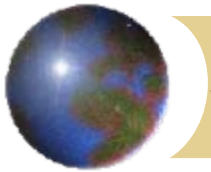


# ***Macroeconomic and Industry Impacts of Currency Valuation: A Global Modeling Analysis***

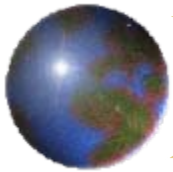


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**INFORUM/Dept of Economics**  
**University of Maryland**  
**June 27, 2005**  
**[werling@econ.umd.edu](mailto:werling@econ.umd.edu)**



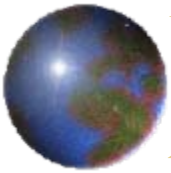
# *Overview*

- **Is U.S. current account sustainable?**
- **Exchange rate scenarios using Inforum's international modeling system:**
  - **25% RMB only**
  - **25% All Asian currencies**
  - **25% All currencies, U.S. financial markets tranquil**
  - **25% All currencies, U.S. financial markets turbulent**



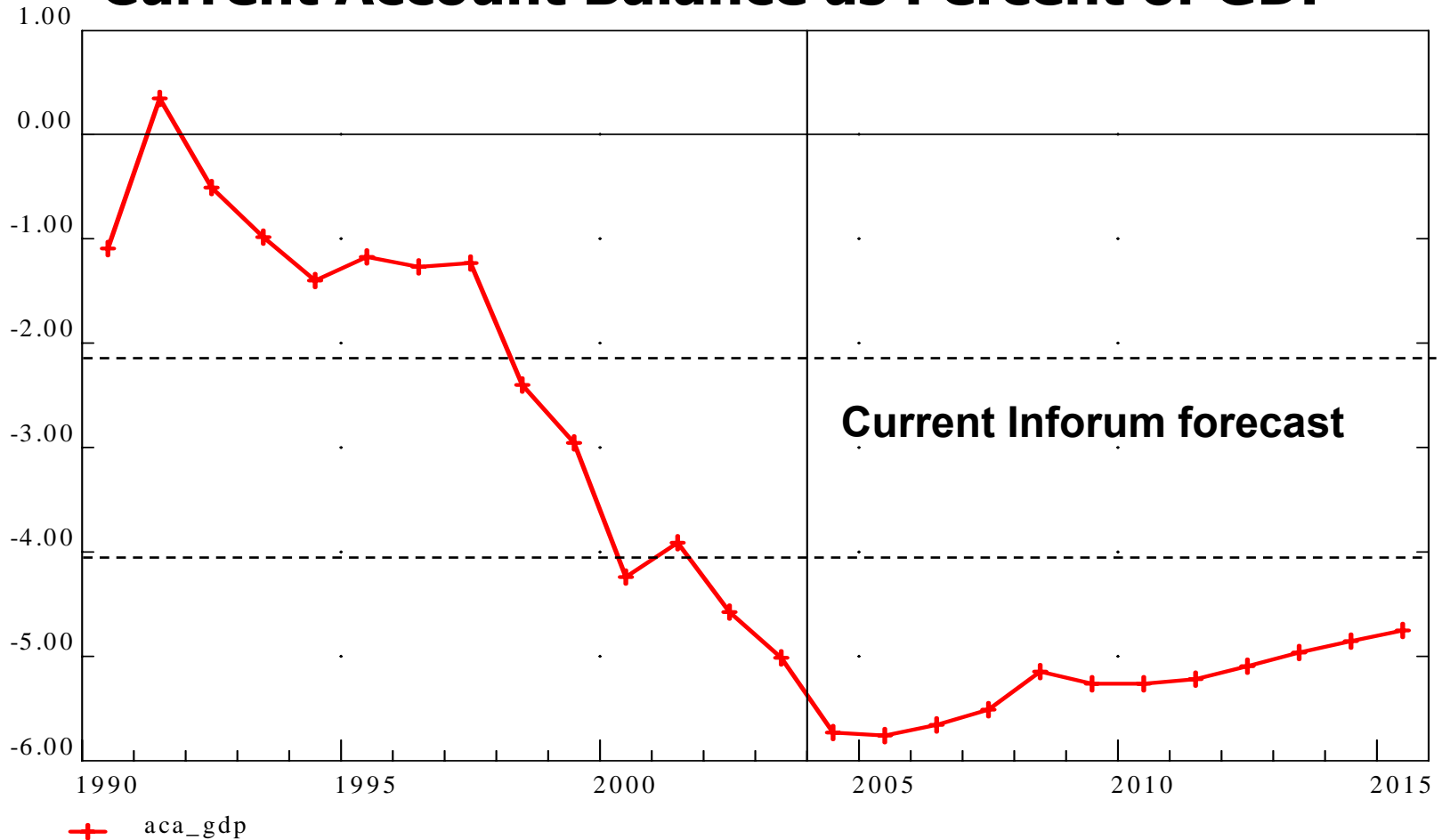
## ***Inforum Models***

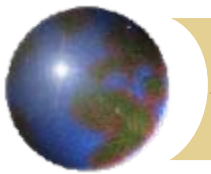
- **Combine input-output structure with econometric equations in a dynamic and detailed framework.**
- **Like a CGE: Contains detailed industry structure and *bottom-up* accounting.**
- **Like an (macro) econometric and/or VAR model: Parameters estimated from actual data. Portrays dynamic evolution of economies over actual time periods.**
- **Lift (Long-term interindustry forecasting tool) is 97 sector flagship model. Under continuous development and use for 30 years.**
- **Iliad - detailed 310 sectors.**
- **International System: BTM bilateral trade model, IM models for all major trade partners including China (Mudan).**



# *Is the U.S. current account sustainable?*

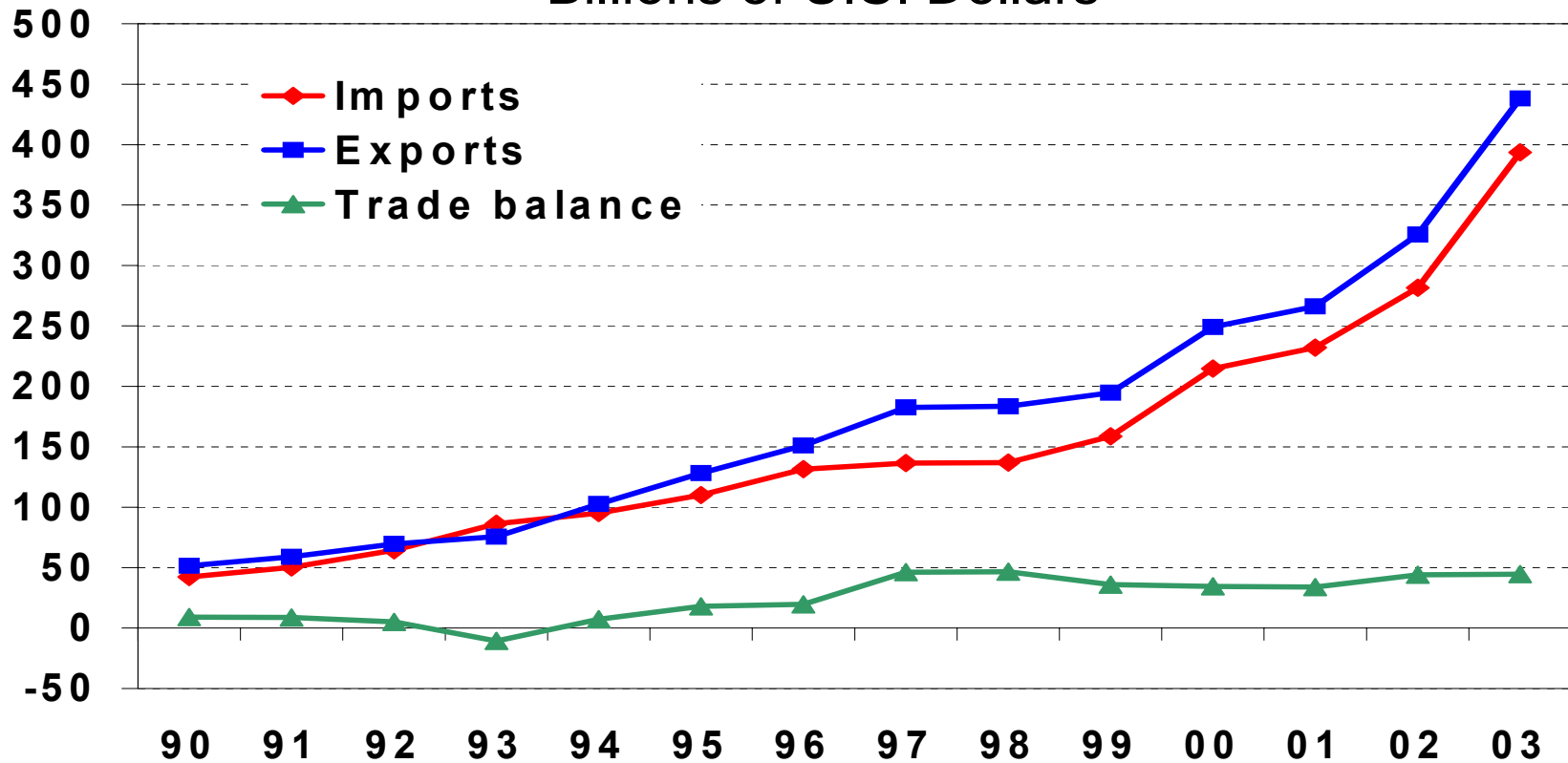
## Current Account Balance as Percent of GDP

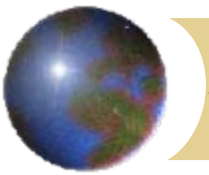




# *China's overall trade surplus has been level.*

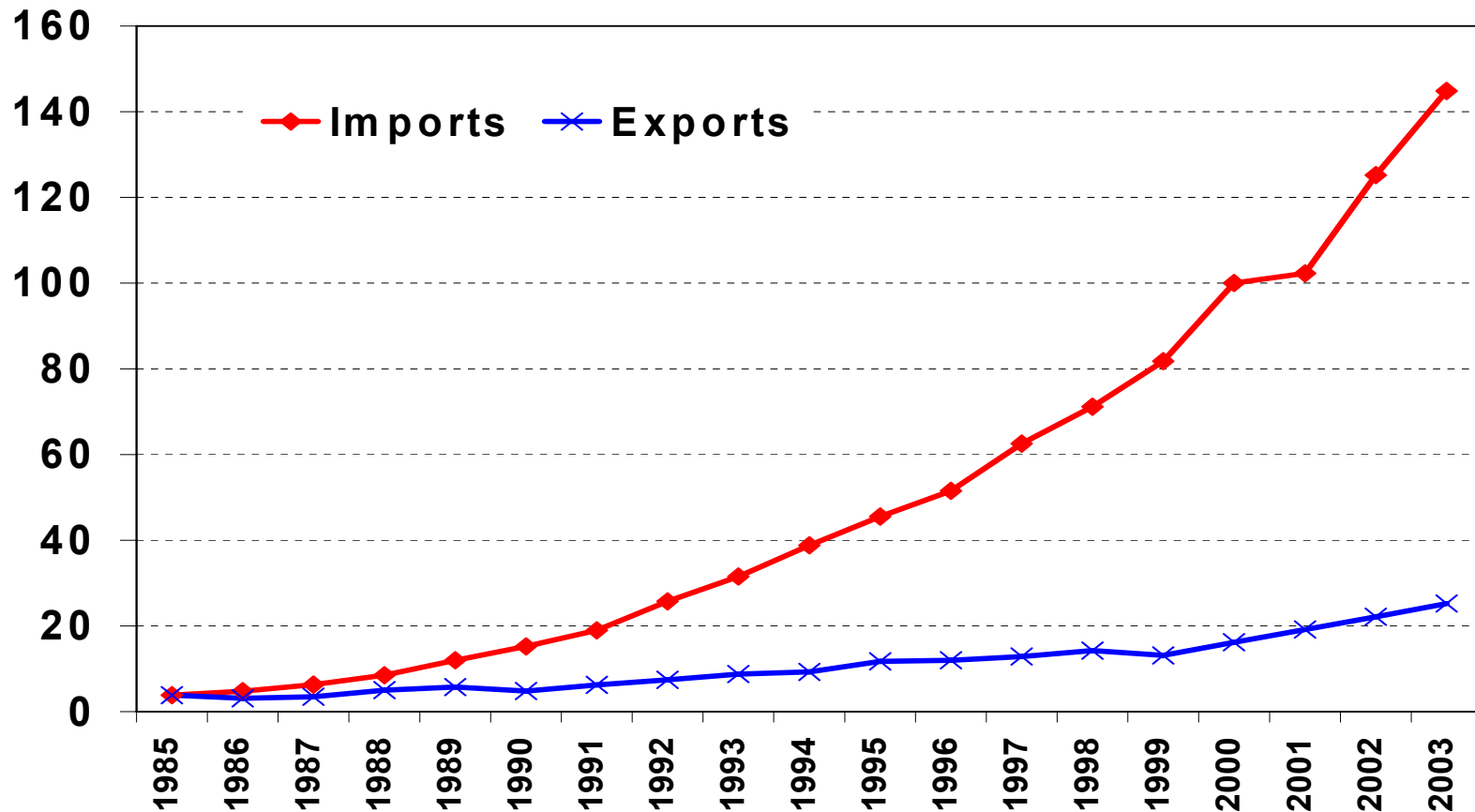
Foreign Trade, People's Republic of China  
Billions of U.S. Dollars

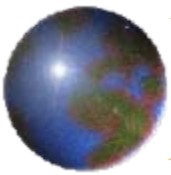




# ***U.S. Import Demand Driving Trade***

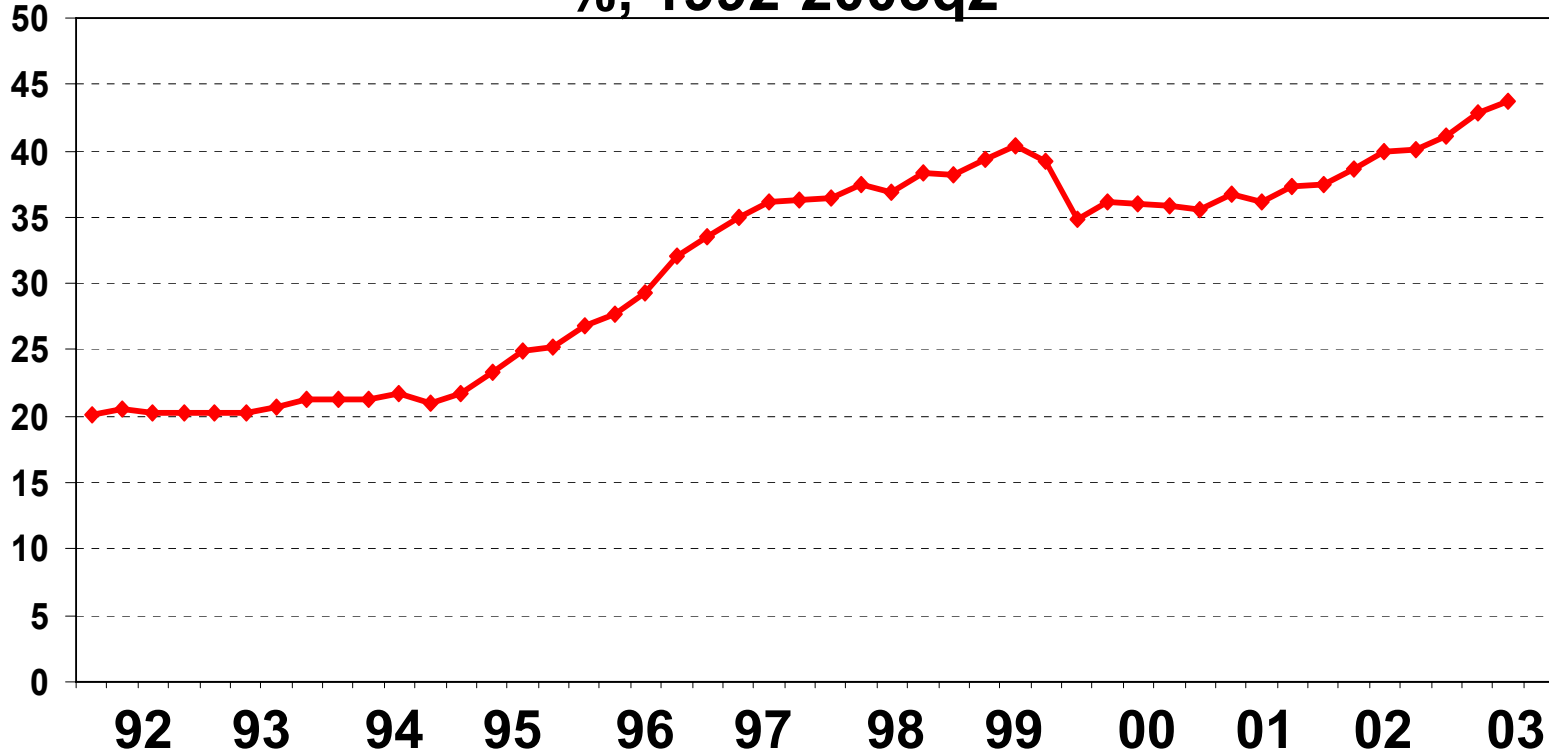
U.S. Foreign Trade with China  
Billions of U.S. Dollars



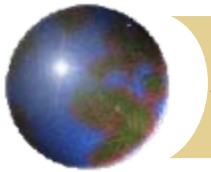


## *Co-dependency: Asians enable federal deficits in order to sustain exports*

### Foreign Ownership of Federal Securities in Private Hands %, 1992-2003q2



Source: U.S. Treasury Department

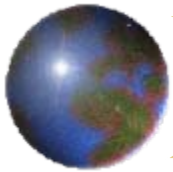


## *Modeling exchange rates and the current account*

- $X - M = S - I$  : any ER induced changes to trade balance must have corresponding impact on I or S.
- Expenditure switching vs. Expenditure reduction.
- Expenditure Switching: Currency changes impact trade through relative price changes. Imports discouraged, exports increase.
- What is the impact on S/I balance?
  - ▣ Higher inflation lifts interest rates, hitting investment.
  - ▣ Inflation hits real asset values, boosting household savings.
- Expenditure switching depends on impact on import and domestic prices. For any given commodity and year:

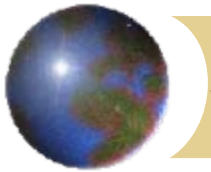
$$\delta PM = \sum_j w_j * PX_j * \delta er_j * pt_j$$



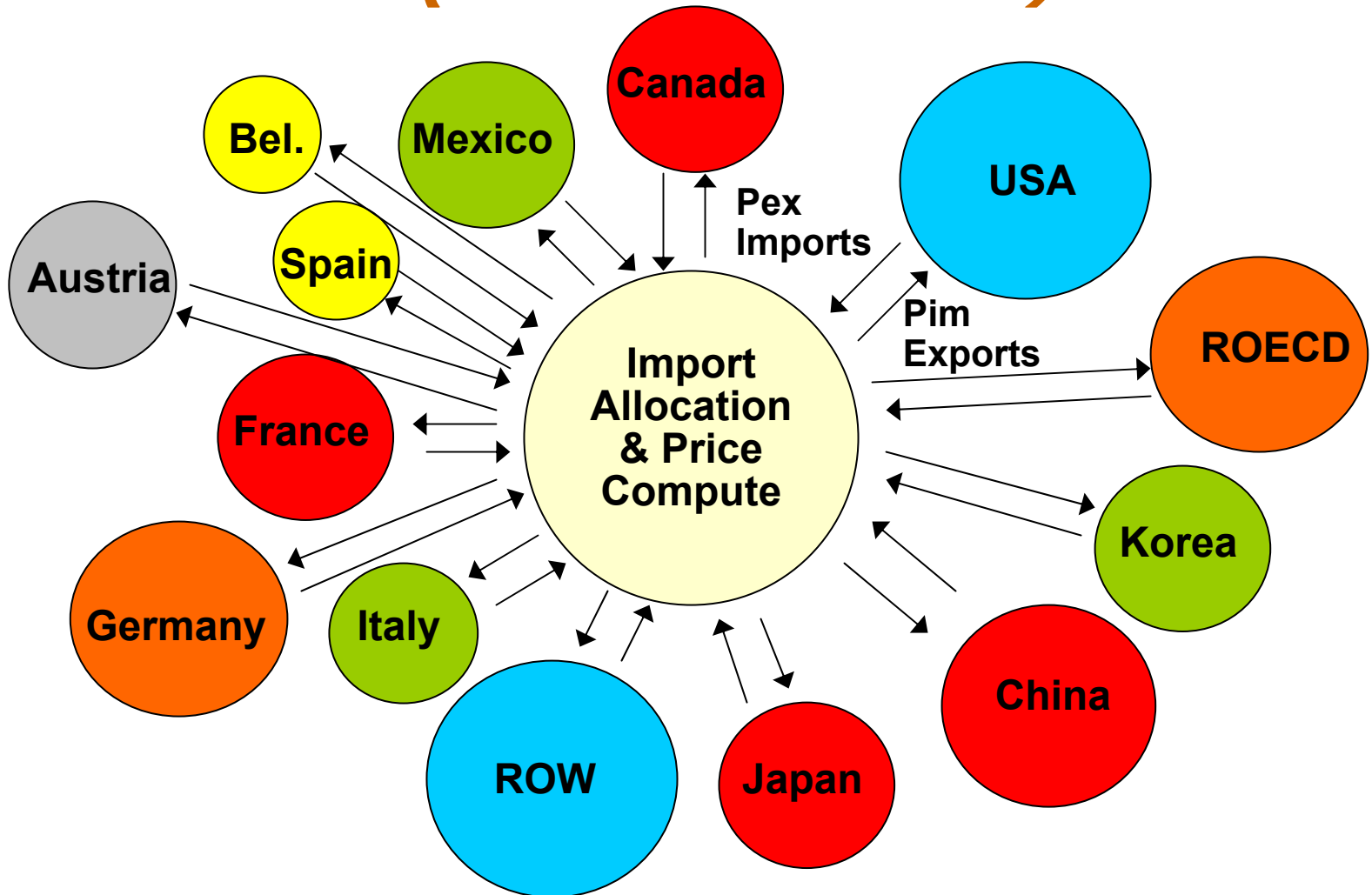


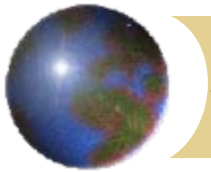
## ***Modeling exchange rates and the current account***

- Evidence exists that currency pass-through to import prices is limited (25-50%). Pass-through depends on breadth and depth of appreciation.
- U.S. imports are relatively price inelastic ( $\sim .7-.9$ ), but income elastic.
- U.S. export price elasticity  $\sim 1$ , but weakness in trading partners could delay export growth.
- Expenditure reduction: At given prices, reduction of domestic income hits consumption/investment or increases savings at given income.
- Asian crisis reversed CA deficits quite rapidly by implosions of absorption.
- In U.S., will significant current account reduction require large decrease of income?



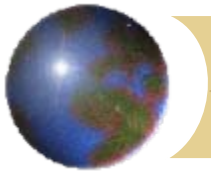
# *Feed new exchange rates into Bilateral Trade Model ( 120 commodities)*





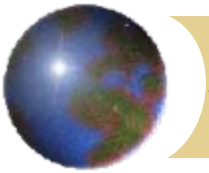
## ***Will (unilateral) 25% RMB appreciation matter to China?***

- **Yes. To extent that Chinese exporters modify prices, impact on exports might be significant as competitors take advantage of currency revaluation. (Bilateral price elasticities are very high.)**
- **Therefore, would a narrow appreciation be accompanied by large pass-through?**
- **Over three years, a unilateral devaluation reduces Chinese nominal exports to U.S. by 20-30% ! (i.e., one year's growth).**
- **Raises costs and asset prices. Might reduce FDI growth. (But I doubt it.)**
- **Currency appreciation is important facet of economic development.**
- **Decrease inflationary pressure. Flexible currency will give China better control over monetary policy.**
- **Increase domestic income and demand in China.**
- **Financial system considerations.**



## ***Will (unilateral) 25% RMB appreciation matter to the United States?***

- Effect on United States will depend on the impact on import prices.
- Expenditure switching:  $\delta PM = \sum_j w_j * PX_j * pt_j * \delta er_j$ 
  - ❏ China's share of U.S. imports 13% (2004)
  - ❏ Pass through: 50% (generous and over time)
  - ❏ Revaluation: 25% (assumed one time adjustment)
  - ❏  $\delta PM = .13 * .25 * .50 = .0163$
  - ❏ That is, U.S. import prices will rise by a whopping 1.6%. Change in overall imports will be small.
  - ❏ Moreover, effect on consumer prices and interest rates are small so change in S – I and current account trivial.
  - ❏ Since price elasticity is less than one, nominal imports will rise!
  - ❏ Bi-lateral exports to China will expand.

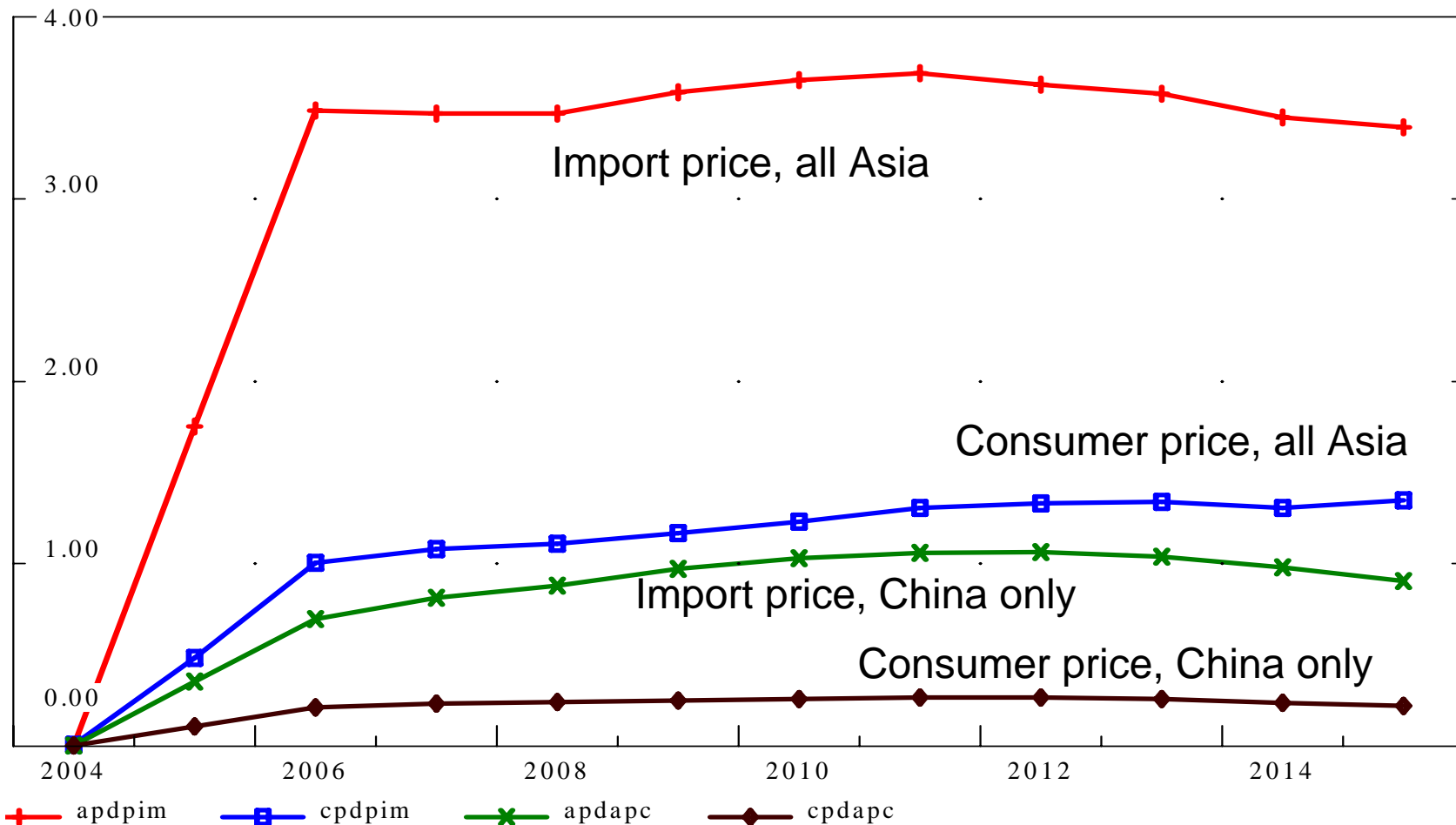


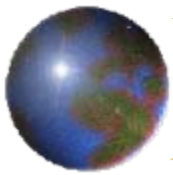
## ***Will Asian supply-chain 25% appreciation matter?***

- Effect on United States will depend on the impact on import prices.
- Expenditure switching:  $\delta PM = \sum_j w_j * PX_j * pt_j * \delta er_j$ 
  - ❏ **Asia's share of U.S. imports 30% (2004)**
  - ❏ **Pass through: 50% (generous and over time)**
  - ❏ **Revaluation: 25% (assumed one time adjustment)**
  - ❏  **$\delta PM = .30 * .25 * .50 = .0375$**
  - ❏ **That is, U.S. import prices will rise by 3.75%. Impacts on consumer prices now noticeable.**
  - ❏ **Still, since price elasticity is less than one, nominal imports will rise!**
  - ❏ **Exports to Asia boosted significantly.**



## *Impact on import and consumer prices (percent deviation)*





# Dollar vs. RMB only and all Asia: Macro results

Table 1: Macroeconomic Effects of Asian Revaluation Scenarios

Alternatives are shown in percentage deviations from base unless otherwise noted.

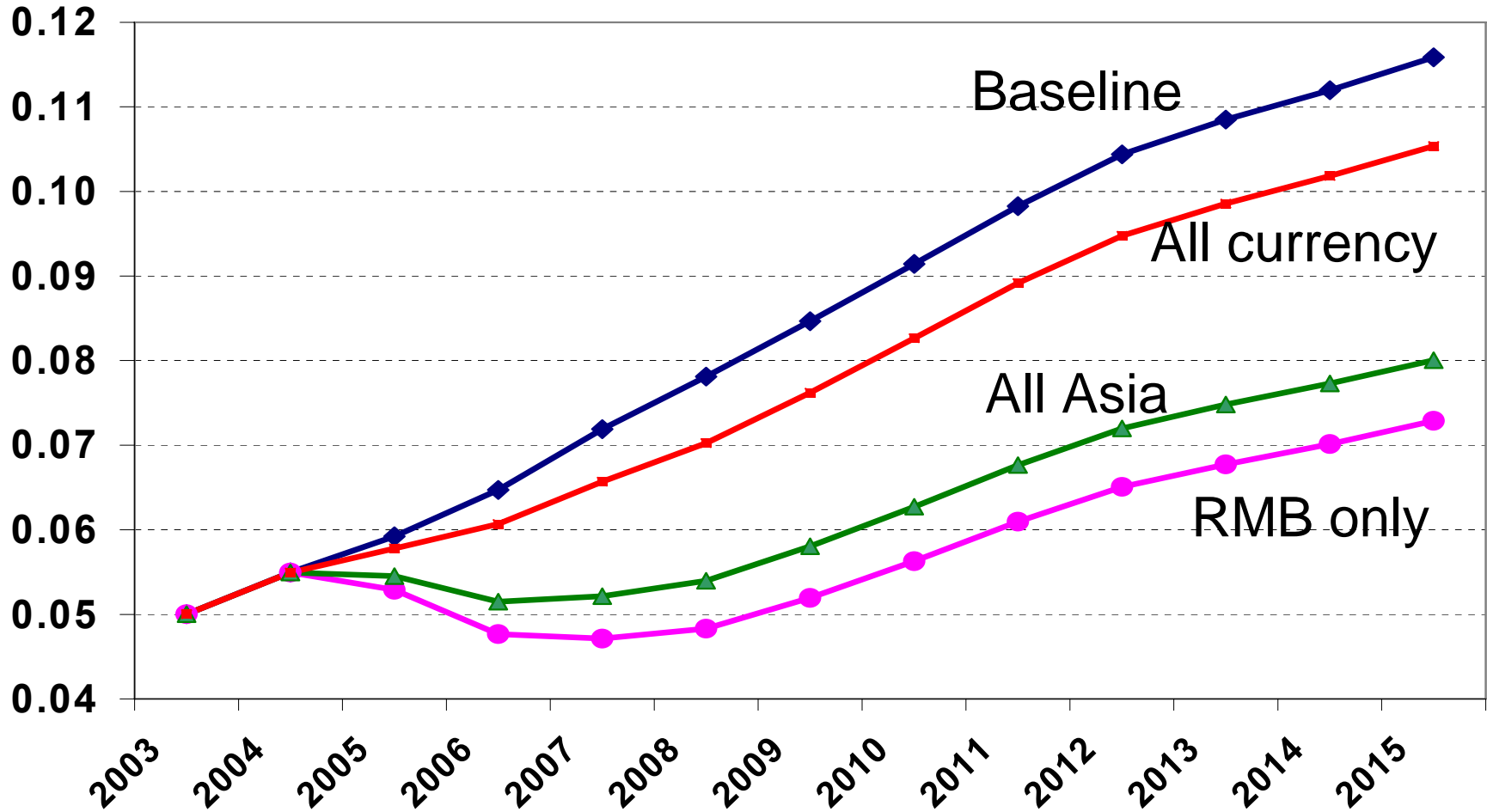
Line 1: Dollar falls 25% against yuan only

Line 2: Dollar falls 25% against all Asian currencies

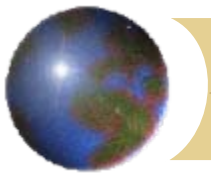
	2005	2006	2007	2008	2009	2010	2012	2015
<b>National Accounts (Real)</b>								
<b>GDP</b>	-0.02 -0.03	-0.02 0.07	-0.02 0.24	0.01 0.37	-0.01 0.23	0.00 0.22	0.02 0.29	0.05 0.34
<b>Personal consumption</b>	-0.03 -0.06	-0.05 -0.24	-0.12 -0.45	-0.15 -0.55	-0.16 -0.54	-0.15 -0.44	-0.15 -0.37	-0.15 -0.27
<b>Investment</b>								
<b>Nonresidential structures</b>	-0.11 -0.56	-0.34 -1.25	-0.47 -1.50	-0.39 -1.25	-0.30 -0.99	-0.28 -1.24	-0.22 -1.28	-0.08 -0.99
<b>Equipment &amp; software</b>	-0.22 -0.64	-0.51 -1.27	-0.53 -1.12	-0.48 -0.59	-0.40 -0.41	-0.43 -0.97	-0.38 -0.86	-0.30 -0.55
<b>Residential structures</b>	-0.48 -1.51	-1.06 -2.38	-0.97 -1.54	-0.77 -0.75	-0.81 -1.47	-0.69 -1.34	-0.51 -0.26	-0.29 0.31
<b>Exports</b>	0.07 0.54	0.36 2.45	0.52 4.43	0.70 5.36	0.46 3.98	0.46 3.55	0.36 3.11	0.41 2.37
<b>Imports</b>	-0.29 -0.75	-0.57 -1.60	-0.74 -1.87	-0.80 -1.82	-0.82 -1.83	-0.84 -1.86	-0.89 -1.76	-0.89 -1.58
<b>Employment (thousands)</b>	-37.8 -77.4	-65.4 -51.4	-80.8 90.4	-56.1 254.0	-69.1 132.3	-57.4 93.2	-32.3 198.1	12.8 284.5
<b>Prices (NIPA deflators)</b>								
<b>GDP prices</b>	0.06 0.22	0.09 0.38	0.10 0.48	0.11 0.56	0.11 0.66	0.11 0.73	0.11 0.76	0.05 0.61
<b>Consumption prices (PCE price)</b>	0.11 0.35	0.21 0.70	0.23 0.81	0.24 0.88	0.25 0.97	0.26 1.03	0.27 1.06	0.22 0.90
<b>Export prices</b>	0.40 1.29	0.70 2.45	0.74 2.58	0.79 2.73	0.83 3.00	0.86 3.10	0.87 3.10	0.82 2.97
<b>Import prices</b>	0.48 1.75	1.01 3.48	1.08 3.47	1.11 3.47	1.17 3.59	1.23 3.65	1.33 3.63	1.35 3.39
<b>Interest Rates</b>								
<b>Treasury bills, 3-month (difference in rate)</b>	0.05 0.12	0.21 0.46	0.22 0.40	0.19 0.41	0.15 0.35	0.12 0.28	0.08 0.19	0.00 -0.03
<b>Yield, 10 yr. Treas bonds (difference in rate)</b>	0.06 0.08	0.18 0.28	0.19 0.39	0.16 0.32	0.15 0.28	0.13 0.22	0.10 0.15	0.06 -0.03
<b>Current account balance (billions)</b>	4.8 8.7	10.8 41.1	11.9 76.7	10.3 85.3	4.6 66.5	5.2 66.4	6.8 76.5	12.1 91.2



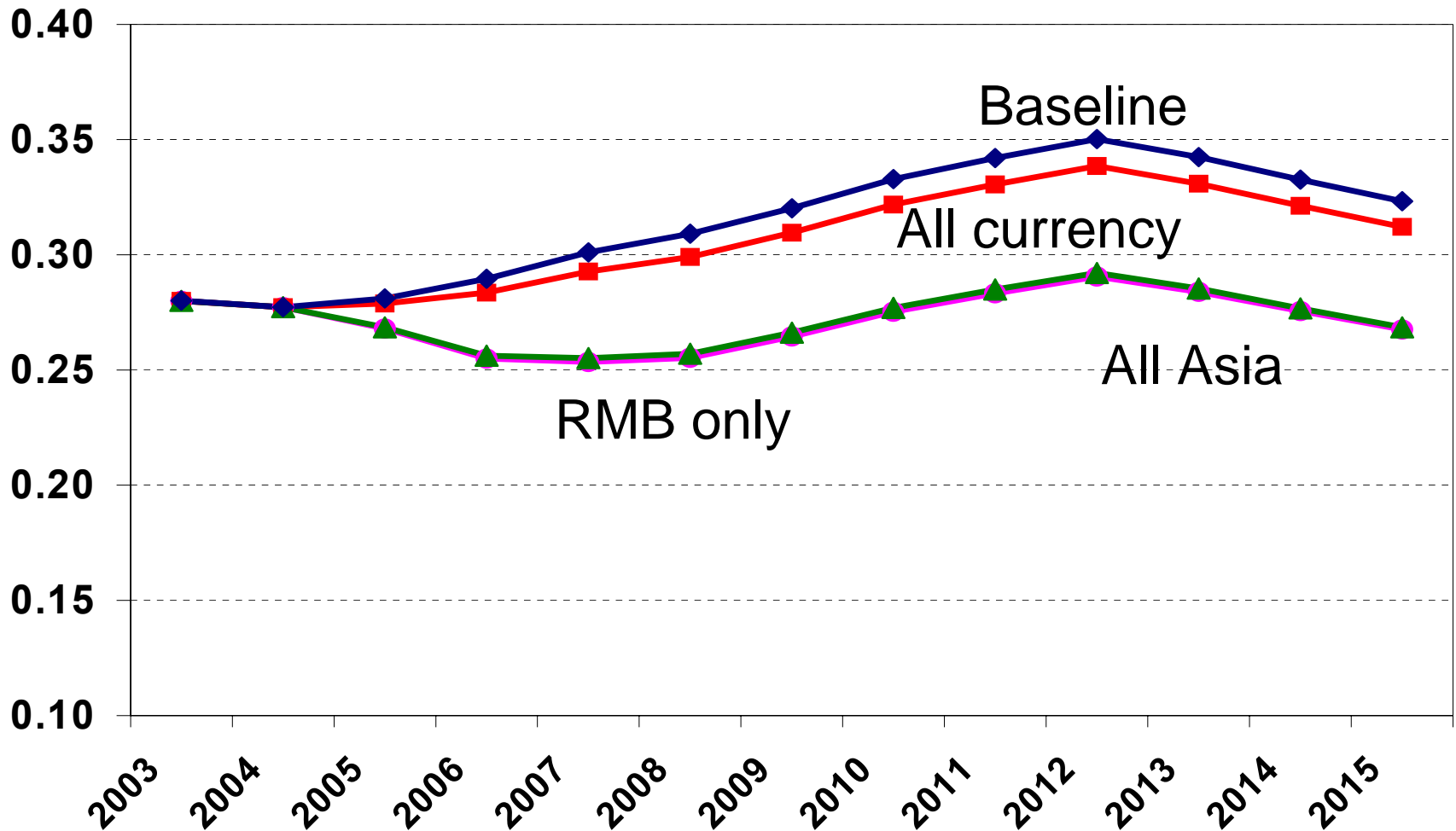
## Chinese share of U.S. (real) imports: Pumps

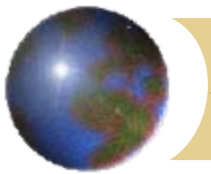




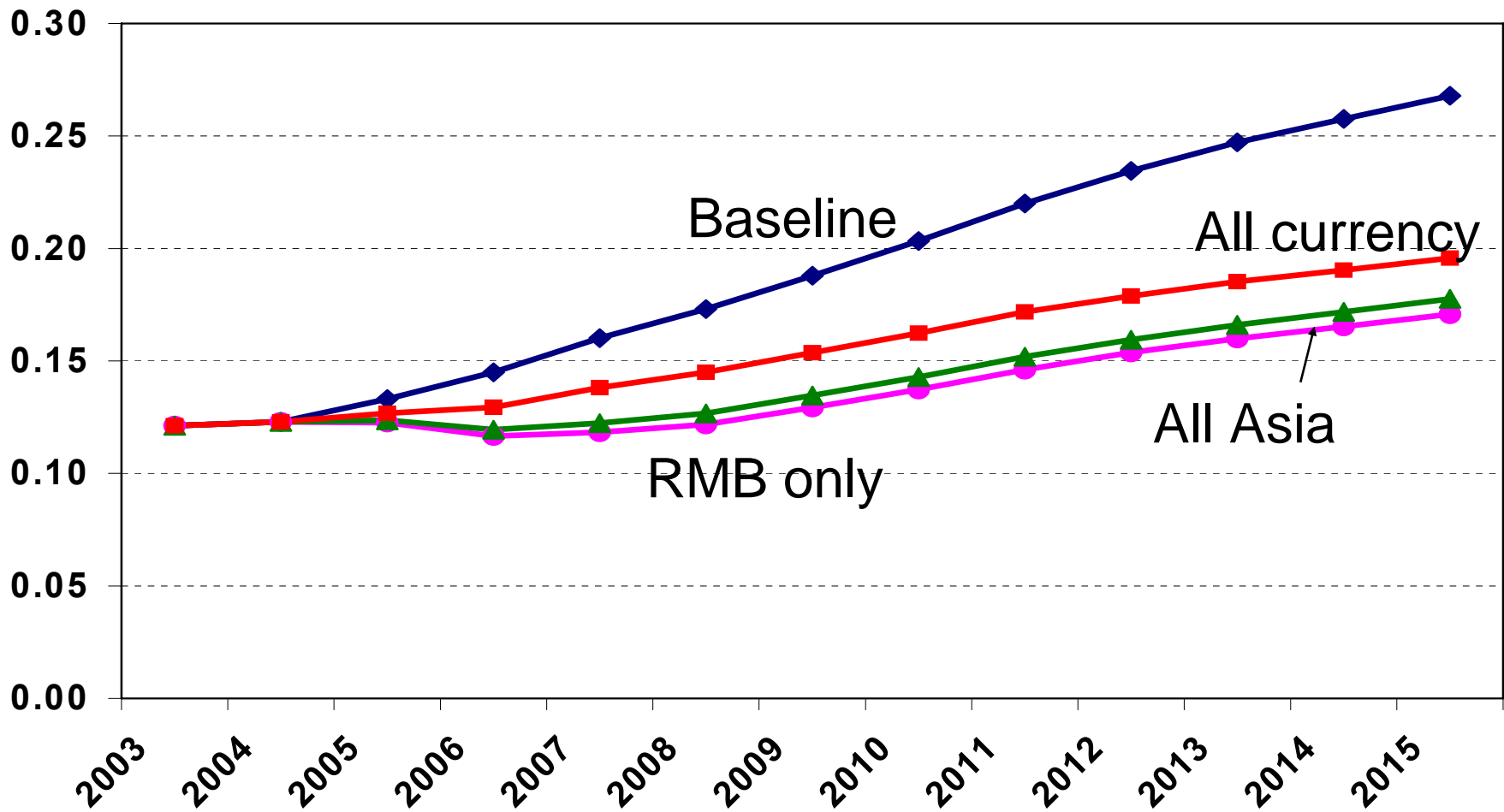


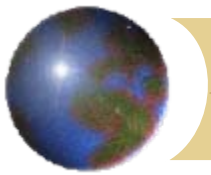
## Chinese share of U.S. (real) imports: Cotton fabric





## Chinese share of U.S. (real) imports: Total





# Chinese real exports to the U.S.

## Real U.S. Imports from China

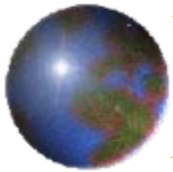
Line 1: Dollar falls 25% against yuan only, % deviation from base  
 Line 2: Dollar falls 25% against Asian currencies only, % deviation from base  
 Line 3: Dollar falls 25% across all currencies, % deviation from base

	bill	2005	2006	2007	2008	2010	2012	2015
	87\$							
<b>1 Agriculture, forestry and fisheries</b>	<b>0.5</b>	<b>-3.0</b>	<b>-7.9</b>	<b>-10.7</b>	<b>-11.9</b>	<b>-12.6</b>	<b>-13.1</b>	<b>-13.8</b>
		-2.7	-7.4	-10.2	-11.4	-12.3	-12.8	-13.6
		-0.4	-1.4	-2.5	-3.1	-4.0	-4.5	-5.1
<b>Mining</b>	<b>0.6</b>	<b>-7.4</b>	<b>-18.7</b>	<b>-24.7</b>	<b>-27.1</b>	<b>-27.4</b>	<b>-27.7</b>	<b>-28.1</b>
		-7.5	-18.7	-24.5	-26.8	-27.2	-27.6	-28.0
		-6.8	-17.4	-23.7	-26.7	-28.1	-29.2	-30.4
<b>Non-Durables</b>	<b>30.7</b>	<b>-3.0</b>	<b>-7.9</b>	<b>-10.7</b>	<b>-11.9</b>	<b>-12.6</b>	<b>-13.1</b>	<b>-13.8</b>
		-2.7	-7.4	-10.2	-11.4	-12.3	-12.8	-13.6
		-0.4	-1.4	-2.5	-3.1	-4.0	-4.5	-5.1
16 Textiles and knitting	1.7	-4.3	-11.3	-15.3	-16.6	-15.8	-15.1	-14.6
		-3.0	-8.6	-12.1	-13.5	-13.0	-12.7	-13.0
		-0.1	-3.4	-7.3	-9.2	-9.0	-9.2	-10.0
17 Apparel	14.2	-4.8	-11.7	-14.8	-15.9	-15.5	-14.9	-14.1
		-5.4	-12.9	-16.0	-17.2	-16.9	-16.3	-15.4
		-5.8	-11.7	-12.7	-13.3	-13.4	-13.3	-12.9
22 Drugs	1.7	-5.2	-13.4	-17.6	-19.2	-19.2	-19.0	-18.9
		-5.0	-13.0	-17.1	-18.6	-18.3	-18.0	-17.7
		-2.5	-7.6	-11.2	-12.9	-11.9	-11.7	-11.9
23 Other chemicals	1.7	-3.5	-9.1	-12.2	-13.5	-13.8	-13.7	-13.2
		-4.2	-10.2	-12.9	-14.0	-14.6	-14.4	-13.7
		-2.7	-5.1	-5.1	-5.4	-6.3	-6.5	-6.8
27 Plastic products	2.1	-9.9	-24.6	-33.1	-37.8	-41.4	-43.4	-45.7
		-9.1	-23.0	-31.1	-35.5	-38.4	-40.3	-42.3
		-5.2	-14.6	-21.1	-24.6	-25.0	-25.4	-25.5
28 Shoes & leather	6.9	-7.8	-19.6	-26.0	-29.0	-29.9	-30.1	-30.2
		-8.5	-20.9	-27.1	-30.0	-30.7	-30.9	-30.8
		-4.3	-8.7	-9.5	-9.9	-10.0	-9.7	-9.3

## Real U.S. Imports from China

Line 1: Dollar falls 25% against yuan only, % deviation from base  
 Line 2: Dollar falls 25% against Asian currencies only, % deviation from base  
 Line 3: Dollar falls 25% across all currencies, % deviation from base

	bill	2005	2006	2007	2008	2010	2012	2015
	87\$							
<b>Durables</b>	<b>10.5</b>	<b>-3.0</b>	<b>-8.0</b>	<b>-11.1</b>	<b>-12.3</b>	<b>-11.9</b>	<b>-11.3</b>	<b>-10.6</b>
		-3.1	-8.1	-10.9	-11.7	-11.0	-10.0	-9.0
		-4.0	-11.5	-16.7	-18.9	-17.8	-17.3	-16.9
30 Furniture	3.6	-0.6	-1.7	-2.3	-2.5	-2.1	-1.9	-1.5
		-0.7	-2.1	-2.7	-2.5	-2.1	-1.3	-0.4
		-1.6	-4.6	-6.7	-7.7	-7.3	-7.1	-6.5
34 Metal products	4.0	-2.6	-7.1	-10.2	-11.5	-11.1	-10.8	-10.4
		-2.8	-7.5	-10.3	-11.1	-10.2	-9.5	-9.0
		-5.1	-15.0	-22.1	-24.9	-23.0	-22.5	-22.5
<b>Non-Electrical Machinery</b>	<b>4.2</b>	<b>-7.4</b>	<b>-19.3</b>	<b>-26.8</b>	<b>-30.4</b>	<b>-34.4</b>	<b>-37.3</b>	<b>-39.2</b>
		-5.4	-14.8	-21.0	-24.1	-28.4	-31.5	-33.1
		-4.4	-9.8	-12.1	-14.3	-18.4	-22.9	-26.9
39 General and misc. industrial machinery	1.2	-1.9	-5.0	-7.1	-8.9	-9.9	-9.3	-8.6
		-4.2	-9.1	-10.5	-11.6	-12.8	-12.1	-10.6
		-9.7	-18.2	-18.3	-18.7	-19.7	-20.0	-19.8
40 Computers	2.2	-10.8	-27.3	-36.8	-41.5	-45.3	-47.6	-49.1
		-5.9	-17.4	-25.4	-29.0	-32.0	-33.9	-35.3
		-1.4	-4.6	-7.2	-8.3	-8.5	-9.0	-10.0
<b>Electrical Machinery</b>	<b>11.8</b>	<b>-14.7</b>	<b>-34.8</b>	<b>-45.9</b>	<b>-51.9</b>	<b>-54.5</b>	<b>-54.1</b>	<b>-54.1</b>
		-11.5	-27.5	-37.0	-42.0	-43.2	-41.1	-38.1
		-6.5	-13.1	-18.3	-22.5	-24.7	-24.0	-22.2
43 Elect. indust. app. & distribution equip	1.0	-17.8	-42.1	-55.3	-62.7	-65.3	-65.2	-65.5
		-12.4	-30.4	-41.7	-47.9	-48.9	-46.5	-42.5
		-9.2	-22.1	-31.5	-37.9	-40.0	-39.7	-37.4
44 Household appliances	1.4	-7.0	-17.8	-24.9	-30.2	-35.7	-39.3	-42.8
		-7.6	-18.3	-24.8	-29.5	-34.6	-37.5	-39.8
		-6.8	-13.6	-15.5	-17.7	-20.0	-20.7	-21.1

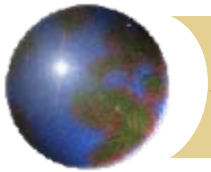


# Chinese real exports to the U.S.

## Real U.S. Imports from China

Line 1: Dollar falls 25% against yuan only, % deviation from base  
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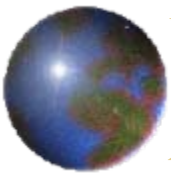
	bill	2005	2006	2007	2008	2010	2012	2015
	87\$							
45 Elect. lighting and wiring equipment	2.2	-12.6	-31.4	-43.4	-51.0	-54.5	-54.9	-55.9
		-7.4	-19.2	-27.9	-33.5	-34.6	-31.9	-27.4
		-7.0	-16.7	-24.3	-29.9	-32.1	-32.1	-30.2
46 TV's, VCR's, radios	2.0	-14.6	-35.9	-46.9	-52.0	-53.6	-53.2	-52.9
		-13.7	-33.6	-43.9	-48.7	-50.0	-49.4	-48.4
		-4.4	-11.3	-15.4	-18.6	-20.2	-19.9	-19.0
47 Communication equipment	4.9	-17.2	-38.7	-49.9	-55.7	-57.8	-56.8	-56.4
		-13.3	-30.4	-40.3	-45.3	-46.3	-43.5	-39.8
		-7.0	-11.9	-16.6	-20.5	-22.5	-21.1	-18.3
<b>Transportation Equipment</b>	<b>2.7</b>	<b>-3.4</b>	<b>-8.5</b>	<b>-12.3</b>	<b>-14.4</b>	<b>-15.5</b>	<b>-14.5</b>	<b>-13.3</b>
		<b>-3.1</b>	<b>-8.3</b>	<b>-12.2</b>	<b>-14.1</b>	<b>-14.6</b>	<b>-13.9</b>	<b>-12.6</b>
		<b>-3.3</b>	<b>-9.2</b>	<b>-13.6</b>	<b>-15.7</b>	<b>-15.5</b>	<b>-15.1</b>	<b>-14.0</b>
50 Motor vehicle parts	1.4	-0.1	-0.5	-1.5	-3.3	-5.5	-4.5	-4.7
		-0.4	-1.5	-3.1	-4.8	-6.0	-5.4	-5.1
		-1.2	-4.3	-7.3	-9.4	-9.6	-9.4	-9.0
<b>Instruments</b>	<b>1.7</b>	<b>-7.3</b>	<b>-19.6</b>	<b>-28.0</b>	<b>-33.9</b>	<b>-40.7</b>	<b>-45.3</b>	<b>-49.0</b>
		<b>-5.8</b>	<b>-16.1</b>	<b>-23.8</b>	<b>-29.4</b>	<b>-36.7</b>	<b>-41.5</b>	<b>-45.1</b>
		<b>-3.6</b>	<b>-10.4</b>	<b>-16.8</b>	<b>-22.3</b>	<b>-30.8</b>	<b>-37.9</b>	<b>-43.9</b>
58 Miscellaneous manufacturing	6.9	-5.5	-13.9	-17.7	-18.8	-17.2	-15.6	-13.1
		-5.9	-14.8	-19.0	-20.2	-18.2	-16.2	-13.4
		-4.2	-11.5	-16.1	-18.0	-16.7	-15.9	-14.9
Merchandise Imports	69.5	-7.0	-17.7	-23.7	-26.5	-27.1	-26.7	-26.1
		-6.4	-16.1	-21.6	-24.0	-24.4	-23.6	-22.5
		-4.7	-10.9	-14.4	-16.6	-17.3	-17.5	-17.4



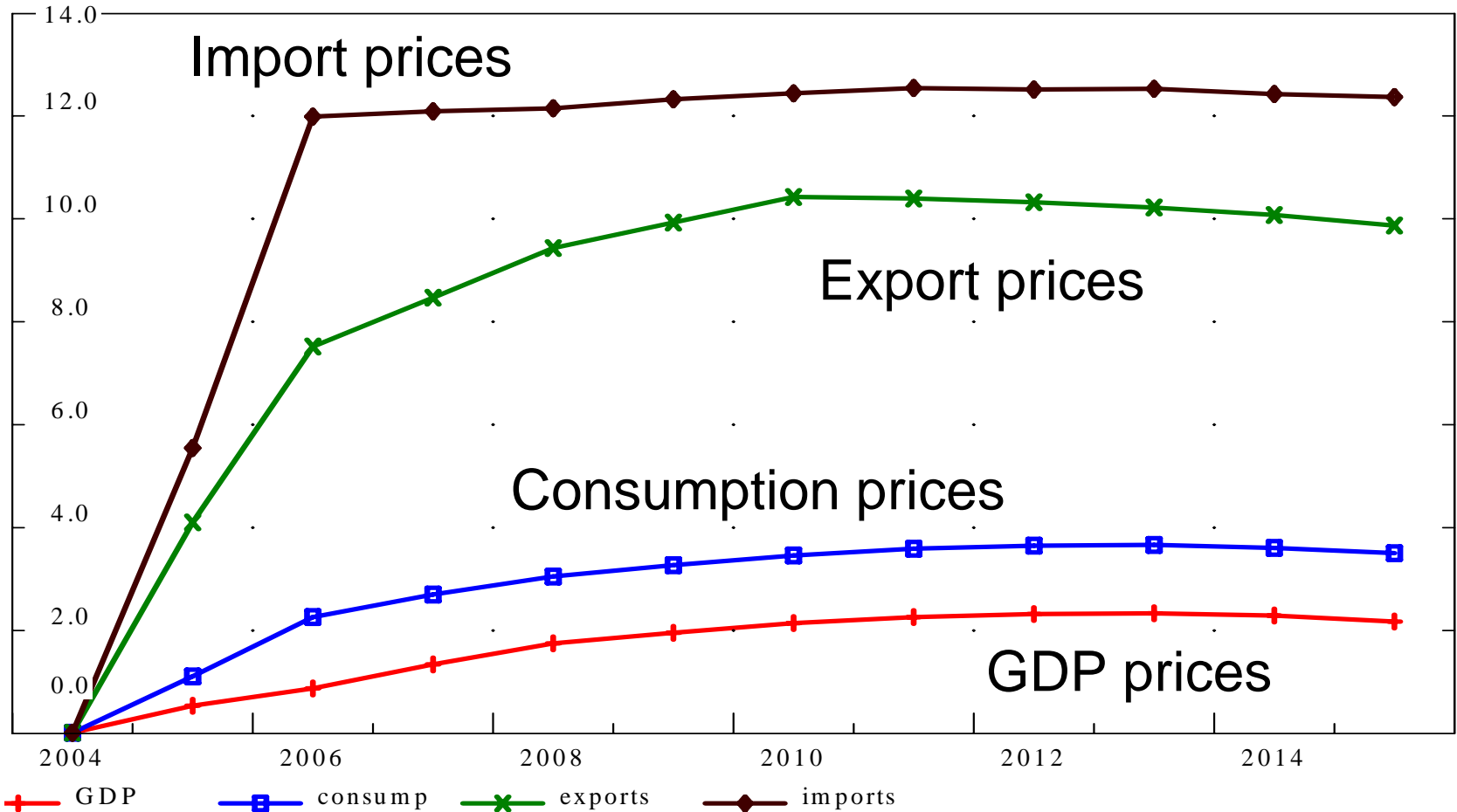
## ***Modeling more comprehensive depreciation***

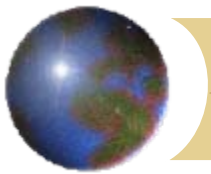
- **One time 25% depreciation of U.S. dollar vs. all currencies. Financial tranquility.**
- **One time 25% depreciation of U.S. dollar vs. all currencies. Financial turbulence in stock and bond, and especially, real estate markets.**

**Simulating financial turbulence: Exogenous higher long term bond rates (up to 250 bp) and higher personal savings rates as households scramble to rebuild assets.**



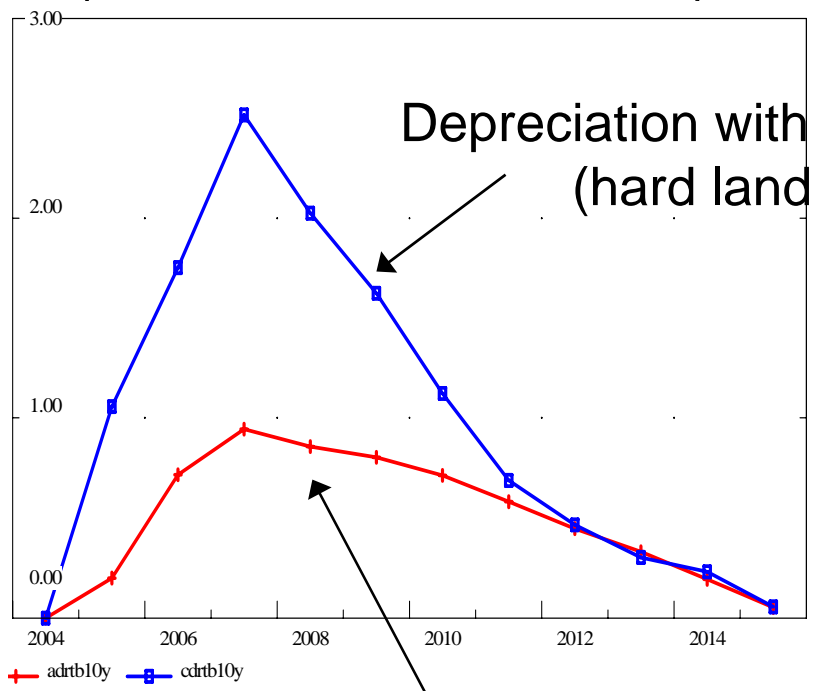
## Price changes with 25% across the board depreciation (50% pass through)



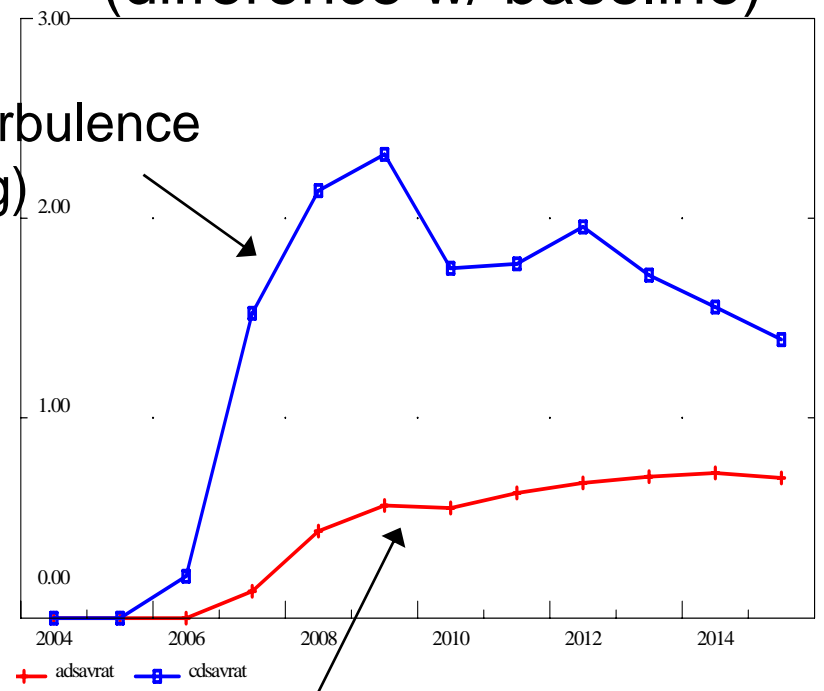


# Modeling financial turbulence

## Ten-year Treasuries (difference w/baseline)



## Household savings rate (difference w/ baseline)

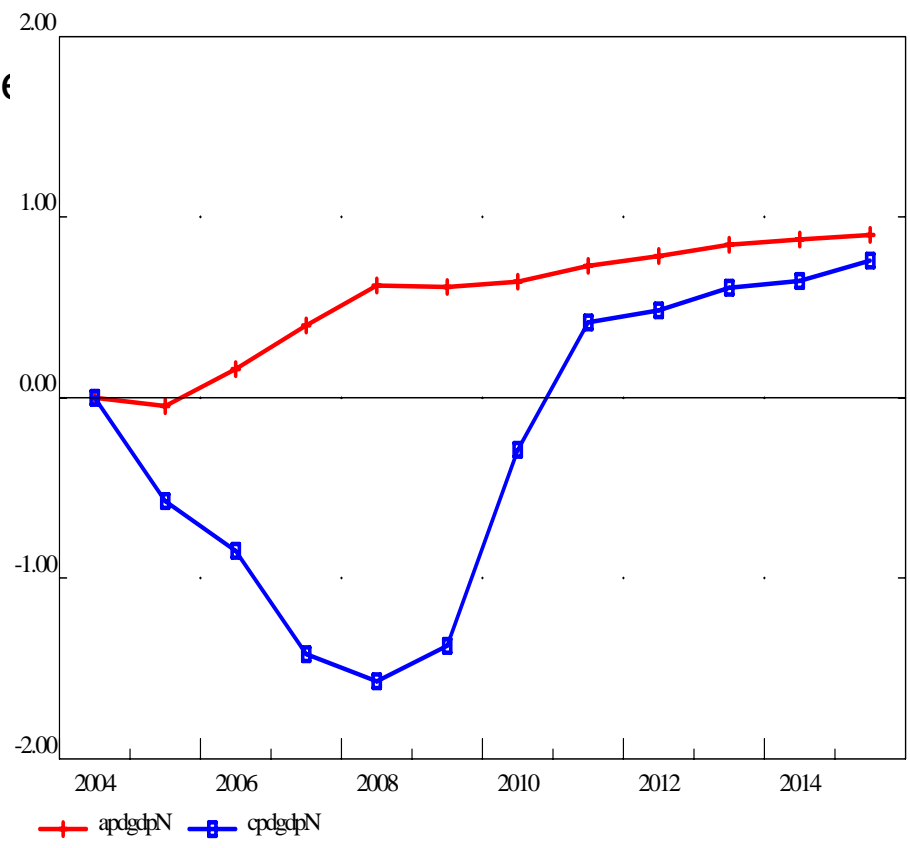
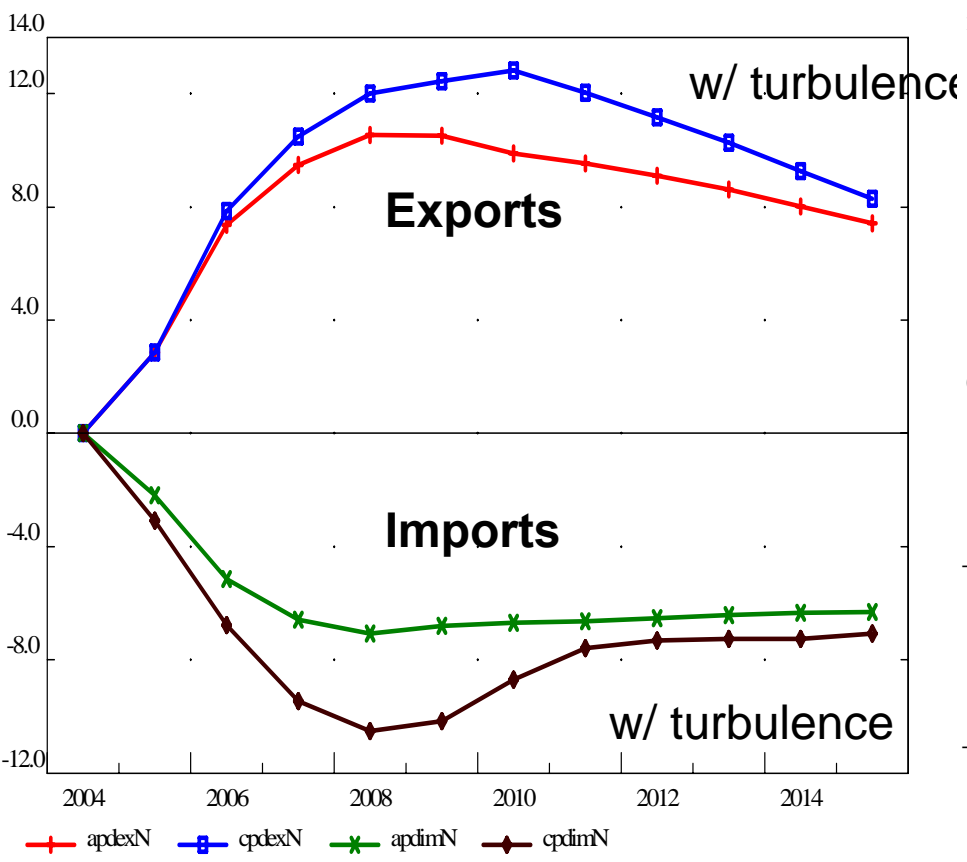


Depreciation with tranquility  
(soft landing)

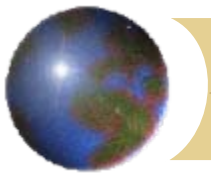


# Effects on Real Trade and GDP

## GDP

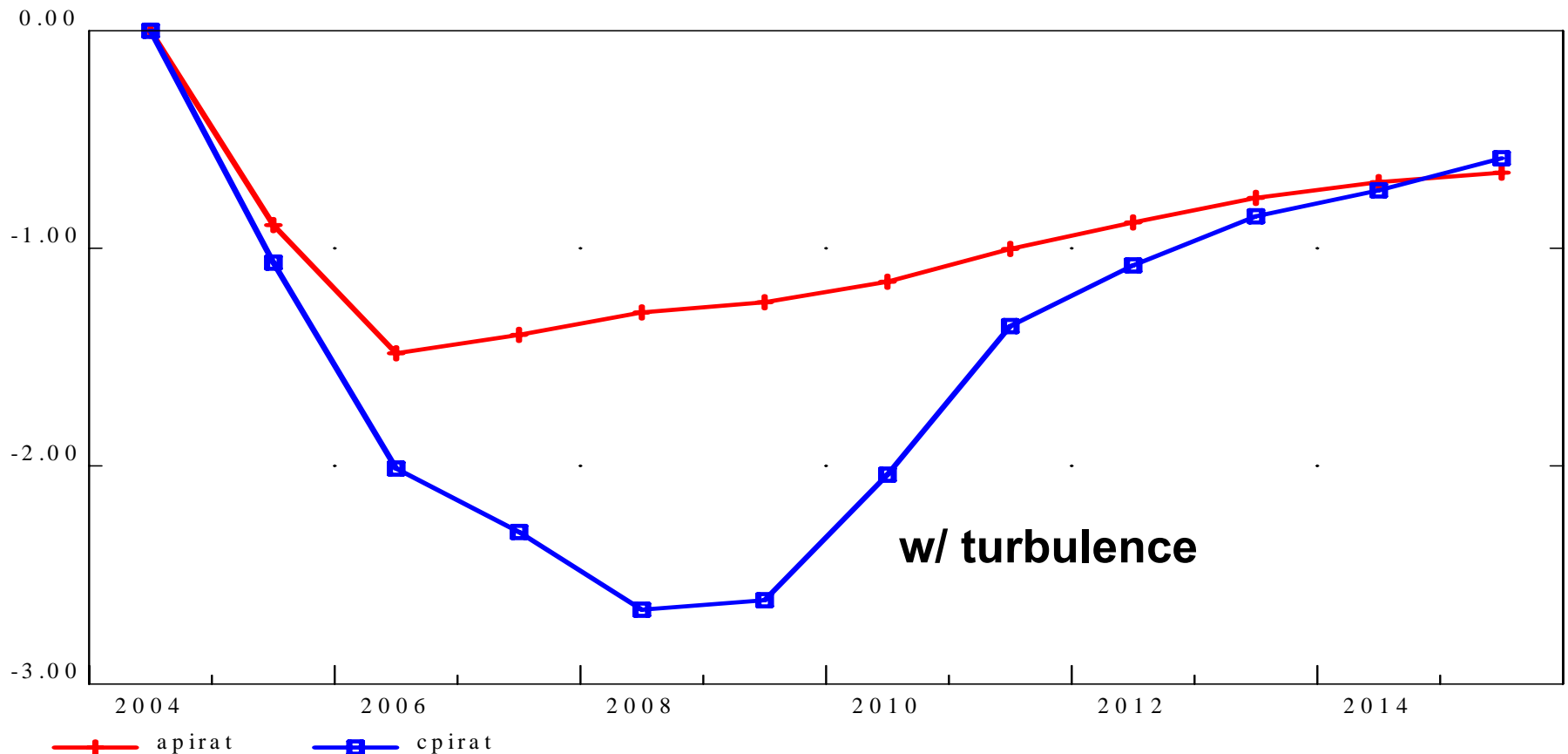


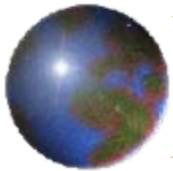




***Depreciation pushes overall welfare down ratio of GDP to PCE deflator means consumers' terms of trade (buying power) worsens***

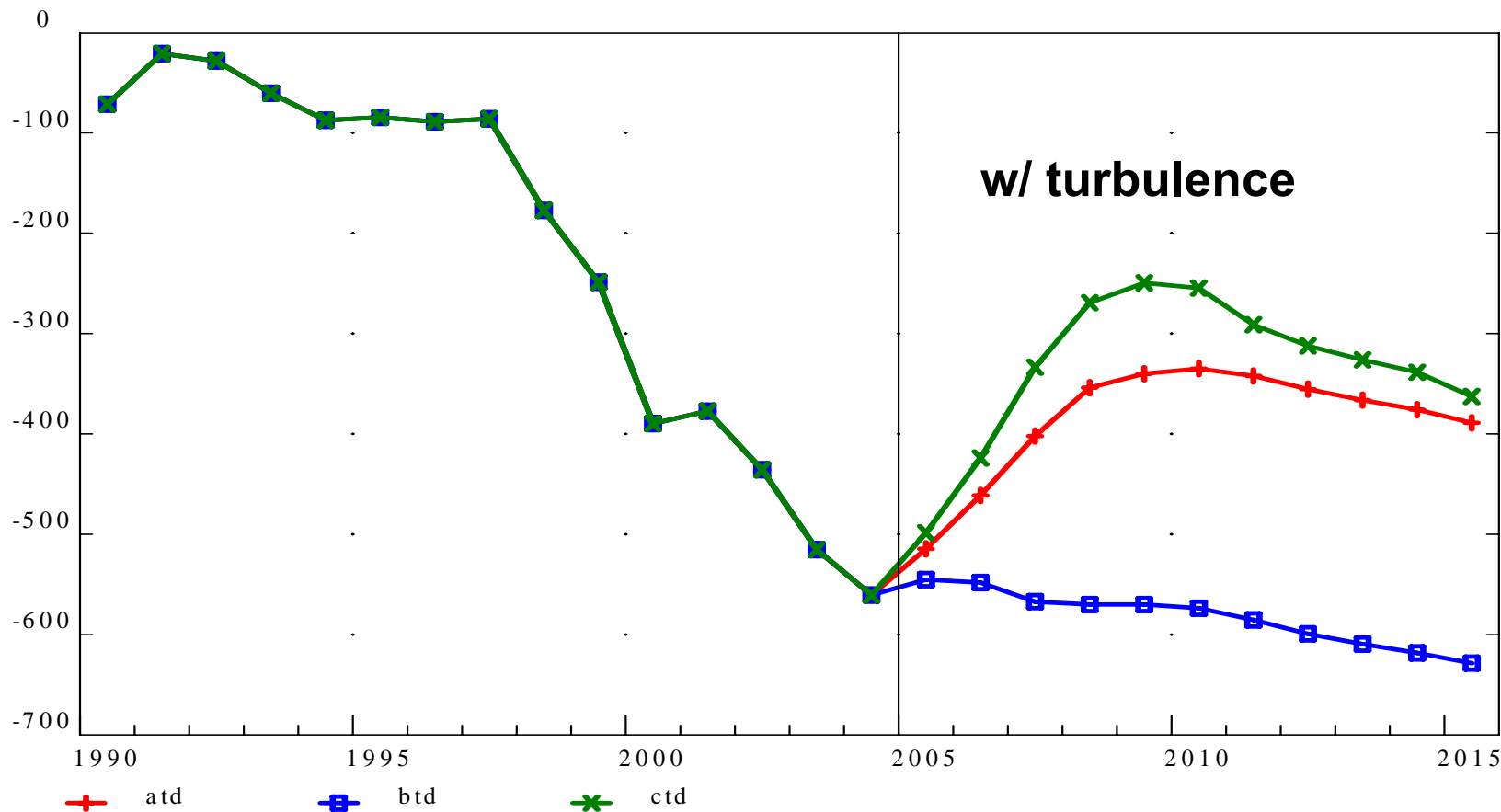
## Real Personal Income percent deviation from baseline





# Trade deficit improves

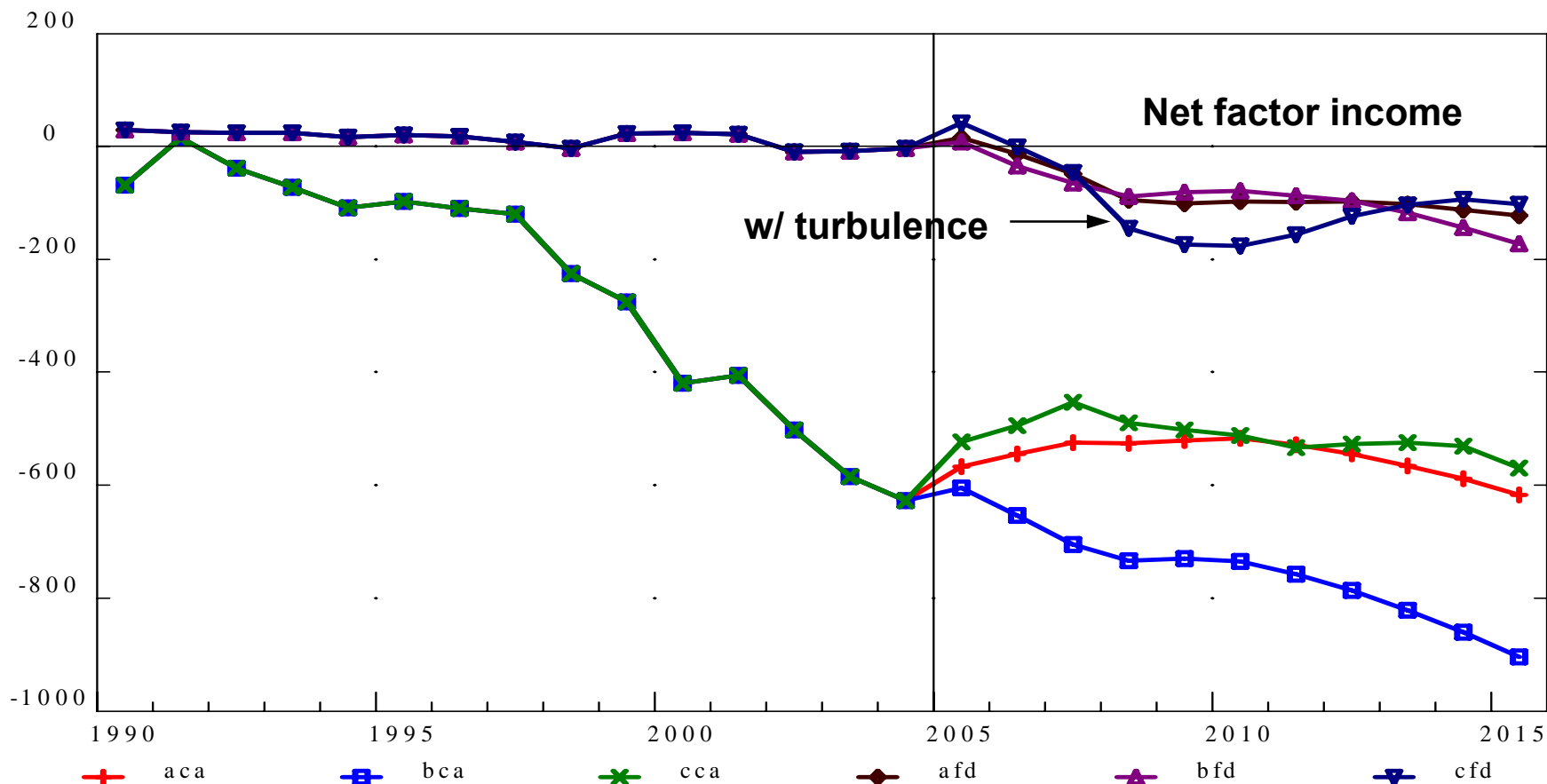
billions of \$





*But result on current account is mixed because net factor payments rise.*

## Current account in billion of \$





# Macroeconomic results: soft vs. hard landing

**Table 2: Macroeconomic Effects of Comprehensive Revaluation Scenarios**

Alternatives are shown in percentage deviations from base unless otherwise noted.

Line 1: Dollar falls 25% across all currencies, financial tranquility

Line 2: Dollar falls 25% across all currencies, financial turbulence

	2005	2006	2007	2008	2009	2010	2012	2015
<b>National Accounts (Real)</b>								
GDP	0.0	0.2	0.4	0.6	0.6	0.6	0.8	0.9
	-0.6	-0.8	-1.4	-1.6	-1.4	-0.3	0.5	0.8
Personal consumption	-0.4	-1.0	-1.5	-1.7	-1.8	-1.7	-1.6	-1.4
	-0.8	-2.0	-3.6	-4.6	-4.7	-3.7	-3.0	-2.0
Investment								
Nonresidential structures	-1.1	-3.0	-3.4	-2.7	-2.0	-1.9	-1.6	-1.0
	-2.0	-5.8	-7.8	-8.3	-7.1	-5.1	-1.4	-0.7
Equipment & software	-1.5	-2.9	-2.8	-2.2	-2.0	-2.3	-2.2	-1.6
	-3.0	-5.7	-7.1	-7.1	-6.4	-4.6	0.0	-2.0
Residential structures	-4.7	-8.0	-5.8	-3.9	-3.8	-3.2	-1.6	-0.2
	-9.3	-14.7	-15.6	-12.6	-9.2	-3.5	0.3	0.6
Exports	2.9	7.4	9.5	10.5	10.5	9.9	9.1	7.4
	2.9	7.9	10.5	12.0	12.4	12.8	11.2	8.3
Imports	-2.2	-5.1	-6.6	-7.1	-6.8	-6.7	-6.5	-6.3
	-3.1	-6.8	-9.5	-10.5	-10.2	-8.7	-7.3	-7.1
Government expenditures	-0.4	-0.7	-0.7	-0.6	-0.5	-0.5	-0.4	-0.3
	-0.5	-0.7	-0.7	-0.4	-0.2	-0.1	0.0	0.0
Employment	-0.2	-0.2	-0.1	0.1	0.1	0.2	0.3	0.4
	-0.7	-1.3	-2.0	-2.3	-2.2	-1.1	-0.2	0.2
Employment (thousands)	-236	-306	-99	175	198	233	445	650
	-989	-1912	-3019	-3514	-3319	-1743	-258	276

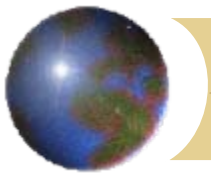
**Table 2: Macroeconomic Effects of Comprehensive Revaluation Scenarios**

Alternatives are shown in percentage deviations from base unless otherwise noted.

Line 1: Dollar falls 25% across all currencies, financial tranquility

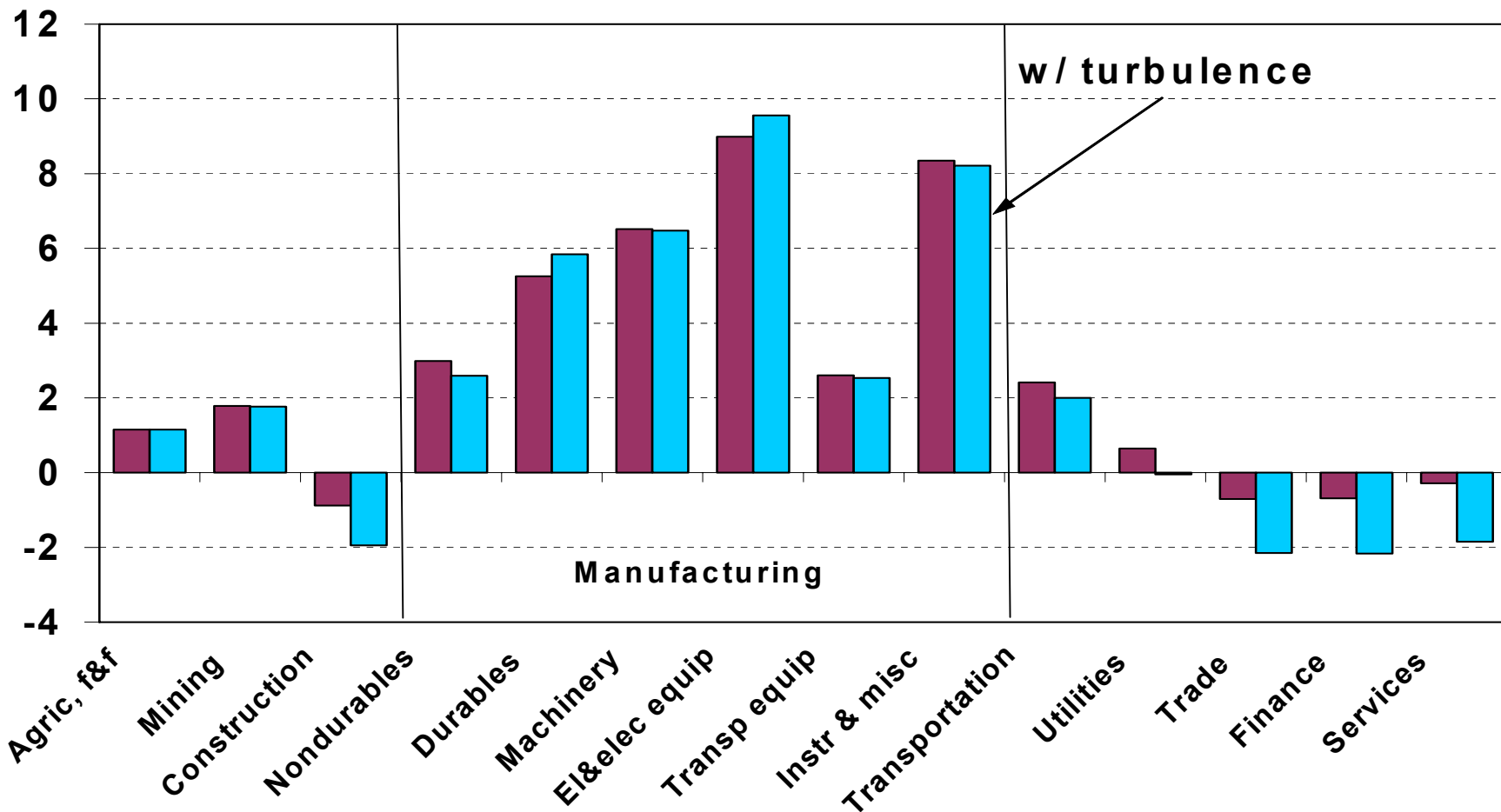
Line 2: Dollar falls 25% across all currencies, financial turbulence

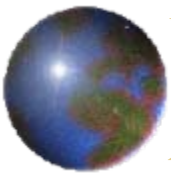
	2005	2006	2007	2008	2009	2010	2012	2015
<b>Prices (NIPA deflators)</b>								
GDP prices	0.5	0.9	1.3	1.7	1.9	2.1	2.3	2.2
(GDP Price)	0.6	0.9	1.2	1.2	1.1	1.1	1.0	1.0
Consumption prices	1.1	2.3	2.7	3.0	3.3	3.5	3.6	3.5
(PCE price)	1.3	2.4	2.8	2.9	2.8	2.7	2.6	2.5
Export prices	4.1	7.5	8.5	9.4	9.9	10.4	10.3	9.9
	4.1	7.4	8.0	8.5	8.6	9.0	9.0	8.9
Import prices	5.5	12.0	12.1	12.2	12.3	12.4	12.5	12.4
	5.6	12.1	12.2	12.2	12.3	12.3	12.2	12.1
<b>Interest Rates</b>								
Treasury bills, 3-month	0.3	1.0	0.9	1.0	0.9	0.8	0.5	0.0
(difference in rate)	0.7	1.7	1.9	1.8	1.4	1.1	0.5	0.0
Yield, 10 yr. Treas bonds	0.2	0.7	0.9	0.9	0.8	0.7	0.4	0.1
(difference in rate)	1.1	1.8	2.5	2.0	1.6	1.1	0.5	0.1
<b>Household Indicators</b>								
Real Wage (per hour)	-0.5	-0.6	-0.8	-0.9	-0.8	-0.8	-0.7	-0.7
(deflated w/ GDP price)	-0.5	-0.5	-0.6	-0.3	-0.1	-0.1	-0.1	-0.4
Real Personal Income	-0.9	-1.5	-1.4	-1.3	-1.2	-1.2	-0.9	-0.7
(deflated w/ PCE price)	-1.1	-2.0	-2.3	-2.7	-2.6	-2.0	-1.1	-0.6
H.H. Savings Rate	-0.5	-0.4	0.1	0.4	0.6	0.6	0.7	0.7
(difference in rate)	-0.1	0.2	1.5	2.1	2.3	1.7	2.0	1.4
Current Account Balance	38	109	181	208	209	218	241	287
(difference in bill \$)	81	158	252	244	228	223	259	334



# Industry Impacts: Winners and Losers

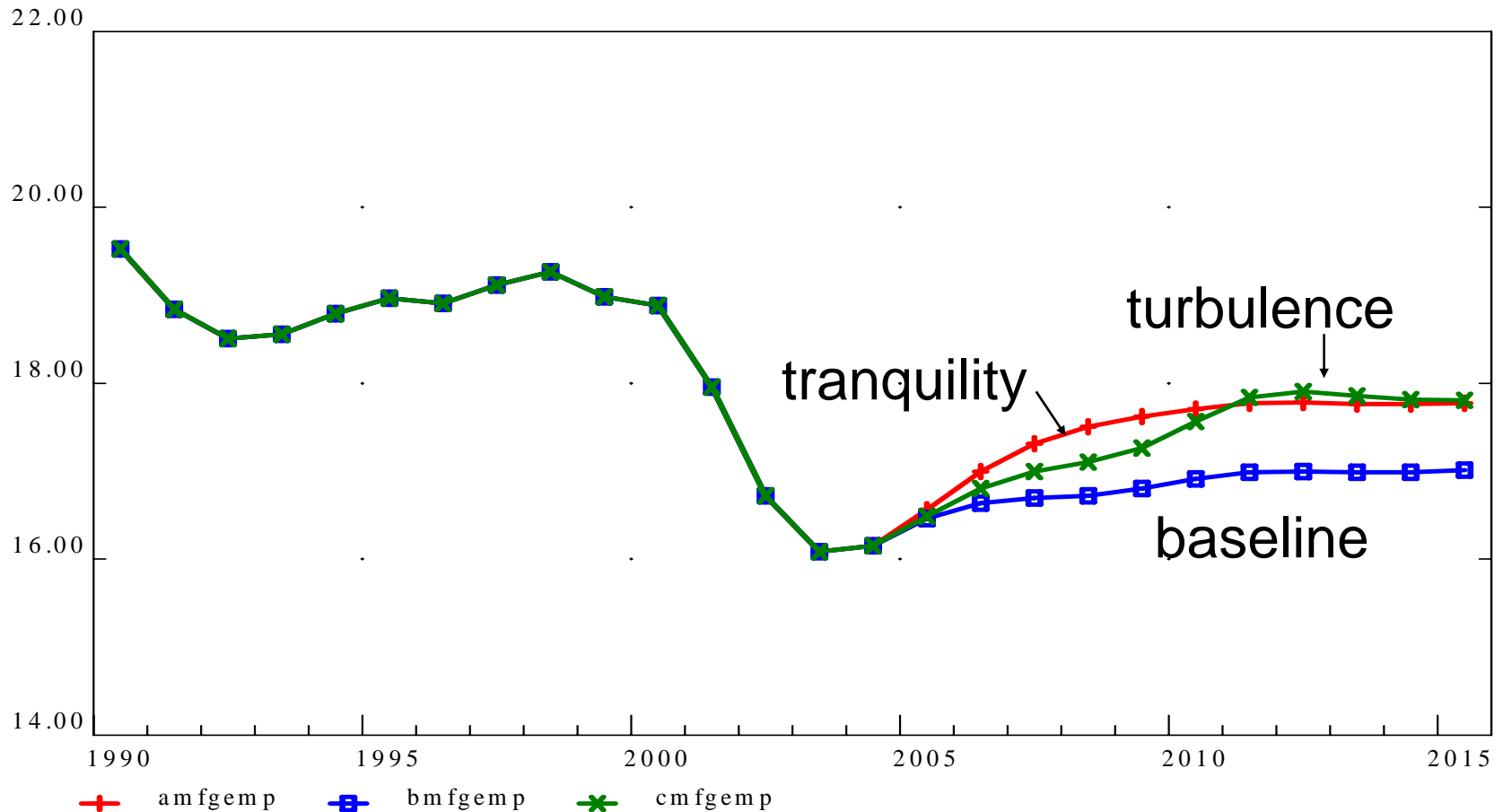
Real Output : Percentage deviation from base.

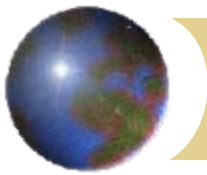




# Manufacturing Employment: Modest comeback

## Manufacturing employment (millions)





# Sectoral impacts: soft vs. hard landing

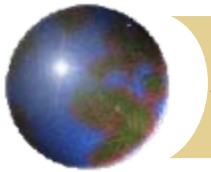
## Real Gross Output by Producing Sector

Alternatives are shown in percentage deviations from base.

Line 1: Dollar falls 25% across all currencies - percent difference from base

Line 2: Dollar falls 25% across all currencies, financial turbulence - percent difference from base

	2005	2006	2007	2008	2009	2010	2012	2015
Agriculture, forestry, & fisheri	0.52	1.41	1.49	1.52	1.32	1.15	1.03	0.78
	0.15	0.90	0.49	0.40	0.40	1.15	0.98	0.78
Mining	0.38	1.19	1.73	2.02	1.90	1.79	1.77	1.71
	-0.05	0.50	0.54	0.75	0.95	1.77	1.98	1.78
Construction	-1.19	-2.15	-1.72	-1.14	-1.02	-0.88	-0.43	-0.01
	-2.50	-4.40	-5.22	-4.79	-3.87	-1.94	-0.21	0.09
Non-Durables	0.94	2.38	2.87	3.14	3.05	2.99	3.02	2.88
	0.48	1.57	1.38	1.39	1.54	2.59	2.95	2.87
Durables	0.56	2.65	4.72	5.87	5.51	5.25	5.30	5.20
	-0.59	0.83	1.84	3.15	3.93	5.84	6.71	5.77
Non-Electrical Machinery	1.34	4.00	6.17	7.44	7.21	6.52	6.12	5.66
	0.21	2.13	3.24	4.49	5.08	6.47	8.32	5.81
Electrical Machinery	2.38	5.25	7.34	8.68	8.94	8.99	9.41	9.65
	1.68	4.20	5.66	7.05	7.88	9.56	10.85	9.99
Transportation Equipment	0.41	1.63	2.79	3.38	3.04	2.60	2.29	1.88
	-0.46	-0.03	-0.12	0.22	0.73	2.53	3.49	2.15
Instruments & Misc Manufact	1.22	4.18	6.68	8.11	8.24	8.35	9.03	9.48
	0.56	3.12	4.89	6.16	6.71	8.21	10.15	9.89
Transportation	0.67	1.67	2.15	2.50	2.49	2.41	2.38	2.21
	0.16	0.83	0.63	0.76	0.98	2.00	2.25	2.10
Utilities	0.20	0.54	0.61	0.68	0.64	0.65	0.71	0.80
	-0.10	-0.03	-0.52	-0.74	-0.73	-0.05	0.46	0.76
Trade	-0.36	-0.67	-0.71	-0.66	-0.72	-0.70	-0.58	-0.46
	-0.97	-1.88	-2.96	-3.45	-3.36	-2.15	-1.21	-0.83
Finance, Insurance & Real Est:	-0.11	-0.27	-0.54	-0.64	-0.74	-0.68	-0.56	-0.41
	-0.67	-1.46	-2.83	-3.58	-3.51	-2.16	-1.56	-0.79
Services	-0.12	-0.28	-0.35	-0.29	-0.31	-0.28	-0.15	0.01
	-0.66	-1.44	-2.51	-3.06	-2.99	-1.85	-0.72	-0.35



## ***Reflection: What could happen?***

- **Unilateral Chinese revaluation or narrow-based Asian revaluation will have only minor impacts on U.S. current account deficit.**
- **U.S. Current Account deficit reduction will require large and widespread dollar depreciation**
- **Is There A Free Lunch? Or will dollar depreciation be accompanied by *real interest rate increases and asset price deflation*, and, therefore, output and significant welfare losses.**
- **One-time exchange rate and interest rate shocks shown here produce only moderate current account changes and marginal losses of income and employment (no recession).**
- **A series of similar shocks would be required to balance the account, but could produce significant hardships.**
- **Manufacturing will expand if trade deficit to be closed. Domestic income and consumption growth will fall and residential construction will contract.**