

# **Topic 10: Asset Valuation Effects**

## **Part1: Document Asset holding developments**

- The relaxation of capital account restrictions in many countries over the last two decades has produced dramatic increases in international asset flows.
- A number of papers have worked to document the facts, in terms of size and characteristics of these flows.
- Recent papers have also noted that the accumulation of large foreign asset positions have implications for some of the theories studied earlier in this course.

## a) Lane and Milesi-Ferretti (2003)

- These co-authors are early researchers to document the recent developments in international assets flows.

### Data sources:

- The IMF has recently improved its data collection on international investment positions and external portfolios. See the IMF Balance of Payments Statistics.
- Note that countries may differ in their reporting, especially regarding whether foreign direct investment is reported at book or market value.

This paper makes a number of observations:

- The sum of assets plus liabilities has grown much, especially in the late 1990s.
- Financial integration has grown faster than goods trade integration.
- Gross holdings (assets plus liabilities) has grown much more than net holdings (assets minus liabilities).
- Returns on US assets abroad have tended to be higher than US liabilities. This explains why US net interest income was positive until recently, even though it has been a net debtor since 1989.

Figure 2. Composition of International Portfolio, Industrial Countries  
(Sum of Assets and Liabilities as a Ratio of GDP, 1980–2003)

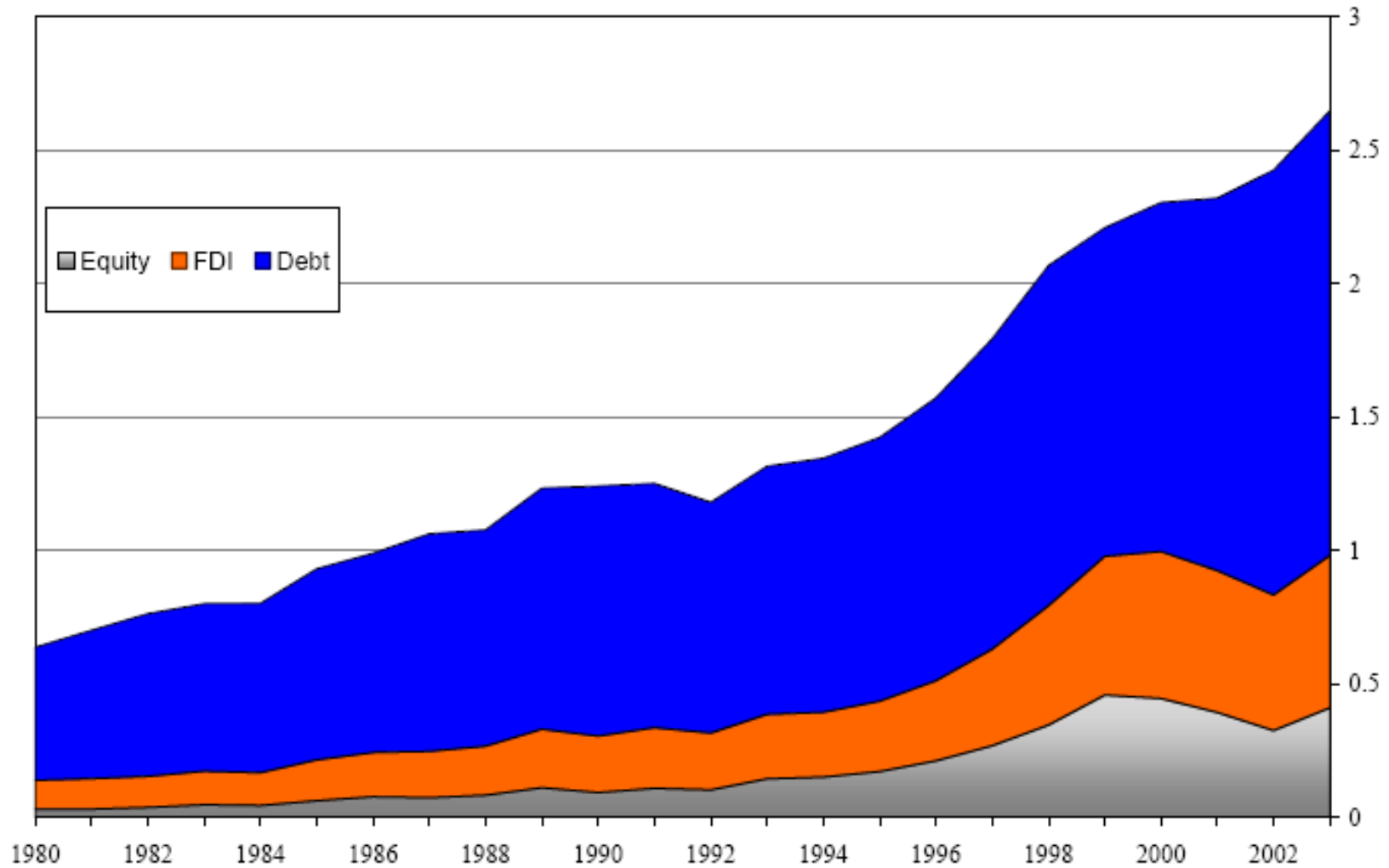
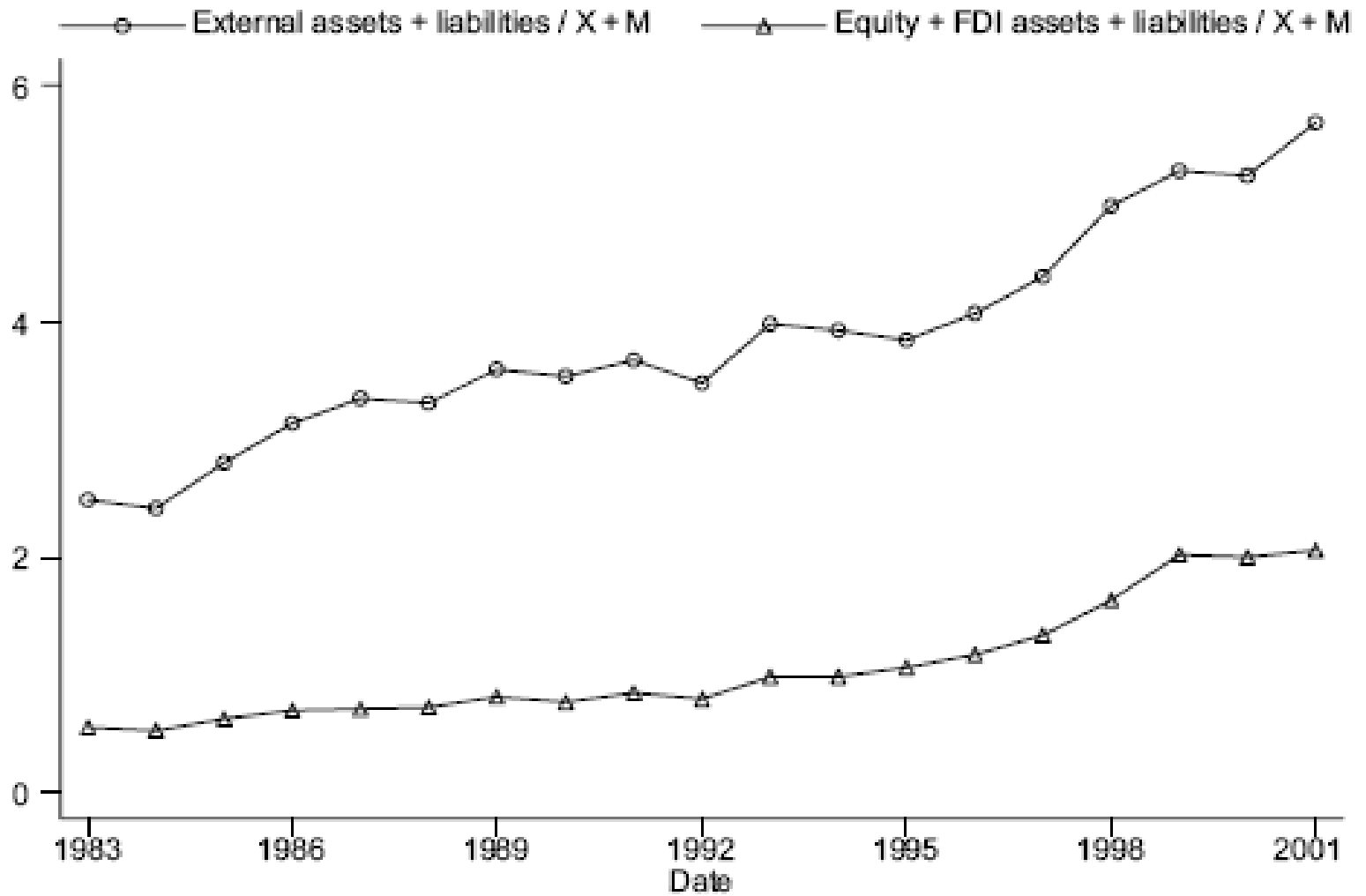


Figure 4. International Integration: Finance versus Trade



**Figure 6. External versus Total Financial Holdings**



Source: Office of National Statistics.

**b) Tille (2003) notes that the US portfolio is special:**

- While US gross assets are primarily in foreign currency, its liabilities are largely in US dollars.
- While the US is a net creditor in foreign currency assets (50% of US GDP in 2004) it is net debtor in dollar assets (72% of GDP). Overall, net debt position of 22% of GDP.
- This implies that a change in the nominal exchange rate affects the value of the net asset position: a 10% depreciation of dollar transfers 5% of US GDP.
- Implications of this fact will be developed in a theoretical model in the third section of this lecture.

Table 1: Currency composition of selected asset categories

Assets, \$ billions (2004)

	Total	FDI	Equity	FDI+equity	Other
Total	9,973	3,287	2,520	5,807	4,165
U.S. dollar	3,476	14	22	35	3,441
Foreign currencies	6,497	3,274	2,498	5,772	725

Liabilities, \$ billions

	Total	FDI	Equity	FDI+equity	Other
Total	12,515	2,687	1,929	4,615	7,900
U.S. dollar	11,869	2,687	1,929	4,615	7,254
Foreign currencies	646	0	0	0	646

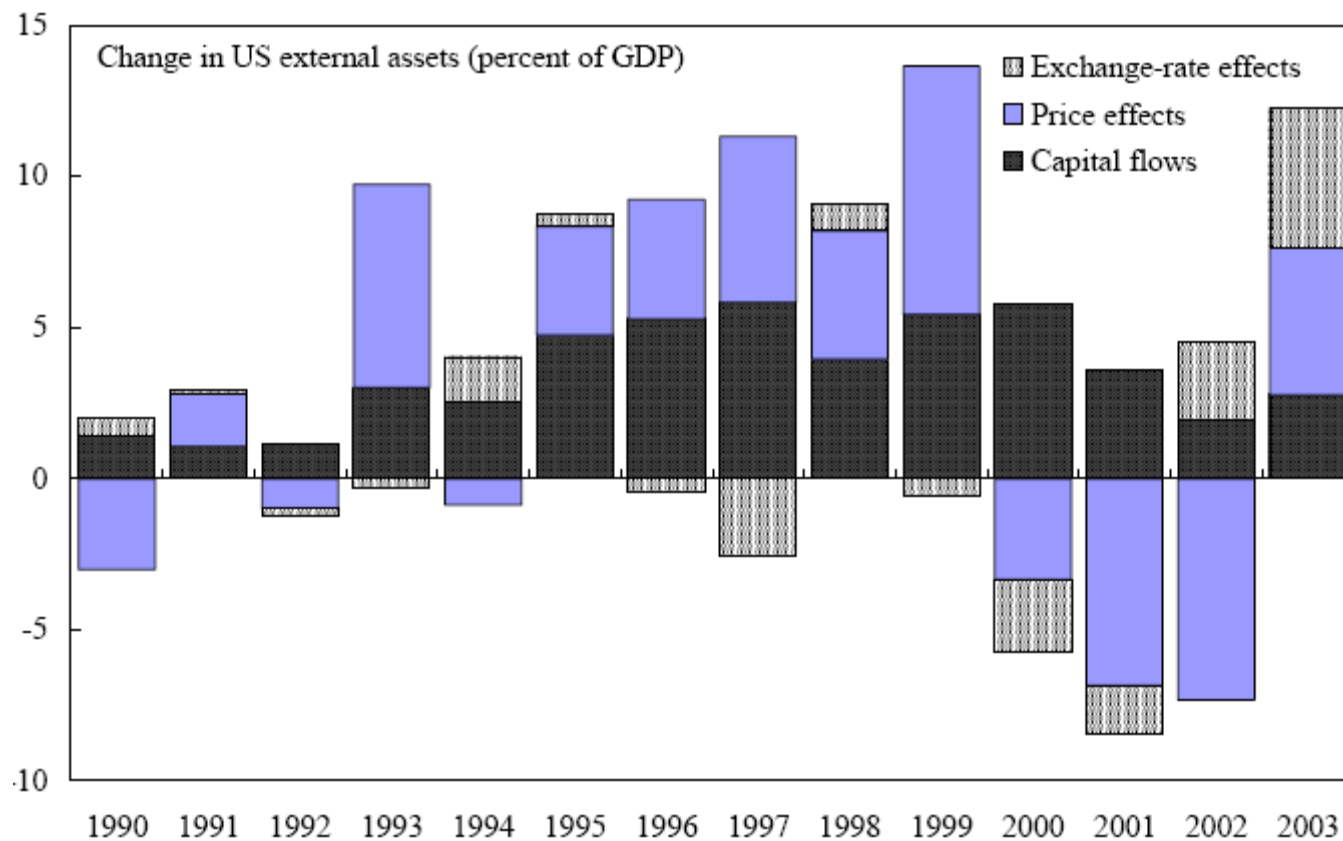
Net assets, \$ billions

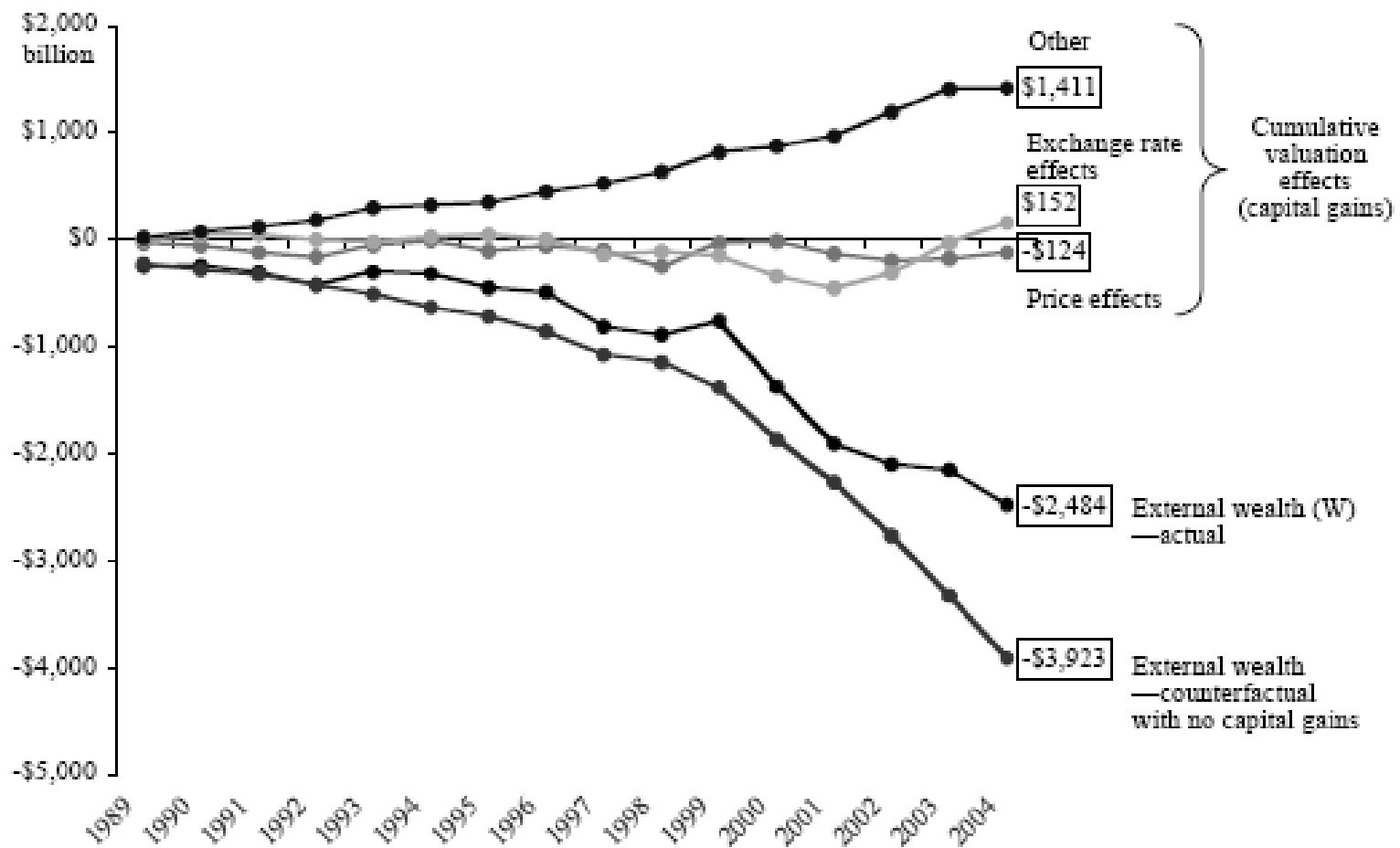
	Total	FDI	Equity	FDI+equity	Other
Total	-2,542	600	592	1,192	-3,734
U.S. dollar	-8,393	-2,673	-1,907	-4,580	-3,813
Foreign currencies	5,851	3,274	2,498	5,772	79

Net assets, percent of GDP

	Total	FDI	Equity	FDI+equity	Other
Total	-22%	5%	5%	10%	-32%
U.S. dollar	-72%	-23%	-16%	-39%	-32%
Foreign currencies	50%	28%	21%	49%	1%

Figure 7. United States: Components of Change in External Assets and Liabilities, 1990–2003





## **Part2: Financial Adjustment: Gourinchas and Rey (2005)**

- This paper studies how capital gains on gross external assets provide an alternative channel for international BOP adjustment to the familiar channel via trade flows.
- We have seen in our intertemporal models that a country running a current account deficit to smooth over a shock needs to finance this by trade surpluses in future periods.
- An alternative way of satisfying the budget constraint would be for the valuation of foreign holdings of home assets to drop.
- A likely way that this would occur would be through exchange rate depreciation.

## a) Theory

- The theory is analogous to that used for the Present Value tests of Campbell, used to test the intertemporal approach to the current account used in this course.
- The authors refer to their approach as an “intertemporal approach to the Financial account.”
- Begin with a rewriting of the BOP (budget) constraint:

$$NA_{t+1} = R_{t+1} (NA_t) + NX_t$$

Where

- NA is defined as the difference between gross foreign assets ( $A$ ) and gross foreign liabilities ( $L$ ).
- NX is net exports, exports ( $X$ ) minus imports ( $M$ ).
- $R$  is total return on net foreign asset portfolio.

- As in the earlier present value tests, linearize this budget constraint:

$$\Delta na_{t+1} = r_{t+1} + \left( \frac{1}{\rho} - 1 \right) (nx_t + na_t)$$

Where  $\rho - 1$  is the steady state ratio of net exports to net assets (NX /NA).

- The total rate of return on the net foreign asset portfolio can be approximated as a weighted combination of the rates of return on the countries external assets and that on the country's external liabilities (which can differ)

$$r_{t+1} \approx |\mu_a| r^a_{t+1} - |\mu_l| r^l_{t+1}$$

- For reference later, define a linear combination of net exports and net assets:

$$nxa_t = nx_t + na_t = |\mu_x| x_t - |\mu_m| m_t + |\mu_a| a_t - |\mu_l| l_t$$

Which can be interpreted as the deviation from trend of the ratio of net exports to net foreign assets (NX /NA).

- The intertemporal budget constraint implies a condition analogous to the test condition from the present value CA literature:

$$\Delta nxa_t = - \sum_{j=1}^{\infty} \rho^j E_t \left[ r_{t+j} + \Delta nx_{t+j} \right]$$

(key PV condition)

- This shows that movements in the trade balance and the net foreign asset position must forecast either future portfolio returns, or future net exports growth, or both.
- So there are two channels of adjustment to a net export imbalance: the usual trade channel, and an asset valuation channel.
- Note that the latter, represented in  $r$ , can take place by changes in the nominal exchange rate, if the gross asset positions for assets and liabilities tend to be denominated in different currencies.

## b) Empirical Implementation and Results

Data: The authors must work quite hard to collect the data needed to compute the series for total returns,  $r$ , as this requires estimates on weights for different categories of assets and their returns.

Present value test:

- The authors follow Campbell methodology in testing the PV condition above.
- They use a VAR to generate forecasts for the expected discounted sums of  $r$  and  $NX$  above.

- They then can use the equation above to compute a model-consistent forecast of  $\Delta nxa$ , which then can compare to the data using a Wald test.
- They find a chi-squared statistic of 0.325, and with three restrictions, the p-value is 0.955. So they cannot reject the restriction of the Present value condition above.

## Decomposition:

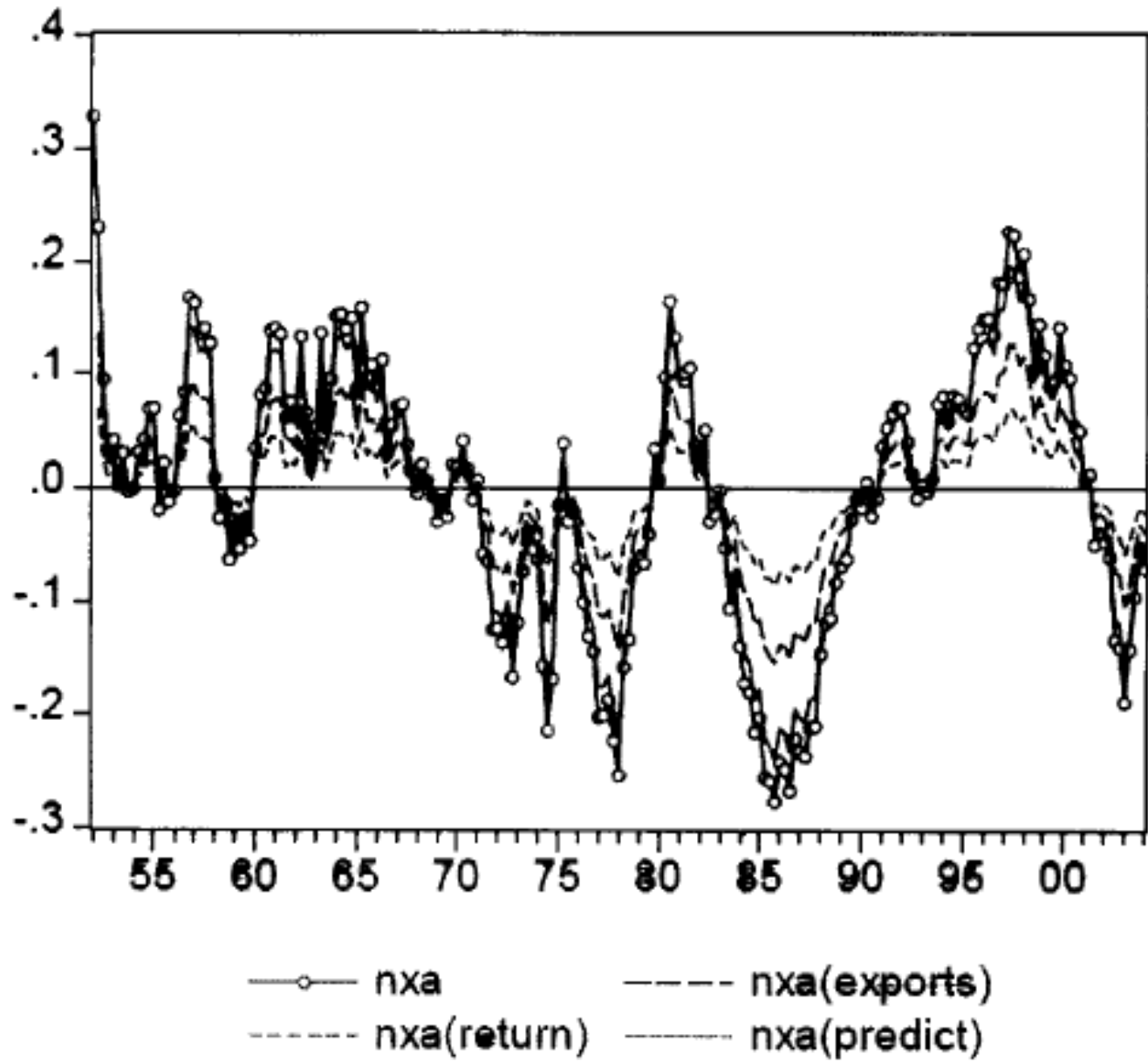
The authors decompose  $\Delta nxa$  into the two channels

implied by the PV condition: 
$$\Delta nxa_t = -\sum_{j=1}^{\infty} \rho^j E_t \left[ r_{t+j} + \Delta nx_{t+j} \right]$$

- the trade channel  $\left( \sum_{j=1}^{\infty} \rho^j E_t \left[ \Delta nx_{t+j} \right] \right)$

-and the valuation channel  $\left( \sum_{j=1}^{\infty} \rho^j E_t \left[ r_{t+j} \right] \right)$ .

- The valuation channel plays an important role, accounting for 31% of overall external adjustment.
- They conclude that the valuation channel does not replace the need for the US to generate net exports in the future, but it does significantly reduce the magnitude of adjustment needed along the trade channel.

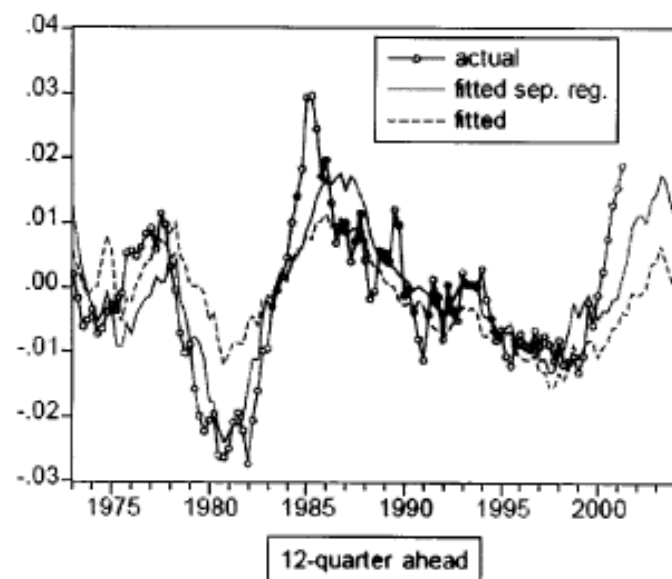
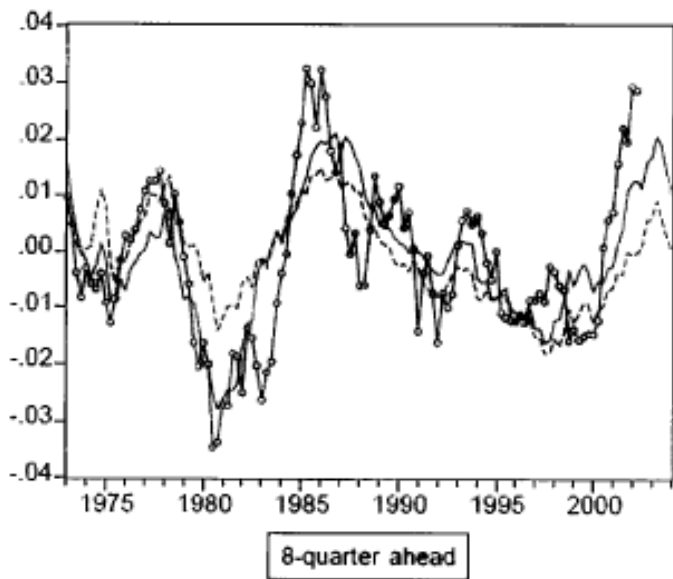
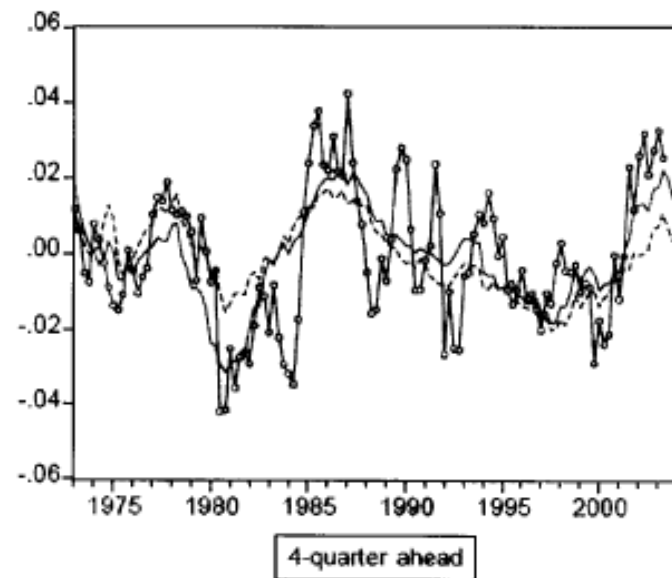
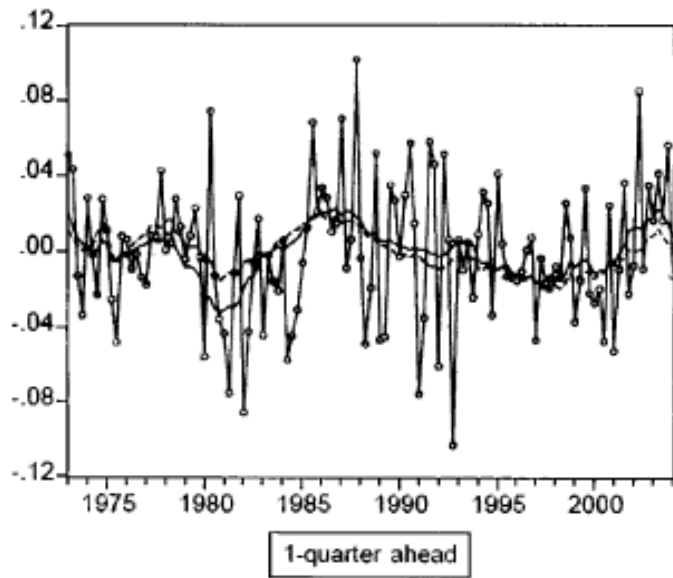


## Gourinchas and Rey (2005)

#	percent	Discount factor $\rho$		
		0.96	0.95	0.94
1	$\beta_{\Delta nx}$	64.91	56.13	45.77
2	$\beta_r$	28.97	30.87	31.59
	of which:			
3	$\beta_a$	28.79	28.94	27.51
4	$\beta_l$	0.28	2.02	4.17
5	Total (lines 1+2)	93.88	87.00	77.36
6	$\mu_a$	6.77	8.24	10.16

## Exchange rate prediction:

- The fact that the PV condition above involves expected movements in asset returns, based largely on the exchange rate, implies that it could use data on external imbalances to predict future exchange rate movements.
- Recall that macro models have a very poor record in being able to predict exchange rates out of sample.
- Movements in  $nxa$  for the US do seem to correspond to broad movements in the value of the US dollar.
- Regressions indicate that there is some predictive power. At short horizons it is the asset values that are helping; at longer horizons it is information on net exports that help
- Out of sample tests: including the  $nxa$  variable improves predictive power over an AR(1) model at all horizons.



This paper raises a natural question:

**If it indeed is predictable that there will be a big capital loss on foreign holdings of US dollar assets, why are foreigners still willing to purchase them?**

## **Part 3: Implications for monetary policy models: Tille (2005)**

### **a) Model:**

- Two country model sticky price model like OR (1995), but with new asset market features.
- Can hold home and foreign bonds and equities. Nominal bonds in H and F currency (one period and perpetuity bonds that pay a fixed nominal interest rate for all future periods).
- Equities share in firm in H and F, which are mutual fund claim to other countries nominal profits.

- assume steady state with zero net foreign asset position, so can get closed form solution.
- Nonetheless, there are nonzero gross holdings in each currency.
- Calibration: representative of US case. Foreign currency - assets represent 50% of home GDP (either bonds, equities, or combination of the two).

Four cases for asset market in each table:

- 1) no international asset positions
- 2) bonds only economy
- 3) equities only
- 4) mixture of bonds and equities matching US case.

## b) Findings (sticky price version of model)

With no financial integration (column 1), get something close to the basic Obstfeld-Rogoff (1995) story: Increase money supply raises production and consumption.

Bonds only economy: (Column 2)

- We see evidence of a wealth transfer.
- May appear that the asset valuation effect has little impact on consumption
- But note the fall in home long-run output.
- It is also very clear in the effect on home welfare, which rises 5.8 times larger than in the no asset case.

<b>Short run differentials</b>	Consumption	0.04	0.04	0.03	0.04
	Output	7.72	7.68	7.72	7.71
	Profits	7.72	7.68	7.72	7.71
<b>Long run differentials</b>	Consumption	0.04	0.04	0.03	0.04
	Output	-0.28	-0.32	-0.28	-0.29
	Profits	0.72	0.68	0.72	0.71
<b>Total differential</b>	Consumption	1	1.00	1	0.90
	Output	1	0.00	1	0.82
	Profits	25	24	25	25
<b>Asset prices</b>	Exchange rate	0.97	0.96	0.97	0.96
	Home equity	0.86	0.84	0.86	0.86
	Foreign equity	0.14	0.16	0.14	0.14
<b>Net asset positions</b>	Total	3.36	3.84	3.34	3.45
	- financial flows	3.36	3.36	3.22	3.23
	- exchange rate	0	0.48	0.48	0.48
	- asset prices	0	0	-0.36	-0.27
<b>Welfare</b>	Differential	0.04	1	0.01	0.21
	Home	0.10	0.58	0.09	0.19
	Foreign	0.06	-0.42	0.08	-0.02