. For example, building a road from farm to market will require many unskilled labourers from landless and smallholder households. Most of the incremental income from unskilled labourers through road-building labour will be spent on food purchases. Moreover, the increased food production to meet demand will lead to more employment and increased income for this labour force. It is the classic multiplier

process. In other words, multipliers reflect the interdependence between economic sectors and actors.

The impact on other sectors of the economy of an exogenous monetary transfer to one sector (i.e. an injection) or an outflow from one sector (i.e. a leakage). This injection (or leakage) is often referred to as an exogenous shock because it is outside consumers and businesses immediate decisions or control. The impact of these shocks can be either direct or indirect. The sum of the direct and indirect effects constitutes the multiplier effect of exogenous shocks.

The direct effect is not transmitted via any linkages. For example, an increase in fruit production does not cause any upstream or downstream changes and only has an impact in this one sector. The indirect effects of exogenous shocks are transmitted through production or consumption linkages. Production linkages depend partly on the extent and intensity of inputs from other sectors that are used to produce the output of the sector initially affected by the shock (i.e. backward linkages). The extent to which the output of the affected sector is used as an input to the production of the upstream industry is also a determinant of production linkages (forward linkages) (Breisinger et al., 2009) (See Figure 3 for details.)

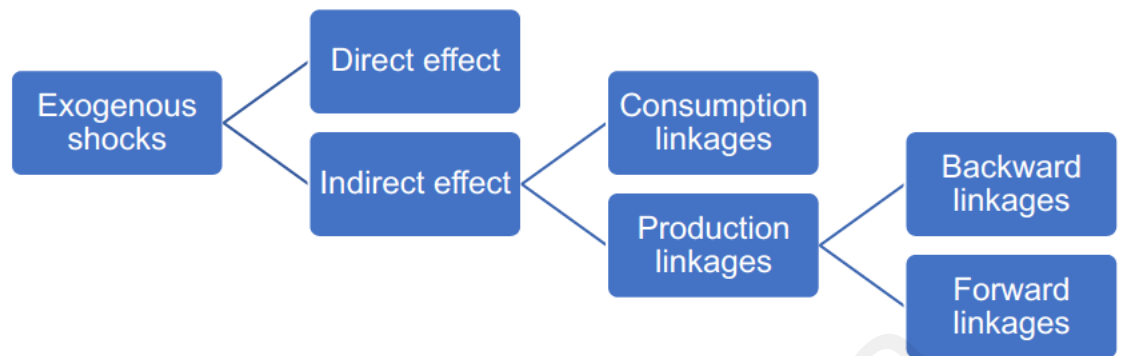


Figure 3.3 Economic linkages

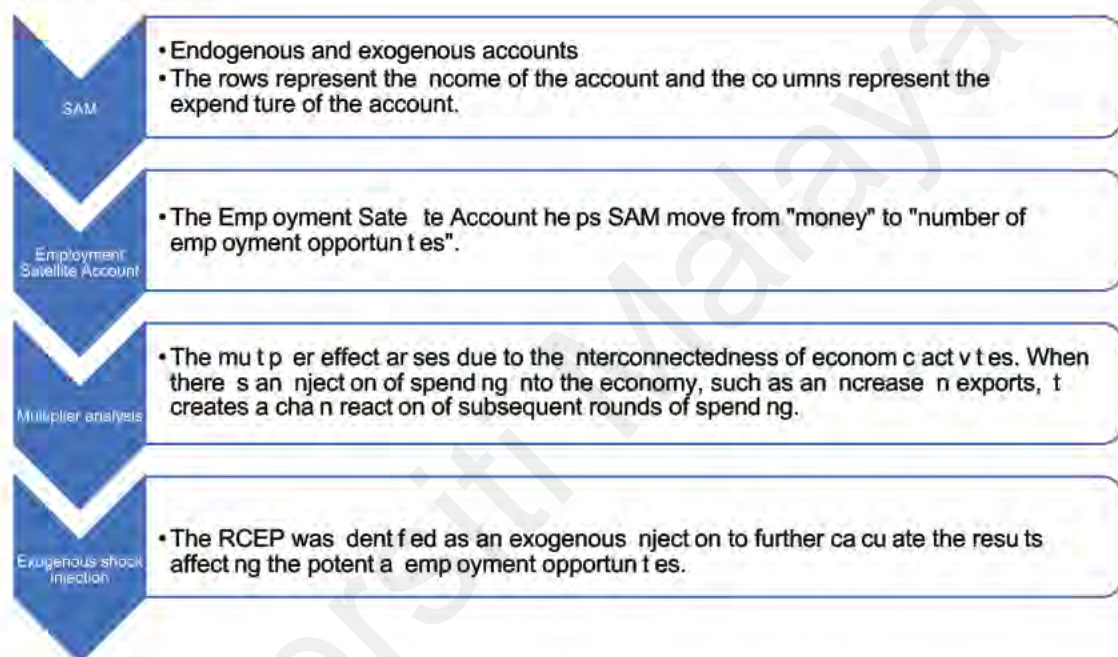
Backward linkages are the additional intermediate demand generated upstream by expanding production in one sector. For example, an increase in fruit production leads to an increase in demand for intermediate goods such as labour and raw materials, which increases production in the raw materials sector. Forward linkages refer to the impact of the expansion of production in one sector on downstream activities. In the example of fruit production, higher fruit production will provide additional inputs to the agriculture-industry; therefore, production in the agriculture-industry will increase.

The identification of key sectors is an important part of economic planning. Output and employment are likely to grow faster if resources are channelled to key sectors than if they are allocated in other ways. From a development strategy perspective, it is necessary for countries with limited financial resources to prioritise and invest in a few key sectors. These key sectors could be those that show the greatest potential in terms of catalytic growth, value added contribution, export potential, employment creation or any other similar economic indicator. One of the main uses of backward and forward linkage analysis is to identify the key sectors of the economy. A sector can be said to be a key

sector if it is closely linked to other sectors through backward and forward linkages.

Thus, in addition to the employment directly supported by a sector, a large number of indirect employment opportunities may also be supported by that sector. In sectors with strong backward and forward linkages to other sectors of the economy, a reduction (or increase) in employment opportunities and output can have a large knock-on effect.

3.5 SAM model



The Social Accounting Matrix (SAM) is an efficient tool for empirical research on employment (Bahta, 2013; Psaltopoulos et al., 2011; Pyatt & Round, 1977; Trapp, 2015; Wanjala & Were, 2009). The standard Leontief inverse formula was used to calculate the SAM multiplier (Leontief, 1986; Thorbecke, 2000).

$$y = A \cdot y + x = (I - A)^{-1} \cdot x = M_a \cdot x$$

In the above equation, y is the vector of endogenous accounts, A is the matrix of the average propensity to spend on endogenous accounts (also known as the technical matrix), x is the vector of exogenous shocks and I is the identity matrix. $(I - A)^{-1}$ or M_a represents the SAM multiplier matrix, also known as the Leontief inverse matrix.

In particular, in the 2020 SAM for China, the exogenous accounts are production subsidies, taxes on production, value added tax on domestic goods, consumption tax on imports, value added tax on imports, consumption tax on domestic goods, taxes on income, rest of the world, fixed capital formation, and changes in inventories. The activity, commodity, labour, capital and household accounts are endogenous accounts.

The average expenditure propensity matrix A , also known as the technology matrix, provides insights into how production sectors utilize factors of production and intermediate inputs to produce output. In the A matrix, each entry is calculated by dividing the corresponding cell of the SAM by its column total. This calculation is performed for each endogenous account within the SAM. The remaining exogenous columns must be filled with zeros to ensure the “rectangularity” of the matrix. A is assumed to be constant. This means that regardless of the size of exogenous shocks, each account will continue to allocate a fixed proportion of its total amount to each activity.

The identity matrix I is a square matrix that has ones on its main diagonal (from the top left to the bottom right) and zeros elsewhere. In the context of the SAM, matrix conformity requires that the identity matrix has the same dimensions (i.e., the same number of rows and columns) as the SAM. Matrix conformity ensures that the identity matrix aligns with the structure of the SAM. The identity matrix is often used as a reference or benchmark in mathematical operations and calculations involving the SAM. It helps maintain consistency and facilitates mathematical operations that require matching dimensions between matrices.

The SAM multiplier matrix is obtained by taking the inverse of the $(I - A)$ matrix. The $(I - A)$ matrix is constructed by subtracting the A matrix from the identity matrix.

3.6 Employment satellite account

The employment satellite account is constructed because the conventional social accounting matrix presents labour in monetary terms, but for labour market policy-oriented models, we need to use the employment satellite account to calculate the employment multiplier. The employment multiplier indicates the impact of external shocks on the economy in terms of employment, i.e., the number of potential employment opportunities created or destroyed.

The employment satellite account is conceptualised as a matrix containing employment data, i.e., the number of people employed in each sector. In this study, the employment satellite account for China is based on data from the seventh population census of China in 2022. This is supplemented by the China Labour Statistics Yearbook 2012-2021 and the China Population and Employment Yearbook 2012-2021. We then classify occupations into skilled and unskilled labour force according to the 2021 PRC Classification of Occupations. The calculated employment ratios were further differentiated by gender (male or female) and skill level (skilled or unskilled). We found that out of the 656.31 million employed Chinese, and there are 121.29 million more males than females, which is in line with the fact that males in China only outnumber females by 3.35 million. Females make up 43 per cent of the skilled workforce and are concentrated in services such as education, health, social work and retail.

To compute the employment-output ratio ε for each sector, data from the SAM and employment statistics from the employment satellite account are utilized. This ratio provides information on the number of workers required to produce one unit of sectoral output for a specific year, indicating the labour intensity or how much labour is utilized

per unit of output. The computation of the employment-output ratio involves dividing the number of workers in each sector by the corresponding output value of that sector. The number of workers is obtained from employment statistics, which provide information on the employment levels within each sector. The output value is derived from the SAM, which captures the monetary value of production for each sector. As can be obtained from the table of China's employment output ratio, agricultural products are the most labour-intensive sector, requiring 1161 workers to produce 100-million-yuan worth of output.

3.7 Employment multiplier

To estimate the impact of exogenous shocks on employment, changes in the employment multiplier are translated into employment impacts by applying the employment-output ratio. As mentioned above, the RCEP will have a knock-on effect on China's imports and exports, which is reflected in the SAM as payments between the "rest of the world" account and the "commodity" account. The "commodity" account pays the value of imports to the "rest of the world" account and, in turn, the value of exports. The employment matrix J is obtained by combining the employment multiplier with the employment-output ratio, which is derived by injection into selected sectors of the cross-section of the "rest of the world" and "commodity" accounts.

$$J = \varepsilon \cdot M_a \cdot x$$

In the above equation, the employment-output ratio matrix $[\varepsilon]$ is a square matrix with n rows (where n is the number of sectors in the SAM). The employment-output ratios ε for each sector are placed on the diagonal and 0 elsewhere. The matrix M_a is also a square matrix of order n . $\varepsilon \cdot M_a$ is the employment multiplier. The following, simple social accounting matrix for the three sectors is used as an example to illustrate the various

matrices.

The matrix ε is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & \varepsilon_1 & 0 & 0 \\ \text{sector2} & 0 & \varepsilon_2 & 0 \\ \text{sector3} & 0 & 0 & \varepsilon_3 \end{bmatrix}$$

The matrix M_a is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & M_{11} & M_{12} & M_{13} \\ \text{sector2} & M_{21} & M_{22} & M_{23} \\ \text{sector3} & M_{31} & M_{32} & M_{33} \end{bmatrix}$$

The employment multiplier is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & M_{11} \cdot \varepsilon_{11} & M_{12} \cdot \varepsilon_{11} & M_{13} \cdot \varepsilon_{11} \\ \text{sector2} & M_{21} \cdot \varepsilon_{22} & M_{22} \cdot \varepsilon_{22} & M_{23} \cdot \varepsilon_{22} \\ \text{sector3} & M_{31} \cdot \varepsilon_{33} & M_{32} \cdot \varepsilon_{33} & M_{33} \cdot \varepsilon_{33} \end{bmatrix}$$

Each row of elements in the employment matrix reflects the employment effect of a one-unit increase for the output of the sector in which that element is located. The effect of a given exogenous shock on employment can be calculated by multiplying the employment multiplier matrix with a vector representing shocks in different sectors of the economy.

$$\Delta J = \varepsilon \cdot M_a \cdot \Delta x$$

Which sector is the most key sector in the production linkage of exogenous shocks?

The answer can be obtained by calculating the forward and backward linkages. We will use the intermediate demand sub-matrix of the SAM, which is the combination of the commodity rows and the production activity columns, to calculate the backward linkages.

The simplified version of the intermediate demand sub-matrix is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & D_{11} & D_{12} & D_{13} \\ \text{sector2} & D_{21} & D_{22} & D_{23} \\ \text{sector3} & D_{31} & D_{32} & D_{33} \end{bmatrix}$$

Technology Matrix A is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & A_{11} & A_{12} & A_{13} \\ \text{sector2} & A_{21} & A_{22} & A_{23} \\ \text{sector3} & A_{31} & A_{32} & A_{33} \end{bmatrix}$$

Leontief inverse multiplier matrix is shown below:

$$\begin{bmatrix} & \text{sector1} & \text{sector2} & \text{sector3} \\ \text{sector1} & L_{11} & L_{12} & L_{13} \\ \text{sector2} & L_{21} & L_{22} & L_{23} \\ \text{sector3} & L_{31} & L_{32} & L_{33} \end{bmatrix}$$

Rasmussen suggests dividing the column sum of each sector by the total column sum of all sectors and then by the total number of sectors (n) to calculate the standardised backward linkage effect (Rasmussen, 1956).

$$\begin{aligned} \text{Backward linkages} &= \text{Column sum of Leontief inverse} \cdot n \div (\text{Sum of total cells in Leontief inverse}) \\ &= (L_{11} + L_{21} + L_{31}) \times 3 \div (L_{11} + \dots + L_{33}) \end{aligned}$$

Similar to backward linkages, forward linkages are calculated using Ghosh inverse multipliers. Ghosh inverse multipliers are obtained by transposing the Leontief inverse matrix. It shows how the output of a particular sector is distributed among all sectors that use the output of that sector as an input in the production process. From a mathematical point of view, the Ghosh inverse multipliers operate by transposing the columns of the model into rows (Miller & Blair, 2009). That is, instead of dividing the cells in each column by the total output of the sector associated with that column, the cells in each row are divided by the total output of the sector associated with that row. Similar to the Leontief inverse matrix for the science and technology matrix A , in the Ghosh inverse

multipliers it is called the allocation matrix B .

$$\text{Forward linkages} = \text{Column sum of Ghosh inverse} \cdot n \div (\text{Sum of total cells in Ghosh inverse})$$

According to Miller and Blair's research (Miller & Blair, 2009), sectoral linkages can be classified into four main categories. According to this classification, a sector is considered to be a key sector if it is classified as generally dependent.

Forward linkages	>1	<1
Backward linkages	>1	<1
>1	Generally dependent	Dependent on Inter- industry supply
<1	Dependent on Inter- industry demand	Generally independent

3.8 Policy simulation

The RCEP Regional Economic Impact Assessment Report, issued on 30 December 2021, states that the RCEP will significantly boost the region's economy, trade and employment in general, and exports and imports in particular. Projections from the Global Dynamic General Equilibrium model show that by 2035, the RCEP will increase China's exports and imports by 7.59 percent and 10.55 percent, respectively, over the base case, with cumulative increases in exports and imports reaching US\$315.4 billion and US\$306.8 billion respectively. At the same time, RCEP, as the world's largest free trade agreement, will have a significant impact on regional economic development and employment along the industrial chain. After the RCEP comes into effect, it will promote the growth of import and export trade in key industries such as agriculture, light industry,

textiles, automobiles, machinery, electronic information and petrochemicals by lowering trade and investment barriers, improving the level of regional economic integration and promoting the formation of a unified regional market, which will provide a rare development opportunity for industrial employment growth. However, the petrochemical, machinery, light industry and textile, electronic information and automobile industries are also facing more intense market competition.

The identification of key sectors is an important part of economic planning. Output and employment are likely to grow faster if resources are channelled to key sectors than if they are allocated in other ways. From a development strategy perspective, countries with limited financial resources must prioritise and invest in a few key sectors. These key sectors could be those that show the greatest potential in terms of catalytic growth, value-added contribution, export potential, employment creation or any other similar economic indicator. One of the main uses of backward and forward linkage analysis is to identify the key sectors of the economy. A sector can be said to be a key sector if it is closely linked to other sectors through backward and forward linkages. According to the definition of key sectors, the key sectors of the agriculture of the China Social Accounting Matrix are agricultural products, forest products, livestock products, and fishery products. The key sectors of the manufacturing are textiles, basic chemical materials, plastic products, non-ferrous metals, and auto parts. In services, postal services, accommodation, restaurants, business services and insurance are key sectors. In this case, this study simulates a scenario of the likely potential employment opportunities in China from the RCEP, choosing precisely two accounts for the exogenous shocks, exports and imports. This is consistent with the projections of the Chinese Ministry of Commerce. The RCEP

is likely to inject 7.59 per cent and 10.55 per cent into each key sectoral increment of China's exports and imports respectively.

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CHAPTER 4: RESULTS

4.1 The structure of China's economy from the SAM

The structure of China's economy can be found in the SAM of 153 sectors in China 2020. In other words, we can infer China's GDP, the value of intermediate consumption, the size of taxes, imports and exports, factor income, etc. from the SAM. Intermediate consumption is the payment from the activity account to the commodity account. The value of intermediate consumption can be observed in the China SAM as RMB 1,682,605,000. Payments from activities to commodities represent the value of the intermediate inputs used in the production process. In the SAM for China, which is subdivided into 153 sectors, we can find the intermediate inputs for each production sector. Value added is gross domestic product (GDP) at factor cost. This is what the activity account pays for labour (RMB 5295.65 million) and capital (RMB 397.27 million). China's GDP at factor cost in 2020 is therefore RMB 92,684.1 million. Foreign trade refers to imports (payments by commodity accounts to the "rest of the world" account for imported goods) and exports (payments by the "rest of the world" account for commodities). In 2020, China's imports from the rest of the world are RMB 147,988,000 while its exports are RMB 187,926,000, indicating a trade surplus of approximately RMB 399,380,000. Overall, the information in the SAM is useful for analysing the impact of external shocks and macroeconomic policies. The research objective of analysing the structure of China's economy and employment through social accounting matrices and employment satellite accounts was achieved.

4.2 The amount and rate of sectoral potential employment opportunities expected by the RCEP

The RCEP is expected to create 4618,390 potential employment opportunities in China through import and export trade. As shown in table 2, the largest potential employment opportunities are concentrated in the agricultural products sector, with 1,856,723 potential employment opportunities. The top 2 to top 10 in order are textiles, retail, catering, metal products, wholesale, plastic products, resident services, road freight transport and accommodation with potential employment opportunities of 374134, 310575, 265363, 130615, 112592, 98886, 98886, 92495, 88089 respectively. Table 4.1 shows the number and rate of potential sectoral employment opportunities expected by RCEP for the top 30 sectors. Sectors with high potential employment opportunities, such as agriculture and manufacturing, highlight the important role that these sectors are expected to play in employment opportunities for China under RCEP.

In terms of growth rates, employment in the medical instrumentation sector had the highest growth rate, at 4.62 percent. The top 2 to the top 10 growth rates, in order of basic chemical raw materials, textiles, plastic products, non-ferrous metals, hemp and silk textiles, Non-ferrous metal mining products, accommodation, woollen textiles with growth rates of 3.30 percent, 3.10 percent, 2.53 percent, 2.52 percent and 2.20 percent, 2.11 percent, 2.11 percent and 2.03 percent respectively. Higher growth rates in sectors such as medical instruments and basic chemical raw materials, albeit with fewer employment opportunities, mean that these sectors have the potential to generate technology-based employment. The number and rate of potential employment opportunities in the key sectors are largely in the top 30. However, sectors exist such as business services and insurance, which is in the top 30 in terms of the amount of employment projected, but not in terms of the rate. This is because the insurance sector

has a large base and may still make a significant contribution to employment. The full table in the appendix reveals that the number and rate of possible employment opportunities in the key sector are in the top 50 percent.

Table 4.1 The top 30 amount and rate of sectoral potential employment opportunities expected by the RCEP

	Amount	Sector	Rate (%)
Agricultural products	1856723	Medical instruments	4.62
Textile	374134	Basic chemical raw materials	3.30
Retail	310575	Textile	3.10
Catering	265363	Plastic products	2.53
Metal products	130615	Non-ferrous metals	2.52
Wholesale	112592	Hemp and silk textiles	2.20
Plastic products	98886	Non-ferrous metal mining products	2.11
Resident services	92495	Accommodation	2.11
Road freight transport	88089	Woollen textiles	2.03
Accommodation	77055	Forest products	1.64
Business services	76280	Cotton, chemical fibre textiles	1.59
Livestock products	68821	Agricultural products	1.58
Education	66485	Auto parts	1.54
Postal services	60391	Knitted or crocheted fabrics	1.52
Real estates	59196	Fertiliser	1.50
Cotton, chemical fibre textiles	56357	Metal products	1.45
Forest products	39194	Postal services	1.31
Basic chemical raw materials	36626	Chemical fibre products	1.29

	Amount	Sector	Rate (%)
Insurances	34157	Pesticides	1.29
Auto parts	33597	Fishery products	1.16

4.3 The amount and rate of sectoral potential employment opportunities for exports and imports expected by the RCEP

The RCEP is expected to create 1915,496 and 270,2894 potential employment opportunities in China through imports and exports respectively. In terms of imports, as shown in table 4.2, agricultural products, textiles and clothing, retail, metal products, catering, plastic products, wholesalers, cotton, chemical fibre textiles, and road transport of goods are the top 10 sectors with the highest potential employment opportunities, at 532701, 302357, 149365, 102109, 67816, 65624, 56236, 44254 and 43261 respectively. As shown in table 3, textile and clothing, medical instrumentation, linen and silk textiles, plastic products, wool textiles, cotton, chemical fibre textiles, basic chemical raw materials, knitted or crocheted fabrics and metal products, these sectors are the top 10 highest growth rates with 2.50 percent, 1.99 percent, 1.75 percent, 1.68 percent, 1.61 percent, 1.25 percent, 1.23 percent, 1.20 percent and 1.13 percent respectively. Import sectors related to manufacturing and services show favourable growth rates, suggesting that employment prospects in these areas are favourable.

Export sectors, such as medical instruments, basic chemical raw materials and restaurants, also show noteworthy employment opportunities and growth rates, suggesting the potential for employment opportunities in these areas. Agricultural products, catering, retail, textiles and clothing, accommodation, wholesale, resident services, road transport of goods and livestock products, which are the top 10 sectors with

the potential employment opportunities growth due to the RCEP, are 132421, 197547, 161209, 71777, 66538, 56356 52231, 44828 and 42142 respectively. Medical instrumentation, basic chemical raw materials, non-ferrous metals, accommodation, non-ferrous mining products, forestry products, agricultural products, fertiliser, and pesticides are the top 10 sectors with the rates of potential employment opportunities due to RCEP, at 2.63 percent, 2.07 percent, 2.02 percent, 1.82 percent, 1.61 percent, 1.46 percent, 1.13 percent, 1.07 percent, and 0.93 percent respectively. The import and export sectors cover a wide range of sectors, including agricultural products, textiles, and retailing show significant potential employment opportunities in both imports and exports, implying that they play a crucial role in the employment opportunities within the RCEP. Table 4.2 describes the top 30 potential sectoral employment opportunities created by RCEP in the export and import in terms of amount and rate. The key sectors make the significant contribution to the RCEP's potential employment opportunities in China, through both imports and exports. The research objective of examining the number and rate of potential employment opportunities in sectors expected to be affected by RCEP was met.

Table 4.2 The top 30 amount and rate of potential employment opportunities in the export and import sectors by RCEP

Sector (import)	Amount	Sector (import)	Rate (%)	Sector (export)	Amount	Sector (export)	Rate (%)
Agricultural products	532701	Textile	2.50	Agricultural products	1324021	Medical instruments	2.63
Textile	302357	Medical Instruments	1.99	Restaurants	197547	Basic chemical raw materials	2.07
Retail	149365	Hemp, silk	1.75	Retail	161209	Non-ferrous metals	2.02

Sector (import)	Amount	Sector (import)	Rate (%)	Sector (export)	Amount	Sector (export)	Rate (%)
		textile					
Metal products	102109	Plastic products	1.68	Textile	71777	Accommodation	1.82
Restaurants	67816	Woollen textiles	1.61	Accommodation	66538	Non-ferrous metal mining products	1.61
Plastic products	65624	Cotton, chemical fibre	1.25	Wholesalers	56356	Forest products	1.46
Wholesalers	56236	Basic chemical raw materials	1.23	Resident services	52231	Agricultural products	1.13
Cotton, chemical fibre textiles	44254	Knitted or crocheted fabrics	1.20	Road transport of goods	44828	Fertiliser	1.07
Road transport of goods	43261	Metal products	1.13	Livestock products	42142	Pesticides	0.93
Resident services	40264	Chemical fibre products	0.99	Business services	39643	Auto parts	0.86
Business services	36637	Synthetic material	0.74	Education	37517	Plastic products	0.85
Education	28968	Auto parts	0.68	Forest products	34862	Fishery products	0.82
Postal service	28681	Postal service	0.62	Real estates	33754	Restaurants	0.69
Livestock products	26678	Non-ferrous	0.50	Plastic products	33262	Postal service	0.69

Sector (import)	Amount	Sector (import)	Rate (%)	Sector (export)	Amount	Sector (export)	Rate (%)
		metal mining products					
Real estates	25442	Non-ferrous metals	0.50	Postal service	31710	Insurances	0.62
Auto parts	14768	Agricultural service products	0.50	Metal products	28506	Textile	0.59
Electricity and heat production	13785	Agricultural products	0.45	Basic chemical raw materials	23012	Agricultural service products	0.57
Basic chemical raw materials	13614	Fertiliser	0.42	Insurances	21578	Processed feedstuff	0.48
Insurances	12578	Iron and ferroalloy products	0.42	Fishery products	20434	Electricity and heat production	0.45
Medical instruments	11689	Waste resources	0.40	Auto parts	18829	Hemp, silk textile	0.45
Monetary	11485	Leather, fur, feathers	0.37	Electricity and heat production	17661	Oil and gas extraction products	0.45
Hygiene	10750	Insurances	0.36	Medical instruments	15412	Waste resources	0.44
Coal mining	10645	Pesticides	0.36	Non-ferrous metals	14939	Specialised machinery for	0.44

Sector (import)	Amount	Sector (import)	Rate (%)	Sector (export)	Amount	Sector (export)	Rate (%)
						agriculture,	
Accommodation	10517	Coatings, inks, pigments	0.36	Monetary	14271	Coal mining and washing products	0.44
Agricultural service products	9742	Steel	0.35	Hygiene	13841	Mining support activities	0.44
Leather, fur, feathers	9274	Electricity and heat production	0.35	Coal mining	13623	Processed fish	0.42
Fishery products	8447	Oil and gas extraction products	0.35	Cotton, chemical fibre textiles	12103	Woollen textiles	0.42
Loading and unloading handling	8337	Coal mining and washing products	0.34	Agricultural service products	11194	Synthetic material	0.42
Building decoration, renovation	8094	Fishery products	0.34	Building decoration, renovation	11043	Pipeline transport	0.41
Other service	7174	Mining support activities	0.34	Loading and unloading handling	9049	Livestock products	0.40

4.4 The amount of sectoral potential employment opportunities for male and female by the RCEP

Gender differences are still present and evident in the amount of potential employment opportunities in the RCEP. The RCEP is expected to create 2,801,178 potential employment opportunities for male in China. As shown in table 4.3, agricultural products, forest products, livestock products, fishery products, coal mining and washing products, agricultural service products, oil and gas extraction products, ferrous metal ore mining products, non-ferrous metal mining products, non-metallic mineral processing products were the top 10 sectors in terms of potential employment opportunities for male with 975341, 337028, 178349, 129378, 107345, 80759, 80054, 76330, 71952 and 68463 respectively.

The RCEP is expected to create 1,817,212 potential employment opportunities for female in China. Although there are differences in numbers, the sectors affected are similar. Agricultural products, forest products, livestock products, agricultural service products, fishery products, oil and gas extraction products, grain milling products, processed feedstuff processed vegetable oil, sugar and sugar products are the top 10 sectors in terms of potential employment opportunities for female in the RCEP, with 881382, 162876, 132226, 53595, 44508, 28413 27675, 27069, 25988 and 24779 respectively. The concentration of potential employment opportunities in agriculture-related sectors is mainly due to China's large employment base in agriculture-related sectors. Table 4.3 describes the top 30 potential sectoral employment opportunities for male and female in the RCEP. The research objective of studying gender differences in the potential employment opportunities that RCEP is expected to bring to China was met.

Table 4.3 The top 30 amount of sectoral employment opportunities for male and female by the RCEP

Sector (Male)	Amount	Sector (Female)	Amount
Agricultural products	975341	Agricultural products	881382
Forest products	337028	Forest products	162876
Livestock products	178349	Livestock products	132226
Fishery products	129378	Agricultural service products	53595
Coal mining and washing products	107345	Fishery products	44508
Agricultural service products	80759	Oil and gas extraction products	28413
Oil and gas extraction products	80054	Grain milling products	27675
Ferrous metal ore mining products	76330	Processed feedstuff	27069
Non-ferrous metal mining products	71952	Processed vegetable oil	25988
Non-metallic mineral processing products	68463	Sugar and sugar products	24779
Mining support activities	59208	Slaughtering and meat processing products	18762
Grain milling products	36156	Convenience food	16967
Processed feedstuff	35365	Processed fish	15954
Processed vegetable oil	33953	Dairy products	15685
Sugar and sugar products	32373	Vegetables, fruits, nuts	15258
Slaughtering and meat processing products	24512	Seasonings, fermented products	14980
Processed fish	20843	Mining support activities	14946
Vegetables, fruits, nuts	19935	Coal mining and washing products	14634
Convenience food	16046	Non-ferrous metal mining products	13453
Alcohol and wine	15881	Other foodstuffs	13446
Drinks	15387	Ferrous metal ore mining products	12752

Sector (Male)	Amount	Sector (Female)	Amount
Dairy products	14834	Non-metallic mineral processing products	11445
Tea	14639	Cotton, chemical fibre textiles	11003
Tobacco products	14454	Woollen textiles	10457
Seasonings, fermented products	14167	Hemp, silk textile	10246
Other foodstuffs	12716	Alcohol and wine	9703
Cotton, chemical fibre textiles	9547	Drinks	9401
Woollen textiles	9074	Tea	8944
Hemp, silk textile	8891	Knitted or crocheted fabrics	8686
Furniture	7586	Textile	8492

4.5 The amount of sectoral potential employment opportunities for skilled and unskilled labour by the RCEP

The RCEP is expected to create 197,0186 sectoral potential employment opportunities for the skilled labour and 2,648,204 for the unskilled labour. The male advantage is most pronounced in the skill differentials in potential employment opportunities in agricultural-related sectors (forest products, fishery products) and the female advantage is most pronounced in the skill differentials in potential employment opportunities in light industry (dairy products, convenience foods).

In the vast majority of sectors, there are more males than females in skilled labour of the potential employment opportunities (Bhalotra et al., 2021). However, as shown in table 4.4, female outnumber male in skilled in the food sector (convenience foods, dairy products, spices and fermented products), the textile sector (cotton, chemical fibre textiles, woollen textiles, linen, silk textiles, knitting, manufactured textiles, textile clothing,

leather, fur, feather and feather products and shoes) and the education sector (arts and crafts, education, sports and recreational goods). The research objective of studying skill differences in the potential employment opportunities that RCEP is expected to bring to China was met.

Table 4.4 The top 30 amount of potential sectoral employment opportunities for skilled and unskilled labour by the RCEP

Sector	Male- skilled	Male- unskilled	Female- skilled	Female- un skilled	Difference
Agricultural products	416076	559265	413594	467787	2482
Forest products	143775	193253	76431	86445	67344
Livestock products	76083	102266	62048	70178	14035
Fishery products	55192	74186	20886	23622	34306
Agricultural fishery service products	34451	46307	25150	28445	9301
Coal mining and washing products	45793	61552	6867	7767	38926
Oil and gas mining products	34151	45903	13333	15080	20818
Ferrous metal mining products	32562	43768	5984	6768	26578
Non-ferrous metal mining products	30694	41257	6313	7140	24382
Non-metallic mineral processing products	29206	39257	5370	6074	23835
Mining support activities	25258	33950	7013	7932	18245
Grain milling products	15424	20732	12987	14688	2438
Processed feed products	15087	20279	12702	14367	2384
Vegetable oil products	14484	19469	12195	13793	2289
Sugar and sugar products	13810	18563	11628	13151	2182

Sector	Male- skilled	Male- unskilled	Female- skilled	Female- un- skilled	Difference
Slaughtering and meat processing products	10457	14055	8804	9958	1653
Processed aquatic products	8892	11951	7486	8467	1405
Vegetables, fruits, nuts	8504	11431	7160	8098	1344
Convenience foods	6845	9201	7962	9005	-1117
Dairy products	6328	8506	7360	8325	-1032
Flavourings, fermented products	6043	8123	7029	7950	-986
Other food products	5425	7292	6310	7136	-885
Alcohol and wine	6775	9106	4553	5150	2222
Beverages	6564	8823	4411	4989	2153
Tea	6245	8394	4197	4747	2048
Tobacco products	6166	8288	3962	4481	2204
Cotton, chemical fibre textiles	4073	5474	5163	5840	-1090
Wool textiles	3871	5203	4907	5550	-1036
Hemp, silk textile	3793	5098	4808	5438	-1015
Knitted or crocheted fabrics	3215	4322	4076	4610	-861

CHAPTER 5: CONCLUSION

From January 1, 2022, the Regional Comprehensive Economic Partnership (RCEP) officially came into effect. RCEP, with 15 member countries, accounts for approximately 30 per cent of the global population, economic size, and total trade. This means that about one-third of the global economic volume is integrated into a large market. RCEP is of significant importance in promoting economic integration in the East Asian region and is considered the most important achievement in East Asian economic integration in the past 20 years. RCEP simultaneously covers the two largest markets with the highest growth potential globally: the Chinese market with a population of 1.4 billion and the ASEAN market with over 600 million people.

For the employment market, RCEP can have various impacts on employment, depending on the economic structure, labour market conditions, and policy measures of each country. This study takes China as an example to explore the potential relationship between RCEP and employment. It is expected that RCEP could create a total of 4,618,389 potential employment opportunities in China. This is because RCEP is expected to facilitate cross-border trade and investment, expand market access, and provide broader development opportunities for businesses. This may lead to an increase in employment opportunities, especially in the growth of trade and investment with RCEP member countries. The implementation of RCEP may intensify competition or bring about changes in market structure in certain industries, resulting in labour market adjustments in sectors such as textiles, fruits, agricultural products, and automobiles (Nugroho et al., 2021; Pan et al., 2023). Some industries may face employment pressure, while others may experience employment growth. This may require labour force

transformation or retraining to adapt to new market demands.

RCEP is expected to create 1,970,185 skilled employment positions and 2,648,204 unskilled employment positions in China. With increased trade and investment, businesses may have a greater demand for highly skilled and specialized workers. This could lead to an increased demand for highly skilled talent in the labour market and potentially exacerbate skill disparities. Workers may need to adapt to new employment requirements by pursuing continuing education, training, and acquiring new skills.

RCEP may have different effects on the labour force based on gender, with an expected creation of 2,801,177 employment positions for men and 1,817,211 employment positions for women. Certain industries or occupations may be more influenced by gender disparities, raising concerns about gender employment inequality (Dang & Nguyen, 2021). Policymakers need to address these disparities and take measures to promote gender equality and inclusive employment growth. Based on calculations using social accounting matrices and employment satellite accounts, the following are some suggestions and implications:

5.1 More active trade policies

By reducing tariffs and non-tariff barriers and promoting trade liberalization and facilitation, trade activities between China and RCEP member countries can be expanded. This will stimulate Chinese export growth and create more employment opportunities. The government can actively promote trade negotiations and consultations, striving to lower and eliminate trade barriers within the framework of RCEP. Preferential treatment can be provided for imported goods from RCEP member countries, offering trade facilitation and benefits such as tariff reductions, streamlined import procedures, reduced

red tape, and accelerated customs clearance. This will attract more imports to meet domestic market demands while generating more employment opportunities.

Policy support for the internationalization of small and medium-sized enterprises (SMEs) is crucial. SMEs are an important source of employment, and the government can provide financial support measures such as low-interest loans, venture capital funds, or subsidies to assist SMEs in expanding their international business. These funds can be utilized for market research, product improvement, brand promotion, participation in exhibitions and conferences, and exploring new markets, thereby enhancing the international competitiveness of enterprises. The government can establish dedicated institutions or platforms to provide SMEs with information and advisory services regarding market conditions, trade policies, regulatory requirements, and market access. This will help businesses understand and address challenges in international markets while providing support and guidance. Simplifying trade procedures and reducing trade barriers can lower the costs and difficulties for SMEs engaging in international trade. This includes simplifying customs procedures, expediting clearance times, reducing documentation requirements, and improving trade efficiency and competitiveness. The government can encourage SMEs to participate in international cooperation projects, such as establishing partnerships or joint research and development projects with enterprises from other RCEP member countries. This will facilitate technology transfer, resource sharing, and market expansion, creating more employment opportunities for SMEs.

The government can intensify the promotion and publicity efforts for RCEP, encouraging businesses to actively engage in RCEP's trade and investment opportunities. This can be achieved through organizing trade exhibitions, dispatching trade delegations,

providing market intelligence and business opportunities, and strengthening trade-related training and consulting services to help enterprises understand the demands and opportunities of the RCEP market.

The government can enhance investment promotion cooperation with RCEP member countries to attract more foreign direct investment (FDI) into China. This will stimulate industrial development and employment growth, particularly in high-tech and high-value-added sectors.

Investment in cultivating and developing international trade professionals can be increased by establishing relevant educational institutions and training programs. Providing professional knowledge and skills training in international trade, cross-border logistics, and trade law will meet the talent demands of the RCEP era.

The government can promote industrial synergy and value chain deepening between Chinese enterprises and RCEP member countries. This can be achieved through providing technical support, research and development cooperation, supply chain connectivity, and collaborative projects. This will promote employment growth, especially in high-value-added industries and services. Encouraging Chinese enterprises to establish closer supply chain cooperation with enterprises from RCEP member countries, including encouraging technological cooperation, sharing production resources, and optimizing supply chain management, will enhance production efficiency, reduce costs, and increase competitiveness. The government can support technology transfer and innovation cooperation projects to help Chinese enterprises access advanced technology and knowledge and play a more important role in industrial collaboration. This will improve the technological level and innovation capabilities of enterprises, creating more

employment opportunities.

5.2 Eliminating potentially widening gender differences

The government should enact and enforce laws against gender discrimination, explicitly prohibiting gender-based discriminatory practices in the employment process. This includes banning biased recruitment practices and ensuring equal opportunities for women to participate in employment positions and receive fair compensation and promotion opportunities.

The government can increase support for women's vocational training and education. This includes providing targeted skills training programs to help women acquire the necessary skills for employment. Additionally, establishing career guidance and counselling services can provide women with information about employment market demands and career development opportunities.

Encouraging and supporting women entrepreneurship by providing support measures such as entrepreneurship training, financing, and market access. The government can provide funding support and entrepreneurship training to encourage women's entrepreneurship and employment opportunities. This can be achieved through the establishment of entrepreneurship funds, providing low-interest loans, setting up business incubators, and offering entrepreneurial mentors. These initiatives will contribute to increased women's participation in the economy and provide more employment opportunities.

The government can consider assuming the costs of women's childbirth to promote women's employment. This policy measure aims to alleviate the economic burden on women during childbirth and help them better balance work and family responsibilities.

By assuming the costs of women's childbirth, the government can relieve the financial pressure faced by women during this period. This may encourage more women to participate in the workforce and increase women's employment rates. The responsibility of childbirth often becomes an obstacle for women in their career development. By assuming childbirth costs, the government can help eliminate unfair treatment of women in career development and promote equal employment opportunities. Reducing the economic burden on women during childbirth can encourage more women to participate in the labour market, which has a positive impact on the country's labour force participation rate and economic vitality.

The government can take measures to encourage men to take more active roles in caregiving responsibilities. The government can provide paid parental leave policies with reasonable wage protection, including dedicated paternity leave. Such policies will encourage fathers to actively participate in childcare and create more employment opportunities for mothers. The government can promote the implementation of flexible work arrangements in companies, such as flexible working hours and remote work. This will make it easier for fathers to balance work and family responsibilities, providing more employment choices for mothers. The government can provide more childcare facilities and offer economic support and subsidies to reduce the costs of family caregiving. This will alleviate the burden on parents in caring for children, allowing fathers to have more time and energy for family caregiving. The government can provide economic and tax incentives to reward employers for providing flexible work arrangements and family caregiving support to employees. This will encourage companies to pay more attention to and support employees' needs in family caregiving, including fathers' involvement.

The government and research institutions should strengthen the collection and research of gender-disaggregated data to understand gender differences and challenges in the employment market. This will enable better formulation of targeted policies and measures, as well as monitoring and evaluation.

In conclusion, eliminating gender disparities in employment in China requires the joint efforts of the government, businesses, and society as a whole. This requires a comprehensive policy framework that includes measures in education and training, legal protection, improvement of work environments, promotion of work-life balance, entrepreneurship promotion, and employment opportunities.

5.3 Eliminating potentially widening skill differences

The government can increase investment in skills training and education, particularly focusing on areas closely related to trade and industries of the RCEP member countries. This can be achieved through increased funding, establishment of specialized training institutions and schools, and formulation of relevant policies and plans. By increasing investment in skills training and education, the government can enhance the skill levels of workers, enabling them to adapt to the emerging trade and industry demands.

The government can promote technological cooperation and cross-border technology transfer with RCEP member countries. This can be accomplished by fostering collaborative technology projects between businesses, such as establishing joint research and development centers and sharing technological resources. The government can also establish technology innovation centers, providing support and funding to encourage technological innovation and transfer. Through collaboration with technologically advanced nations, Chinese workers can access new technologies and work methods,

thereby improving their skill levels and adaptability.

The government can facilitate cross-border mobility and exchanges of labor force among RCEP member countries. This can be achieved by signing more labor mobility agreements, simplifying labor visa procedures, and providing more employment opportunities. The government can collaborate with RCEP member countries to establish vocational exchange programs and training initiatives, offering opportunities for workers to engage in cross-border employment and training. Through cross-border talent mobility, workers can access broader employment opportunities and training resources, enhancing their skills and international competitiveness.

The government can collaborate with RCEP member countries to establish industry skill standards and certification systems. This will contribute to improving the quality and standardization of skills training, enabling the outcomes of training to be recognized and accepted by various countries, thereby increasing employment opportunities for workers. The government can work together with industry associations, educational institutions, and businesses to jointly develop skill standards and certification requirements, as well as establish corresponding assessment and certification mechanisms. As a result, workers can obtain internationally recognized skill certificates after completing training, enhancing their competitiveness in the employment market.

The government can strengthen the close alignment between school education and industries to ensure that the education system can timely adapt to the trade and industry demands of RCEP member countries. This can include collaborating with businesses to conduct internships and practical projects, establishing industry-academia research cooperation bases, and providing educational resources related to relevant industries. The

government can cooperate with businesses and educational institutions to jointly formulate education plans and curriculum settings, ensuring the cultivation of talent that meets market demands. By closely connecting with actual work scenarios, students can better acquire the required skills and knowledge, improving their employability.

The government can provide support measures for innovation and entrepreneurship, encouraging workers to enhance their skills and competitiveness through entrepreneurship and innovation. The government can offer entrepreneurship training, startup funding, and policy support, among others. Additionally, the government should provide support for skill transformation, assisting workers who face unemployment risks due to technological advancements and industrial transformations in obtaining new employment opportunities. The government can establish specialized entrepreneurship support organizations, providing services such as entrepreneurship training, incubation, and financing support to help workers achieve self-employment and employment opportunities.

These policy measures can help eliminate skill disparities in employment in China, enhance the skill levels and competitiveness of workers, and enable them to adapt to the emerging trade and industry demands brought by the RCEP. Simultaneously, the government, educational institutions, businesses, and society as a whole need to make joint efforts, establish cooperative mechanisms, and ensure the effective implementation and continuous advancement of these policies.

5.4 Limitations and future work

This study examines the impact of the RCEP on potential employment opportunities in China, as well as the gender and skill differences therein, based on the

latest social accounting matrix and employment satellite accounts for China. RCEP is an ongoing free trade agreement and the impact of its employment opportunities will be proven in the future. Future work could use dynamic modelling to further test the impact of RCEP's potential employment opportunities.

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