Global Imbalances and External Adjustment

Maurice Obstfeld

University of California, Berkeley
Outline

• Long-run trends in financial integration
• Two-way diversification in the 21st century
• The current pattern of global imbalances
• Net foreign asset changes versus current account balances: role of exchange rates
• Empirics and theories of adjustment
• Exchange rate effects of U.S. adjustment
• Does the current account still matter?
• Scenarios for global adjustment: current controversies
Long-run trends in financial integration

- Stylized facts (ca. 1860-2000):

High

Gold Standard 1880–1914

1860 1880 1900 1914 1929

Interwar 1914–45

Bretton Woods 1945–71

Float 1971–2000

Low


1918

1929

1940

1960

1980
Concrete price and quantity metrics

- Deviations from covered interest parity
Concrete price and quantity metrics

- Feldstein-Horioka coefficients
Concrete price and quantity metrics

- Gross foreign asset positions

![Graph showing the evolution of assets as a percentage of GDP and world GDP, along with the UK and US shares of all assets over time.](image-url)
World total foreign assets and liabilities, 1970-2003

Source: Philip Lane and Gian Marta Mileti-Ferretti, unpublished data.
Framework for understanding these changes

• Open economies face a *trilemma*. Can only pick 2 from 3 below (i.e., must drop one):

  - Fixed exchange rate
  - Open capital market
  - Monetary policy autonomy

Historically, political economy has led to some very different outcomes. Four major epochs:

  - Gold Standard (1870–1914)
  - Interwar (1914–1945)
  - Bretton Woods (1945–73)
  - Post-Bretton Woods (1973–)
Two-way diversification in the 21st century

• Massive 2-way diversification differentiates the current from the earlier period of globalized capital markets.
• In the 19th century, most flows were “development” rather than “diversification” flows.
• This phenomenon finds one expression in the fact that today, most capital flows from rich to other rich countries.
• In the 19th century, there was a relatively greater flow from rich to poorer.
Foreign assets, then and now

- 1913, gross stocks
- 1997, gross stocks

Per capita income range of receiving region (U.S. = 10)

Share of total foreign capital:
- <20
- 20–40
- 40–60
- 60–80
- >80
Rich-poor capital flows: Why so limited?

• Modern theories of per capita GDP focus on the role of institutions (North, Engerman-Sokoloff, Acemoglu et al.; but see Glaeser et al.)
• AJR distinguish between colonization based on settlement versus “extractive” models.
• Nurkse, *EJ* (1954), “International Investment Today in the Light of 19th Century Experience” distinguishes between capital flows based on movement of people (complementary factor) and “extractive” investments. He foresaw neither playing a big role in postwar world.
• He was mainly right, but missed rich-rich flows.
Developing countries diversify less

• Define the “Grubel-Lloyd” index of diversification asset trade as

\[ GL = 1 - \frac{|A - L|}{A + L} \]

• For \( A = L \), index = 1, pure trade across different random states of nature.
• For \( A = 0 \), index = 0, pure intertemporal asset trade (trade across different dates).
Empirical Grubel-Lloyd indexes, 2003

<table>
<thead>
<tr>
<th>Country</th>
<th>G–L index</th>
<th>Non-reserve G–L index</th>
<th>Asset trade to GDP</th>
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<td><strong>Average without Luxembourg</strong></td>
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Current global imbalances

• IMF (4/06) forecast of U.S. 2006 current account balance: -$864.2 billion (-6.5% GDP).
• Euro zone: -$23.8 billion (-0.2% GDP)
• Japan: +$163.9 billion (3.2% GDP)
• Other advanced: +$145.1 billion
• Newly indust. Asia: +$88.6 billion (5.7% GDP)
• Other developing: +$486.7 billion
2005 saving-investment balances (% GDP)
U.S Current Account Balance: 1970-2005

Percent of GDP

-7.00% -6.00% -5.00% -4.00% -3.00% -2.00% -1.00% 0.00% 1.00% 2.00% 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004*
Net foreign asset changes versus current account balances: role of exchange rates

• *CA* data based on NIPA. Excludes capital gains and losses on net foreign assets.

• Change in $NFA = CA + $ net capital gains on lagged *NFA*.

• Capital gains/losses due to (i) asset price changes (e.g., stock-market movements) and (ii) exchange rate changes.

• These can now be *very* large. Cf. Lane and Milesi-Ferretti; Tille; Gourinchas and Rey.
Numerical example

- Right now, U.S. net external debt is 25% of GDP.
- Gross foreign assets = 75% U.S. GDP.
- Gross foreign liabilities = 100% U.S. GDP.
- About 65% of U.S. assets are in foreign currencies.
- About 95% of U.S. liabilities are in dollars.
- Effect of a 1% balanced dollar depreciation:
  \[ (.01)(.65)(.75) - (.01)(.05)(1) = .4375\% \text{ GDP}, \]
or about $50 billion transfer to the U.S.
Composition of U.S. external position

Composition of U.S. Gross Foreign Assets

Billion $:
- 0.000
- 1.000.000
- 2.000.000
- 3.000.000
- 4.000.000
- 5.000.000
- 6.000.000
- 7.000.000
- 8.000.000
- 9.000.000

Years:
- 1982
- 1983
- 1984
- 1985
- 1986
- 1987
- 1988
- 1989
- 1990
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003

Legend:
- Other
- Bank Loans
- Bonds
- Equity
- Private FDI
- Public
Composition of U.S. external position

Composition of U.S. Gross Foreign Liabilities

Billion $


Other
Treasuries
Bank Loans
Bonds
Equity
Private FDI
Public
United States Foreign Assets, Liabilities, and Net Foreign Assets, 1982-2003 (percent of GDP)
CA vs. capital gains in dynamics of NFA

Annual averages: 3.1% (total), 1.2% (income)
Empirics and theories of adjustment


• Key idea: Intertemporal budget constraint of a country links increase in net foreign debt to either (or both of)
  – (i) increase in present value of future trade surpluses
  – (ii) increase in present value of future capital gains on the leveraged international portfolio.
Gourinchas-Rey main findings:

- Over 31% of stabilizing U.S. external adjustment comes through capital gains/losses.
- Deviations from trend in the ratio $\frac{NX}{NFA}$ predicts asset returns 1 quarter to 2 years ahead and $NX$ at longer horizons.
- Exchange-rate change is forecastable by $\frac{NX}{NFA}$ out of sample, one quarter out and beyond (compare Meese-Rogoff result).
- IMF, *WEO*, April 2005: Related results for some industrial countries, most strongly U.S.
U.S. current account and the dollar
What economic mechanisms are at work?

- **Home bias in consumption preferences**
  - Gives rise to Keynesian “transfer” mechanism, whereby a transfer of wealth to U.S. improves terms of trade, appreciates currency.

- **Home bias in currency preferences**
  - Gives rise to a portfolio transfer effect, as in the classic portfolio-balance model of W. Branson, D. Henderson, P. Kouri and others, in which an inward transfer of wealth creates excess demand for home-currency assets and an appreciation of the home currency.
Stabilizing role of depreciation?

• Under portfolio-balance model, country with a deficit will have a depreciating currency.
• If its assets are mainly in foreign currency, liabilities in domestic, this can be stabilizing.
• As home currency depreciates, foreigners lose and demand more, we gain and demand less.
• Flow effect on net foreign assets offset.
• Home currency declines at an ever-decreasing rate.
Not for emerging markets!

- Tend to display “original sin.”
- As their currencies depreciate in the face of a deficit, negative flow effect on their \textit{NFA} is \textit{reinforced}, not offset.
- Since the “hit” to wealth is all in net dollar holdings, domestic currency must depreciate more sharply, not less.
- Stability under rational expectations, but truly knife-edge.
Adjustment dynamics with debt, original sin

Consistent with WEO findings for emerging markets.
Does the current account still matter?

- One view is that “the current account is a meaningless concept” -- former Treasury Secretary O’Neill.
- Or: the U.S. is the best/only place for the world to invest (Laffer, Cooper, many others).
- Or: increasing integration of asset markets makes adjustment easier (Greenspan).
- Or: Asia will finance us forever (Dooley et al.)
- Or: excessive global saving is to blame.
- Or: complete markets.
- Or: valuation effects can do the work.
These views, I would argue, are wrong

- In ’90s U.S. deficit reflected high investment -- bubble collapse helped NFA (a bit).
- Now CA reflects high government deficit.
- For government deficit to have had no role, consumers must be very Ricardian -- they must have raised saving massively. But U.S. saving rate is lowest in industrial world now.
- Fed study on how deficit reduction affects CA: assumes fairly low trade elasticities.
Is foreign asset demand driving the deficit?

• As a matter of accounting, foreigners can add U.S. assets to their portfolios even if $CA = 0$.
• In 2004, they added $1.078$ trillion (BEA), much more than the net deficit of $666$ billion.
• So $CA$ deficit not yet testing foreign willingness to add U.S. assets to portfolios?
• Foreign asset demand could raise our $CA$ deficit by appreciating the currency, lowering interest rate. How powerful are these portfolio effects?
The Deutsche Bank Weltanschaung

• “Bretton Woods II” worldview: Asia needs a dollar peg to grow, eliminate surplus labor.
• They also need FDI for those purposes.
• Since they need an export surplus for growth, massive reserve accumulation follows.
• U.S. interest rates are kept low, USD high (though not against euro).
• Chinese controls can support this indefinitely.
• Problem: Applies to China, but Japan, Korea?
• Eventual inflow attacks? Reserve losses?
World saving and investment (2005)

- Investment in Asian NIEs and Japan very low.
- Their saving is far below 1992-99 levels.
- Developing Asia invests and saves more than in ‘90s.
- Middle East: As in mid-1970s, oil surplus pushes world interest rate down.
Currency mismatch: Menu for policy choice?

- Asset flow is better understood than asset returns, and easier to act upon by policy.
- If we run policies on the theory that we can under-compensate foreign investors all of the time, they are likely to demand higher interest on loans.
- Asian official creditors clearly are worried about the dollar.
Scenarios for U.S., global adjustment

• If we take it as given that U.S. external adjustment must eventually come, its consequences are important.
• They arise primarily from the need to re-equilibrate markets in the face of a large shift in world spending patterns.
• The degree of asset-market globalization is less important for the resulting exchange rate effects than goods-market globalization, which remains limited.
U.S. Dollar Real Exchange Rate
Broad Index, March 1973 = 100

Source: Board of Governors of the Federal Reserve System
Quantitative effects

• In each region people consume two aggregates, nontradables and tradables made up of the home export plus imports from the two other regions.
• There is home consumption bias in traded goods, such that tradables price levels differ and a Keynesian transfer effect operates.
• But the overall real exchange rate depends on relative nontradeds’ prices too.
Consumption baskets

\[ C^i = \left[ \gamma^{\frac{1}{\theta}} \left( C^i_T \right)^{\frac{\theta-1}{\theta}} + (1 - \gamma)^{\frac{1}{\theta}} \left( C^i_N \right)^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}, \quad i = U, E, A, \]

\[ C^U_T = \left[ \alpha^{\frac{1}{\eta}} \left( C^U_U \right)^{\frac{\eta-1}{\eta}} + (\beta - \alpha)^{\frac{1}{\eta}} \left( C^U_E \right)^{\frac{\eta-1}{\eta}} + (1 - \beta)^{\frac{1}{\eta}} \left( C^U_A \right)^{\frac{\eta-1}{\eta}} \right]^\eta, \]

\[ C^E_T = \left[ \alpha^{\frac{1}{\eta}} \left( C^E_E \right)^{\frac{\eta-1}{\eta}} + (\beta - \alpha)^{\frac{1}{\eta}} \left( C^E_U \right)^{\frac{\eta-1}{\eta}} + (1 - \beta)^{\frac{1}{\eta}} \left( C^E_A \right)^{\frac{\eta-1}{\eta}} \right]^\eta, \]

\[ C^A_T = \left[ \delta^{\frac{1}{\eta}} \left( C^A_A \right)^{\frac{\eta-1}{\eta}} + \left( \frac{1 - \delta}{2} \right)^{\frac{1}{\eta}} \left( C^A_E \right)^{\frac{\eta-1}{\eta}} + \left( \frac{1 - \delta}{2} \right)^{\frac{1}{\eta}} \left( C^A_U \right)^{\frac{\eta-1}{\eta}} \right]^\eta. \]
Price indexes

\( P^i_j \) ≡ country \( i \) exact price index for consumption category \( j \).

\[
P_C^i = \left[ \gamma \left( P_T^i \right)^{1-\theta} + (1 - \gamma) \left( P_N^i \right)^{1-\theta} \right]^{\frac{1}{1-\theta}}, \ i = U, E, A,
\]

\[
P_U^T = \left[ \alpha P_U^{1-\eta} + (\beta - \alpha) P_E^{1-\eta} + (1 - \beta) P_A^{1-\eta} \right]^{\frac{1}{1-\eta}},
\]

\[
P_E^T = \left[ \alpha P_E^{1-\eta} + (\beta - \alpha) P_U^{1-\eta} + (1 - \beta) P_A^{1-\eta} \right]^{\frac{1}{1-\eta}},
\]

\[
P_A^T = \left[ \delta P_A^{1-\eta} + \left( \frac{1 - \delta}{2} \right) P_U^{1-\eta} + \left( \frac{1 - \delta}{2} \right) P_E^{1-\eta} \right]^{\frac{1}{1-\eta}}.
\]
Terms of trade, real exchange rates

$$\tau_{U,E} = \frac{P_E}{P_U}, \quad \tau_{U,A} = \frac{P_A}{P_U}, \quad \tau_{E,A} = \frac{P_A}{P_E} = \frac{\tau_{U,A}}{\tau_{U,E}}.$$ 

$$q_{U,E} = \frac{P_C^E}{P_C^U}, \quad q_{U,A} = \frac{P_C^A}{P_C^U}, \quad q_{E,A} = \frac{P_C^A}{P_C^E} = \frac{q_{U,A}}{q_{U,E}}.$$
Changes in relative tradables indexes

\[ \hat{P}_T^E - \hat{P}_T^U = (2\alpha - \beta)\hat{\tau}_{U,E}. \]

\[ \hat{P}_T^A - \hat{P}_T^U = [\delta - (1 - \beta)]\hat{\tau}_{U,A} + \left[ \left( \frac{1 - \delta}{2} - (\beta - \alpha) \right) \right] \hat{\tau}_{U,E}. \]
Changes in real exchange rates

\[ \Delta \hat{q}^\text{UE} = \Delta(\mu_\alpha - \beta)\hat{q}^\text{UE} + (1-\gamma)\left(\frac{1-\delta}{2} - (\beta - \alpha)\right)\hat{q}^\text{UE} + (1-\gamma)(\hat{P}^A_N - \hat{P}^U_N). \]
Current account adjustment

- We know that the current accounts of the 3 regions must sum to zero.
- There are various ways in which the U.S. CA can go to zero; e.g., everyone does so, Asia maintains its real bilateral peg (which requires Asia to raise its surplus -- otherwise it would have to appreciate against the U.S. in real terms), Asia does nothing
**Numerical findings** (theta = 1, eta = 2, alpha = 0.7, beta = 0.8, delta = 0.7, gamma = 0.25)

<table>
<thead>
<tr>
<th>Changes in Bilateral Real Exchange Rates</th>
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<tbody>
<tr>
<td><strong>Log change (x 100) in:</strong></td>
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<tr>
<td><strong>GLOBAL REBALANCING:</strong></td>
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<tr>
<td>All current accounts go to zero</td>
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<tr>
<td><strong>BRETTON WOODS II:</strong></td>
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<tr>
<td>Asia raises CA surplus to keep dollar fix. Europe CA absorbs all change in US and Asia CAs</td>
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<tr>
<td><strong>EUROPE TRADES PLACES:</strong></td>
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<tr>
<td>Europe absorbs entire US CA improvement, Asia CA constant</td>
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<tr>
<td>Real exchange rate, ( q_{UE} ) (Europe/US)</td>
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<tr>
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<td>Terms of trade, ( \tau_{EA} ) (Asia/Europe)</td>
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Effects on net foreign investment positions

- Start from a situation in which the ratio of U.S. net liabilities to tradables = -1, Europe = 0, Asia = 1.

<table>
<thead>
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<th>Ratio of Net Foreign Assets to U.S. Tradable Output after Exchange Rate Revaluation Effects</th>
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<tbody>
<tr>
<td><strong>GLOBAL REBALANCING:</strong> All current accounts go to zero</td>
</tr>
<tr>
<td><strong>BRETTON WOODS II:</strong> Asia raises CA surplus to keep dollar fix. Europe CA absorbs all change in US and Asia CAs</td>
</tr>
<tr>
<td><strong>EUROPE TRADES PLACES:</strong> Europe absorbs entire US CA improvement, Asia CA constant</td>
</tr>
<tr>
<td>U.S.</td>
</tr>
<tr>
<td>Euro</td>
</tr>
<tr>
<td>Asia</td>
</tr>
</tbody>
</table>
Hazards

• Greater asset market integration might facilitate gradual adjustment …

• … or give us a longer rope for neckwear.

• The larger is CA deficit and net foreign debt, and thus the “overhang” of potential depreciation, the more likely is an eventual precipitous adjustment.

• Given the greater volume of gross positions than in the past, much nonbank, the risks are great.

• World interest rates due to rise. As a debtor we will be hurt. Could we lose any privilege? This could offset (easily) gains in U.S. NFA position.

• For the U.S., fiscal responsibility is the obvious first step to take.
Hazards (continued)

• Krugman paper on “Will There be a Dollar Crisis?” (November 2005)
• Reprises 1985 Jackson Hole analysis
• Argues that market expectations (as embodied in real interest differentials, assuming UIP) underestimate extent of dollar depreciation necessary to avoid unstable/implausible debt dynamics
• When markets “wake up” to this, there could be a steep dollar collapse
Krugman: A “Wile E. Coyote moment”? 

Returns and Differentials on Inflation Indexed Government Bonds, June 6, 2005 (percent per annum)

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(1) - (2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(3) - (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. 10-year</td>
<td>Japan 10-year</td>
<td>U.S. 30-year</td>
<td>France 30-year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.57</td>
<td>0.35</td>
<td>1.22</td>
<td>1.68</td>
<td>1.56</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Source: Global Financial Data, Bloomberg