

# **RMB revaluation and China's foreign trade**

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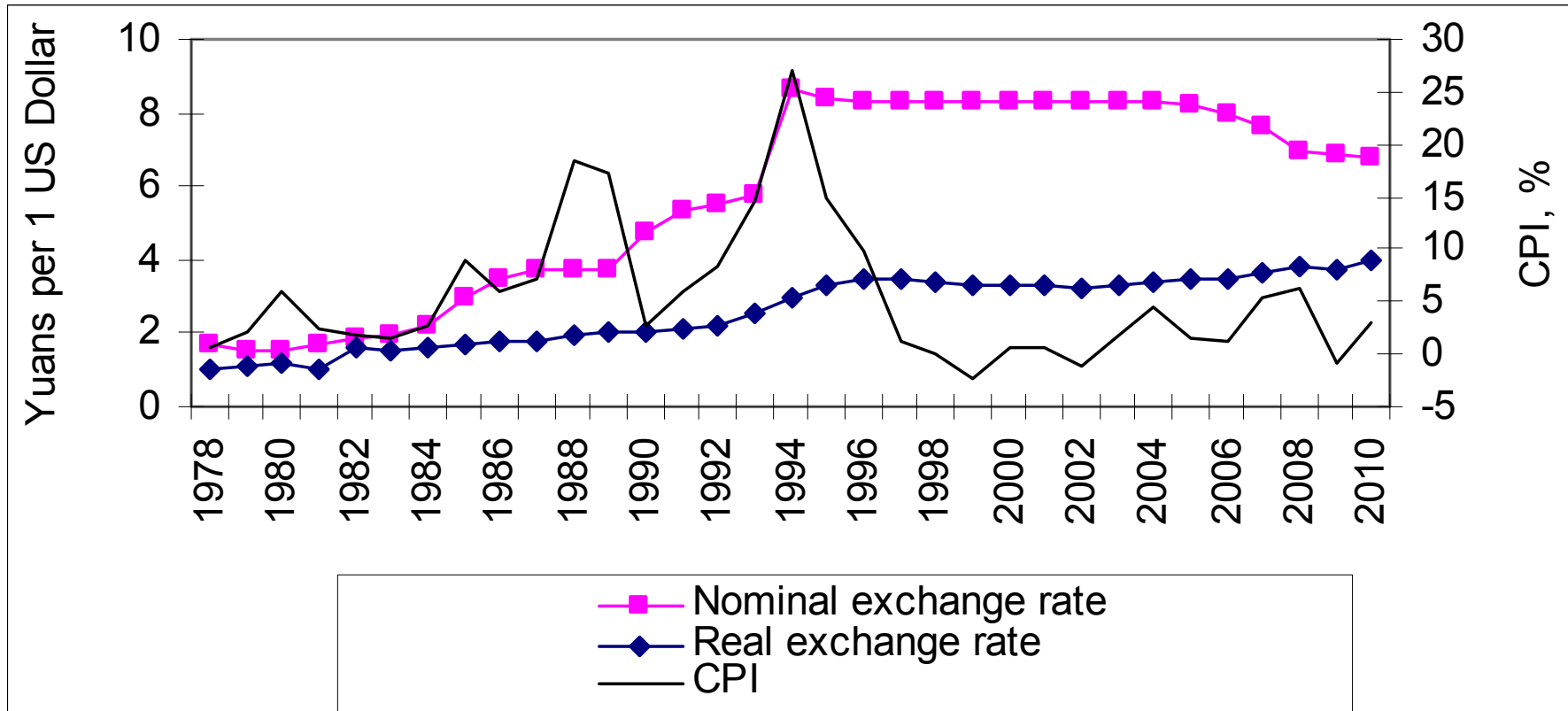
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**Research question:** Does yuan appreciation have a measurable impact on China's main trading partners' balance of trade?

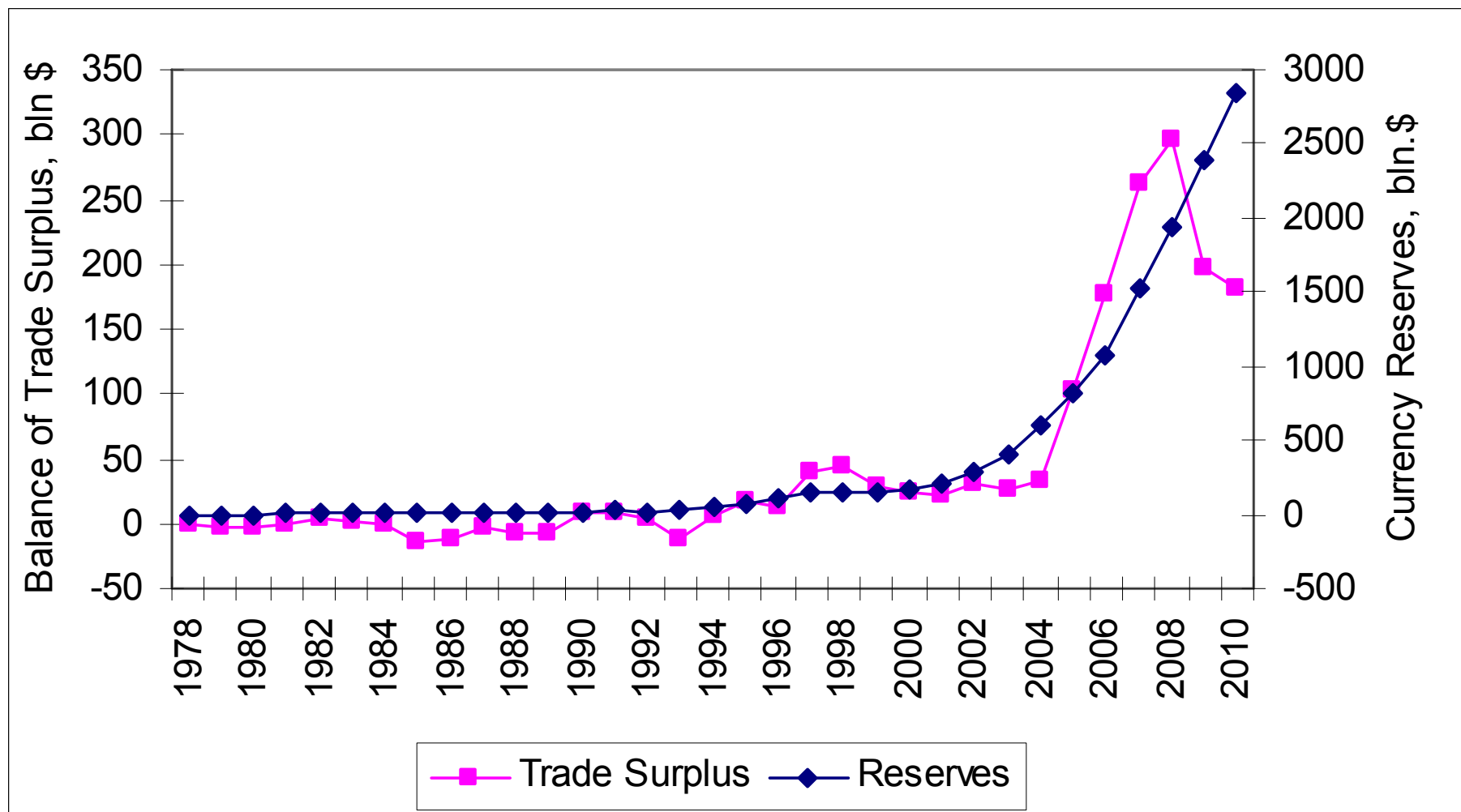
**Methodology:** Regression analysis of imports and exports of China's main trading partners prior and subsequent to RMB appreciation.

a.CRIZ – dummy variable; b.Rows – 13 countries.

# Nominal and Real (on PPP) Exchange Rates of RMB per 1 US dollar and Dynamics CPI rate of China



## China's Balance of Trade Surplus and Gold and Foreign Currency reserves



# Share of Country (group of countries) in the Foreign Trade of China, %

		Exports	Imports
I group	EU-27	19,7	12,1
	US	18	7,3
	Hong Kong	13,8	0,9
	Japan	7,7	12,7
	RoK	4,4	9,9
	Taiwan	2,3	5,2
III group	ASEAN	8,8	11,1
	India	2,6	1,5
II group	Brazil	1,5	2,7
	Russia	1,9	1,8
	Australia	1,7	4,4
	Saudi Arabia	0,6	2,4
	Others	17	28

# Estimation of RMB appreciation on China's foreign trade (quarterly 2004-2010):

$$\Delta IMP_i = \beta_{0i} + \beta_1 \Delta RATE_i + \beta_n \Delta X_{ni} + \varepsilon_i \quad (1)$$

$$\Delta EXP_i = \beta_{0i} + \beta_1 \Delta RATE_i + \beta_n \Delta X_{ni} + \varepsilon_i \quad (2)$$

$i$  – country-trade partner of China,  $n$  – number of independent variables,  $IMP$  – imports,  $EXP$  – exports,  $\beta_0$  – constant,  $RATE$  – nominal rate of RMB per 1 US dollar,  $X_n$  – other factors,  $\beta_1$  и  $\beta_n$  – value of factors,  $\varepsilon$  – errors.

Time series variables are growth rates ( $\Delta X$ ). Estimated regressions describe the absence of multicollinearity and heteroscedasticity.

Others estimated factors of 1 and 2 regressions are: GDP; INV – fixed asset investments; INVINT – national fixed asset investments; MANUF – value of manufacturing output; MANUFFE – value of manufacturing output of FDI enterprises; CONSUMP – expenditure of final consumption; CONSUMPH – households expenditure of final consumption; CONSUMPG – government expenditure of final consumption; TRADE – internal trade; CONSTAX – consumption tax; TARIFF – average custom duty; M2 – monetary aggregate M2.

To estimate the impact of the financial crisis on imports and exports, the dummy variable, CRIZ, was used.

# Factors impacting China's import rates, $\beta_1$ – growth rate of RMB per 1 US dollar (RATE)

	$\beta_0$	$p_0$	$\beta_1$	$p_1$	$X_2$	$\beta_2$	$p_2$	$X_3$	$\beta_3$	$p_3$	$R^2$	DW	P
CHINA_IMP	–	–	<b>3,09</b>	0,05	<i>GDP</i>	1,74	0,01	<i>CRIZ</i>	–0,22	0	0,82	1,71	0,03
EU_IMP	–	–	<b>2,04</b>	0,07	<i>M2</i>	1,49	0,01	<i>CRIZ</i>	–0,43	0	0,63	2,20	0,08
AUS_IMP	–	–	<b>1,66</b>	0,08	<i>INV</i>	1,53	0,00	<i>CRIZ</i>	–0,37	0	0,68	1,35	0,06
HK_IMP	-0,3	0,1	<b>3,18</b>	0,07	<i>CONSUMPG</i>	3,07	0,05	–	–	–	0,60	1,73	0,10
JP_IMP	–	–	<b>2,17</b>	0,03	<i>CONSTAX</i>	1,31	0,00	<i>CRIZ</i>	-1,22	0	0,74	1,64	0,03
KR_IMP	–	–	<b>2,58</b>	0,02	<i>MANUFFE</i>	1,08	0,00	<i>CRIZ</i>	-0,07	0	0,72	1,43	0,04
US_IMP	–	–	<b>1,81</b>	0,01	<i>INV</i>	0,90	0,00	<i>CRIZ</i>	-0,29	0	0,73	1,69	0,04
IN_IMP	–	–	<b>-3,72</b>	0,02	<i>TARIFF</i>	-10,9	0,01	<i>CRIZ</i>	-0,41	0	0,70	2,13	0,05
RU_IMP	–	–	<b>2,73</b>	0,06	<i>CONSUMP</i>	1,77	0,00	<i>CRIZ</i>	-0,23	0	0,73	2,27	0,03
ASEAN_IMP	–	–	<b>3,83</b>	0,04	<i>INV</i>	1,30	0,02	<i>CRIZ</i>	–0,42	0	0,62	1,54	0,08
SAR_IMP	–	–	<b>–6,16</b>	0,00	<i>TARIFF</i>	–8,21	0,00	<i>CRIZ</i>	–0,37	0	0,77	1,65	0,02
BR_IMP	–	–	<b>–5,82</b>	0,00	<i>TARIFF</i>	–9,33	0,02	<i>CRIZ</i>	–0,18	0	0,62	1,98	0,09
TW_IMP	–	–	<b>5,33</b>	0,04	<i>MANUF</i>	2,23	0,02	<i>CRIZ</i>	–0,19	0	0,82	1,86	0,03

# Factors impacting China's export rates, $\beta_1$ – growth rate of RMB per 1 US dollar (RATE)

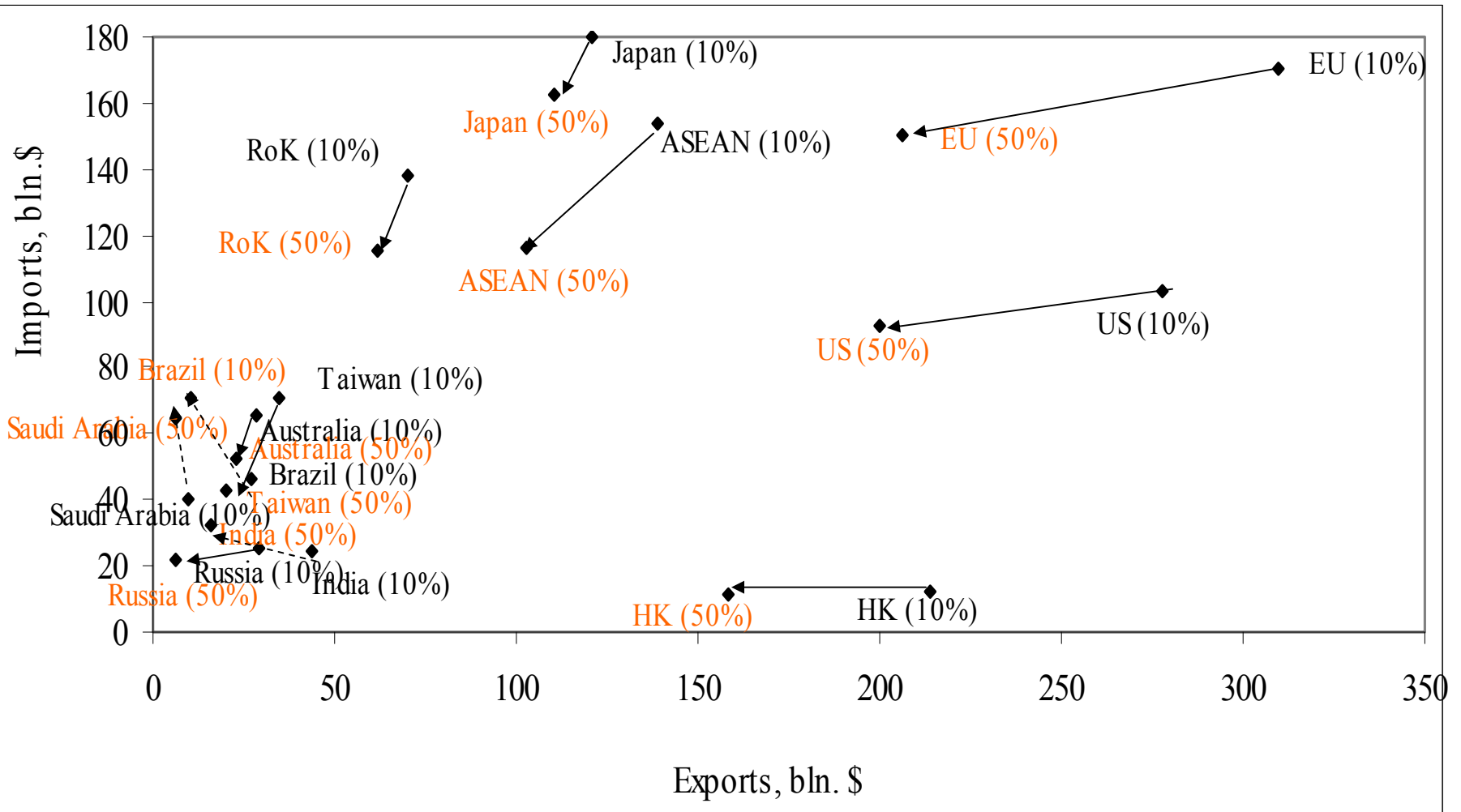
	$\beta_1$	$p_1$	$X_2$	$\beta_2$	$p_2$	$X_3$	$\beta_3$	$p_3$	$R^2$	DW	P
CHINA_EXP	<b>3,67</b>	0,00	<i>GDP</i>	2,00	0	<i>CRIZ</i>	-0,27	0	0,89	2,09	0,00
EU_EXP	<b>4,16</b>	0,02	<i>GDP</i>	2,29	0	<i>CRIZ</i>	-0,31	0	0,84	1,76	0,01
AUS_EXP	<b>2,24</b>	0,01	<i>INVINT</i>	1,23	0	<i>CRIZ</i>	-0,43	0	0,88	2,09	0,01
HK_EXP	<b>4,57</b>	0,00	<i>GDP</i>	1,85	0	<i>CRIZ</i>	-0,20	0	0,90	2,54	0,00
JP_EXP	<b>2,62</b>	0,05	<i>GDP</i>	1,18	0	<i>CRIZ</i>	-0,21	0	0,82	1,41	0,01
KR_EXP	<b>1,66</b>	0,08	<i>MANUF</i>	1,67	0	<i>CRIZ</i>	-0,32	0	0,90	2,09	0,00
US_EXP	<b>4,57</b>	0,00	<i>GDP</i>	1,91	0	<i>CRIZ</i>	-0,20	0	0,89	2,47	0,00
IN_EXP	<b>4,06</b>	0,05	<i>GDP</i>	3,33	0	<i>CRIZ</i>	-0,26	0	0,78	2,04	0,02
RU_EXP	<b>6,54</b>	0,01	<i>GDP</i>	3,71	0	<i>CRIZ</i>	-0,65	0	0,83	2,22	0,01
ASEAN_EXP	<b>3,11</b>	0,00	<i>GDP</i>	2,01	0	<i>CRIZ</i>	-0,18	0	0,88	1,63	0,00
SAR_EXP	<b>3,87</b>	0,01	<i>TRADE</i>	2,41	0	<i>CRIZ</i>	-0,37	0	0,87	1,41	0,01
BR_EXP	<b>3,99</b>	0,08	<i>CONSUMPH</i>	4,96	0	<i>CRIZ</i>	-0,68	0	0,80	1,67	0,02
TW_EXP	<b>5,68</b>	0,02	<i>GDP</i>	2,34	0	<i>CRIZ</i>	-0,30	0	0,79	2,14	0,02



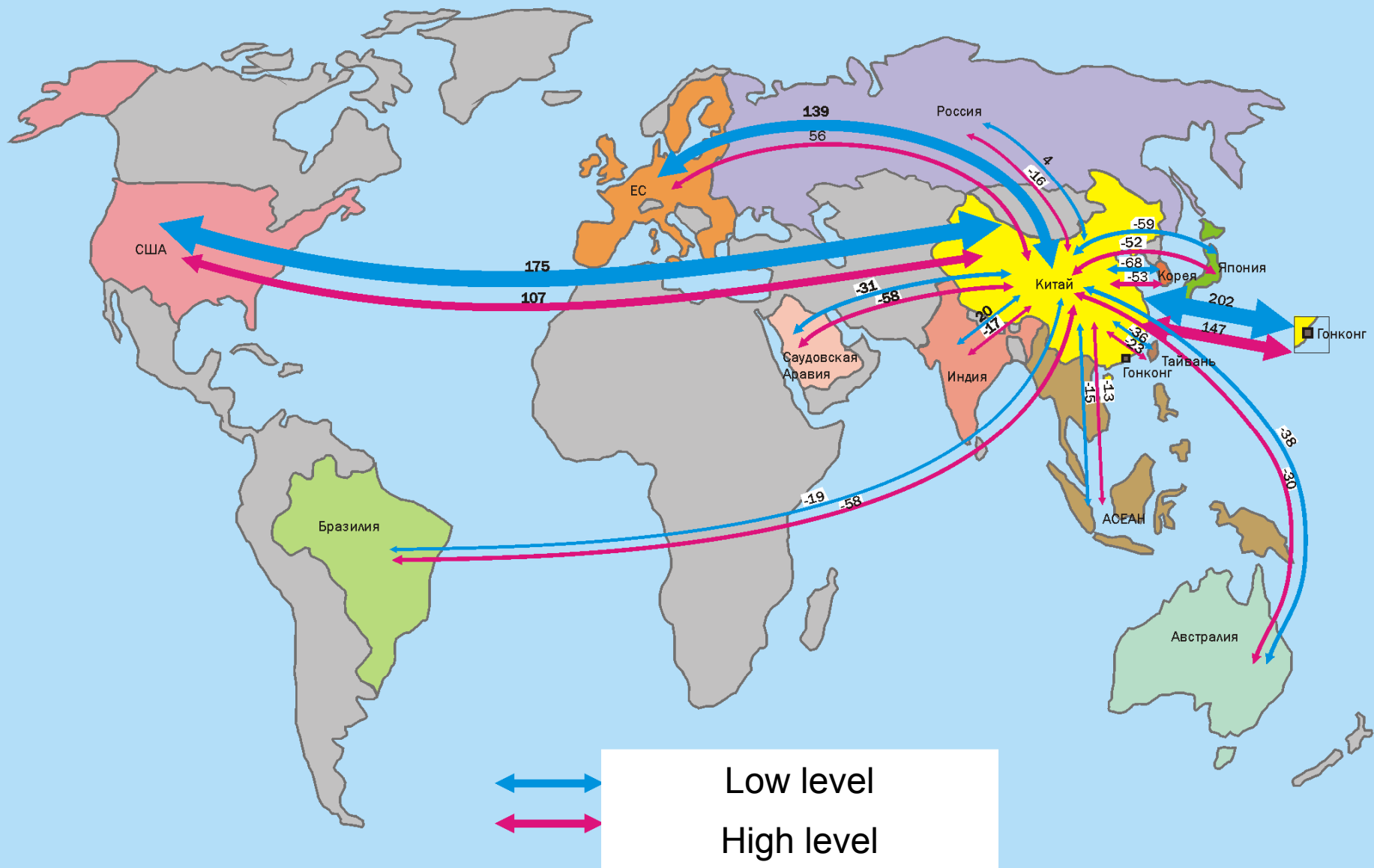
# **RMB appreciation scenarios**

- 1.Low level (10%) is defined by current fluctuation of RMB revaluation.** From 2005 until present, the average annual growth rate of RMB exchange rates relative to the dollar didn't exceed this value. We can assume that currency revaluation will not exceed this level.
- 2.High level (50%) is defined by equality of the nominal and real exchange rates of RMB (3.2 yuans per 1 US dollar).**

# Estimated volumes of China's exports and imports by country (base – 2010) in cases of 10% and 50% RMB revaluation



# China's foreign trade surplus by country



## Conclusions:

- Current RMB revaluation leads to declining growth rates of China's exports and imports as a whole. However growth rates of imports from India, Brazil and Saudi Arabia are estimated to increase. For other national economies RMB revaluation results decreasing import growth rates to China. This is because these latter countries' exports were largely derived from the initial internal imports of transnational corporations, initial raw material imports, and one-time purchases.
- As estimates show, low-level yuan revaluation will have a negligible impact on most of China's external trading volumes. High level revaluation may promote a substantial reduction of China's foreign trade volume. On the one hand, this lends support to US and EU pressures for RMB appreciation. On the other hand, with RMB appreciation, are unlikely to increase export volumes to China. This is due to these latter regions economic interdependency with China. Nevertheless, they didn't get a chance to balance negative foreign trade surplus with China.