

Fung, Kwok-chiu; García Herrero, Alicia; Seade, Jesús

**Research Report**

## Beyond minerals: China-Latin American Trans-Pacific supply chain

BOFIT Policy Brief, No. 5/2015

**Provided in Cooperation with:**

Bank of Finland, Helsinki

*Suggested Citation:* Fung, Kwok-chiu; García Herrero, Alicia; Seade, Jesús (2015) : Beyond minerals: China-Latin American Trans-Pacific supply chain, BOFIT Policy Brief, No. 5/2015, Bank of Finland, Institute for Economics in Transition (BOFIT), Helsinki, <https://nbn-resolving.de/urn:nbn:fi:bof-201506301309>

This Version is available at:

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BOFIT Policy Brief  
2015 No. 5

K.C. Fung, Alicia Garcia-Herrero and  
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Bank of Finland, BOFIT  
Institute for Economies in Transition

BOFIT Policy Brief  
Editor-in-Chief Iikka Korhonen

BOFIT Policy Brief 5/2015

K.C. Fung, Alicia Garcia-Herrero and Jesus Seade: Beyond minerals:  
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16.6.2015  
ISSN 2342-205X (online)

Bank of Finland  
BOFIT – Institute for Economies in Transition  
PO Box 160  
FIN-00101 Helsinki

Phone: +358 10 831 2268  
Fax: +358 10 831 2294

Email: [bofit@bof.fi](mailto:bofit@bof.fi)  
Website: [www.bof.fi/bofit\\_en](http://www.bof.fi/bofit_en)

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K.C. Fung, Alicia Garcia-Herrero and Jesus Seade

## Beyond minerals: China-Latin American Trans-Pacific supply chain

### Abstract

In this paper, we highlight *three* characteristics of China-Latin American economic relations. China-Latin American economic relationships are *asymmetric, comparative-advantage driven* and motivated by *both political and economic* considerations. There are several co-operative measures on which China and Latin America can focus. China can be encouraged to invest not only in mining in Latin America but also in infrastructure and manufacturing facilities. China and Latin America can deepen their *Trans-Pacific production network*. Utilizing the advantages of being close to and in the same time zone as the U.S. market, this pan China-Latin America supply chain can be a potent supplier and exporter to the United States.

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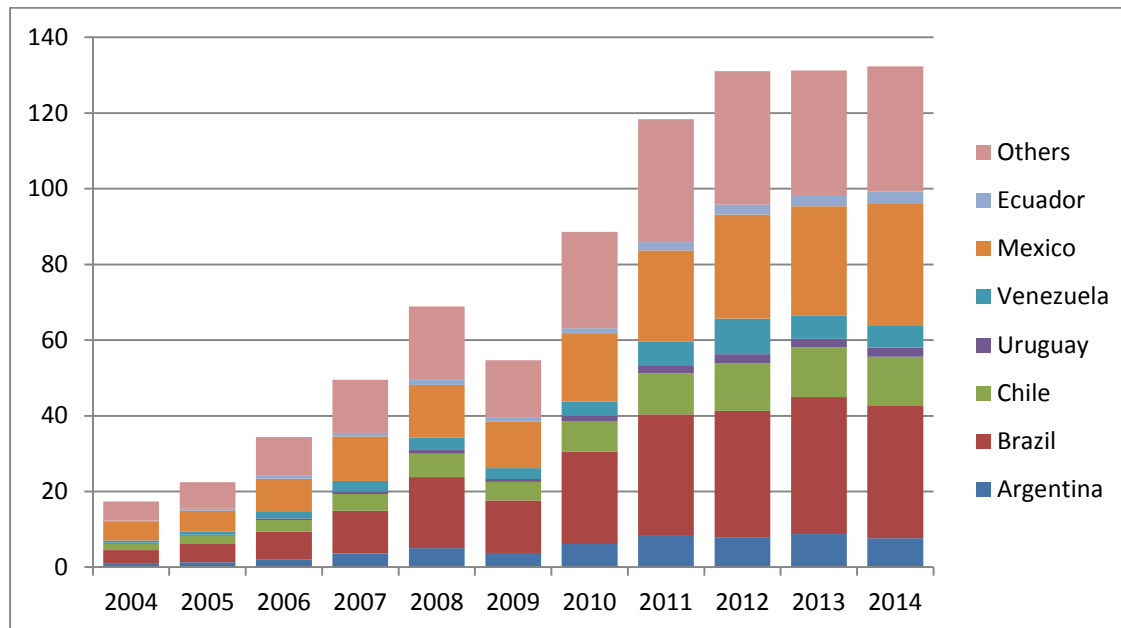
**K.C. Fung** is Professor of Economics at the University of California, Santa Cruz. He was a senior economist at the White House Council of Economic Advisers during the George H.W. Bush and Bill Clinton administrations, and served as an academic adviser to the U.S. International Trade Commission (USITC) from 2006 to 2010. In 2011, he testified before a U.S. Congressional Commission on trade and investment of China.

**Alicia García-Herrero** is Chief Economist for Emerging Markets at Banco Bilbao Vizcaya Argentaria (BBVA) since December 2007. She also serves as special advisor to the European Commission on China issues, non-resident Faculty at China-Europe International Business School (CEIBS) in Shanghai, Adjunct Professor at City University of Hong Kong, and as member of the Advisory Board of the Hong Kong Institute of Monetary Research (HKIMR).

**Professor Seade** is a Chair Professor of Economics at Lingnan University, Hong Kong. He studied in Mexico and in the U.K. (University of Oxford: B.Phil. and D.Phil. in Economics). He was Professor of Public Economics at Warwick University, where he co-founded and was Director of its Development Economics Research Center. In 1989 he was appointed Mexico's Chief Uruguay Round Trade Negotiator and Ambassador to GATT, whose senior management he joined as Deputy Director-General in 1993. In 1998 he joined the International Monetary Fund where he was Assistant Director for Policy Development and then Senior Advisor for Fiscal Affairs.

In the last decade, the economic relationships between China and Latin America have deepened and intensified. Exports from Latin America to China increased from US\$11 billion in 2003 to close to US\$ 106 billion in 2013. China is the second largest export market for Latin America as a whole, behind only the United States. Indeed, for Brazil, Uruguay and Chile, China is the *largest* export market in the world. China also ranks as the second largest export market for Argentina, Colombia, Cuba and Peru. Furthermore, between 2005 and 2013, China committed about US\$98 billion of loans to Latin America—mostly to Venezuela, Argentina and Brazil (Figure 1).

Figure 1 China's Imports from Latin America by country (US\$ billion)



Source: IMF DOT

## Three characteristics of China-Latin America economic links

Latin America consists of many heterogeneous countries. Latin America includes economies as different as Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Mexico, Panama, Peru, Paraguay, El Salvador, Uruguay and Venezuela (Fung and Alicia Garcia-Herrero 2014). It would be misleading to lump so many diverse countries into one entity. Nonetheless, we can distill *three* features of China-Latin America economic links.

First, the economic relationships can be viewed as *asymmetric*. Other than Hong Kong, China's top export markets include the United States and Japan. China also engages in more than 1 billion euros worth of trade *per day* with the European Union. Latin America is important to China, but it is *not* among China's most important export markets. As Table 1 shows, China's top export markets include Hong Kong, the United States, EU 28, Japan, South Korea, Russia, Vietnam and India, etc. None of the Latin American countries shows up in the top ten markets. In contrast, as Table 2 shows, China is either the largest or the second largest export market for many Latin American economies, including Brazil, Argentina, Peru and Chile.

Table 1 China's top export markets, 2013

Economy	Rank as export market
Hong Kong	1
USA	2
EU 28	3
Japan	4
South Korea	5
Russia	6
Vietnam	7
India	8
Malaysia	9
Singapore	10

Source: European Commission (2015)

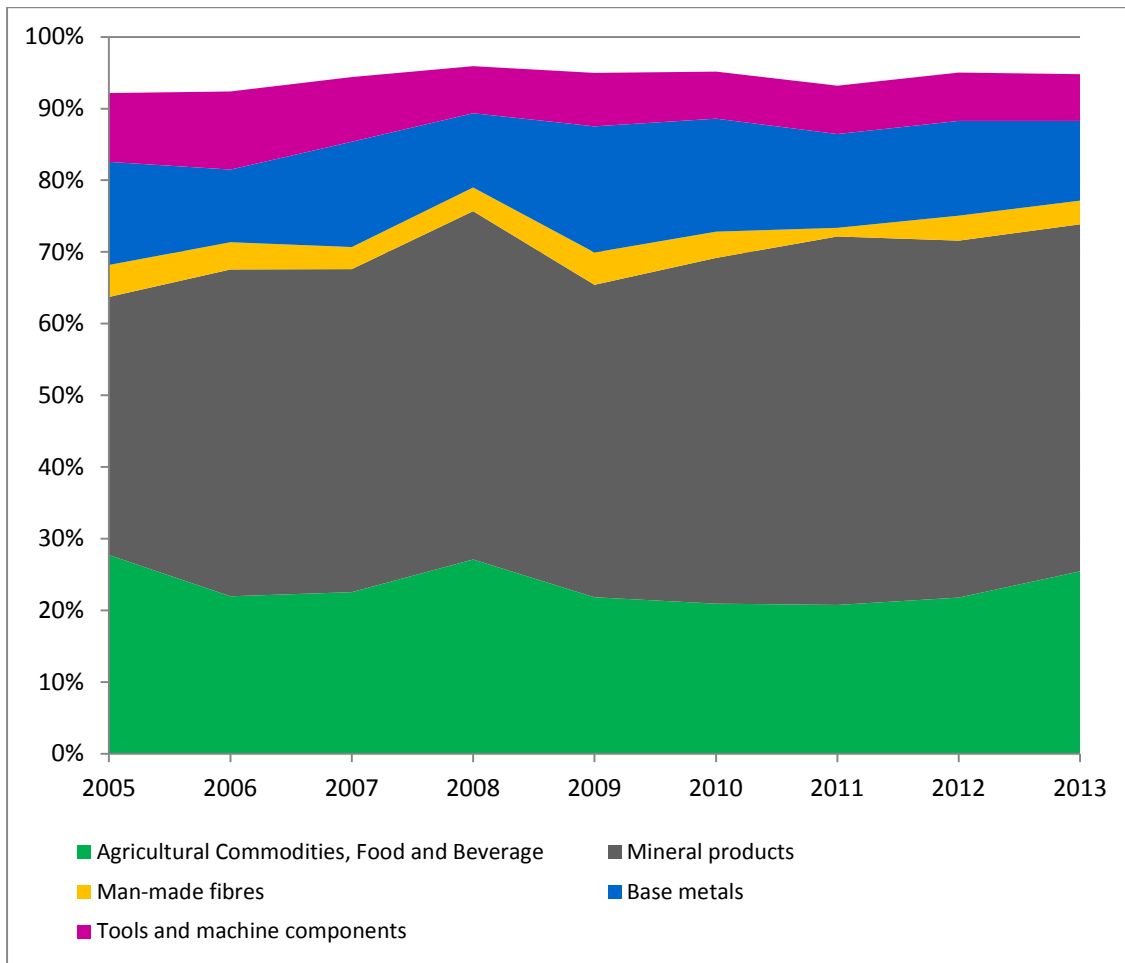
Table 2 Importance of China as an export market for various Latin American countries, 2014

Country	Rank of China as export market
Argentina	2
Brazil	1
Chile	1
Columbia	2
Cuba	2
Peru	2
Uruguay	1
Latin America	2

Source: Deutsche Bank Research, 2015.

Second, the China-Latin America trade relationship can be described as *comparative advantage-driven*. Chinese exports to Latin America are mostly manufactured products. In exchange, much of the exports from Latin America to China consist of minerals and agricultural products, particularly *copper, iron and soy* (Figure 2). Only about 8% of Latin American exports to China are manufactured goods. As an illustration, China is the largest consumer of iron ore in the world. In 2005, Brazil exported 60 million tons of iron ore to China; in 2013, 170 million tons.

Figure 2 China's imports from Latin America (% total)



Source: UN Comtrade

This pattern of trade can be explained by the difference in endowments. China is labor-abundant while many Latin American economies are well endowed with land, minerals, fuels and water. For example, Latin America is estimated to have more than 22,000 m<sup>3</sup> of fresh water per capita, more than 0.016 sq. km of forests per capita, and about 0.013 sq. km of land per person. In contrast, China is estimated to have only less than 3,000 m<sup>3</sup> of fresh water per capita, less than 0.002 sq km of forests per capita, and about 0.004 sq km of land per person (Estevadeordal, Moreira, Martincus and Blyde 2014).

Third, Chinese loans and investment in the region seem to be based on *political-economic* factors. In Fung and Garcia-Herrero (2012), we ran an augmented gravity model regression equation on the determinants of Chinese foreign direct investment outflows:

$$\begin{aligned}
 \ln FDI_{eit} = & \beta_1 \ln GDP_{it} + \beta_2 \ln PGDP_{it} + \beta_3 \ln D_{ei} + \beta_4 B_{ei} + \\
 & \beta_5 Cr_{it} + \beta_6 LW_{it} + \beta_7 \ln (IMP+EXP_{it}) + \beta_8 FTA_{eit} + \beta_{10} Kc_{it} + \\
 & \beta_{11} \ln FS_{it} + \beta_{12} \ln FuS_{it} + \beta_{12} \ln OS_{it} + \beta_{13} \ln RD_{it} + \beta_{14} \ln IT_{it} + \\
 & \beta_{15} \ln GDP_{et} + \beta_{16} \ln BX_{eit}
 \end{aligned} \tag{1}$$



$FDI_{eit}$  : foreign direct investment outflows from China to host economy  $i$  in year  $t$

$GDP_{it}$  : gross domestic product of the host economy  $i$  in year  $t$

$PGDP_{it}$ : per capita gross domestic product of the host economy  $i$  in year  $t$

$D_{ei}$  : the distance between China and the host economy  $i$

$B_{ei}$  : a dummy variable denoting border sharing between China and host economy  $i$

$Cr_{it}$  : the corruption index of host economy  $i$  in year  $t$

$LW_{it}$ : the index for law and order of host economy  $i$  in year  $t$

$IMP+EXP_{it}$ : total trade as a proportion of GDP in host economy  $i$  in year  $t$

$FTA_{eit}$  : a dummy variable denoting the existence of a free trade agreement

between China and host economy  $i$  in year  $t$

$Kc_{it}$  : capital control index in host economy  $i$  in year  $t$

$FS_{it}$  : the share of food in total exports from host economy  $i$  to the world in year  $t$

$FuS_{it}$  : the share of fuel in total exports from host economy  $i$  to the world in year  $t$

$OS_{it}$  : the share of ores and metals in total exports from host economy  $i$  to the

world in year  $t$

$RD_{it}$  : research and development spending in host economy  $i$  in year  $t$

$IT_{it}$  : information technology expenditure in host economy  $i$  in year  $t$

$GDP_{et}$  : GDP of China in year  $t$

$BX_{eit}$  : bilateral exchange rate between the currency of China and host economy  $i$  in year  $t$

Among several statistical conclusions, one interesting result of the estimations is that outward foreign direct investment from China is actually higher to *more corrupt destinations* (as measured by the corruption index of the host economy). A possible interpretation of this robust positive relationship between the amount of Chinese outward investment and the extent of corruption is that Chinese outward direct investment to the world, including Latin America, is not solely based on business and commercial considerations. Much of the outward investment to Latin America are conducted by Chinese state-owned enterprises. Indeed, we would argue that such Chinese investment is influenced by both profit motives and non-economic considerations such as buying good will from the Latin American countries. In other words, outward investment from China could be a part of China's foreign policy. The foreign policy-cum-economics motivation can also be seen in Chinese loans to the region. For example, more than half of the loan commitments from China went to one very close ally in the region—Venezuela.

## Reversed "Dutch Disease"

As growth in China slows, the prospects for further increases in exports from Latin America to China fade. Prices of fuels and metals decline. This slowdown has two potential effects on Latin America economies.

One is a *negative income effect*. Commodity export revenues decline. The Latin American terms-of-trade (captured by the relative price index of commodities to that of manufactured goods) turn in favor of China. Real income and growth of Latin American countries that export minerals decrease. In 2014, iron ore export revenue from Brazil to China was US\$12.3 billion. However, this represented a *decline* of about 23% compared to 2013.

The second is the potential *reversed concentration effect*. During the decade-long commodity boom, Latin America was blessed with rising commodity prices but *cursed* with the "Dutch Disease". With the Dutch Disease, the resource sector expands, wages increase, the exchange rate rises but the manufacturing sector shrinks. Economic activities in Latin America are increasingly concentrated in production and export of commodities, particularly *soybeans, copper and iron*. According to Fung, Garcia-Herrero and Ospina (2013), the rise of China has worsened the dependence and concentration of Latin American exports in minerals and commodities. One important negative effect of the enhanced concentration is that potential economic development into more complex and sophisticated high-tech products can be stunted. As a contrast, South Korea's earlier big push into semiconductor manufacturing facilitated its rise in prominence first in plasma TV and laptops and more recently in smartphones.

Now Latin America is faced with a *Dutch Disease reversal*. Metal and food exports slow and exchange rates depreciate. Lower exchange rates and more sluggish wage growth create the possibility for expanding non-commodity activities such as manufacturing. This potential "industrialization" however needs to be aided by judicious government policies, including building a better physical infrastructure and further investment in schools to enhance human capital. Unfortunately this is also a time when government finances are hard to come by, as export revenues deteriorate.

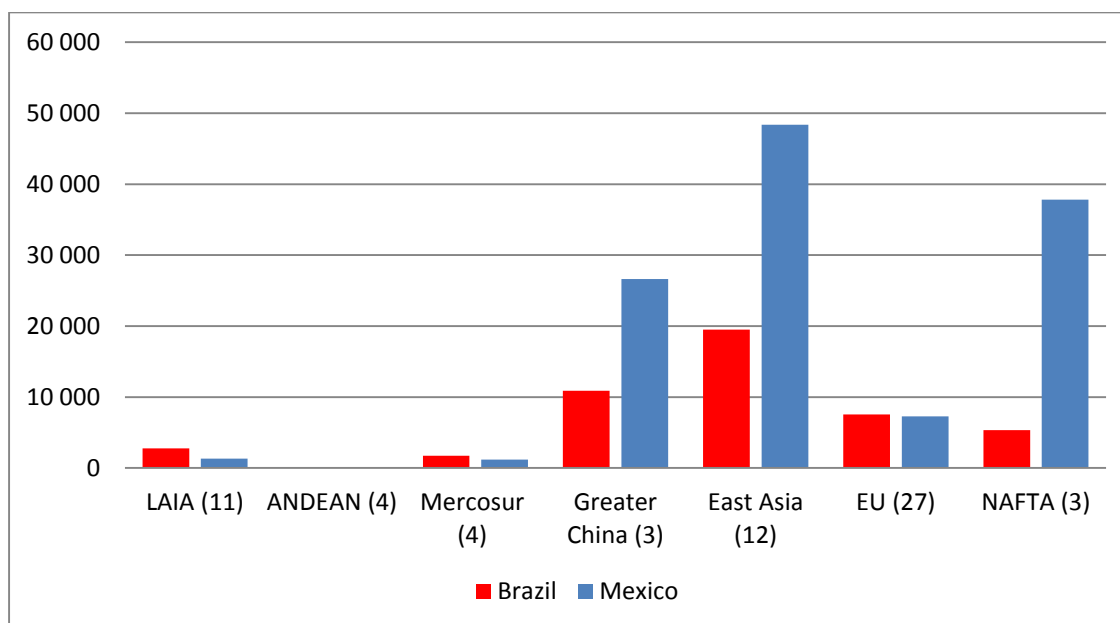
## Co-operative policies between China and Latin America

To turn the slowdown of China into potential development opportunities for Latin America, the region needs to present win-win propositions to Chinese companies and the government in order to entice China to aid in the further diversification and growth of their economies.

Latin America and China can co-operate in three areas.

First, Latin America should realize that China is very sensitive to perceived energy chokeholds. The region should further allow Chinese loans and direct investment. Through government bargaining, China should be enticed to bundle investments in resources and fuels with investment and loans in infrastructure building as well as investment in manufacturing. Second, Latin America should enmesh China (and other Asian economies) in a joint China-Latin American *supply chain*. There is some recent evidence that China is exporting more electronic and telecom parts and components to the region. Indeed, much of Brazil's and Mexico's parts and components came from China, Hong Kong and Taiwan.

Figure 3 Sources of Mexican and Brazilian imports of parts and components, 2010



Note : The classifications of country groups are defined as follows:

ANDEAN (4) = Bolivia, Colombia, Ecuador and Peru.

LAIA (11) = Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

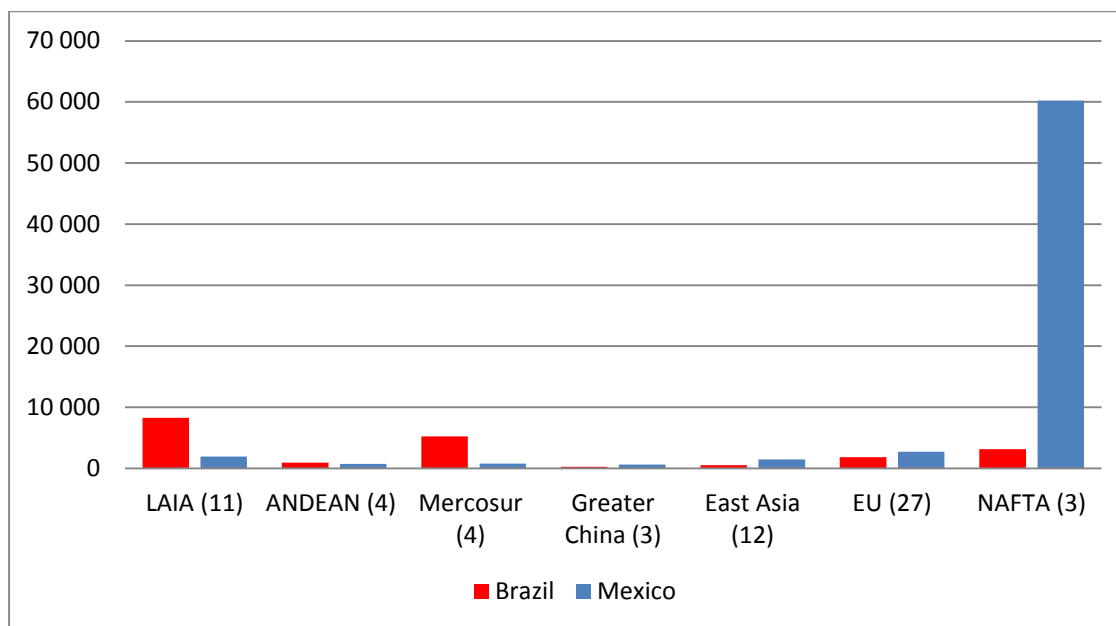
Mercosur (4) = Argentina, Brazil, Paraguay and Uruguay.

Greater China (3) = China, Hong Kong, and Taiwan.

East Asia (12) = East Asia (9) plus Greater China (3).

Source: UN COMTRADE Statistic, Fung, Hwang and Seade (2015).

Figure 4 Destinations of exports of parts and components for Brazil and Mexico, 2010



Note : The classifications of country groups are defined as follows:

ANDEAN (4) = Bolivia, Colombia, Ecuador and Peru.

LAIA (11) = Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

Mercosur (4) = Argentina, Brazil, Paraguay and Uruguay.

Greater China (3) = China, Hong Kong, and Taiwan.

East Asia (12) = East Asia (9) plus Greater China (3).

Source: UN COMTRADE Statistic, Fung, Hwang and Seade (2015).

China should be encouraged to invest in factories to produce such parts in Latin America rather than just exporting. This initiative is related to the next move. China should be reminded of Latin American natural advantage in *space and time*, i.e. its geographic proximity and being in the same time zone as the United States, the largest consumer market in the world. A pan China-Latin American supply chain to serve the U.S. market would make business sense and would be profitable to producers in both economies.

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## References

- Estevadeordal, Antoni, Mauricio Mesquita Moreira, Christian Volpe Martincus and Juan S. Blyde, 2014, "Is India the Next Big Thing for Latin America? A Comparative Analysis of China's and India's Trade," in Fung, K.C. and Alicia Garcia-Herrero (eds), 2014, *Sino-Latin American Economic Relations*, Routledge Press, Paperback edition.
- European Commission, Directorate General for Trade, 2015, "Statistics on China," Brussels, Belgium.
- Deutsche Bank Research, Magdalena Forster, "China and Latin America," 2015.
- Fung, K.C. and Alicia Garcia-Herrero, 2012, "Foreign Direct Investment Outflows from China and India," *China Economic Policy Review*, 2012.
- Fung, K.C., Alicia Garcia-Herrero and Mario Nigrinis Ospina, 2013, "Latin American Commodity Export Concentration: Is There a China Effect?" *BBVA Working Paper* 2013.
- Fung, K.C. and Alicia Garcia-Herrero (eds), 2014, *Sino-Latin American Economic Relations*, Routledge Press, Paperback edition.
- Fung, K.C., 2015, "Finding an Upside for Latin America in China's Slowdown," *Nikkei Asian Review*, April.
- Fung, K.C., Hsiang-Chih Hwang and Jesus Seade, 2015, "Production Network and International Trade: China, Brazil and Mexico," *North American Journal of Economics and Finance*, forthcoming.

- 2012 No 1 Risto Herrala, Juuso Kaaresvirta, Iikka Korhonen and Jouko Rautava: Kiinan kasvava mahti maailmantaloudessa. BOFIT Kiina-tietoisku 2011
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