

# Exposure of Belt and Road Economies to China Trade Shocks

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## Abstract

The Belt and Road Initiative seeks to deepen China's international integration by improving infrastructure and strengthening trade and investment linkages with countries along the old Silk Road, thereby linking it to Europe. This paper uses detailed bilateral trade data for 1995–2015 to assess the degree of exposure of Belt and Road economies to China trade shocks. The econometric results reveal that China's trade growth significantly affected the exports of Belt and

Road economies. Between 1995 and 2015, the magnitude of China's demand shocks was larger than that of its competition shocks. However, competition shocks became more important in recent years, and were highly heterogeneous across countries and industries. Building on these findings, the paper documents the current degree of exposure of Belt and Road economies to China trade shocks, and discusses policy options to deal with trade-induced adjustment costs.

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# **Exposure of Belt and Road Economies to China Trade Shocks\***

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JEL: F1; F6

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## 1. Introduction

In recent decades, China has become a major player in global trade. Between 1995 and 2015, its share of world exports grew from about 4% to over 15%. At the same time, China's share in world imports of agricultural and mining products rose from less than 2% to more than 10%. China is also a major importer of manufactured inputs used in the production of its own exports. As emphasized by Autor et al. (2013), the rising importance of China's trade over this period reflected several intertwined developments: (i) the transition to a market-oriented economy, which involved the rural-urban migration of more than 150 million workers (Chen et al., 2010); (ii) increased access to previously banned foreign technologies, capital goods and intermediate inputs (Hsieh and Klenow, 2009); (iii) the fact that multinationals were increasingly allowed to operate in the country (Naughton, 2007); and (iv) the accession to the WTO giving China most-favored nation status among WTO members (Branstetter and Lardy, 2006).

The Belt and Road (B&R) Initiative seeks to deepen China's international integration, notably by improving infrastructure and strengthening trade and investment links among the economies involved (Table A1 in the Appendix reports the unofficial list of B&R economies considered in this study). The *Belt* links China to Central and South Asia and onward to Europe, while the *Road* links China to the nations of Southeast Asia, the Gulf Countries, North Africa, and on to Europe. The B&R initiative is composed of five main priorities: (1) infrastructure connectivity; (2) coordination of development strategies and policies; (3) trade facilitation to ensure "unimpeded trade"; (4) financial integration; and (5) people-to-people exchange.

This paper uses detailed bilateral trade data for the period 1995-2015 to assess the degree of exposure of B&R economies to China trade shocks. The paper proceeds in several steps. First, it examines the main destinations and sources of China's trade over the period 1995-2015, devoting especial attention to trade relationships between China and B&R economies. It then examines econometrically the extent to which competition and demand shocks associated with China's trade growth impacted industry-level exports of B&R economies in recent decades. This analysis

distinguishes between average impacts on exports of all B&R economies, and specific impacts by country and industry. In a third step, the paper characterizes the current degree of exposure of each B&R economy to cross-industry supply and demand shocks that are likely to arise from further integration with China. To conclude, the paper reviews recent empirical evidence on the labor market impacts of trade shocks, and discusses policy options to deal with trade-induced adjustment costs.

The descriptive analysis reveals that, over the past two decades, Chinese exports became less concentrated geographically. Although the share of exports to the US remained little changed between 1995 and 2015 (at about 20% in both 1995 and 2015), the relative importance of other major destinations, notably Hong Kong SAR, China, and Japan, declined considerably at the expense of other markets, including Mexico, United Kingdom, India and Vietnam. B&R economies accounted for about a third of China's export revenue between 1995 and 2015. While they have been more important for China as export markets than as sources of imports, in recent years the share of imports originated in B&R economies has observed an upward trend, rising from about 25% in 1995 to nearly 30% in 2015. China is an important trade partner for many B&R economies, especially as a source of imports.

The econometric analysis reveals that industry-level exports of B&R economies were significantly impacted by China's trade shocks. Between 1995 and 2015, demand shocks associated with China's trade growth were more important than competition shocks, implying that the overall net impact of China trade shocks on the exports of B&R economies during this period was significantly positive. However, in the period 2005-2015 competition shocks had a stronger negative impact on exports of B&R economies. These effects were heterogeneous across B&R economies and industries.

Looking ahead, the analysis of trade data from 2015 reveals that several B&R economies exhibit a relatively high degree of exposure to competition shocks associated with further integration with China. This is the case of Hong Kong SAR, China, Vietnam, Malaysia, Philippines, Thailand and Indonesia, which source a relatively large share of imports from China and have an export structure that is closer to that of China. To the extent that heterogeneity in export structure reflects the

underlying production structure, these economies are relatively more exposed to import competition from China in their own markets in several industries. Further integration with China will likely involve stronger competitive pressures in final goods markets, which may also have important implications for factor market adjustment (notably labor markets). There are nevertheless various important sources of mutual gains from further integration: consumers would gain access to a wider range of product varieties within sectors; firms and countries would obtain efficiency gains due to further specialization in different varieties or stages of production.

Other B&R economies are only weakly exposed to competition shocks associated with further integration with China. Tajikistan, Myanmar, the Islamic Republic of Iran, Kyrgyzstan, Bangladesh, Mongolia and Timor-Leste source a sizable share of imports from China, but have an export structure that differs considerably from that of China. If differences in export structure reflect underlying heterogeneity in production structure, these economies are only weakly exposed to Chinese import competition in their own markets, even though they source a large share of imports from China. Mutual gains from further integration with China are likely to derive mainly from further exploitation of the corresponding comparative advantages. The degree to which B&R economies compete with China in third country markets is relatively higher in Vietnam, Thailand, Malaysia, Philippines, India, Singapore and Indonesia. If China's exports become relatively more expensive (e.g. due to further increases in labor costs or exchange rate movements), these countries would likely gain market share in their corresponding export markets.

Mongolia, Hong Kong SAR, China, the Islamic Republic of Iran, Oman, Turkmenistan and the Republic of Yemen are highly exposed to demand shocks from China. A large share of exports from these economies is to the Chinese market, and the export structure of these countries displays a high degree of similarity with China's overall import demand. China is also an important destination for the Lao People's Democratic Republic, Uzbekistan, Myanmar and Iraq, although the export structure of these economies is quite different from the structure of China's overall import demand. Finally, Malaysia, Philippines and Singapore export a sizable share of exports to China and have an export structure that is relatively close to the structure of Chinese multilateral imports, suggesting that these economies are also strongly exposed to China's demand shocks.

While deeper international integration typically generates gains at the country-level, it also imposes adjustment costs within countries. These costs are associated with reallocations of workers across sectors, regions and occupations triggered by sector-specific competition and demand trade shocks. Countries more exposed to competition shocks from China may face stronger adjustment costs. Policies to deal with these trade shocks may include general inclusive policies, such as social security and labor policies (including education and training). Well-designed credit, housing and place-based policies may also facilitate adjustment. Trade-specific adjustment programs may play a complementary role. B&R economies more exposed to competition shocks should consider whether their inclusive policies are appropriate to deal with the adjustment costs imposed by trade shocks.

This paper adds to a growing literature seeking to assess the implications China's transformation and increased integration in the world economy on economic outcomes in other countries. In a series of influential papers, Autor et al. (2013, 2014, 2015) estimate the impacts of increased Chinese import competition on labor markets in the United States. Autor et al. (2013) emphasize that US local labor markets are differentially exposed to Chinese import competition because of initial heterogeneity in their production structure, and argue the transition of China to a market economy – and the consequent rise of its productivity and trade flows – can be regarded as an exogenous trade shock to those local labor markets. Although the rise of China also represented a global demand shock (manifested in the rise of China's imports), Autor et al. (2013) note that such demand shock was relatively unimportant for the US. This is because the increase in US imports from China was much stronger than the rise in US exports to China, leading to sizable bilateral trade imbalances. However, this point does not apply generally across B&R economies. Building on these insights, this paper examines econometrically the heterogeneous impacts of supply and demand shocks associated with China's trade dynamics for sectoral exports of B&R economies. Exposure to competition shocks are measured with trade flow data by detailed product category, and capture both the degree of exposure to Chinese competition in the domestic and in third markets. Exposure to the global demand shocks associated with China's rise is measured in an analogous way, exploiting the fact that some countries initially exported more of what China buys than what China sells. By focusing on both supply and demand shocks, the study also accounts for intermediate inputs that are used in production of Chinese exports.

The remainder of the paper is organized as follows. Section 2 describes the data employed, and section 3 documents the evolution of China's bilateral trade relationships. Section 4 develops and implements an econometric framework for examining the relative importance of supply and demand shocks associated with China's trade dynamics on exports of B&R economies. Section 5 provides a descriptive analysis on the current degree of exposure of each B&R economy to supply and demand trade shocks associated with China's trade. Section 6 reviews empirical evidence on the impacts of trade shocks on labor markets in other countries, and discusses policy options to deal with the adjustment costs imposed by these trade shocks. Section 7 concludes the paper.

## **2. Data**

The analysis in this paper makes use of product-level bilateral trade data from BACI spanning the period 1995-2015. BACI is the world trade database developed by CEPII, building on original data provided by the COMTRADE database of the United Nations Statistical Division. BACI is constructed using an original procedure that reconciles the declarations of the exporter and the importer. This harmonization procedure makes it possible to extend considerably the number of countries for which trade data are available. BACI provides bilateral values and quantities of exports at the HS 6-digit product disaggregation for more than 200 countries since 1995.

CEPII developed original statistical procedures to reconcile data reported by almost 150 countries to the United Nations Statistics Division. First, as import values are reported CIF (cost, insurance and freight) while exports are reported FOB (free on board), CIF costs are estimated and removed from import values to compute FOB import values. Second, the reliability of country reporting is assessed based on the reporting distances among partners. These reporting qualities are used as weights in the reconciliation of each bilateral trade flow twice reported. Due to the use of this double information on each flow, BACI ends up covering a large set of countries not reporting at a given level of the product classification. The dataset gives information about the value (in thousands of US dollars) and the quantity (in tons) of trade.

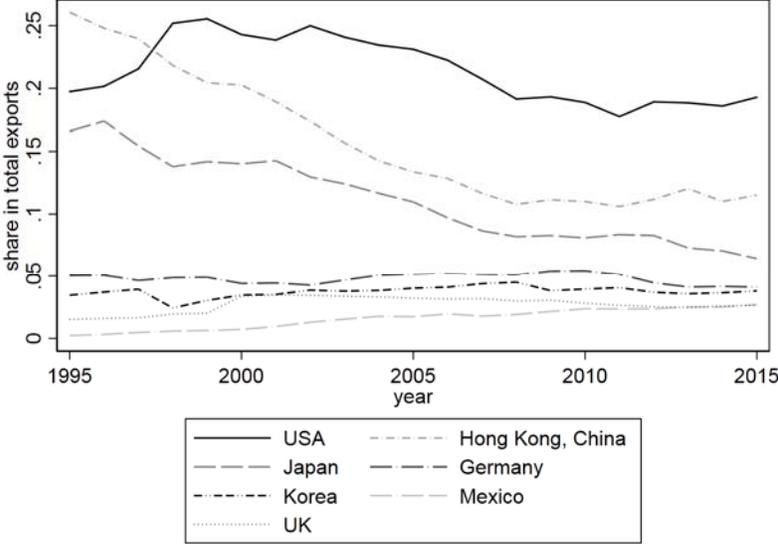
The BACI database was supplemented with the CEPII *gravity* data set, which contains multiple economic and sociodemographic information for all world pairs of countries from 1948 to 2015.

This data set includes bilateral variables for country pairs, such as distance, common language, common border, common religion, as well as country specific attributes such as GDP, GDP per capita, area, and membership in the WTO.

**3. The importance of B&R economies for China’s trade**

This section examines the geographic composition of China’s trade, devoting especial attention to trade relationships with B&R economies. Between 1995 and 2015 Chinese exports became less concentrated geographically. Although the share of exports to the United States remained stable between 1995 and 2015 (around 20% in both years), the relative importance of other major destinations, notably Hong Kong SAR, China, and Japan, declined considerably over this period. As a result, the US became by far the major market for Chinese exports. The decline in the relative importance of exports to Hong Kong SAR, China, and Japan is reflected to a considerable extent in the rising share of exports to several other destinations, including Mexico, United Kingdom, India and Vietnam.

**Figure 1: Main export destinations, 1995-2015**

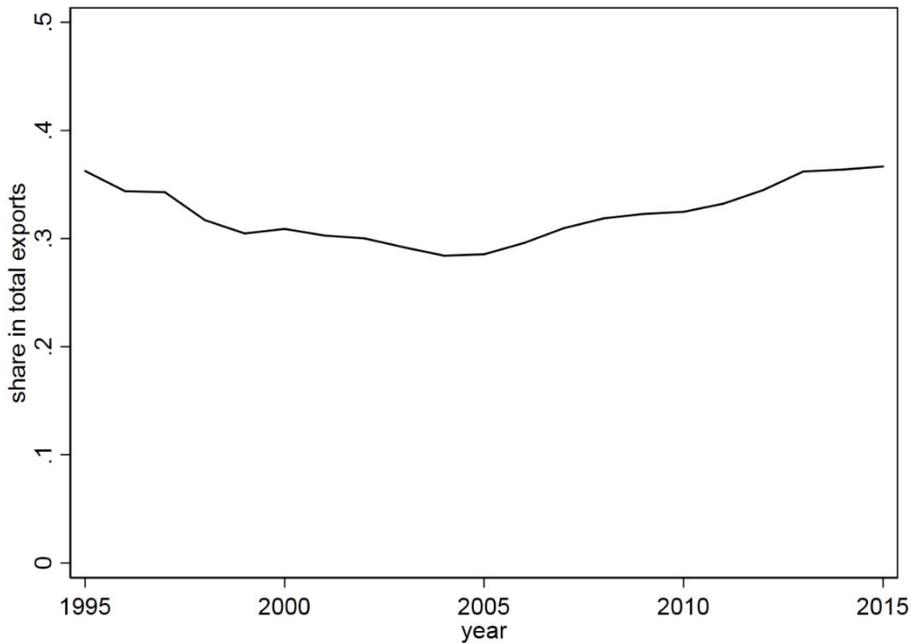


**Table 1: Main export destinations, 1995 and 2015**

	1995		2015	
	share	rank	share	rank
USA	0.197	2	0.193	1
Hong Kong, China	0.261	1	0.115	2
Japan	0.166	3	0.064	3
Germany	0.050	4	0.041	4
Rep. of Korea	0.035	5	0.038	5
Mexico	0.002	39	0.027	6
United Kingdom	0.015	9	0.026	7
India	0.004	23	0.025	8
Vietnam	0.003	27	0.021	9
Canada	0.015	10	0.021	10
France	0.024	6	0.021	11
Singapore	0.018	8	0.020	12
Australia	0.013	12	0.019	13
Netherlands	0.012	13	0.017	14
Thailand	0.010	15	0.017	15

The overall importance of exports to B&R economies remained little changed between 1995 and 2015, when they accounted for about 36% of China’s exports (see Figure 2).

**Figure 2: Relative importance of exports to B&R economies, 1995-2015**



However, the stability of the overall share hides important shifts in the relative importance of individual B&R economies for China’s exports (Table 2). The share of exports to Hong Kong

SAR, China, declined from 26% in 1995 to 12% in 2015. This fall was compensated for by an increase in the share of exports to several other B&R economies, including India, Vietnam, United Arab Emirates, Thailand, Turkey and the Czech Republic, leaving the overall export share to B&R economies little changed.

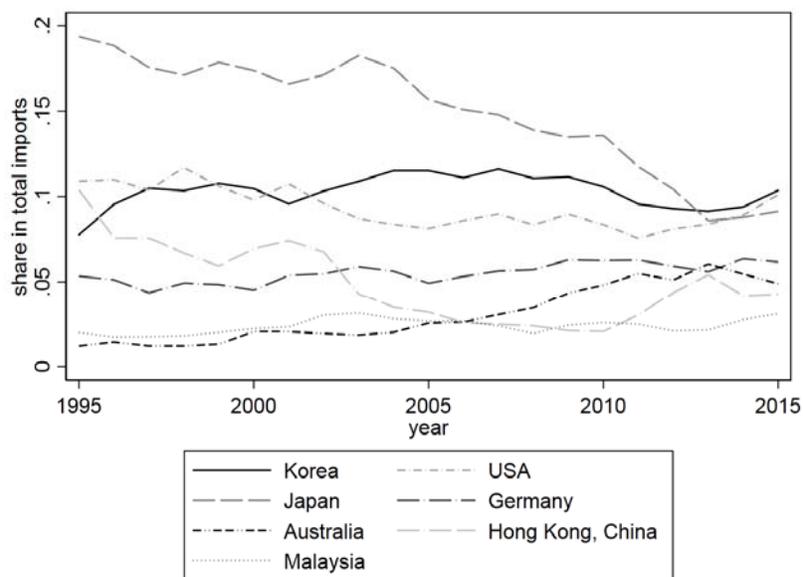
**Table 2: Exports to B&R economies, 1995 and 2015**

	1995		2015	
	share	rank	share	rank
Hong Kong SAR, China	0.261	1	0.115	1
India	0.004	9	0.025	2
Vietnam	0.003	11	0.021	3
Singapore	0.018	2	0.020	4
Thailand	0.010	3	0.017	5
United Arab Emirates	0.005	7	0.016	6
Malaysia	0.008	5	0.015	7
Russian Federation	0.008	4	0.015	8
Indonesia	0.008	6	0.014	9
Turkey	0.003	14	0.010	10
Saudi Arabia	0.004	10	0.010	11
Poland	0.003	13	0.009	12
Czech Rep.	0.001	20	0.008	13
Iran, Islamic Rep.	0.001	19	0.008	14
Philippines	0.005	8	0.006	15
Bangladesh	0.002	18	0.006	16
Pakistan	0.003	12	0.005	17
Egypt, Arab Rep.	0.002	16	0.004	18
Myanmar	0.003	15	0.004	19
Iraq	0.000	60	0.003	20
Slovak Rep.	0.000	34	0.002	21
Israel	0.001	21	0.002	22
Kazakhstan	0.000	31	0.002	23
Hungary	0.001	23	0.002	24
Kuwait	0.001	28	0.002	25
Ukraine	0.000	32	0.002	26
Cambodia	0.000	37	0.002	27
Sri Lanka	0.001	22	0.001	28
Qatar	0.000	50	0.001	29
Romania	0.001	27	0.001	30
Greece	0.002	17	0.001	31
Jordan	0.001	26	0.001	32
Lebanon	0.001	25	0.001	33
Uzbekistan	0.000	39	0.001	34
Belarus	0.000	49	0.001	35
Oman	0.000	38	0.001	36

Tajikistan	0.000	45	0.001	37
Slovenia	0.000	35	0.001	38
Kyrgyzstan	0.000	30	0.001	39
Bahrain	0.000	46	0.001	40
Mongolia	0.000	33	0.001	41
Serbia	-	-	0.001	42
Yemen, Rep.	0.000	29	0.001	43
Estonia	0.000	47	0.001	44
Lao PDR	0.000	40	0.001	45
Bulgaria	0.000	43	0.000	46
Syrian Arab Republic	0.001	24	0.000	47
Nepal	0.000	36	0.000	48
Lithuania	0.000	54	0.000	49
Turkmenistan	0.000	51	0.000	50
Croatia	0.000	41	0.000	51
Georgia	0.000	59	0.000	52
Bosnia Herzegovina	0.000	62	0.000	53
Afghanistan	0.000	48	0.000	54
Brunei Darussalam	0.000	42	0.000	55
Latvia	0.000	53	0.000	56
Azerbaijan	0.000	56	0.000	57
Macedonia	0.000	52	0.000	58
Albania	0.000	44	0.000	59
Rep. of Moldova	0.000	57	0.000	60
Armenia	0.000	58	0.000	61
State of Palestine	-	-	0.000	62
Montenegro	-	-	0.000	63
Maldives	0.000	55	0.000	64
Timor-Leste	-	-	0.000	65
Bhutan	0.000	61	0.000	66

Figure 3 depicts the share of China's imports accounted for by each major source country. Like for exports, the strong decline in the relative importance of Japan and Hong Kong SAR, China, as trading partners is the most noteworthy shift observed during this period: the share China's imports sourced from Japan declined from 19% in 1995 to 9% in 2015, while that for Hong Kong SAR, China, declined from 10% to 5% during the same period. By contrast, during this period Australia became a more important source for China's imports, accounting for 5% of imports in 2015 versus only 1% in 1995 (see Table 3). While still accounting for a relatively low share of imports, Saudi Arabia and Brazil also became important source countries for China in this period.

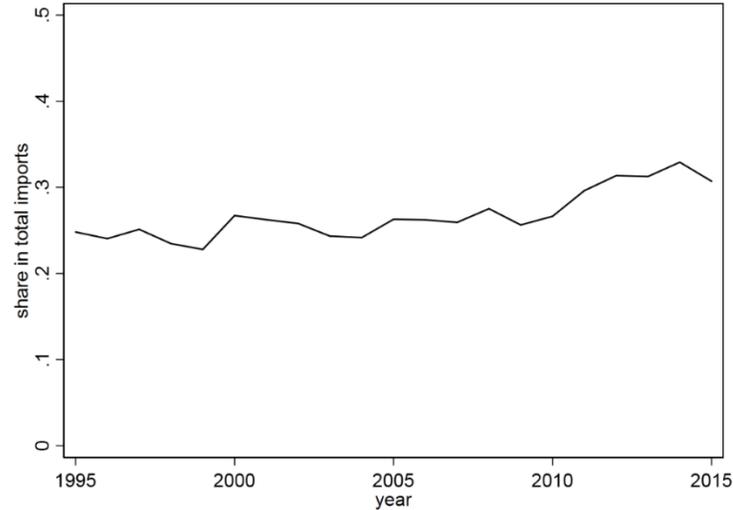
**Figure 3: Main import sources, 1995-2015**



**Table 3: Main import sources, 1995 and 2015**

	1995		2015	
	share	rank	share	rank
Korea	0.078	5	0.104	1
USA	0.109	3	0.101	2
Japan	0.194	1	0.091	3
Germany	0.053	6	0.062	4
Australia	0.012	17	0.049	5
Hong Kong, China	0.104	4	0.043	6
Malaysia	0.020	12	0.031	7
Brazil	0.011	18	0.028	8
Russian Federation	0.026	7	0.024	9
Singapore	0.023	10	0.024	10
Thailand	0.014	15	0.022	11
United Kingdom	0.013	16	0.022	12
Saudi Arabia	0.004	27	0.021	13
France	0.023	9	0.016	14
Switzerland	0.007	23	0.016	15

**Figure 4: Relative importance of imports from B&R economies, 1995-2015**



Comparison of Figures 2 and 4 shows that economies in the Belt and Road have been more important for China as markets for exports than as sources of imports. In recent years, however, the share of imports originated in these economies observed an upward trend, increasing from about 25% in 1995 to about 30% in 2015. The evidence in Table 4 reveals that the relative decline of Hong Kong SAR, China, as source of imports over this period was more than compensated for by the rise in importance of other B&R economies, including Saudi Arabia, Vietnam, Malaysia, Philippines and the Islamic Republic of Iran.

**Table 4: Imports from B&R economies, 1995 and 2015**

	1995		2015	
	share	rank	share	rank
Hong Kong SAR, China	0.104	1	0.043	1
Malaysia	0.020	4	0.031	2
Russian Federation	0.026	2	0.024	3
Singapore	0.023	3	0.024	4
Thailand	0.014	6	0.022	5
Saudi Arabia	0.004	8	0.021	6
Vietnam	0.003	11	0.015	7
Indonesia	0.019	5	0.015	8
Philippines	0.002	14	0.013	9
Oman	0.004	7	0.012	10
Iran, Islamic Rep.	0.002	17	0.011	11
India	0.004	9	0.009	12
Iraq	0.000	51	0.009	13
United Arab Emirates	0.001	22	0.008	14
Turkmenistan	0.000	42	0.006	15
Kuwait	0.001	21	0.005	16

Kazakhstan	0.002	13	0.004	17
Qatar	0.001	27	0.004	18
Myanmar	0.001	24	0.004	19
Mongolia	0.001	23	0.003	20
Israel	0.001	26	0.003	21
Turkey	0.001	19	0.002	22
Ukraine	0.003	10	0.002	23
Pakistan	0.002	16	0.002	24
Poland	0.001	25	0.002	25
Hungary	0.000	30	0.002	26
Czech Rep.	0.001	18	0.002	27
Slovak Rep.	0.000	32	0.001	28
Lao PDR	0.000	41	0.001	29
Uzbekistan	0.001	28	0.001	30
Romania	0.002	15	0.001	31
Egypt, Arab Rep.	0.000	39	0.001	32
Belarus	0.000	34	0.001	33
Yemen, Rep.	0.002	12	0.001	34
Bangladesh	0.000	29	0.001	35
Bulgaria	0.000	35	0.001	36
Cambodia	0.000	44	0.001	37
Jordan	0.000	36	0.000	38
Sri Lanka	0.000	47	0.000	39
Greece	0.000	33	0.000	40
Estonia	0.000	46	0.000	41
Slovenia	0.000	43	0.000	42
Azerbaijan	0.000	45	0.000	43
Armenia	0.000	56	0.000	44
Macedonia	0.000	59	0.000	45
Lithuania	0.000	49	0.000	46
Georgia	0.000	55	0.000	47
Latvia	0.000	38	0.000	48
Serbia	-	-	0.000	49
Bahrain	0.000	37	0.000	50
Croatia	0.000	31	0.000	51
Brunei Darussalam	0.000	58	0.000	52
Albania	-	-	0.000	53
Kyrgyzstan	0.001	20	0.000	54
Tajikistan	0.000	40	0.000	55
Bosnia Herzegovina	-	-	0.000	56
Rep. of Moldova	0.000	50	0.000	57
Nepal	0.000	53	0.000	58
Lebanon	0.000	52	0.000	59
Afghanistan	0.000	54	0.000	60

Montenegro	-	-	0.000	61
Syrian Arab Republic	0.000	48	0.000	62
Timor-Leste	-	-	0.000	63
State of Palestine	-	-	0.000	64
Bhutan	0.000	60	0.000	65
Maldives	0.000	57	0.000	66

#### 4. Evidence on the impacts of China's trade shocks on exports of B&R economies

This section examines econometrically the extent to which the multilateral exports of B&R economies were impacted by China's trade shocks during the period 1995-2015. In doing so, the analysis seeks to quantify the importance of supply and demand shocks, and to assess which type of shock was more important for each country and sector.

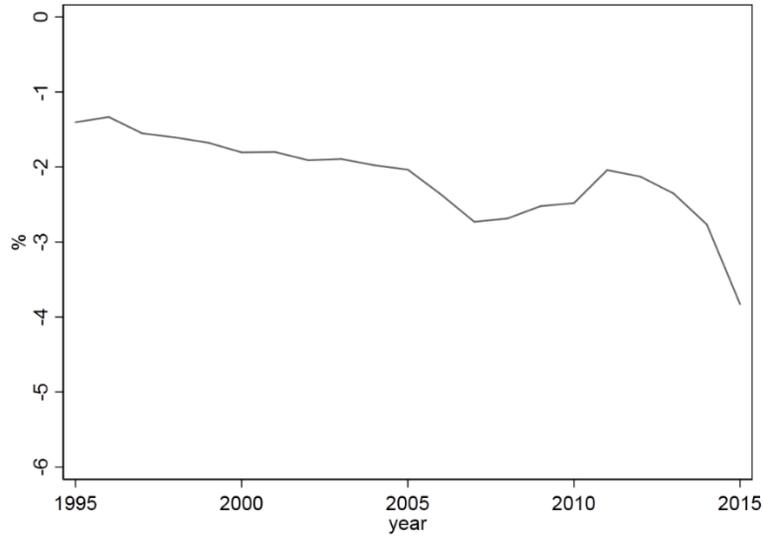
##### 4.1 Methodology

The econometric analysis in this section builds on Autor et al. (2013), who focus on the impact of increased Chinese import competition on local labor markets in the US. Autor et al. (2013) emphasize that local labor markets in the US were differentially exposed to Chinese import competition because of initial heterogeneity in production structure, and argue the transition of China to a market economy (and consequent rise of its productivity and trade flows) can be regarded as an exogenous trade shock to local labor markets in the US. Although the rise of China also represented a global demand shock (manifested in the rise of China's imports), Autor et al. (2013) note that such demand shock was relatively unimportant for the US. This is because the increase in US imports from China was much stronger than the rise in US exports to China.

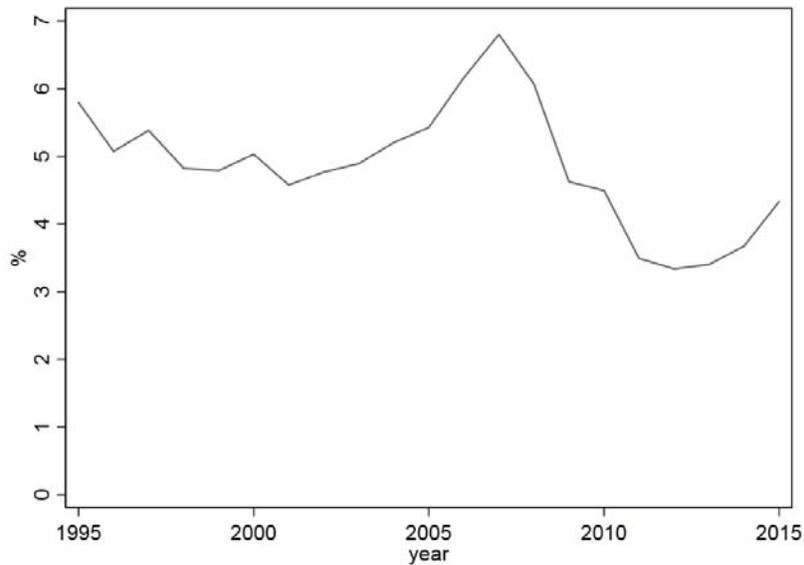
Figure 5 shows that the overall trade deficit of B&R economies with China increased over this period: Panel A reveals that the B&R trade deficit (computed as if B&R economies other than China were a single economy) rose from about 1.3% in 1995 to 4% in 2015; while Panel B indicates that the trade surplus of China with B&R economies decreased in the last years of this period.

**Figure 5: Trade balances between China and B&R economies**

Panel A: Trade balance of B&R economies with China (% of GDP)



Panel B: Trade balance of China with B&R economies (% of Chinese GDP)



Notes: Panel A is based on trade and GDP data aggregated across B&R economies. Panel B is based on trade data aggregated across B&R economies and GDP data for China.

However, as shown in Table A3 in the Appendix, these aggregate patterns hide considerable heterogeneity across countries. Although the trade balance with China deteriorated considerably

in Cambodia, Hong Kong SAR, China, Vietnam, the Czech Republic, the Kyrgyz Republic and Tajikistan, it became increasingly positive in Mongolia, Oman and Turkmenistan. This is yet another reason why the relative importance of supply and demand shocks associated with China's trade dynamics is likely to vary across B&R economies.

Building on these insights, this section examines econometrically the heterogeneous impacts of supply and demand shocks associated with China's trade dynamics on the exports of B&R economies. To measure supply (or competition) shocks associated with China's rising global exports, we use trade flow data by detailed product category and exploit differences across B&R economies in the degree of exposure to such shocks within each sector. Specifically, we interact the change in log exports of China in sector  $i$  in period  $t$  with the export similarity index between China and B&R economy  $j$  in sector  $i$  in 1995. The sector is defined at the 3-digit level, while the similarity index is computed as in Finger and Kreinin (1979) using product-level data at the 6-digit level. This index takes values between zero and one, and the higher its value the closer is the product distribution of exports in the two countries.

Formally, we define the China supply shock faced by B&R economy  $j$  in sector  $i$  in period  $t$  as:

$$\Delta Supply_{cjit} = \Delta \log X_{cit} * SX_{cji95} \quad (1)$$

where  $X_{cit}$  denotes multilateral exports of China in sector  $i$  in year  $t$ , and  $SX_{cji95}$  the export similarity index between China and B&R economy  $j$  in sector  $i$  in 1995.

Exposure to the global demand shocks associated with China's rising imports is measured in an analogous way, exploiting the fact that some countries initially exported relatively more of what China buys. Formally, the demand shock faced by B&R economies is defined as:

$$\Delta Demand_{cjit} = \Delta \log M_{cit} * SM_{cji95} \quad (2)$$

where  $M_{cit}$  denotes multilateral imports of China in sector  $i$  in year  $t$ , and  $SM_{cji95}$  the similarity index between China's imports and the exports of B&R economy  $j$  in sector  $i$  in 1995. In the

estimation sample, the average value for  $SX_{cji95}$  is 0.0009, while the mean value for  $SM_{cji95}$  is 0.0008.

The analysis then proceeds by examining the extent to which these country-sector specific supply and demand shocks impacted the multilateral exports of B&R economies in each sector. Specifically, the following econometric model is estimated:

$$\Delta \log X_{jit} = \beta \Delta Supply_{cjit} + \varphi \Delta Demand_{cjit} + \partial + \emptyset + \epsilon_{ijt} \quad (3)$$

where,  $X_{jit}$  denotes multilateral exports of B&R economy  $j$  in sector  $i$  in period  $t$ ,  $\partial$  is a period effect,  $\emptyset$  is a country-industry effect and  $\epsilon_{ijt}$  is the error term. The parameters of interest are therefore identified from variation over time in Chinese multilateral exports and imports in each 3-digit sector interacted with the initial degree of initial exposure of each B&R economy to such dynamics in the corresponding sector.

The key identifying assumption is that, from the perspective of each B&R economy, the evolution of China's multilateral exports and imports is largely exogenous to the country in question. This assumption is plausible given the relatively small importance of each B&R economy to China's trade growth. At the same time, the fact that China is an important destination market for several B&R economies would suggest that their exports will likely be impacted by changes in China's trade patterns. Nevertheless, given the above-mentioned internal and external factors driving the rise in China's exports and imports during this period, we use changes in sectoral Chinese exports and imports to the top 10 destinations and source countries as instruments for the change in China's multilateral exports within each sector. Importantly, these variables capture not only the effect of Chinese import competition in the domestic market (via imports) but also effects in third markets. By focusing on both supply and demand shocks, we will also account for Chinese demand of intermediate inputs that are used in production of Chinese exports.<sup>1</sup>

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<sup>1</sup> Autor et al (2013) note that firms may produce inputs in one country, export them to a second country for further processing, and so on, until the final good is delivered to consumers. China is often the final link in the supply chain reflecting its comparative advantage in labor-intensive assembly. Although the empirical approach outlined above is not designed to explicitly account for supply chains within product categories, it partly captures exposure of B&R economies to intermediate-goods trade (via supply and demand shocks across products). In this regard, it is important to note that, while China may be the last link in global production chains for some products, its contribution to value added across the various sectors is relatively large. Koopman et al. (2010) estimate that value added in China

The econometric analysis considers changes over four periods: 1995-2000, 2000-2005, 2005-2010 and 2010-2015. The baseline model will be estimated for the pooled panel by country-product-period. In addition, it will be estimated for different sub-samples of countries and products, generating specific estimates for: (1) all sectors and B&R economies; (2) all sectors in each B&R economy; and (3) each 2-digit sector in all B&R economies.

## 4.2 Results

The results in Table 5 provide estimates on average impacts of supply and demand shocks associated with China's trade dynamics on the multilateral exports of B&R economies. Column (1) reports the OLS results, columns (2) and (3) the first stage estimates, and column (4) the corresponding 2SLS estimates.

**Table 5: Average impacts of China shocks on exports of B&R economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	-11.30** (4.757)			-21.75*** (3.884)
$\Delta \text{Demand}_{cjit}$	46.82*** (7.669)			42.52*** (7.266)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.825*** (0.0106)	0.143*** (0.0290)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		0.00838 (0.00750)	0.658*** (0.0319)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	42,603	42,603	42,603	42,602
R-squared	0.163	0.980	0.873	0.035
F-statistic		4462.29	913.57	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

accounted for 63 percent of its gross exports across all sectors. Using more detailed data, Kee and Tang (2016) show that the substitution of domestic for imported materials by individual processing exporters caused China's domestic content in exports to increase from 65 to 70 percent in the period 2000-2007.

The results in column (1) suggest that China's supply (or competition shocks) had a negative impact on the multilateral exports of B&R economies: the coefficient of interest is negative and statistically significant at the 1% level. In other words, the rise of China's exports in sectors where exports of B&R economies were initially relatively more exposed to China had a negative impact on export growth in these countries. By contrast, demand shocks associated with the rise of China's imports impacted positively the overall growth of their exports. The magnitude of the coefficient on demand shocks is larger than that on supply shocks, suggesting that the overall net impact of China trade shocks on the exports of B&R economies during the period 1995-2015 was significantly positive.

**Table 6: Average impacts of China shocks on exports of B&R economies, 2005-2015**

	(1) OLS	(2)	(3) 2SLS	(4)
	$\Delta \log X_{jit}$	1st stage $\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	2nd stage $\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	-43.83*** (12.80)			-52.82*** (8.309)
$\Delta \text{Demand}_{cjit}$	37.63** (16.80)			44.95*** (16.93)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.817*** (0.0193)	0.0218 (0.0177)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		-0.0272** (0.0113)	0.565*** (0.0317)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	21,303	21,303	21,303	21,302
R-squared	0.339	0.977	0.929	0.015
F-statistic		1801.99	359.65	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

These findings remain very similar when using changes in Chinese exports to top 10 destinations (or imports from top 10 sources) interacted with the initial similarity index as instruments for the change in China's multilateral exports (also interacted with the initial similarity index). The results in columns (2) and (3) reveal that these instruments are a strongly correlated with the overall supply

and demand shocks. They also suggest that supply and demand shocks are only weakly correlated with each other, thereby providing a source of variation for identifying their independent effects. Since the first stage coefficients of interest are close to unity (and the others are close to zero), the 2SLS estimates in column (4) are not too dissimilar from those in column (1). Nevertheless, the negative effect of China's supply (or competition shocks) on the multilateral exports of B&R economies ceases to be statistically significant when country-year and country-industry fixed effects are included in the regressions (see Table A4 in the Appendix).

Table 6 reports results from a similar analysis, but focusing now on the period 2005-2015. These results suggest that, in more recent years, China supply shocks had a stronger negative impact on exports of B&R economies, while demand shocks associated with rising Chinese imports were equally significant. These results are robust when country-period and country-industry fixed effects are included in the estimation (see Table A5 in the Appendix).

Table 7 presents IV estimates by B&R economy for the period 1995-2015. The results reveal considerable heterogeneity of effects across countries. China's competition shocks had a negative impact on the growth of multilateral exports of Bangladesh, Maldives, Nepal, Pakistan, Bahrain, Kuwait, Azerbaijan and Bosnia. The results in this table further provide evidence of positive impacts of demand shocks for several countries: Brunei, Cambodia, Indonesia, Singapore, Thailand, Timor-Leste, India, Bahrain, Kuwait, Saudi Arabia, the Syrian Arab Republic, Azerbaijan, Bosnia, Bulgaria, Estonia, Moldova, Poland, Romania, the Russian Federation, Ukraine, Uzbekistan and Greece.

**Table 7: Impacts of China shocks on exports of B&R economies, 2SLS, 1995-2015**

Country	$\Delta$ Supply <sub>cit</sub>	$\Delta$ Demand <sub>cit</sub>	Country	$\Delta$ Supply <sub>cit</sub>	$\Delta$ Demand <sub>cit</sub>
Brunei	19.46 (50.85)	78.78 *** (27.08)	Yemen	-2.94 (24.23)	9.10 (19.79)
Cambodia	35.46 (31.89)	161.33 *** (27.40)	Albania	-7.17 (17.93)	37.88 (78.60)
Indonesia	-12.87 (9.82)	39.76 *** (15.02)	Armenia	-346.39 (282.12)	-350.91 ** (144.72)
Lao	-63.83 (43.05)	-189.10 (641.80)	Azerbaijan	-144.00 ** (67.05)	89.07 *** (29.59)
Malaysia	7.21 (12.01)	19.03 (16.24)	Belarus	147.34 ** (63.71)	-75.24 (66.91)
Myanmar	-30.59 (49.83)	21.16 (15.78)	Bosnia	-96.65 *** (35.48)	136.51 *** (50.06)
Philippines	-13.07 (14.32)	40.70 (30.56)	Bulgaria	24.32 (15.54)	23.02 ** (9.21)
Singapore	-2.07 (10.53)	33.30 * (19.41)	Croatia	-6.56 (16.03)	19.05 (28.19)
Thailand	-1.34 (10.38)	32.35 *** (9.34)	Czech Republic	76.06 *** (16.88)	2.42 (10.91)
Timor Leste	-30.87 (129.11)	172.96 *** (54.26)	Estonia	-24.80 (19.94)	64.82 ** (30.66)
Vietnam	-1.58 (15.27)	38.18 (45.67)	Georgia	88.52 (171.95)	53.12 (66.21)
Afghanistan	564.66 (366.20)	110.47 (147.90)	Hungary	47.68 * (25.10)	5.99 (5.50)
Bangladesh	-32.85 *** (11.19)	-81.61 (54.52)	Kazakhstan	27.71 (57.19)	56.09 (53.89)
Bhutan	649.44 (467.00)	91.28 (587.44)	Kyrgyz	-578.87 (419.54)	87.20 (68.85)
India	-7.41 (14.60)	56.49 ** (26.58)	Latvia	-36.07 (28.46)	5.69 (31.43)
Maldives	-462.53 *** (125.00)	860.50 (600.57)	Lithuania	-7.70 (27.40)	22.12 (25.60)
Nepal	-65.78 * (37.63)	99.82 (397.80)	Macedonia	2.93 (20.39)	-12.58 (36.01)
Pakistan	-135.19 *** (37.34)	-4.06 (14.65)	Moldova	62.72 (97.37)	20.19 * (11.23)
Srilanka	-24.46 (16.08)	97.47 (140.04)	Poland	-12.54 (14.20)	22.17 ** (10.09)
Bahrain	-418.10 * (234.36)	304.39 *** (94.39)	Romania	2.78 (11.25)	29.14 *** (7.05)
Egypt	-19.11 (26.97)	10.19 (24.38)	Russia	27.83 ** (12.65)	37.74 *** (11.11)
Iran	-27.66 (36.66)	3.50 (20.33)	Slovak	6.89 (26.44)	25.89 (16.70)
Iraq	-62.09 (57.52)	39.64 (36.66)	Slovenia	19.57 (18.43)	14.69 (12.74)
Israel	31.02 ** (15.52)	-28.94 * (15.78)	Tajikistan	107.02 (294.58)	145.98 (153.85)
Jordan	92.41 (61.63)	26.88 (21.22)	Turkey	22.15 (18.70)	9.98 (21.05)
Kuwait	-69.69 * (40.48)	70.90 *** (20.37)	Turkmenistan	148.43 ** (73.21)	-65.16 (63.12)
Lebanon	-31.58 (40.82)	-57.36 (82.56)	Ukraine	10.39 (12.04)	55.99 *** (18.44)
Oman	-24.55 (50.23)	4.04 (26.39)	Uzbekistan	308.08 (649.62)	105.87 * (64.17)
Qatar	-64.68 (101.33)	-21.69 (22.61)	Hong Kong, China	8.69 (9.33)	20.76 (15.60)
Saudi Arabia	-58.25 (37.21)	69.01 *** (17.26)	Greece	0.86 (25.17)	23.93 * (13.74)
Syria	-108.32 (96.75)	315.55 *** (89.47)	Mongolia	94.95 (66.45)	126.42 (104.73)
Arab Emirates	-69.31 (49.50)	32.19 (35.55)			

Robust standard errors clustered by industry, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 8: Impacts of China shocks on exports of B&R economies, 2SLS, 2005-2015**

Country	$\Delta$ Supply <sub>cit</sub>	$\Delta$ Demand <sub>cit</sub>	Country	$\Delta$ Supply <sub>cit</sub>	$\Delta$ Demand <sub>cit</sub>
Brunei	-487.67 *** (97.79)	72.49 (49.79)	Yemen	1823.91 (7223.77)	71.32 (227.57)
Cambodia	43.36 (46.32)	79.60 (189.09)	Albania	-41.94 (39.34)	-193.50 (283.96)
Indonesia	-31.78 * (17.98)	36.97 *** (13.73)	Armenia	-58.16 (254.93)	188.02 ** (89.01)
Lao	-55.18 (44.35)	59.50 (363.26)	Azerbaijan	-132.22 (1059.07)	88.93 (240.83)
Malaysia	-83.48 ** (40.64)	29.57 * (16.19)	Belarus	-16.86 (54.00)	-127.28 (85.55)
Myanmar	-35.05 (102.48)	-12.52 (97.22)	Bosnia	-24.93 (36.94)	-25.06 (54.74)
Philippines	-70.54 *** (24.35)	61.96 (38.34)	Bulgaria	-38.17 * (21.59)	2.53 (15.99)
Singapore	-36.75 (78.44)	58.13 (47.55)	Croatia	-13.71 (21.96)	56.18 (54.43)
Thailand	-40.84 ** (17.74)	6.79 (23.90)	Czech Republic	24.83 (38.19)	8.14 (16.25)
Timor Leste	-856.39 (1667.71)	1143.45 (1525.73)	Estonia	-74.69 (69.79)	64.94 (45.87)
Vietnam	-36.92 *** (11.04)	4.23 (13.05)	Georgia	-807.75 (948.09)	311.47 (232.62)
Afghanistan	-1820.04 (2212.45)	362.78 (337.12)	Hungary	-87.12 ** (35.48)	-11.18 ** (5.02)
Bangladesh	38.65 * (22.22)	-143.47 * (76.85)	Kazakhstan	415.62 (540.28)	92.61 * (49.93)
Bhutan	-4446.65 * (2506.08)	393.10 (427.89)	Kyrgyz	-24.60 (1471.00)	-76.03 (166.69)
India	-9.98 (21.91)	105.74 ** (47.38)	Latvia	-214.95 *** (76.16)	-82.04 *** (19.04)
Maldives	-61.75 (203.01)	530.79 (577.12)	Lithuania	-95.29 ** (39.67)	66.32 * (40.02)
Nepal	-90.07 (70.89)	461.15 (629.05)	Macedonia	17.19 (37.76)	50.17 (62.88)
Pakistan	-49.82 (61.60)	-76.30 (153.35)	Moldova	319.90 (231.43)	25.90 (23.87)
Srilanka	11.72 (20.25)	163.07 (219.82)	Poland	-29.92 ** (12.79)	43.15 ** (18.86)
Bahrain	-292.97 (276.87)	332.92 ** (152.00)	Romania	-60.14 *** (15.93)	-30.91 (22.31)
Egypt	-47.79 (32.12)	-9.88 (20.22)	Russia	-64.83 (103.01)	47.21 *** (17.79)
Iran	-1454.98 (899.54)	25.04 (120.60)	Slovak	-60.88 (42.20)	20.40 (13.66)
Iraq	-1368.97 (1385.47)	-30.54 (59.70)	Slovenia	-24.38 (40.64)	57.35 *** (20.01)
Israel	-177.13 *** (57.50)	-13.22 (25.88)	Tajikistan	-1843.44 (1877.36)	547.86 (495.69)
Jordan	-208.09 (140.40)	18.02 (39.15)	Turkey	-13.21 (15.08)	14.23 (37.70)
Kuwait	326.45 (1155.60)	100.55 *** (33.80)	Turkmenistan	3835.41 (7303.02)	-148.99 (209.68)
Lebanon	-57.83 (51.97)	-252.96 (210.01)	Ukraine	-55.56 (36.51)	84.68 *** (20.33)
Oman	-272.66 * (155.99)	-15.29 (27.00)	Uzbekistan	-1616.11 (1814.91)	209.99 (315.36)
Qatar	-831.73 *** (226.13)	-10.46 (54.04)	Hong Kong, China	-31.49 (19.64)	34.49 (27.44)
Saudi Arabia	14732.47 (146552.62)	201.00 (1024.92)	Greece	-4.53 (27.49)	26.68 (36.02)
Syria	-202.64 (228.04)	525.18 *** (47.84)	Mongolia	-129.03 (190.87)	512.76 *** (130.44)
Arab Emirates	-365.90 ** (160.98)	25.27 (39.84)			

Robust standard errors clustered by industry, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8 reports similar country-specific results, but focusing now on the period 2005-2015, which as shown above was characterized by stronger negative average impacts of China’s supply shocks on exports of B&R economies. The estimates in this table reveal that the countries more negatively impacted by China supply shocks in this period were Brunei, Bhutan, Qatar, Latvia, United Arab Emirates and Oman. At the same time, China’s demand shocks had a positive impact on the exports of the Indonesia, India, Bahrain, Kuwait, Syria, Armenia, Poland, Russia, Slovenia, Ukraine and Mongolia.

**Table 9: Impacts of China shocks on exports of B&R industries, 2SLS, 1995-2015**

Industry	$\Delta \text{Supply}_{ijt}$	$\Delta \text{Demand}_{ijt}$
Live animals and animal products	-2149.01 (8523.23)	1859.58 (6520.36)
Vegetable products	247.16 (190.50)	39.90 (12.22)
Food products	-338.36 (386.56)	287.04 (191.86)
Minerals	112.26 (365.22)	31.64 (72.78)
Fuels	-3.76 (23.35)	51.40 (39.04)
Chemicals	196.36 (174.84)	43.95 (22.17)
Plastic or rubber	-202.02 *** (65.34)	-18.80 (28.85)
Hides and skins	132.55 (96.70)	0.24 (179.85)
Wood	-5070.24 (58710.45)	-10917.25 (129295.96)
Textiles and clothing	-16.24 ** (8.16)	37.09 *** (11.03)
Footwear	52.29 (37.04)	177.75 (231.22)
Stone and glass	-550.85 ** (278.68)	73.88 (171.33)
Metals	28.54 ** (14.20)	18.53 (15.03)
Machinery and electrical	-33.84 *** (12.79)	40.08 ** (18.42)
Transportation	-414.50 ** (190.07)	124.48 *** (37.09)
Miscellaneous	-96.91 *** (34.30)	288.61 *** (89.56)

Robust standard errors clustered by country, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9 reports estimates on the impacts of China’s supply and demand shocks on exports of B&R economies by sector during the period 1995-2015. The evidence in this table suggests that adverse effects of China’s supply shocks were felt more strongly in the sectors “Plastic or rubber”, “Textiles and Clothing”, “Stone and Glass”, “Machinery and electrical”, “Transportation” and

Miscellaneous”. As shown above, these are important export sectors in China. The table also reveals that positive demand shocks were relatively more important in “Vegetable products”, “Chemicals”, “Textiles and clothing”, “Machinery and electrical”, “Transportation” and the residual category “Miscellaneous”. The fact that the latter three sectors were characterized by both negative supply shocks and positive demand shocks is likely to reflect the fact that these are sectors in which trade in parts and components tends to be relatively important (recall that the similarity indexes are computed at the 6-digit level, and hence supply and demand shocks may be separately identified even within sectors).

**Table 10: Impacts of China shocks on exports of B&R industries, 2SLS, 2005-2015**

Industry	$\Delta \text{Supply}_{cjt}$	$\Delta \text{Demand}_{cjt}$
Live animals and animal products	18.87 (311.63)	48.68 (390.83)
Vegetable products	-78.68 (214.56)	-9.99 (13.17)
Food products	50767.62 (1296326.28)	-61056.80 (1561593.31)
Minerals	1949.85 (2894.08)	121.94 (86.04)
Fuels	175.08 (171.33)	89.45 (60.93)
Chemicals	-14.93 (205.04)	44.86 (36.90)
Plastic or rubber	-337.67 * (200.25)	35.11 (35.09)
Hides and skins	-296.44 (554.72)	-1600.08 (4074.67)
Wood	448.51 (527.67)	39.63 (36.40)
Textiles and clothing	-29.21 * (16.30)	62.32 * (33.53)
Footwear	-17.85 (28.17)	-518.96 ** (247.46)
Stone and glass	-866.39 (1263.91)	864.16 (1894.30)
Metals	-84.47 (83.74)	56.83 (41.79)
Machinery and electrical	19.93 (21.55)	-44.91 (31.02)
Transportation	-366.66 (774.46)	43.76 (76.70)
Miscellaneous	1.88 (38.86)	360.29 * (212.71)

Robust standard errors clustered by country, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 10 reports similar estimates but focusing now on the period 2005-2015, which on average was characterized by a relatively stronger negative impacts of China's supply shocks, and a weaker positive impact of China's demand shocks. The estimates in this table suggests that adverse effects of China's supply shocks were felt more strongly in the sectors "Plastic or rubber" and "Textiles and Clothing". The results also reveal that, during this period, positive demand shocks were relatively more important in "Textiles and Clothing".

### **4.3 Comparison with other major B&R trade partners**

Rather than focusing on China trade shocks, Tables A6-A10 in the Appendix provide related estimates for supply and demand shocks associated with trade of other major B&R countries: Indonesia, Pakistan, India, Russia and Thailand. It is important to emphasize at the outset that this analysis is subject to several important caveats. First, the internal and external factors shaping the economic transformation of China during this period imply that the China's trade shocks are large and plausibly exogenous to B&R economies. The same conditions may not be met by these other B&R economies, which has important implications for interpreting the econometric results. Second, these countries tend to be relatively unimportant trade partners for most B&R economies. The exception is Russia, who stands out as an important partner for several B&R economies.

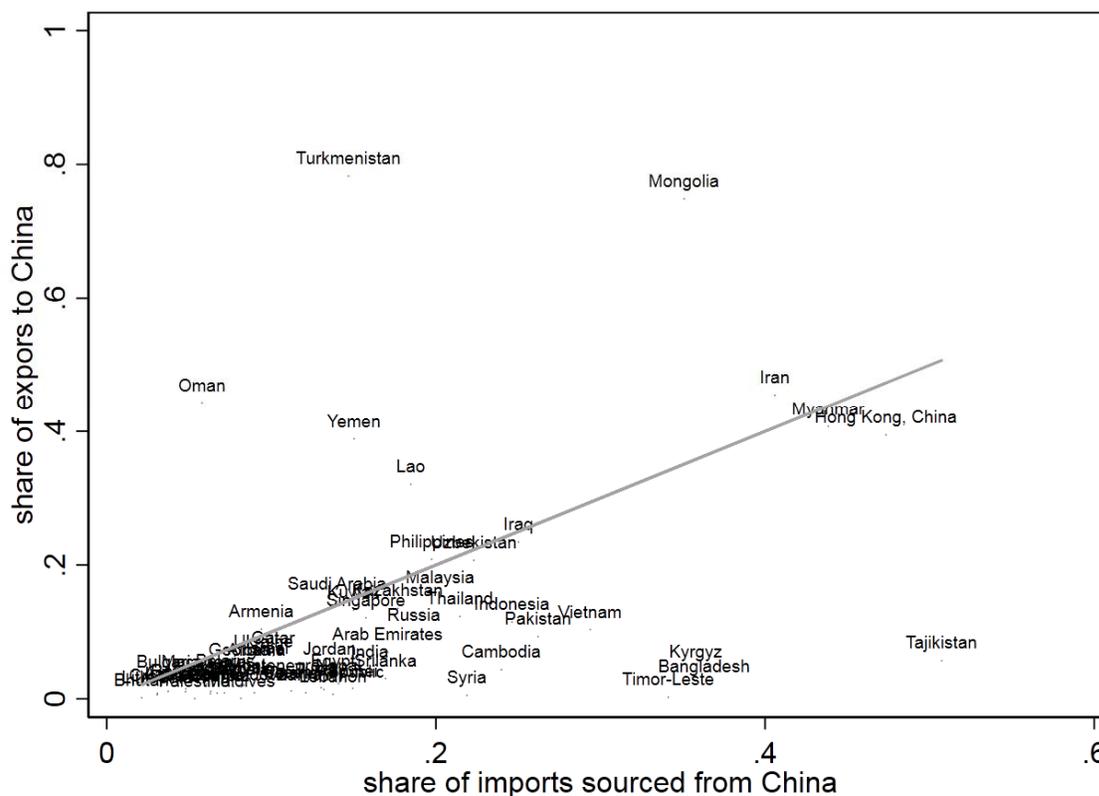
Consistent with these considerations, the results in Tables A6-A10 in the Appendix provide little evidence of negative impacts of supply shocks associated with the trade dynamics of these countries. In fact, the coefficients on both supply and demand shocks tend to be positive. This may reflect the fact that, in the absence of an exogenous internal and external transformation affecting trade dynamics in these countries, the coefficients of interest reflect common unobserved factors linking trade developments across these B&R economies.

## **5. Current degree of exposure of B&R economies to China's trade dynamics**

The econometric analysis presented above made it possible to quantify the extent to which the multilateral exports of B&R economies were impacted by supply and demand shocks associated with China's trade dynamics during the last two decades. Building on this analysis, this section provides descriptive statistics to document the current degree of exposure of each B&R economy

to: (1) import competition from China; (2) competition from China in third export markets; and (3) demand shocks from China. This analysis makes it possible to draw inferences about the likely impacts of further integration with China on sectorial trade patterns.

**Figure 6: Relative importance of China for trade of B&R economies, 2015**



A first step towards assessing these various dimensions of exposure to China’s trade dynamics is to document how important are trade relationships with China for each B&R economy. Figure 6 depicts the relative importance of China for the exports and imports of each B&R economy. It reveals that China is an important trade partner for many B&R economies. Indeed, for most B&R economies, China is more important as a source of imports than as a destination market for exports. This is clearly the case for Tajikistan, Kyrgyzstan, Bangladesh, Cambodia and Timor-Leste. There are also several B&R economies, including Mongolia, Turkmenistan, Oman, the Republic of Yemen and Lao PDR for which China is more important as export destination than as source country. (Figure A1 in the Appendix displays more clearly the names of the B&R economies that are located close to the origin.)

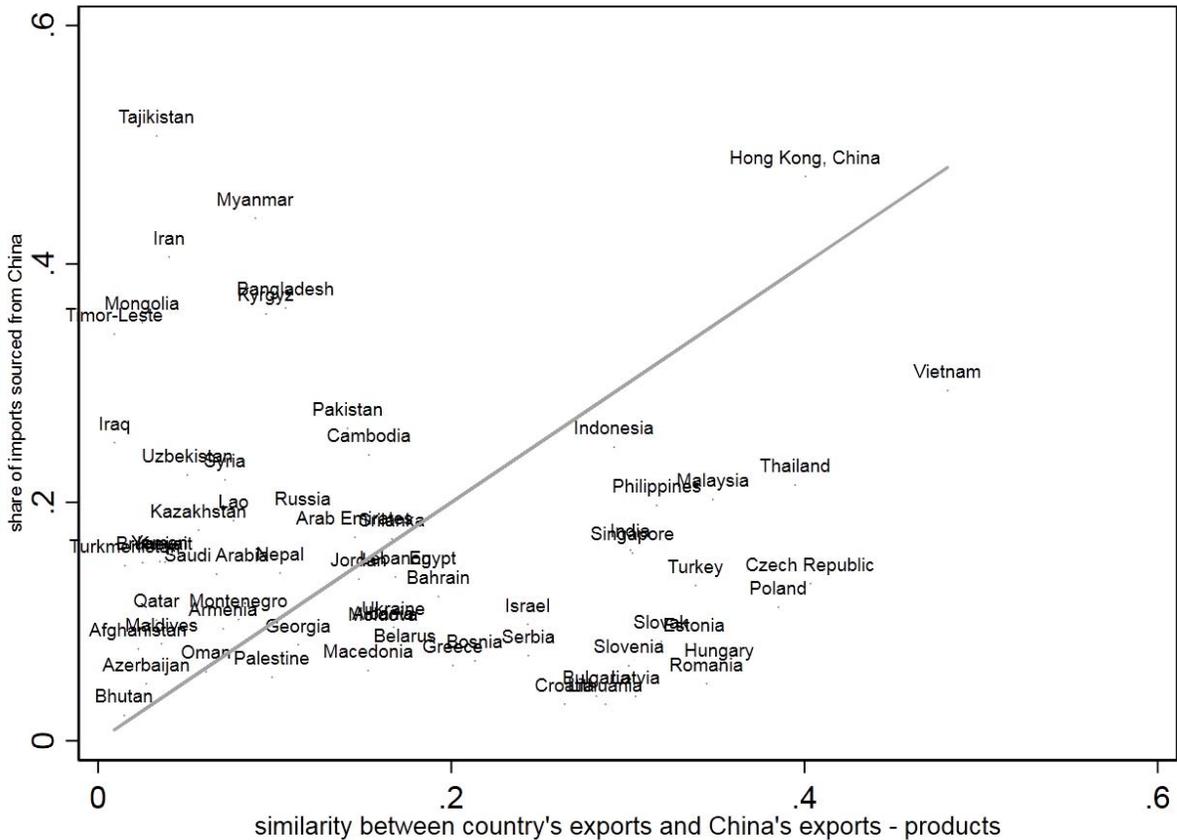
To assess the extent to which B&R economies are exposed to import competition from China, it is important to examine not only how important China is as a source of imports, but also the degree to which China's specialization pattern is similar to that of the country in question. If a B&R economy sources a significant share of imports from China and has a similar production structure, competition shocks would be expected to be stronger. In contrast, if China is either not an important source of imports, or the two countries produce and export markedly different sets of products, competitive pressures would be expected to be weaker. As in the previous section, the degree of similarity in specialization patterns relative to China is measured by the export similarity index proposed by Finger and Kreinin (1979), using detailed product-level data at the 6-digit level. This index takes values between zero and one, and the higher its value the closer is the product distribution of exports in the two countries.

The evidence in Figure 7 reveals that several B&R economies for which China is an important source of imports have a specialization structure that differs considerably from that of China. These include Tajikistan, Myanmar, Kyrgyzstan, Bangladesh, Mongolia and the Islamic Republic of Iran. To the extent that differences in export structure reflect underlying differences in production structures across countries, these countries are only weakly exposed to Chinese import competition in their own markets, even though they source a large share of imports from China. Mutual gains from further integration with these countries are likely to derive mainly from further exploitation of the corresponding comparative advantages. (Figure A2 in the Appendix displays more clearly the names of the B&R economies that are located close to the origin.)

By contrast there are several other B&R economies that source a relatively large share of imports from China and have an export structure that is more similar to that of China. These include, most notably, Vietnam, Thailand, Malaysia, Philippines, India, Singapore and Indonesia. These countries are therefore likely to be relatively more exposed to import competition from China in their own markets in several industries. Further integration with these countries would likely involve stronger competitive pressures in final goods markets, which may have important implications for the adjustment of factor markets (notably labor markets). However, it is important to emphasize that there are various important sources of mutual gains from further integration:

consumers would gain access to a wider range of product varieties within sectors, and firms and countries would be expected to obtain efficiency gains due to further specialization in different varieties or stages of production.

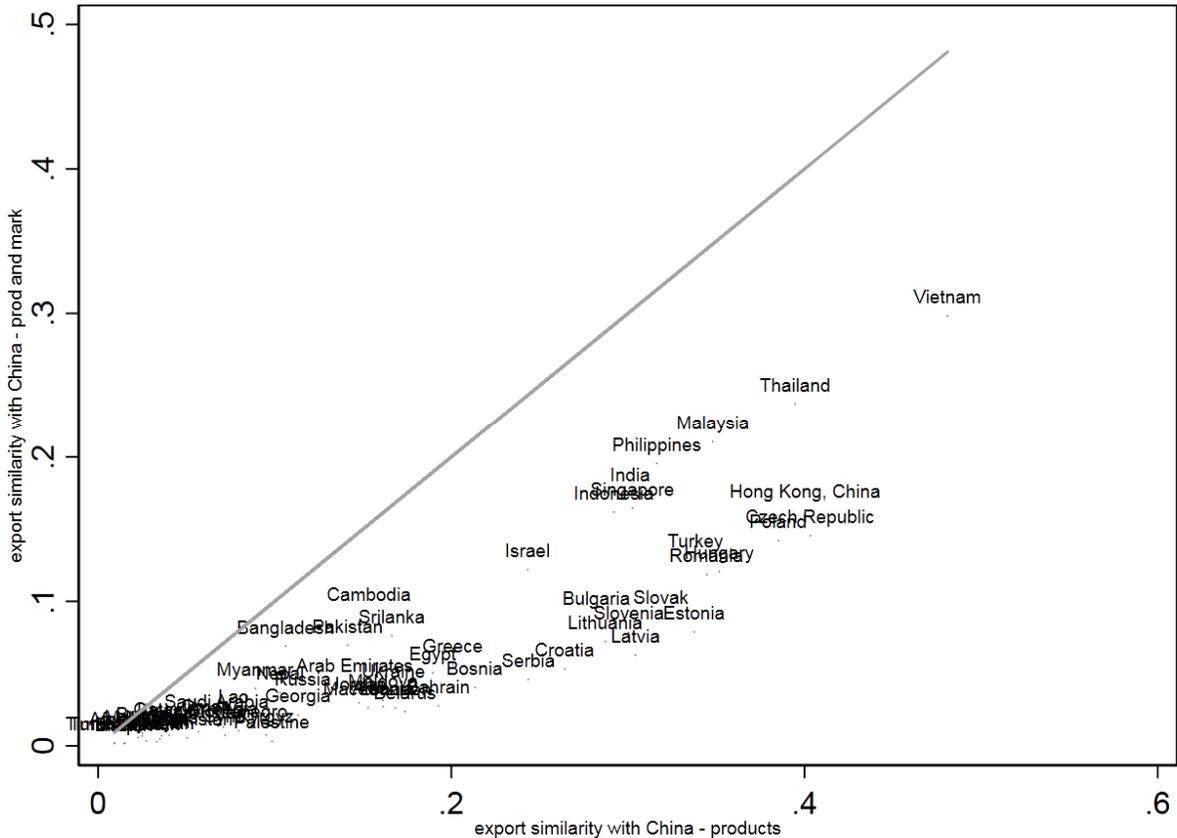
**Figure 7: Exposure to import competition from China, 2015**



To assess the extent to which B&R economies are exposed to competition from China in third-country export markets, Figure 8 depicts the relationship between an Export Similarity Index computed at the product-destination level and an Export Similarity Index at the product-level. A relatively high value for both these measures would suggest that not only the B&R economy produces and exports a basket of goods that is similar to that of China, but also that it sells those products in the same export destinations. The results in Figure 8 suggest that the degree to which B&R economies are exposed to competition from China in third-country markets is relatively higher in Vietnam, Thailand, Malaysia, Philippines, India and Singapore. If Chinese exports become relatively more expensive (e.g. due to increases in labor costs or exchange rate movements), these countries would likely gain market share in their corresponding export

markets. Conversely, if Chinese investments in robotization make its exports more competitive, these economies may lose market shares. (Figure A3 in the Appendix displays more clearly the names of the B&R economies that are located close to the origin.)

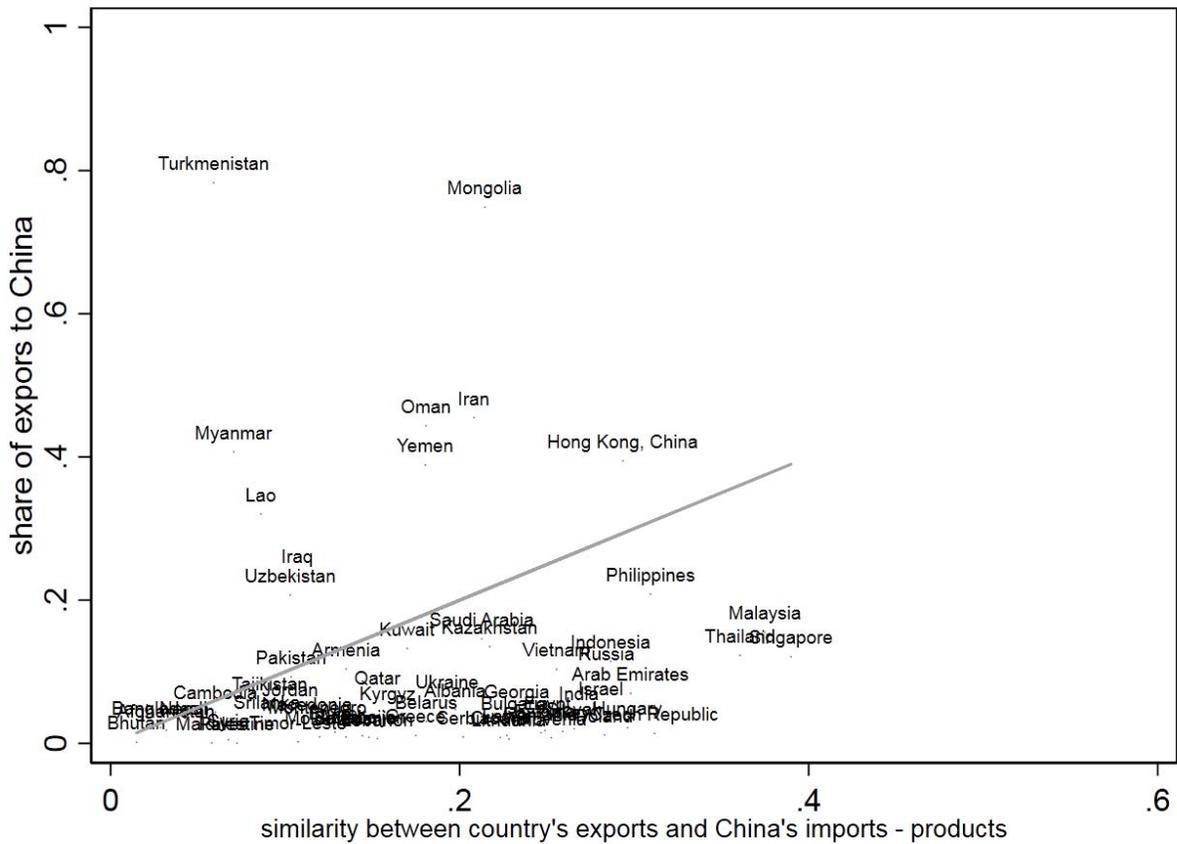
**Figure 8: Exposure to competition from China in third export markets, 2015**



Finally, Figure 9 provides evidence on the extent to which B&R economy is exposed to fluctuations in China’s import demand. To make this assessment, it is important to consider not only if China is an important export destination for B&R economies, but also the extent to which the structure of Chinese import demand is similar to the structure of the B&R economy’s exports. While the first indicator gives a direct measure of the current degree of exposure to changes in Chinese import demand, the second contains useful information on the potential for increasing further such demand. The results in Figure 9 suggest that Mongolia, Hong Kong SAR, China, the Islamic Republic of Iran, Oman, the Republic of Yemen and Turkmenistan are highly exposed to demand shocks from China. China is also an important destination

market Lao PDR, Uzbekistan and Myanmar, though the export structure of these countries exhibits important differences relative to the structure of China's overall import demand. Finally, there are several B&R economies for which China is an important destination market and have an export structure that is relatively closer to the structure of Chinese multilateral imports. This is especially the case of Malaysia, Philippines, Thailand and Singapore. (Figure A4 in the Appendix displays more clearly the names of the B&R economies that are located close to the origin.)

**Figure 9: Exposure to demand shocks from China, 2015**



## 6. Policy options to facilitate adjustment to trade shocks

Deeper international economic integration typically generates aggregate welfare gains for the countries involved. These gains can have a static or dynamic nature. Static gains from trade are driven by increased specialization according to comparative advantage, a greater concentration of productive resources in the most efficient firms within each sector, and by the fact that consumers

gain access to a wider variety of products (Pavcnik, 2002; Broda and Weinstein, 2006). Dynamic gains may arise from trade-induced innovation, knowledge diffusion and improved access to intermediate inputs, which lead to improvements in technical efficiency and product quality within firms (Goldberg et al. 2010; Bloom et al. 2015).

Although deeper integration is generally beneficial at the country-level, it also imposes adjustment costs within countries. These costs reflect frictions in the reallocation of workers across sectors, regions and occupations in response to sector-specific competition and demand trade shocks. Greater import competition may displace workers from their current employment, who must therefore find employment elsewhere or exit the labor market altogether. Positive demand shocks typically lead to employment gains in the corresponding industry, and may therefore contribute to absorb workers displaced by competition shocks.

B&R economies more exposed to competition shocks from China are likely to face stronger adjustment costs. Even if workers can find employment in expanding sectors, regions and occupations, they may suffer welfare losses. For example, workers displaced by international competition may face periods of involuntary unemployment while searching for another job. Some displaced workers (e.g. older workers) may not find employment and exit the labor force. Other displaced workers may have to pay monetary and non-monetary costs associated with moving location. Workers may also lose human capital that is specific to the industry or occupation in which they were previously employed. The remainder of this section reviews recent empirical evidence on how competition shocks imposed by deeper integration have impacted labor markets in other countries. Building on the findings of this literature, it then discusses policy options to deal with these adjustment costs.

## **6.1 Evidence on adjustment costs imposed by trade shocks**

This section summarizes the main findings of recent studies examining the effects of Chinese import competition on US labor markets, the impacts of NAFTA on wages and employment, and the impacts of the unilateral tariff liberalizations on regional dynamics in India and Brazil.

*US-China*: In two influential papers, Autor et al. (2013, 2014) examine the impacts of increased Chinese import competition on labor markets in the United States. Autor et al. (2013) emphasize that US local labor markets are differentially exposed to Chinese import competition because of initial heterogeneity in their production structure, and argue the transition of China to a market economy (and the consequent rise of its productivity and trade flows) may be regarded as an exogenous trade shock to those local labor markets. They provide evidence that rising import competition from China caused higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import-competing manufacturing industries. Import competition is found to explain about one-quarter of the contemporaneous aggregate decline in US manufacturing employment. Transfer benefit payments for unemployment, disability, retirement and health care also rose sharply in local labor markets more exposed to import competition. The empirical approach adopted by Autor et al. (2013) hinges on the assumption that labor is relatively immobile across space. This hypothesis is supported by evidence showing insignificant population adjustments for local labor markets with substantial exposure to imports. This appears to reflect frictions in labor mobility across sectors and regions.

An important implication of these findings is that federally-funded transfer programs, like the Social Security Disability Insurance (SSDI), implicitly insure US workers against trade-related employment shocks. Autor et al. (2013) also report evidence that import exposure predicts an increase in in-kind medical programs benefits from Trade Adjustment Assistance (TAA), which is the primary federal program that offers financial support to workers who face a trade-induced job loss. However, TAA grants are relatively small and temporary, while most workers who take disability receive social security benefits until retirement or death. Autor et al. (2013) estimate that for regions affected by import competition from China, the estimated dollar rise in per capita SSDI payments is more than 30 times as large as the estimated dollar increase in TAA payments (which account for a negligible part of trade-induced increase in transfers). Unemployment insurance and income assistance play a significant but secondary role.

Autor et al. (2014) complement this analysis by pairing industry-level competition shocks stemming from China's rise as manufacturing exporter with panel data on individual earnings by employer during 1992-2007. They find that individuals who in 1991 worked in manufacturing

industries that experienced high subsequent import growth earn lower cumulative earnings and face elevated risk of obtaining public disability benefits. The difference between a manufacturing worker at the 75th percentile of industry trade exposure and one at the 25th percentile of exposure amounts to cumulative earnings reductions of 46% of initial yearly income, and to one-half of an additional month where payments from SSDI are the main source of income. Trade exposure increases job churning across firms, industries and sectors. Workers initially employed in industries more exposed to import competition spend less time working for their initial employers, less time in their initial two-digit manufacturing industries, and more time working elsewhere in manufacturing and outside of manufacturing. Earnings losses are also found to be heterogeneous across workers. They are larger for individuals with low initial wages, low initial tenure, and low attachment to the labor force. Low-wage workers churn primarily among manufacturing sectors, where they are repeatedly exposed to subsequent trade shocks. High-wage workers are better able to move across employers with minimal earnings losses and are more likely to move out of manufacturing conditional on separation. These findings reveal that import shocks impose substantial labor adjustment costs that are highly unevenly distributed across workers according to their skill levels and conditions of employment in the pre-shock period.

*US-Mexico:* Hakobyan and McLaren (2017) estimate effects of NAFTA on wages using US data for 1990 and 2000. They estimate the effects of the agreement by industry and by location, measuring each industry's exposure to Mexican imports and each locality's dependence on exposed industries. The results indicate that tariff reductions reduced wage growth for blue-collar workers in the most affected industries and localities. These effects apply also to service-sector workers in affected localities, whose jobs do not compete with imports.

Other earlier papers examine effects of NAFTA on local labor markets in Mexico. Hanson (2007) finds that, in the aftermath of NAFTA, Mexican regions more exposed to globalization (as measured by exports, imports and FDI) experienced a decline in inequality and poverty relative to the rest of the country. Prina (2013, 2015) finds that Mexican small farmers tended to benefit from the agreement, while rural landless workers appear not to have been affected. Robertson (2004) provides evidence that the prices of unskilled-intensive goods fell in Mexico following NAFTA, which led to a decline in the wage premiums of skilled workers. Finally, Chiquiar (2008) shows

that skill premiums in Mexico following NAFTA declined in parts of the country more integrated with world markets (relative to more isolated parts of the country).

*Indian and Brazilian trade liberalizations:* Topolova (2010) exploits the 1991 Indian trade liberalization to estimate the impact of import competition on poverty. The estimates provide evidence that rural districts in which sectors were more exposed to liberalization were concentrated experienced slower decline in poverty and lower consumption growth. The impact of liberalization was most pronounced among the least geographically mobile at the bottom of the income distribution, and in Indian states where inflexible labor laws impeded factor reallocation across sectors.

Most empirical studies on the labor market effects of trade liberalization typically emphasize short- or medium-run effects. Dix-Carneiro and Kovak (2017) use 25 years of administrative employment data from Brazil to study the dynamics of local labor market adjustment following the country's trade liberalization in the early 1990s. The study exploits variation in the tariff declines across industries and variation in the industry composition of local employment across regions to measure changes in local labor demand induced by tariff liberalization. The results reveal that regions facing larger tariff cuts experienced prolonged declines in formal sector employment and earnings relative to other regions. The impact of tariff changes on regional earnings 20 years after liberalization was three times the effect after 10 years. Importantly, these rising impacts on regional earnings are inconsistent with conventional spatial equilibrium models, which predict declining effects due to spatial arbitrage. Dix-Carneiro and Kovak (2017) examine potential mechanisms underlying these impacts, and find support for a mechanism involving imperfect interregional labor mobility and dynamics in labor demand, driven by slow capital adjustment and agglomeration economies. This mechanism gradually amplifies the effects of liberalization, explaining the slow adjustment path of regional earnings and quantitatively accounting for the magnitude of the long-run effects.

It is important to note that most studies reviewed above focus on the impacts of stronger import competition -- induced either by import tariff liberalization or by the rise of China as a major manufacturer exporter. The main exception refers to the studies on Mexico in the context of

NAFTA, which find that deeper integration (as measured by imports, exports and FDI) contributes to reduce poverty and inequality. In the Brazilian context, Costa et al. (2016) distinguish between the impacts of competition and demand shocks arising from rising trade with China. They find that local labor markets more affected by Chinese import competition experienced slower growth in manufacturing wages between 2000 and 2010. However, they also document that locations benefiting from rising Chinese commodity demand during the same period experienced faster wage growth. The results of this study further highlight the importance of distinguishing between competition and demand shocks when examining the effects of deeper international economic integration.

## **6.2 Policy options to address trade-induced adjustment costs**

Freer trade typically generates aggregate welfare gains for the countries involved. Autor et al. (2013) emphasize that while freer trade may lower incomes for workers exposed to import competition, it generates broader gains to consumers from lower product prices or increased product variety, as well as gains to firms from having inputs at lower cost and in greater diversity. Import competition may also contribute to productivity growth by inducing firms to invest in innovation. But international integration has distributional consequences within countries, and the costs of adjustment to import competition may partly offset gains, especially in the short and medium run. (As negatively impacted workers retire or pass away, trade-induced welfare losses from government transfers or unemployment will dissipate, while the gains from trade should persist.)

B&R economies more exposed to competition shocks from China are likely to face stronger adjustment costs. Policies to deal with these trade shocks may include general inclusive policies, such as social security and labor policies (including education and training). Well-designed credit, housing and place-based policies may also facilitate adjustment. Trade-specific adjustment programs may play a complementary role. B&R economies more exposed to competition shocks should consider whether their inclusive policies and institutions are appropriate to deal with the adjustment costs imposed by trade shocks. There is no-one-size-fits all strategy for dealing with trade-induced adjustment costs. The optimal policy design depends on the nature of the shock, as well as on country attributes and initial conditions. For example, Belt & Road economies facing

stronger competition shocks that are not offset by demand shocks (e.g. in the face of rising current account imbalances) may experience a more difficult adjustment process. If competition shocks emerge during a broader economic upturn, labor reallocations towards expanding sectors and regions may be easier than if they emerge in a downturn. Facilitating geographical labor mobility may be especially important in larger economies, or in those where such mobility has been historically lower. The initial attributes of inclusive institutions (such as labor market laws governing the degree of labor market flexibility, the level and access to education, the coverage and depth of social safety nets) should be internalized into policy design and sequencing. The remainder of this section considers in more detail specific policy options to address short-term adjustment costs imposed by trade shocks, building on the more comprehensive discussion in IMF-WB-WTO (2017, section V).

*Labor policies:* The labor reallocations required to generate some of the gains from trade may also impose adjustment costs. The evidence reviewed in the previous section suggests that adverse effects of import competition on some individuals and communities can be large and long-lasting. Facilitating mobility of workers across sectors, locations and occupations should be a key focus in the policy response to a negative trade shock. Well designed and targeted active labor market policies, such as job search assistance and training, can in principle play an important role in facilitating mobility. While the evidence on the effectiveness of training programs is mixed, specific training and education programs devoted to providing the skills required to face structural changes in the labor market have potential to succeed, especially if employer associations are involved in the process of defining the skills and expertise that are necessary (Almeida et al. 2012; Bastos et al., 2016). Education policies equipping workers with skills that are portable across sectors and occupations may need to be strengthened. Protecting workers and their families (as opposed to protecting their jobs) is an important consideration in the design of policies and institutions seeking to mitigate adjustment costs. Although employment protection legislation can reduce displacements, it can also be an impediment to necessary reallocation. Furthermore, it can lead to inefficient (segmented) labor markets, in which younger and less tenured workers have greater difficulties in realizing their full potential, and face the bulk of the adjustment process in the face of negative shocks.

*Social safety nets:* Unemployment benefits can help smooth consumption, and make it possible for workers to participate in training and job search. They can also mitigate the impacts on the children of displaced workers. However, these policies should be carefully designed to avoid potentially adverse effects on employment and efficiently. Means-tested support or early retirement have been widely adopted in developed countries to protect the most vulnerable eldest members of society who no longer qualify for unemployment insurance.

*Complementary policies:* Easing labor market adjustment and dealing with the localized effects of trade shocks may require a more comprehensive policy mix that goes beyond labor policies. The evidence reviewed above points to large and long-lasting adverse effects of import competition on local economic development. It also points to reduced geographical mobility of labor in response to trade shocks. Place-based policies (such as the US Empowerment Zone Program) may play a role in revitalizing areas depressed by trade shocks and strengthen regional cohesion (Busso et al., 2013). Housing policies, such as relocation allowances, may facilitate geographical mobility of displaced workers. Well-functioning financial markets may ease access to credit to help to finance education, training and entrepreneurship of displaced workers.

*Trade-specific programs:* The case for trade-specific adjustment programs is not clear cut. Trade shocks typically coincide in time and space with other shocks, such as those associated with technological change, business cycle fluctuations unrelated to trade, or natural disasters. It is often difficult to identify workers displaced by trade shocks, as opposed to technological change, for instance. Trade shocks may also impact jobs in local economies well beyond the manufacturing sector, as suggested by the above-mentioned evidence for the US, Brazil and Mexico. This makes it hard to operationalize these programs. On the other hand, workers displaced by trade shocks or technological change may differ from other workers (e.g. they may be less skilled or older). They may therefore be more likely to require training than those who lose their jobs because of cyclical or firm-specific reasons. Furthermore, unlike other shocks, trade-shocks often arise from deliberate policy decisions to reduce trade costs. Targeted programs may be more effective at reducing opposition to openness. Examples of trade-specific adjustment programs include the TAA of the US and the European Globalization Adjustment Fund of the European Union, both of which have relatively small budgets. The evidence on the effectiveness of these programs is mixed (D'Amico

et al. 2007; Park, 2012), and insufficient to determine if they are superior to more general inclusive policies.

## **7. Concluding remarks**

This paper characterized the dynamics of China's bilateral trade relationships over the 1995-2015 period and assessed the implications of China trade shocks for exports of B&R economies. Between 1995 and 2015, B&R economies accounted for about a third of China's export revenue. They have been more important for China as export markets than as sources of Chinese imports (although the share of imports originated in B&R economies has observed upward trend in recent years). China is an important trade partner for many B&R economies, especially as a source of imports. Over this period, exports of B&R economies were significantly impacted by China's trade shocks. Between 1995 and 2015, the magnitude of China's demand shocks was larger than that on supply (or competition) shocks, implying that the overall net impact of China trade shocks on the exports of B&R economies during this period was significantly positive. However, the magnitude of competition shocks associated with China's trade became stronger in 2005-2015. The impacts of China trade shocks were heterogeneous across B&R economies and industries.

Although one must be cautious in extrapolating from historical data, the econometric results suggest that the trade similarity indexes we employed contain useful information for capturing the current degree of exposure of B&R economies to China trade shocks. Looking forward, these measures suggests that several B&R economies currently exhibit a relatively high degree of exposure to competition shocks associated with further integration with China. This is the case of Hong Kong SAR, China, Vietnam, Malaysia, Philippines, Thailand and Indonesia, which source a relatively large share of imports from China and have an export structure that is more similar to that of China. These B&R economies are therefore likely to be relatively more exposed to import competition from China in their own markets in several industries. Further integration with China will likely involve stronger competitive pressures in final goods markets, which may also have important implications for the adjustment of factor markets. There are nevertheless various important sources of mutual gains from further integration: consumers would gain access to a wider range of product varieties within sectors; firms and countries would obtain efficiency gains due to further specialization in different varieties or stages of production.

Other B&R economies are only weakly exposed to competition shocks associated with further integration with China. Tajikistan, Myanmar, the Islamic Republic of Iran, Kyrgyzstan, Bangladesh, Mongolia, and Timor-Leste source a sizable share of imports from China, but have an export structure that differs considerably from that of China. To the extent that differences in export structure reflect underlying differences in production structures, these economies are only weakly exposed to Chinese import competition in their own markets, even though they source a large share of imports from China. Mutual gains from further integration with China are likely to derive mainly from further exploitation of the corresponding comparative advantages. The degree to which B&R economies are exposed to competition from China in third-country markets is relatively higher in Vietnam, Thailand, Malaysia, Philippines, India, Singapore and Indonesia. If Chinese exports become relatively more expensive (e.g. due to further increases in labor costs or exchange rate movements), these countries would likely gain market share in their corresponding export markets. Conversely, if Chinese investments in robotization make its exports more competitive, these economies may lose market shares.

Mongolia, Hong Kong SAR, China, the Islamic Republic of Iran, Oman, Turkmenistan, and the Republic of Yemen are highly exposed to demand shocks from China. A large share of exports from these economies is to the Chinese market, and the export structure of these countries displays a high degree of similarity with China's overall import demand. China is also an important destination for Lao PDR, Uzbekistan and Myanmar and Iraq, although the export structure of these economies is quite different from the structure of China's overall import demand. Finally, Malaysia, Philippines and Singapore export a sizable share of exports to China and have an export structure that is relatively close to the structure of Chinese multilateral imports, suggesting that these economies are also strongly exposed to China's demand shocks.

While deeper economic integration typically generates gains at the country-level, it also imposes adjustment costs within countries. These costs are associated with reallocations of workers across sectors, regions and occupations triggered by sector-specific competition and demand trade shocks. Countries more exposed to competition shocks from China are likely to face stronger adjustment costs. Policies to deal with these trade shocks may include general inclusive policies,

such as social security and labor policies (including education and training). Well-designed credit, housing and place-based policies may also facilitate adjustment. Trade-specific adjustment programs may play a complementary role. B&R economies more exposed to competition shocks should consider whether their inclusive policies are appropriate to deal with the adjustment costs imposed by trade shocks, and potentially include these policies in the negotiated trade package. While this paper aimed to provide a general overview of the exposure of each B&R economy to supply and demand shocks associated with further integration with China, more definite conclusions require complementary analysis based on production and employment data, along with a deeper assessment of country-specific institutions.

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## APPENDIX

**Table A1: Unofficial list of B&R economies**

No.	Country/Economy	ISO Code	World Bank Region	Covered in BACI
1	Brunei Darussalam	BRN	EAP	Yes
2	China	CHN	EAP	Yes
3	Cambodia	KHM	EAP	Yes
4	Hong Kong SAR, China	HKG	EAP	Yes
5	Indonesia	IDN	EAP	Yes
6	Lao PDR	LAO	EAP	Yes
7	Malaysia	MYS	EAP	Yes
8	Mongolia	MNG	EAP	Yes
9	Myanmar	MMR	EAP	Yes
10	Philippines	PHL	EAP	Yes
11	Singapore	SGP	EAP	Yes
12	Taiwan, China	TWN	EAP	No
13	Thailand	THA	EAP	Yes
14	Timor-Leste	TLS	EAP	Yes
15	Vietnam	VNM	EAP	Yes
16	Afghanistan	AFG	SAR	Yes
17	Bangladesh	BGD	SAR	Yes
18	Bhutan	BTN	SAR	Yes
19	India	IND	SAR	Yes
20	Maldives	MDV	SAR	Yes
21	Nepal	NPL	SAR	Yes
22	Pakistan	PAK	SAR	Yes
23	Sri Lanka	LKA	SAR	Yes
24	Bahrain	BHR	MENA	Yes
25	Egypt, Arab Rep.	EGY	MENA	Yes
26	Iran, Islamic Rep.	IRN	MENA	Yes
27	Iraq	IRQ	MENA	Yes
28	Israel	ISR	MENA	Yes
29	Jordan	JOR	MENA	Yes
30	Kuwait	KWT	MENA	Yes
31	Lebanon	LBN	MENA	Yes
32	Oman	OMN	MENA	Yes
33	Palestine (West Bank and Gaza)	PSE	MENA	Yes*
34	Qatar	QAT	MENA	Yes
35	Saudi Arabia	SAU	MENA	Yes
36	Syrian Arab Republic	SYR	MENA	Yes
37	United Arab Emirates	ARE	MENA	Yes
38	Yemen, Rep.	YEM	MENA	Yes
39	Albania	ALB	ECA	Yes

**Table A1: Unofficial list of BRI economies (continued)**

No.	Country/Economy	ISO Code	World Bank Region	Covered in BACI
40	Armenia	ARM	ECA	Yes
41	Azerbaijan	AZE	ECA	Yes
42	Belarus	BLR	ECA	Yes
43	Bosnia and Herzegovina	BIH	ECA	Yes
44	Bulgaria	BGR	ECA	Yes
45	Croatia	HRV	ECA	Yes
46	Czech Republic	CZE	ECA	Yes
47	Estonia	EST	ECA	Yes
48	Greece	GRC	ECA	Yes
49	Georgia	GEO	ECA	Yes
50	Hungary	HUN	ECA	Yes
51	Kazakhstan	KAZ	ECA	Yes
52	Kyrgyz Republic	KGZ	ECA	Yes
53	Latvia	LVA	ECA	Yes
54	Lithuania	LTU	ECA	Yes
55	Macedonia, FYR	MKD	ECA	Yes
56	Moldova	MDA	ECA	Yes
57	Montenegro	MNE	ECA	Yes*
58	Poland	POL	ECA	Yes
59	Romania	ROM	ECA	Yes
60	Russian Federation	RUS	ECA	Yes
61	Serbia	SRB	ECA	Yes*
62	Slovak Republic	SVK	ECA	Yes
63	Slovenia	SVN	ECA	Yes
64	Tajikistan	TJK	ECA	Yes
65	Turkey	TUR	ECA	Yes
66	Turkmenistan	TKM	ECA	Yes
67	Ukraine	UKR	ECA	Yes
68	Uzbekistan	UZB	ECA	Yes

\*The information is not available for all years (1995-2015)

**Table A2: Skilled labor value added contained in Chinese exports, 1995-2011 (relative to total value added, % of total)**

<b>Sector</b>	<b>1995</b>	<b>2011</b>
Agr, Forestry, Fisheries	0.80	3.52
Beverages and Tobacco Products	12.00	13.45
Construction	14.29	17.87
Chemical, Rubber, Plastic Products	16.70	18.39
Electricity, Gas, Water	34.49	29.71
Energy Extraction	11.75	18.72
Metal Products	15.00	18.27
Ferrous Metals	15.10	18.50
Leather Products	13.60	13.65
Wood Products	11.30	13.13
Machinery and Equipment nec	17.00	19.43
Metals nec	15.90	19.08
Mineral Products nec	14.70	18.53
Manufactures nec	10.90	13.97
Minerals nec	12.40	17.30
PubAdmin/Defence/Health/Educat	60.50	52.85
Other Private Services	40.80	34.56
Processed Foods	16.90	9.27
Paper Products, Publishing	15.50	17.30
Trade and Transport Services	18.50	19.31
Textiles	14.00	14.63
Transport Equipment	15.10	18.68
Wearing Apparel	12.10	15.24
<b>Total</b>	<b>15.93</b>	<b>17.88</b>

Notes: Labor Content of Exports (LACEX) database, World Bank. The skilled domestic labor value added embodied in a sector's exports, including the skilled wages paid directly for the production of the sector's exports and indirectly via the production of economy-wide inputs for the sector's exports (backward linkages).

**Table A3: Trade balance with China (% of GDP)**

	1995	2000	2005	2010	2015
Brunei Darussalam	-0.72	0.69	1.40	1.70	-3.72
Cambodia	-1.26	-3.76	-8.09	-11.37	-16.46
Hong Kong	-27.30	-34.86	-58.80	-74.25	-70.73
Indonesia	0.35	0.80	0.59	-0.36	-1.84
Lao PDR	-2.23	-1.82	-3.26	1.51	0.09
Malaysia	0.94	1.20	1.49	2.46	1.31
Mongolia	2.21	-4.78	8.28	12.10	20.93
Myanmar	na	-4.79	-6.79	-4.79	-6.95
Philippines	-0.95	0.34	7.07	3.60	0.37
Singapore	-0.92	-2.19	-2.02	-2.49	-5.56
Taiwan, China	na	na	na	na	na
Thailand	-0.13	0.20	0.22	0.64	-3.11
Timor-Leste	na	na	-0.44	-4.49	-7.29
Vietnam	-1.87	-1.34	-5.06	-11.12	-15.84
Afghanistan	na	na	-0.79	-2.18	-2.90
Bangladesh	-0.72	-1.60	-2.86	-5.63	-6.72
Bhutan	-0.06	-0.44	-0.48	-0.78	-0.47
India	-0.11	-0.09	-0.17	-1.10	-2.23
Maldives	-0.35	-0.28	-1.65	-1.87	-4.92
Nepal	-1.14	-2.88	-2.15	-4.06	-4.27
Pakistan	-0.62	-0.19	-1.85	-2.13	-3.50
Sri Lanka	-1.20	-1.67	-2.54	-2.08	-3.97
Bahrain	0.05	-0.51	-2.13	-4.16	-4.67
Egypt, Arab Rep.	-0.65	-0.79	-1.54	-2.04	-2.91
Iran, Islamic Rep.	-0.05	0.71	1.45	1.67	-0.86
Iraq	na	na	-0.04	1.44	1.88
Israel	-0.08	-0.20	-0.75	-0.92	-0.87
Jordan	-1.41	-1.92	-6.51	-5.23	-6.62
Kuwait	0.02	0.13	0.37	3.62	1.70
Lebanon	-1.17	-1.61	-3.37	-4.23	-4.83
Oman	3.40	16.02	13.71	14.91	18.48
Palestine (West Bank and Gaza)	na	-0.14	-0.48	-1.43	-2.03
Qatar	0.86	1.96	0.01	0.65	0.99
Saudi Arabia	-0.24	0.27	2.45	3.45	0.50
Syrian Arab Republic	-1.25	-0.89	-2.87	na	na
United Arab Emirates	-1.47	-1.62	-2.88	-5.92	-7.48
Yemen, Rep.	4.63	4.92	10.33	3.39	-1.27
Albania	-0.60	-0.54	-2.37	-1.57	-2.53

**Table A3: Trade balance with China (% of GDP, continued)**

Armenia	-0.05	-0.02	-0.54	-3.82	-1.28
Azerbaijan	0.05	-0.33	-1.38	-1.13	-0.65
Belarus	0.07	0.91	0.54	-1.95	-2.21
Bosnia and Herzegovina	-0.01	0.00	-1.25	-2.46	-3.48
Bulgaria	-0.11	-0.53	-2.09	-0.70	-0.63
Croatia	-0.06	-0.40	-1.83	-2.33	-1.12
Czech Republic	-0.12	-0.98	-2.54	-6.52	-8.86
Estonia	-0.24	-2.55	-4.07	-3.81	-4.47
Greece	-0.23	-0.56	-0.85	-1.18	-1.37
Georgia	-0.01	-0.09	-0.76	-2.58	-3.53
Hungary	-0.26	-1.92	-2.93	-4.01	-2.62
Kazakhstan	1.08	2.80	2.07	4.07	-0.04
Kyrgyz Republic	2.19	-3.26	-13.08	-29.81	-24.21
Latvia	0.19	-0.40	-1.00	-1.30	-1.53
Lithuania	-0.01	-0.67	-1.45	-1.57	-1.70
Macedonia, FYR	-0.10	-0.38	-1.63	-2.06	-2.42
Moldova	-0.01	0.47	-3.50	-5.29	-5.28
Montenegro	na	na	na	-2.89	-5.51
Poland	-0.31	-0.75	-1.51	-2.99	-4.10
Romania	0.36	-0.22	-1.43	-1.68	-1.33
Russian Federation	0.37	1.28	0.46	-0.91	-0.24
Serbia	na	na	-1.92	-2.40	-3.16
Slovak Republic	-0.14	-0.50	-1.31	-2.64	-5.16
Slovenia	-0.23	-0.58	-1.44	-2.87	-3.47
Tajikistan	-0.41	0.38	-5.58	-23.41	-22.26
Turkey	-0.24	-0.44	-1.23	-1.78	-2.54
Turkmenistan	-0.14	-0.32	-0.88	1.83	17.28
Ukraine	0.70	1.58	-1.59	-2.54	-1.42
Uzbekistan	0.15	-0.20	1.43	0.26	-1.53

Source: BACI and World Development Indicators

**Table A4: Average impacts of China shocks on exports of BRI economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
	$\Delta \log X_{jit}$	1st stage		2nd stage
		$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	-4.730 (4.817)			-6.676 (4.831)
$\Delta \text{Demand}_{cjit}$	42.80*** (6.940)			35.84*** (7.447)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.826*** (0.00931)	0.143*** (0.0252)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		0.00706 (0.00647)	0.657*** (0.0288)	
country-period effects	Yes	Yes	Yes	Yes
country-industry effects	Yes	Yes	Yes	Yes
observations	42,602	42,602	42,602	42,602
R-squared	0.258	0.981	0.873	0.258
F-statistic				

Robust standard errors clustered by country-industry and country-year in parenthesis,  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A5: Average impacts of China shocks on exports of BRI economies, 2005-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	-36.65*** (8.947)			-44.81*** (8.456)
$\Delta \text{Demand}_{cjit}$	34.95*** (12.36)			39.87** (15.98)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.813*** (0.0114)	0.0166 (0.0130)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		-0.0281*** (0.00726)	0.564*** (0.0238)	
country-period effects	Yes	Yes	Yes	Yes
country-industry effects	Yes	Yes	Yes	Yes
observations	21,302	21,302	21,302	21,302
R-squared	0.408	0.977	0.929	0.408

Robust standard errors clustered by country-industry and country-year in parenthesis,  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A6: Average impacts of Indonesia trade shocks on BRI economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	1.205 (6.343)			-1.803 (12.56)
$\Delta \text{Demand}_{cjit}$	36.07*** (5.159)			36.82** (14.34)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.813*** (0.00753)	0.392*** (0.0207)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		0.0266*** (0.00378)	0.239*** (0.0498)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	42,603	42,603	42,603	42,602
R-squared	0.163	0.948	0.626	0.036
F-statistic		10054.6	307.18	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A7: Average impacts of Pakistan trade shocks on BRI economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	3.789 (9.008)			55.26*** (18.00)
$\Delta \text{Demand}_{cjit}$	32.41*** (5.002)			25.38*** (4.141)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.516*** (0.0479)	0.306*** (0.0414)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		0.0263*** (0.00794)	0.767*** (0.154)	
country-industry effects	Yes	Yes	Yes	Yes
year effects	Yes	Yes	Yes	Yes
observations	42,391	42,391	42,391	42,390
R-squared	0.163	0.745	0.719	0.034
F-statistic		78.75	47.62	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A8: Average impacts of India trade shocks on BRI economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	30.63*** (6.201)			20.31*** (6.153)
$\Delta \text{Demand}_{cjit}$	22.42*** (7.439)			12.77*** (3.835)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.708*** (0.0422)	0.0103** (0.00414)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		0.0132*** (0.00513)	0.677*** (0.0470)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	42,603	42,603	42,603	42,602
R-squared	0.162	0.849	0.735	0.035
F-statistic		187.69	176.69	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A9: Average impacts of Russia trade shocks on BRI economies, 1995-2015**

	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	7.257** (3.466)			8.138** (3.377)
$\Delta \text{Demand}_{cjit}$	13.43*** (3.057)			18.39*** (3.332)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.877*** (0.00513)	-0.00363** (0.00153)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		-0.0594*** (0.0137)	0.831*** (0.0242)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	42,603	42,603	42,603	42,602
R-squared	0.162	0.908	0.850	0.035
F-statistic		24003.81	359.65	

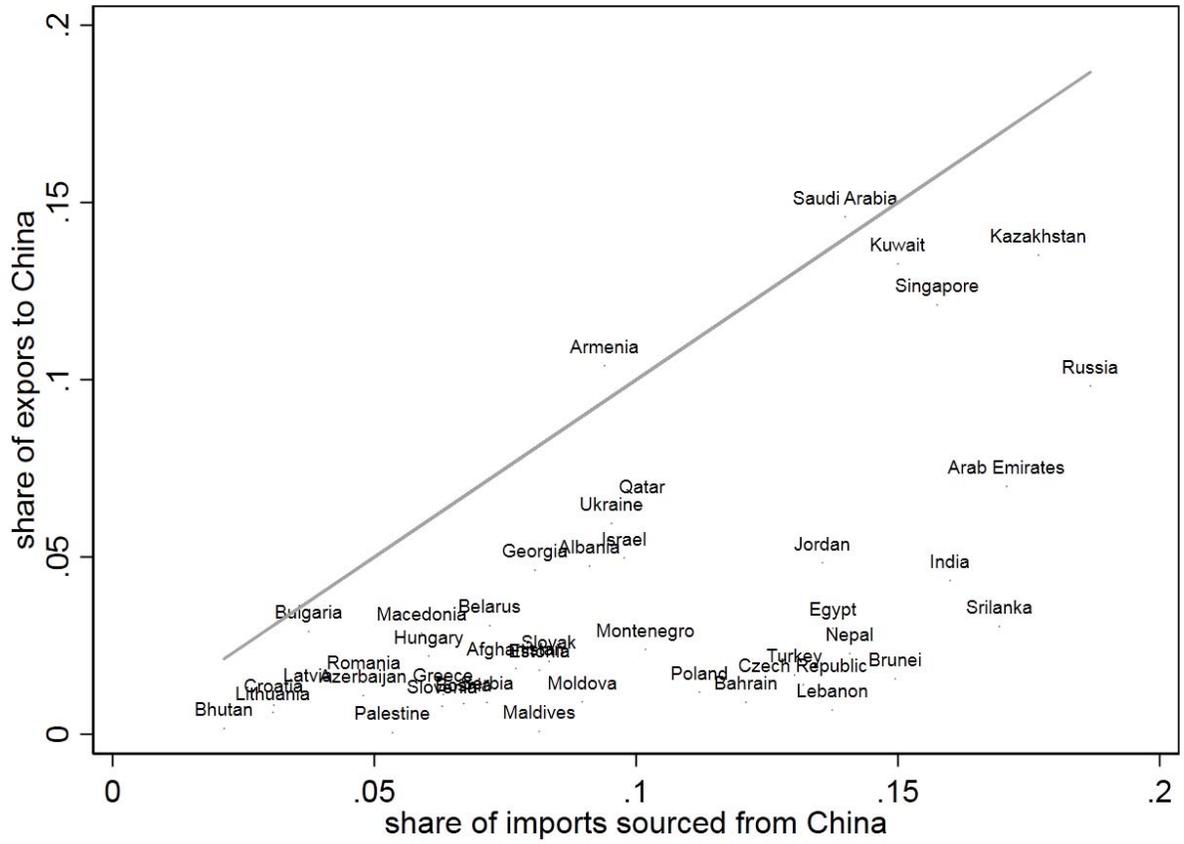
Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A10: Average impacts of Thailand trade shocks on BRI economies, 1995-2015**

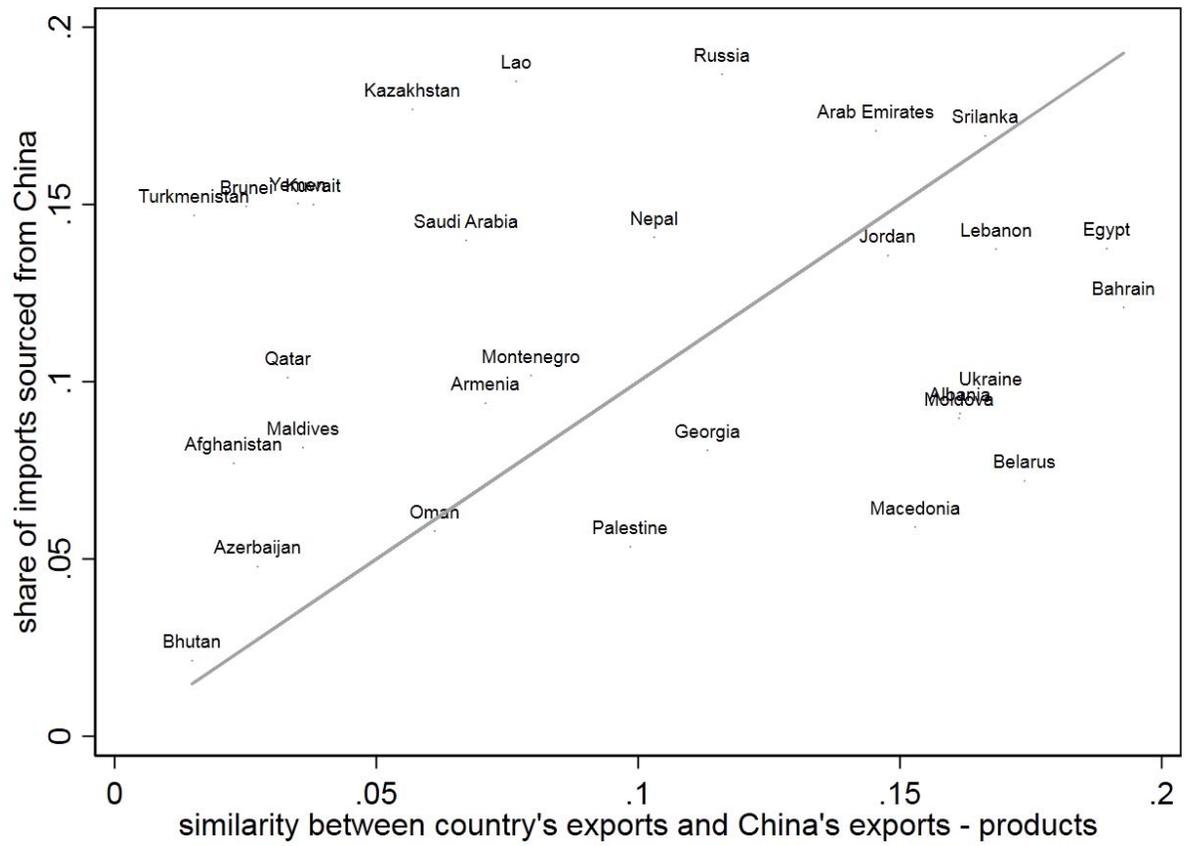
	(1)	(2)	(3)	(4)
	OLS	2SLS		
		1st stage		2nd stage
	$\Delta \log X_{jit}$	$\Delta \text{Supply}_{cjit}$	$\Delta \text{Demand}_{cjit}$	$\Delta \log X_{jit}$
$\Delta \text{Supply}_{cjit}$	32.58*** (8.232)			23.98*** (8.214)
$\Delta \text{Demand}_{cjit}$	36.37*** (6.193)			40.53*** (7.774)
$\Delta \text{Supply}_{cjit}$ (top 10 destinations)		0.608*** (0.0619)	0.0503*** (0.0193)	
$\Delta \text{Demand}_{cjit}$ (top 10 sources)		-0.0159** (0.00656)	0.532*** (0.0232)	
country-industry effects	Yes	Yes	Yes	Yes
period effects	Yes	Yes	Yes	Yes
observations	42,823	42,823	42,823	42,822
R-squared	0.166	0.745	0.745	0.037
F-statistic		64.65	424.89	

Robust standard errors clustered by country-industry in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

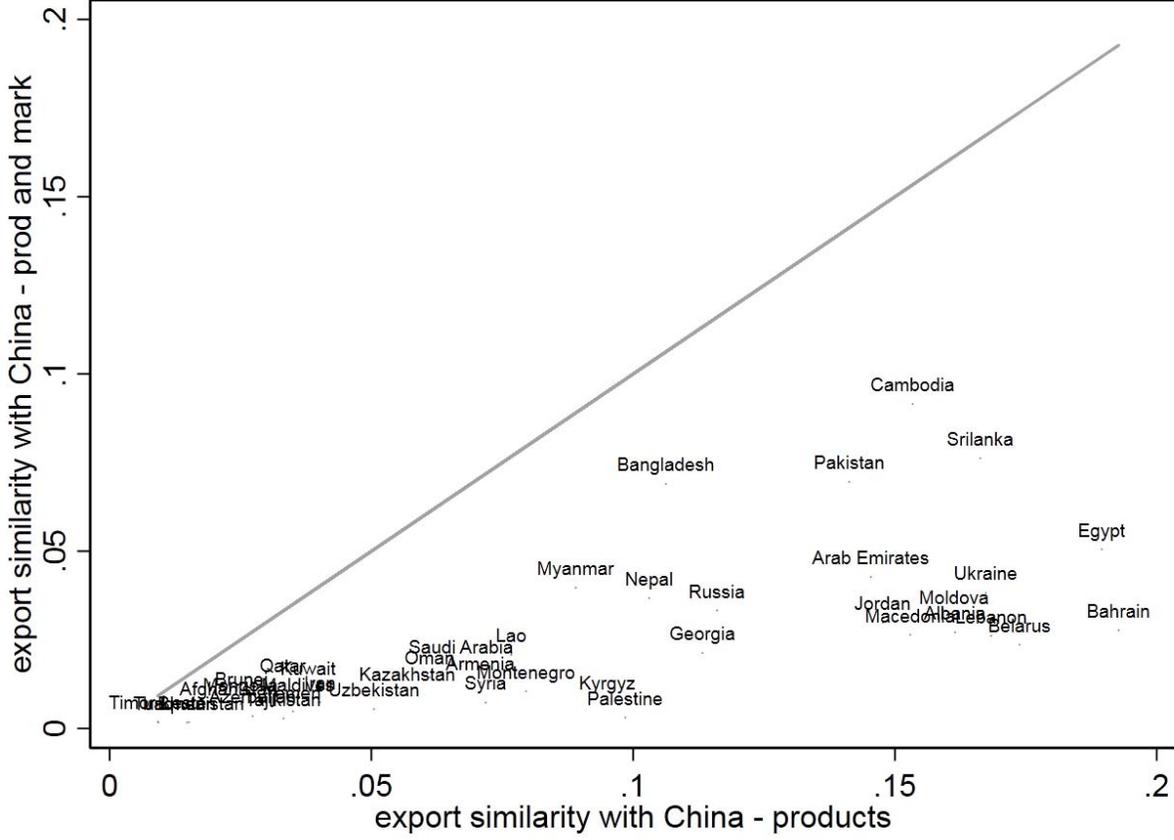
**Figure A1: Relative importance of China for trade of BRI countries, 2015  
(zoom in for the smallest values)**



**Figure A2: Exposure to import competition from China, 2015**  
 (zoom in for the smallest values)



**Figure A3: Exposure to competition from China in third export markets, 2015 (zoom in for the smallest values)**



**Figure A4: Exposure to demand shocks from China, 2015 (zoom in for the smallest values)**

