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China and India - Long-term Implications for the EU

A note presented at the International Conference on India and China's Role International Trade and Finance and Global Economic Governar

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I. Introduction

China and India are often mentioned in one breath as representing similar challenges for the EU (and indeed all OECD countries).

However, the scale of the challenge is not comparable.

In terms of the sheer size of the trade and investment flows the differences still dwarf the similarities as shown in table 1.

I. Introduction

Table 1: China and India: comparing size

In Billions of USD	GDP		Trade (exports)		FDI
	Current	PPP	Goods	Service	Inward
China	2,630	10,147	970	[S] 92	78
India	887	4,232	102	56	7
EU	14,480	14,080	1,330		

Source: WEO and Eurostat

I. Introduction

The raw data on the size of China and India in economic terms suggest that China is on its own large enough to have a strong impact on the global economy (and on the EU) whereas India might constitute an important actor in some niche sectors (services trade, especially software) .

But being an order of magnitude smaller than China in economic terms (especially overall trade) it is not large enough to have, on its own, a noticeable impact on the global or the EU economy.

This note will thus concentrate mainly on China

I. Introduction

This note provides some rough numbers on today's trade structure as well as the upgrading of the human and physical capital stock in China.

These numbers suggest that the current differences in capital-labor ratios will disappear rapidly and trade between the EU and China is thus more and more likely to become intra-industry in nature.

Given that it is likely that capital will continue to be under-priced in China, it is even likely that future trade disputes will be more in those sectors characterized *by both a high capital intensity and economies of scale* (steel, cars, ships, etc), rather than in the 'old' labor intensive sectors (textiles).

I. Introduction

It is by now widely accepted that an expansion of trade among *similar* economies causes *few* problems because it is likely to be intra-industry in nature and thus does not displace entire industries or large groups of workers
(e.g. the low skilled).

One of the key questions about the rapid rise of China as a trading economy is thus *what kind of trade* will expand between China and the EU: inter-industry (China exports textiles against machinery) or intra-industry (two way exchange of highly differentiated varieties of machinery and other manufactured products).

I. Introduction

The available data suggests that China has already moved a long way *towards the second paradigm* as can be seen from the evolution of the structure of Chinese exports reported in table 2 below.

The composition of China's exports has thus changed rapidly over 10 years and is already now rather *close to that of the EU*.

I. Introduction

Table 2: The structure of trade (exports) compared

	China		EU
SITC Category	1995	2006	2005
Food + beverages (0+1+4)	7.9	2.8	5.1
Minerals + fuels (2+3)	6.5	2.6	5.8
Chemicals (5)	6.1	4.5	14.7
Manufactures by material (6)	22.1	18.2	14.1
Machinery, transport (7)	21.0	47.2	44.4
Miscellaneous (8)	36.1	24.5	11.1

Source: UN trade statistics

I. Introduction

However, since the structure of China's imports is also somewhat different from that of the EU (more imports of machinery, for example) it remains true so far that China retains a *comparative advantage in 'traditional' sectors*, such as textiles (contained in SITC (6)) and "miscellaneous" (SITC (8) including toys, etc.), whereas the strongest sector for the EU is still machinery and transport equipment.

A key question for the future is thus whether China will be able to continue the rapid shift away from traditional sectors.

I. Introduction

This note does not deal with the frictions created by the large (and growing) trade surplus of China.

There is an abundant literature on this issue and the more longer terms considerations that follow in this note will be relevant whatever happens to the overall Chinese trade surplus (or the bilateral one with the EU).

In assessing the likely future challenges of the rise of China for the EU it might be useful to start from *current perceived policy issues*.

II. Yesterday's policy issues: cheap labor?

A first policy issue concerns the composition of Chinese exports. Policy makers seem still to be under the impression (correct until recently) that imports from China are likely to threaten mainly labor intensive industries, such as clothing.

However, given the *extremely high investment rates* in China this is likely to change rather quickly.

Some illustrative calculations suggest that *within the next decade* China could reduce the present difference in capital-labor ratios considerably, implying that the composition of Chinese exports should shift quickly as well.

II. Yesterday's policy issues: cheap labor?

One reason why the capital stock is increasing much more quickly in China than in the EU is that the starting level of the capital stock in China is still much lower than in the EU.

This implies that *depreciation is much lower*.

In the EU the (net) capital stock is increasing only slowly because most investment just makes up for depreciation, whereas the opposite is true in China.

II. Yesterday's policy issues: cheap labor?

Table 3: Chinese and European capital stocks compared (2006 data)

In billions of USD	GDP at PPP	Investment as % of GDP	Total investment	Capital stock		Labour force (in modern sector, millions)	
				Present	Future	Present	Future
China	11,000	44	4,840	33,000	92,300	350	450
EU	16,000	20	3,200	64,000	70,400	200	220

Source: own calculations based on WEO data

II. Yesterday's policy issues: cheap labor?

Given certain assumptions, table 4 reports the resulting *capital-labor ratios*.

That of the EU remains constant as the small increase in the capital stock is just sufficient to keep the capital-labor ratio constant with the small increase in the work force (the additional capital is just enough to equip the additional employment with the same amount of capital).

However, the capital-labor ratio rises rapidly in China, from around 30 % of that of the EU to over 70 %.

II. Yesterday's policy issues: cheap labor?

If China continues to keep its present high investment rate it could thus have within a decade a capital-labor ratio similar to that of the EU (and the Chinese capital stock would be of a more recent vintage).

At that point China should no longer specialize in labor intensive goods.

II. Yesterday's policy issues: cheap labor?

Table 4: The Chinese capital-labor ratio in motion

	K/L (thousands of USD per worker)	
	Present	Future (2016)
China	94	212
EU	320	320

Source: own calculations

III. Human capital: China - a global player in R&D?

While current policy concerns focus on cheap labor there have been a number of press reports suggesting China is rapidly catching up in terms of *innovation activity*.

The raw data suggest, however, that concerns that China will take over the lead in innovation activity on a broad scale might be *exaggerated*.

Moreover, in this area the speed at which China can close the gap with the EU is *limited by demographic factors*.

With a roughly constant population the average stock of human capital per worker can change only gradually as better educated new generations substitute for the older ones. This is by definition a *slow process*.

III. Human capital: China - a global player in R&D?

The basic picture of the evolution of the stock of human capital in China seems to be that of strong basis, which is being reinforced quite rapidly, but that it will take some time before the Chinese work force will contain a similar percentage at the highest levels of education as that of the EU (or other OECD countries).

However, given its population size, China is starting to count on the global scale even at the tertiary level of education.

This will now be illustrated from two different angles: the *present* situation and the *future* evolution as foreshadowed by enrollment ratios.

III. Human capital: China - a global player in R&D?

Present situation

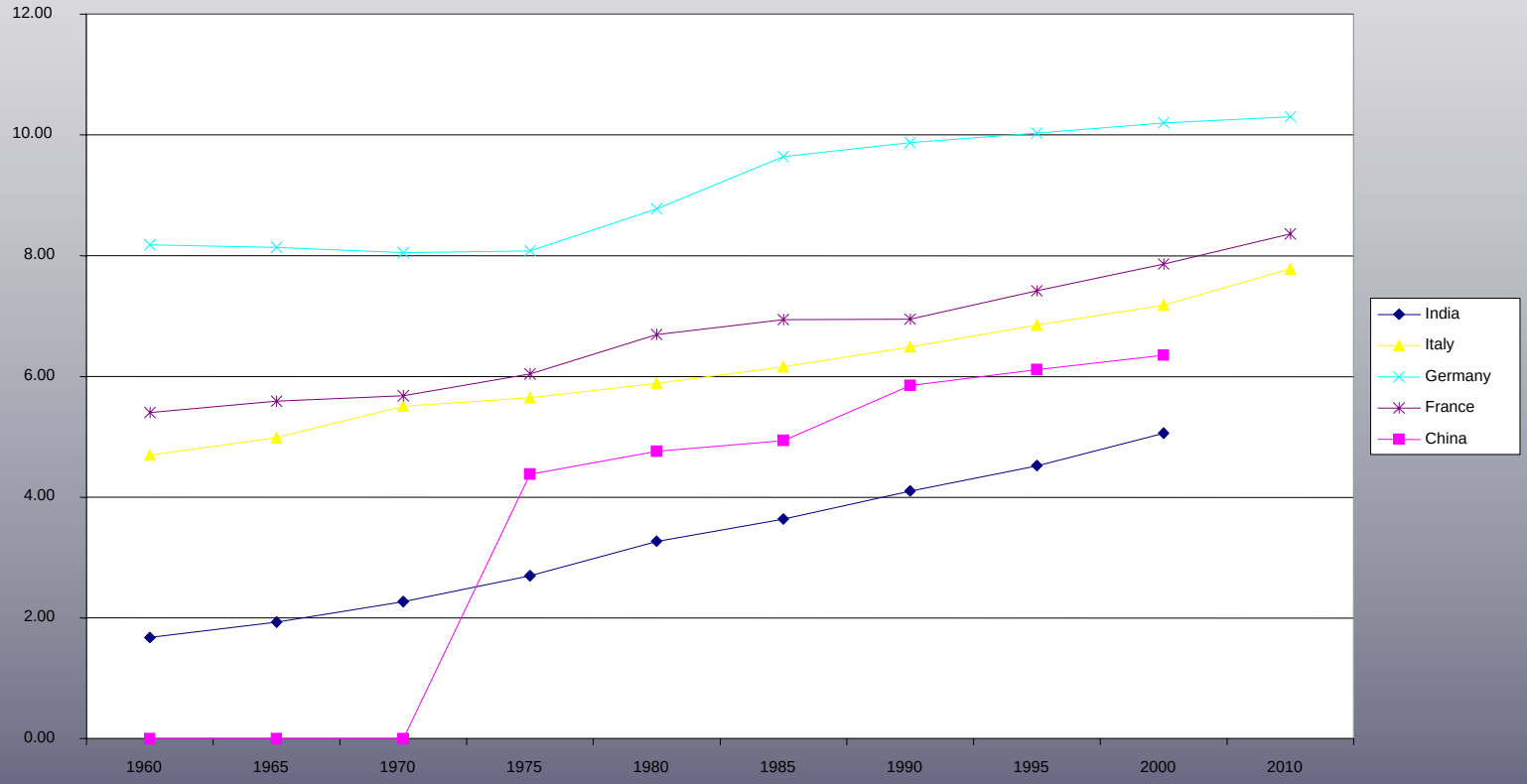
A useful gauge of the overall stock of human capital of the workforce is the *average years of education* members of the adult cohorts have.

Measured this way China has reached a respectable level, close to some member countries (such as France and Italy) and not far from the EU average, but it *remains behind*.

Projections indicate that the *upgrading of the workforce will continue in the EU* as well so that the difference between China and the EU will not diminish if the upgrading in China just continues at this historical pace.

III. Human capital: China - a global player in R&D?

Figure 1



Source: Barro Lee dataset.

III. Human capital: China - a global player in R&D?

Future evolution

An indispensable input for R&D is a workforce with the appropriate level of education. Research and development is mostly undertaken by personnel with *tertiary* (University) *education*.

The available data indicates that the Chinese work force will continue to lag behind that of the EU (and even more than that of the US) in terms of the percentage of the younger cohorts that have a tertiary education.

III. Human capital: China - a global player in R&D?

Over the last 20 years there has been a jump in tertiary education in China, with enrollment ratios increasing by a factor of 7. But the starting point was so low that even today enrollment rates are below one half of the European level.

It is interesting to note that despite its reputation, India has made much less progress than China (tertiary enrollment up only from 6 to 11 %).

The Indian software industry seems to constitute an exception that hides an average which has falling behind that of China.

III. Human capital: China - a global player in R&D?

Table 5: Enrollment Ratios 1985 – 2005

	Secondary Education **Net**			**Tertiary Education** **Gross**		
Country	**1985**	**1995**	**2005**	**1985**	**1995**	**2005**
China	39.7	65.8	74.3	2.9	5.3	20.3
United States	91.2	90	89	60.2	80.9	82.7
India	37.9	48.8	56.6	6	6.6	11.4
EU27 (average)	82.7	97.9	100.8	26.7	44.9	56.2
Turkey	36	51.3	66.8	8.9	19.5	31.2

Source: World Bank

III. Human capital: China - a global player in R&D?

The upgrading of skills of the Chinese workforce is thus proceeding less quickly than is sometimes assumed.

However, one needs to recall that the cohorts that are currently studying (and will soon enter the labor force) are also much larger in China (about 3 times larger) than in the EU.

This implies that in absolute terms one should expect that China will produce same number of University graduates (engineers, which have been the focus of much attention) as the EU.

Moreover, as enrollment rates are still increasing rapidly it is unavoidable that China will soon overtake the EU (and the US) in terms of the number of scientists that graduate each year.

IV. Energy: China's carbon rich economy

An additional area of friction that is likely to remain concerns *energy*.

China already now consumes almost as much energy as the EU, implying that its energy intensity (energy consumption per unit of output) is only slightly higher than that of the EU, at least if GDP is measured at PPP.

However, the *composition* of China's energy consumption is quite different from that of the EU (or the US): China consumes almost 4 times as much coal as the EU.

IV. Energy: China's carbon rich economy

Table 6: Energy consumption and composition

All data in millions of tons of oil equivalent (mtoe)	Primary energy consumption			Major fuels (2006)	
	1996	Today (2006)	Projected (2016)	Oil (net imports)	Coal (consumption)
EU	1691	1782	1878	560	320
US	2190	2326	2471	608	567
China	965	1698	2987	169	1,191

Source: BP, World Energy Review (2007)

IV. Energy: China's carbon rich economy

Moreover, if current trends continue China would in ten years consume 50 % more energy than the EU.

Most of the increase in the energy demand is likely to continue to come *from coal*, which is relatively abundant in China.

This has two implications:

IV. Energy: China's carbon rich economy

a) China is already now the biggest source of CO2 emissions (coal is much more intensive in CO2 than the equivalent energy obtained through oil or gas).

Hence considerable frictions will arise to the extent that limiting CO2 emissions remains an objective of EU policy.

China will not be willing to accept any CO2 tax, but if it were introduced by the EU, or at least throughout the OECD, this would create an *important competitive advantage for Chinese producers*.

IV. Energy: China's carbon rich economy

b) China is much *less dependent on hydrocarbon imports* than either the EU or the US and the price of coal has increased much less than that for either oil or gas.
This fall in the relative price of coal will give Chinese producers a *further cost advantage* in energy intensive industries (again steel, for example).

V. The EU and the rise of China

For a European it is interesting to observe that China provides in many respects almost exactly the *mirror image* of the convergence process going on *within the enlarged EU*:

The new member countries have a relatively well educated population, most of which was already employed in the modern sector (industry and services), but lacked a modern capital stock and the associated know-how.

The new member countries have thus become large importers of capital, mostly in the form of FDI.

As a result, productivity is increasing rapidly, allowing wages to converge rapidly to the EU average.

V. The EU and the rise of China

By contrast **in China**, only part of the population works in the modern sector and the supply of domestic savings is much larger.

The role of FDI in China is thus ‘only’ to facilitate the transfer of know how, not to provide funds for investment.

Capital deepening is preceding at such a rapid pace that on current trends China will have a capital-labor ratio close to that of the EU within the next decade, earlier than the new member states.

V. The EU and the rise of China

These differences between the economies of the new member states and China imply that in future *the brunt of the adjustment* to the rise of China will have to be *borne by the capital (and energy) intensive industries in the old member states*.

The workers in these industries are not necessarily low skilled; they tend to have the highly specialized skills necessary to operate the large capital employed in these industries.

They are generally well paid and organized, thus constituting, together with the capital owners, a *strong lobby for protectionism*.

V. The EU and the rise of China

A further key difference between China and the new member countries concerns the *role of financial markets.*

In the CEECs, they were totally liberalized and the domestic banking system was taken over by EU banks.

This has permitted the financing of a consumption boom and thus large capital imports.

V. The EU and the rise of China

By contrast **in China** financial markets have not yet been liberalized, leading, in conjunction with the absence of a social security safety net to extraordinarily high savings rates.

China has thus become a large (net) capital exporter, with its net supply of savings to the rest of the world (its current account surplus) now close to 1 % of world GDP.

V. The EU and the rise of China

What does the emergence of large exporter of capital goods and an increase in the supply of global savings imply for the EU?

The increased supply of savings should keep interest rates low, but this does not require any particular policy reaction assuming it is properly recognized by the ECB.

The very large current account surplus of China is a relatively recent phenomenon, and it is not going to increase without limits. Once it stabilizes, Chinese imports will increase in line with exports. China will thus not have a deflationary impact on the global economy forever.

V. The EU and the rise of China

The ongoing shift from intra- to inter-industry trade that will result from the shift towards relatively capital intensive products in China's exports suggests that *labor market flexibility and constant re-training are more important than a special concern for unskilled workers in general*.

Another policy implication is that *regional and industrial policies which tend to support capital intensive industries via investment subsidies are unlikely to work*. As China becomes stronger and stronger in these sectors these industries will not be able to survive without continuing support.

V. The EU and the rise of China

Taxing imports of capital intensive products from China is not a policy option since China is a full member of the WTO.

But even if possible, it would have *an undesirable effect on income distribution* since it would be favorable to capital owners, but have a negative impact on labor.

V. The EU and the rise of China

A key peculiarity of China's economy is its extraordinary degree of openness: exports amount to about 40 % of GDP, a figure closer to the average of individual EU member countries, rather than the roughly 15 % one observes for the EU and US and would thus expect from a continent-sized economy.

Moreover, about 60 % of these exports are generated by so-called '*foreign invested enterprises*' (enterprises with a large foreign participation).

V. The EU and the rise of China

Over one half of the China's 'export machine' is thus managed by foreigners.

This suggests that while China is likely to remain stubborn in the pursuit of its perceived national interests, it is *unlikely to become a disruptive element in the world economy*.

There is thus no reason why the EU should assume a confrontational stance vis-a-vis China.

Annex: Chinese and Indian export structures compared.

A simple way to document the evolution of the structure of Chinese trade is to look at the Balassa index, which shows to what extent a country's share in world exports of a certain category of goods is higher or lower than the share of the country in overall world exports.

For example, if a country provides 15 % of global exports of machinery, but its share in overall global exports is only 10 % the Balassa index will be equal to 1.5, indicating that the country has a revealed comparative advantage in this sector.

Annex: Chinese and Indian export structures compared.

Table A1 below shows to what extent there is a similarity between the distribution of the Balassa index across the major SITC categories for China and for a group of other comparator countries.

The crude measure used here is just the correlation coefficient of the Balassa index across 1 digit SITC categories (times 100).

Given the small number of observations individual results do not have statistical power, but the overall picture is clear: all correlation coefficients have changed sign over the last twenty years.

Annex: Chinese and Indian export structures compared.

Twenty years ago the (distribution of sectoral export) specialization of China seemed to be negatively correlated with that of major OECD countries and positively correlated with that of other emerging markets, such as Brazil and Indonesia.

Today (2005 data) the structure of Chinese exports is positively correlated with all OECD countries (the correlation is strongest with those countries (J, DE) specialized in heavy industry), but negatively correlated with other emerging market economies.

Annex: Chinese and Indian export structures compared.

Table A1: Evolving Chinese export structure

Correlation coefficients (*100) between the Balassa index for and other countries in first column)		
	1986	2005
China*	-3	
USA	-27	25
Japan	-49	62
Germany	-71	46
Brazil	25	-45
Indonesia	67	-38
Italy	-24	42

Source: own calculations based on UN trade data.

*China 1986 versus 2005

Annex: Chinese and Indian export structures compared.

It is interesting to note, as mentioned that the correlation coefficient has turned negative for the pairs China-Brazil and China-Indonesia. One could thus argue that the challenge to the EU provided by China is the opposite of that coming from these two countries. Hence it is misleading to lump the so-called BRICs together.

The first row of table A1 shows that today's export structure of China has little to do with that of 20 years ago since the correlation coefficient is essentially zero.

Annex: Chinese and Indian export structures compared.

Table A2: Stagnant Indian export structure ?

Correlation coefficients (*100) between the Balassa index for other countries in first column)		
	1986	2005
India*	72	
China	37	17
USA	-13	32
Japan	-30	-14
Germany	-31	-24
Brazil	64	45
Indonesia	-22	-9
Italy	15	-24

*India 1986 versus 2005

Annex: Chinese and Indian export structures compared.

The correlation coefficient between China and India has diminished over time is now rather low (17%). This suggests that the structure of the challenge to the EU provided by India is quite different from that coming from China (even apart the difference in size mentioned above).

The first row of the table shows that India's export structure has changed little over the last 20 years since the correlation coefficient is rather high (72%). This is another indication of the different dynamics of these two countries.

V. The EU and the rise of China

The EXR issue from an EU perspective – what is it about?

The US are inflating their economy and their foreign debt by a mainly externally financed twin deficit, accompanied more recenly by two interest rate cuts.

China is also inflating its economy by export-driven growth. Especially the Chinese *state funds* financed by Chinese dollar reserves are conceived as a threat to national security, at least in Germany. **Euro bears the main burden** while the US (cheap consumption goods, seignorage gains) and China (dollar reserve accumulation) profit!

V. The EU and the rise of China

Europeans, esp. Germans, doubt that US has an interest in a strong dollar, hence they try to push China to go for a revaluation of the RMB – without success up to now.

Hence, call for FX market interventions by unions in Germany.

Dollar as a *subprime currency*! Full-blown dollar crisis on top of a credit crunch mainly in the US, but also in the euro area, and of emerging short-term inflationary pressures (further euro rate hikes?) and of medium-run recession scares (via declining euro area house prices and via potential US recession!) in the euro area?

V. The EU and the rise of China

The US Fed forced even to raise interest rates as US recession looms => US recession! => With higher euro rates, ky-rocketed euro would rise further => political tensions in the euro area (aircraft and car industry), because Germany‘s gains in competitiveness are neutralised.

But note: Only 13% of Germany‘s exports are directed towards the dollar area, most of them have an intra-EU destination!

Fears of a sudden shift in the global monetary system: From the dollar as the main reserve currency to the euro (and in the long run to the RMB?). Further gains in the external value of the euro! However, worldwide share of the euro as a reserve currency has risen from 1/5 in 1999 to ¼ by today.

V. The EU and the rise of China

The EXR issue from an EU view – 3 scenarios

Scenario 1: US saves more and comsumes less => lower US imports => trade deficit and speed of dollar-devaluation diminish.
Eventually, China is even prepared to revaluate the RMB.
World economy equilibriates at new equilibrium while transition process is characterized by lower growth rates but not by a recession.

V. The EU and the rise of China

Scenario 2: Subprime crisis feeds through the system => lower US consumption and real estate investment => even lower worldwide confidence into a soft landing of the US economy => further massive devaluation of the dollar – eventually combined with a low-performing stock market which up to now still perform surprisingly well.

German economy is hit twice: exports to the US go down and the damage for the world economicy is so large that booming Asia cannot compensate for that any more. (At the moment the Asians are still the drivers of the world economy.)

If US-recession even feeds through to the Asian economies, the imports of the latter from Germany would diminish and Germany would suffer from a recession.

Scenario 1 and 2 assume consistent behavior of the actors (Japan as a fighter of deflation unlikely to sell dollar reserves first; China is a large owner of US assets and is aware of the fact that dumping dollars would be self-defeating)!

V. The EU and the rise of China

Scenario 3: Worst case: dollar crash due to structural blasts which combine with th eabove mentioned cyclical ones! Cannot be excluded but has a low probability (yields on US gov‘t bonds have fallen recently).

Decline of dollar in the past five years has led to a huge loss in currency reserves. If this appears too painful, central banks are inclined to dump their dollars. Each CB wants to be first, since it knows that the others are overloaded with dollars too (network effect).

Sudden and quick shift in reserve currency choice to the euro.

The more external debt the US accumulates the more probable a default on its obligations by weak currency or inflation.

A fall of private US capital inflows is not compensated any more by central banks of emerging markets which have a dollar-peg.

V. The EU and the rise of China

The EXR issue – potential solutions from an EU perspective

- Self-interest and sensible policy can handle the issue: US should pay more heed to their currency and should demonstrate ist willingness to hold back interest-rate cuts for the sake of the dollar.
- Benign neglect will no longer do. Chinese also have no interest in either a plunge of the external value of their existing 1.4 bio. dollar reserves nor in slowing economic growth in one of their best market – the euro area.

V. The EU and the rise of China

- Those countries with dollar-peg need to give their currencies some leeway to rise – both to rebalance the global economy and to curb inflation (oil-rich gulf states). But abandoning the peg completely will only add to the pressure on the dollar – Choose basket peg! Slowly!
- But will emerging markets really switch to the euro, as a reserve currency at a time where the price of the sold dollars would be at a cyclical low? Europeans tend to be skeptical about that.
- No FX market interventions by the ECB (as in 2004)! Main reason, other arguments notwithstanding: if ECB intervenes to support the dollar, the price of dollars increases and dollar reserve countries would feel inclined to sell their reserve dollars and to shift to euros. Hence, interventions would make the euro even more expensive in terms of dollars! Also: Fed would not agree!

V. The EU and the rise of China

The EXR issue – a note of caution

• The euro‘s revaluation will not go on forever. Flattered by cyclical forces although: five years ago it was very weak and last year exposed to debate about the breakup of the euro area.

•Medium-term perspectives of the euro not so bright (higher aging rate than US, structural asymmetries due to lack of reforms in some countries, lack of central fiscal authority etc.).

•The euro‘s appreciation – combined with a decrease in house prices in some member countries is already now causing strain in the euro area.