



Wealth Generation from Mercantilism: How Under-valuation Of Exchange Rate Matters for Growth

by

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Purpose:

- 1. Determinants of growth, use of exchange rate, particularly Chinese exchange rate policy. Side products – explain acceleration in Indian growth in the eighties, the need for a new Plaza accord (a different yen, Chinese yuan).**
- 2. Data used is for close to 100 countries for the period 1960-2001; for some data, till 2003.**

How to Measure Under-valuation of Exchange Rates?

1. Adjusting For Inflation: Choose base year, and adjust for inflation differences.

2. Adjusting for Productivity Differences: Same as above, but adjusting for differences in productivity growth

How to Measure Under-valuation of Exchange Rates? (Continued)

3. How to Measure Productivity Growth? World Bank data on Capital and Labour 1950 to 1990 (Nehru et.al) and Capital data adjusted via investment rates post 1990 (depreciation equal to 5 % per annum).

4. Simple Regression with Dummy (1960-73 & 1974-03) and region dummies, yields the results that coefficient of K is 0.40 and L is 0.43 ; education differences were insignificant.

Table: Under-valuation of Exchange Rates

Country	Exchange Rates				Under-valuation		
	Nominal end 2003	Inflation	Equilibrium Growth	Total	1984 87 base	2003 93 base	00-03
Australia	1.3	1.5	1.5	1.6	-9.4	-17.1	-14.3
Brazil	2.8	1.9	0.6	1.7	32.1	71.7	88.9
Canada	1.3	1.3	1.3	1.3	0.4	-3.0	0.0
China	8.3	6.6	5.0	5.7	-44.9	45.5	39.3
Germany	0.8	0.8	0.9	0.8	46	-5.3	-4.1
India	45.4	45.1	28.5	42.2	-0.8	7.8	10.4
Japan	106.4	85.8	139.7	107.8	45.9	-1.2	-0.7
South Korea	1176	891	834	925.8	-5.2	27.0	30.1
Mexico	10.8	14.7	5.4	12.3	6.1	-12.0	-7.0
Thailand	38.3	27.9	31.2	34.3	-10.5	11.5	12.9

Major Results

- ❑ **China's Currency is the most under-valued today (if the "transition" exchange rate of Brazil is ignored) – fair value of yuan close to 5.9, a 45.5% under-valuation.**
- ❑ **Close on its heels is Korea, 27%.**

Some Surprises

- ❑ **Indian currency is only 8% under-valued**
- ❑ **Mexican Peso is 12% over-valued**
- ❑ **Japan (@106 yen) and Euro (@ 1.26) are both fairly valued.**
- ❑ **Canada (after the recent 10% appreciation is fairly valued).**

But Does Overvaluation Matter for Economic Growth?

- ❑ Revealed preference of East Asian economies suggests that it matters a lot.**
- ❑ The resistance of China to a “flexible” exchange rate is another.**
- ❑ Searching for empirical evidence on the importance of under-valuation of exchange rates.**

Model of Growth; five-year periods centered on 1952, 1957 etc. till 1999 and the last period consisting of 4 years 2000 to 2003

- Standard Variables: Lagged per-capita GDP (for catch-up effect), share of investment in GDP, and fiscal deficits (share in GDP).**
- Openness to trade variables: Sachs-Warner, updated using Easterly et.al.**
- Barro-Lee educational attainment variable.**

Under-valuation Of Currency

1. The ratio of per capita GDP in nominal US dollars to per capita GDP in nominal PPP dollars is an indicator of labor cost advantage; this ratio is standardized with reference to the ratio for China.

For example this ratio was 21.9 for China in 2003 and 19.5 for India i.e. India had a 2.4 percent cost/productivity advantage relative to China – the higher this advantage, higher the growth, *ceteris paribus*.

Under-valuation of Currency(Continued)

2. Change in under-valuation (again, relative to China), where under-valuation is as measured in Table 1; e.g., between 1999 and 2003, India's under-valuation increased by 10%, while that of China increased even more by 17 percent.

3. Interaction of under-valuation with average schooling (Barro-Lee).

Past Poverty Decline Should Help Future Growth

1. If absolute poverty denotes genuine lack of purchasing power, then escape from poverty should create..... demand; i.e. the larger the fraction escaping poverty, the higher is subsequent growth; variable entered as lagged change (same as lagged trade shares)

Past Poverty Decline Should Help Future Growth

(Continued)

2. The yield of growth to poverty decline is a statistical property (congestion near the poverty line), the larger the “shape of the distribution elasticity”, the greater the decline, *ceteris paribus; introduced as a lagged variable.*

Table:

Regression results with per capita GDP as left hand side variable

	Coefficient	t-value
lagged pc income	-0.374	2.84
share of investment in GDP	0.19	9.78
Ratio (Fiscal deficit/GDP)	0.1413	7.3
Cost/Productivity advantage	0.0162	3.02
Change in under-valuation (relative to China)	0.0174	4.31
Mean years of Schooling	-0.0220	0.26
Interraction with under-valuation	0.0024	2.86
Sachs-Warner openness index	0.5840	2.19
Lagged change in share of trade/GDP	0.0307	2.76
Lagged change in % poor	-0.0480	3.34

Some Results

- 1. Fiscal Deficit: Very significant, always positive; coefficient of *0.14* suggests that a 1% increase in the fiscal surplus, leads to a *0.14%* increase in GDP Growth**
- 2. Investment Share: 1% increase in share leads to *0.2%* increase in GDP growth.**

Table:

Regression results with productivity growth as left hand side variable

	Coefficient	t-value
Ratio (Fiscal deficit/GDP)	0.0851	3.67
Cost/Productivity advantage	-0.0033	-0.51
Change in under-valuation (relative to China)	0.0174	3.67
Mean years of Schooling	0.0321	0.33
Interaction with under-valuation	-0.0008	-0.93
Sachs-Warner openness index	1.0462	3.37
Lagged change in share of trade/GDP	0.0033	0.25
Lagged change in % poor	-0.0139	-0.84
Shape of distribution elasticity (lagged)	0.1373	0.2
Constant	0.9262	2.08

Number of obs = 383

R-squared = 0.1246

Some Results (Continued)

3. A 10% increase in under-valuation in currency increases annual GDP growth rate by 0.33 percentage points; plus about 0.07 from interaction with education; plus about 0.05 from lagged change in trade share; overall, about a 0.45 to 0.50 increase in annual growth rate.

Some Results (Continued)

4. Relative Magnitudes: Reduce fiscal deficit by 1% of GDP, or under-value the currency by only 3 to 5%

5. Poverty decline helps; each 10 percentage point decline in poverty increases subsequent five year growth rate by approximately 0.5 percent.

Conclusion

- 1. Under-valuation of currency one of the most effective tools for increasing GDP growth rate (often, at the expense of other economies)**
- 2. On several parameters, China's exchange rates more under-valued today than the Yen was before the Plaza Accord.**

Conclusion (Continued)

3. See Tables for ranks on export growth, reserve growth, under-valuation (Borda ranking of two indicators) and GDP growth.

Table: Ranking: **Export Growth**

Country	1984	1994	2003
Brazil	6	24	7
Canada	10	30	23
China	3	1	4
Germany	28	33	13
India	14	17	6
Japan	8	23	21
South Korea	5	14	19
Mexico	4	12	20
Thailand	13	4	16
United States	17	22	31

Table: Ranking: **Growth in Reserves**

Country	1984	1994	2003
Brazil	32	10	31
Canada	24	33	8
China	2	18	10
Germany	23	31	26
India	19	26	6
Japan	21	25	5
South Korea	27	12	2
Mexico	6	15	7
Thailand	29	4	21
United States	9	32	25

Table: Ranking: Productivity Growth

Country	1984	1994	2003
Brazil	30	15	5
Canada	23	32	24
China	1	1	8
Germany	19	18	20
India	3	17	13
Japan	10	29	31
South Korea	9	16	11
Mexico	27	5	9
Thailand	7	10	21
United States	13	23	12

Table: Borda Ranking of Under-Valuation

Country	1984	1994	2003
Brazil	5	13.5	6
Canada	26.5	28.5	27.5
China	28.5	1.5	3.5
Germany	17	24.5	24.5
India	17	16	7
Japan	11.5	20	32
South Korea	13	15	14.5
Mexico	14.5	33.5	31
Thailand	17	8	10
United States	31	21	34

Table: Ranking: GDP Growth

Country	1984	1994	2003
Brazil	28	32	30
Canada	23	31	14
China	1	2	2
Germany	17	20	23
India	20	11	10
Japan	11	10	29
South Korea	6	3	8
Mexico	10	26	16
Thailand	7	1	28
United States	22	24	20