Global Imbalances and External Adjustment

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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):
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 changes in gross foreign asset positions over time]

- Assets/Sample GDP
- Assets/World GDP
- UK share of all assets
- US share of all assets
World total foreign assets and liabilities, 1970-2003

World Foreign Assets and Liabilities, 1970–2003 (percent of world GDP)

Source: Philip Lane and Gian Marta Mileti-Ferretti, unpublished data.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. = 1C)

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 asset trade as trade across different dates.

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

• For \( A = 0 \), index = 0, pure intertemporal different random states of nature.

• For \( A = L \), index = 1, pure trade across.

Diversification asset trade as

Define the “Grubel-Lloyd” index of

Developing countries diversity less.
Empirical Grubel-Lloyd indexes, 2003

<table>
<thead>
<tr>
<th>Country</th>
<th>G–L index</th>
<th>Non-reserve G–L index</th>
<th>Trade to GDP</th>
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Current global imbalances

- IMF (9/06) forecast of U.S. 2007 current account balance: -$959.1 (-6.9% GDP)
- Euro zone: -$16.9 billion (-0.2% GDP)
- Japan: +$162.9 billion (3.5% GDP)
- Newly indust. Asia: +$79.5 billion (+4.9% GDP)
- Other developing: +$638.9 billion
2005 saving-investment balances (% GDP)
U.S Current Account Balance: 1970-2005
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 25% GDP.
- Gross foreign assets = 75% U.S. GDP.
- Gross foreign liabilities = 100% U.S. GDP.
- About 65% of U.S. assets in foreign currencies.
- About 95% of U.S. liabilities 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. external position
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 $NX/NFA$ predicts asset returns 1 quarter to 2 years ahead and $NX$ at longer horizons.
• Exchange-rate change is forecastable by $NX/NFA$ 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.
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 NFA is 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.
U.S. Current Account and Saving-Investment

Current Account Balance

Private Saving - Investment

Public Saving - Investment

(Percent of GDP)

Years: 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04
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

\[
C^i = \left[ \frac{1}{\theta} \left( C_T \right)_i^\theta + (1 - \gamma) \left( C_i \right)_i^\gamma \right]^{\theta^{-1}} + \left( 1 - \beta \right) \left( C^U \right)_i^\eta + (1 - \beta) \left( C^E \right)_i^\eta + \left( 1 - \beta \right) \left( C^A \right)_i^\eta,
\]

\[
C^U = \left[ \alpha^n \left( C^U \right)_i^\eta + (\beta - \alpha) \left( C^E \right)_i^\eta \right]^{\eta^{-1}} + \left( 1 - \delta \right) \left( C^E \right)_i^\eta + \left( 1 - \delta \right) \left( C^A \right)_i^\eta.
\]

\[
C^A = \left[ \frac{1}{\eta} \left( C^A \right)_i^\eta + (1 - \delta) \left( C^E \right)_i^\eta \right] + \left( 1 - \delta \right) \left( C^E \right)_i^\eta.
\]
Price indexes

\( P_j^i \equiv \text{country } i \text{ exact price index for consumption category } j. \)

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

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

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

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

\[ P_A^E = P_U \quad \tau_{U,A} \] 

\[ \tau_{U,A} = \frac{P_A^E}{P_U} = \tau_{U,E} \]

\[ P_C^A = P_U \quad q_{U,A} = q_U \]

\[ q_{U,E} \]
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

\[ \hat{q}_{U,E} = \lambda (\delta \alpha - \beta) \hat{q}_{U,E} + (1 - \lambda) (\frac{\beta}{\gamma} - \ln \frac{\beta}{\gamma}) \cdot \]

\[ \hat{q}_{U,A} = \gamma [\delta - (1 - \beta)] \hat{q}_{U,A} + \gamma \left[ \left( \frac{1 - \delta}{2} - (\beta - \alpha) \right) \right] \hat{q}_{U,E} + (1 - \gamma) (\hat{P}_N^A - \hat{P}_N^U) \cdot \]
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>Log change (x 100) in:</th>
<th>GLOBAL REBALANCING: All current accounts go to zero</th>
<th>BRETTON WOODS II: Asia raises CA surplus to keep dollar fix. Europe CA absorbs all change in US and Asia CAs</th>
<th>EUROPE TRADES PLACES: Europe absorbs entire US CA improvement, Asia CA constant</th>
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<td>Real exchange rate, (q_{U,E}) (Europe/US)</td>
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<td>0.5</td>
<td>–18.0</td>
<td>–10.8</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.

| Ratio of Net Foreign Assets to U.S. Tradable Output after Exchange Rate Revaluation Effects |
|----------------------------------|----------------------------------|----------------------------------|
| **GLOBAL REBALANCING:** All current accounts go to zero | **BRETTON WOODS II:** Asia raises CA surplus to keep dollar fix. Europe CA absorbs all change in US and Asia CAs | **EUROPE TRADES PLACES:** Europe absorbs entire US CA improvement, Asia CA constant |
| U.S. | − 0.3 | − 0.2 | − 0.2 |
| Euro | − 0.1 | − 0.6 | − 0.4 |
| Asia | 0.4 | 0.8 | 0.6 |
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)

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<th>Japan 10-year</th>
<th>U.S. 30-year</th>
<th>France 30-year</th>
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</tr>
</tbody>
</table>

Source: Global Financial Data, Bloomberg