Hazardous Inertia of Imbalances in the US and World Economy

This paper revisits the economic expansion in the US since the early 1990s by looking at the structure of aggregate demand and the financial balances of the main sectors with the help of a consistent set of Social Accounting Matrices, Flow of Funds and Matrices of Stock Balances. It highlights the by now obvious fact that the US expansion was allowed to continue by the exacerbation of unprecedented global financial imbalances. By exploring econometrically the patterns of aggregate demand, it concludes that for the US economy to keep growing at such a pace, continuing asset appreciation (real estate and equities) and capital inflows from abroad are required. Such a path is precarious, and potentially hazardous for the US and the world economy because it relies on ever-accumulating debts. There seem not to exist market-driven alternatives which would not involve serious macro-financial crises. Unless a congenial, policy-coordinated solution is found, the inertia may prevail… until it lasts.

Alex Izurieta

The US economic expansion which started in 1992 was driven entirely by domestic demand. Throughout the 1990s the main motor was the private sector, whose spending grew at a faster rate than income. Towards the end of the decade, private expenditure (particularly corporate investment) weakened. An incipient recession in 2001 was neutralised by fiscal deficits. The deficits added to aggregate demand in counter-cyclical fashion and subsequently encouraged faster private sector spending. This was sustained by growing lending flows to both sectors and thus resulted in an unprecedented debt accumulation, estimated by the US Federal Reserve at about 150 per cent of GDP for the private sector and 45 per cent for the general government.

Such spending and lending patterns of domestic institutions are, by accounting logic, reflected in growing external deficits. The US moved from a current account surplus of nearly 1 per cent of GDP in 1991 to deficits above 6 per cent of GDP at present. It can be calculated that the leakage from the flow of US income throughout this period adds up to about US 3.700 billion, or 30 per cent of today's GDP. As the US represents roughly 30 per cent of global income, the accumulated loss via the external account is roughly equal to 15 per cent of the rest-of-the-world's income at present. This is the measure of how much US dis-savings these growth patterns implied. By the same token, such an expansion would not have taken place if the rest of the world had not lent from 1991 to the present about a seventh of its estimated current income.

Thus, the 'vigour' of the US economy depends on spending and borrowing patterns which, to be continued in the same fashion, would require an escalation of debt (of domestic sectors vis-à-vis the financial sector and of the US as a whole vis-à-vis the rest of the world), which seems unsustainable. The official view in the US and among international organisations such as the IMF, the World Bank, and the OECD, to name but a few, is that such a growth pattern in the US is likely to be sustained (estimates range between 3 and 3.5 per cent on average over the next two to five years).[1] If there are concerns about deficits and growing debt exposure those seem to concentrate on the fiscal deficit and the presumed financial vulnerability of social security and public health systems, which may lead many observers to believe that reining in the fiscal stance is the only precondition for growth to become structural.[2]

The aim of this paper is to explore the underlying structure of the US economy in relation with the rest of the world and the behavioural patterns which might help explaining the factors driving growth and its limits. The next two sections are devoted to explaining the accounting framework of analysis and use it to revisit recent history. The last two sections explore stylised behavioural patterns of the main sectors and their relationship with the global economy.

The analysis suggests that for economic growth to continue, global imbalances would exacerbate rather than correct themselves. This means global savings would keep feeding into deficit-driven growth in the US until the imbalances unwind abruptly and relentlessly. Sustaining global growth (including that of the US) without compromising stability may require a globally coordinated effort aimed at redirecting savings to enhance income redistribution shifts worldwide. It remains to be seen, however, if policy-makers around the globe will weigh up the urgent need and advantage of policy coordination vis-à-vis the potentially hazardous market-driven outcomes.

A Social Accounting Matrix Framework and the Underlying Macroeconomic Structure of the US

Social Accounting Framework: Public, Private and External Sectors When Flows, Holding Gains and Stocks Add Up[3]

The underlying accounting structure is laid down with a Social Accounting Matrix (SAM) framework, which highlights the two institutional sides of each transaction and also ensures that there are no 'black holes'. Additionally, the accumulation of financial flows and holding gains would serve to generate the institutional balances.

In this study, the main institutions are the public, private, financial and external sectors. Typically, it is possible to derive the ex-post accumulation balance for these sectors from the known 'macroeconomic identity':[4]

$$\underbrace{[Y - T - C_p - I_p]}_{\text{Private Net Saving (PNS)}} \equiv \underbrace{[C_g - I_g - T]}_{\text{Government Deficit (PSBR)}} + \underbrace{[Ex - IM + YF]}_{\text{Current Account Surplus (CAS)}} \quad ...(1)$$

where Y is national income, T tax revenue, C_p and I_p consumption and capital expenditure of the private sector, C_g plus I_g government total spending, EX exports, IM imports and YF factor receipts. The equation links net savings of these sectors (also called 'net lending') and shows the intrinsic constraint that all but one change of financial position can be determined independently. Expressed in this way it is intended to highlight the relation between income of the private sector, its expenditure and the net demands of the other sectors.

The equation condenses a whole set of financial transactions which can be specified in a SAM as the one below, including the flow-of-funds subsystem.

The principle of SAM is that each cell represents at once the origin (row) and destination (column) of a transaction for which there is a monetary counterpart in the opposite direction. It is this accounting consistency that serves as a basis for behavioural relations.[5] Domestic output – *DomOutp* (row 1) – is generated by total production, which pays (in column 1) intermediate inputs (Q_{int}) and factors of production (*GDP*) to the private sector (wages, profits and interests). Commodities both generated domestically (Q_{dom}) and those by imports (IM) in column 2 are absorbed by the economy in the form of consumption (C_p and C_g), investment (I_p and I_g) and exports (EX) in row 2. The transactions in the intersection of rows and columns 3 to 5 complete the incomes of institutions (row totals), from which expenditures are deducted to obtain their current savings (S_p, S_g and S_f). These savings are used to purchase physical assets ($-I_p$, $-I_g$).

The flow-of-funds (lower right corner of the matrix in bold) shows that the residual, after investment spending is deducted from savings, is added to borrowing (row-wise), and this is fully used to increase financial assets (column-wise). Σ^F represents the sum of flow-of-funds transactions (which are not exactly the same as 'changes in stocks' because of holding gains and other changes); ΔL represents the flow of lending to the private sector; ΔB represents net government bond emissions; ΔD corresponds to changes in bank deposits; ΔF denotes financial flows to the rest-of-the-world; while ΔA and NL stand for acquisition of assets and net lending of the different institutions. When two suffixes are introduced, the first represents the holder of assets while the second signifies the holder of liabilities.

The SAM provides a direct way of calculating the basic identities which define each institution's income, spending, saving, borrowing, investment and lending. For the private sector, for example, starting from $Y \equiv GDP + YF \equiv Cp + T + Sp$, it can be seen that current saving $Sp \equiv Y - T - Cp$ is used for investment and the net acquisition of financial assets. Thus,

PNS: $NLp \equiv Sp - Ip \equiv Y - T - Cp - Ip$

Ditto for the government and the external sectors (the function of the financial sector is intermediation and thus profit, saving and net lending are assumed nil):[6]

–PSBR: $NLg \equiv Sg - Ig \equiv T - Cg - Ig \equiv -PSBR$
–CAS: $NLf \equiv Sf \equiv M - X - YF$

An increase of assets by one institution is an increase of liabilities for the counterpart. Thus, net lending will cancel out

Table 1: A Simplified SAM and Flow of Funds Structure

		PROD	COM	Inst (Current)			Inst (Capital)				Σ
				Priv	Govt	RoW	Priv	Govt	Banks incl Fed	RoW	
PROD			Qdom								DomOutp
COM		Qint		Cp	Cg	EX($)	Ip	Ig			GrExped
Inst (cur)	Priv	GDP				YF($)					Y
	Govt			T							T
	RoW		IM								IM
Inst (capital)	Priv			Sp			**-Ip**	**(*)**	**ΔLbp**	**ΔLfp**	Sp+ $\Sigma_j^F \Delta L_j p$
	Govt				Sg		**ΔBpg**	**-Ig**	**ΔBbg**	**ΔBfg**	Sg+ $\Sigma_j^F \Delta B_j g$
	Banks						**ΔDpb**	**ΔDgb**	**{ΔR}**	**ΔDfb**	$\Sigma_j^F \Delta L_j b$
	RoW					Sf	**ΔFpf**	**ΔFgf**	**ΔFbf**		Sf+ $\Sigma_j^F \Delta L_j f$
	Σ	Dom Input	GrSupply	C_p+T+S_p	C_g+S_g	$EX+YF+S_f$	$\Sigma_i^F \Delta Ap_i$	$\Sigma_i^F \Delta Ag_i$	$\Sigma_i^F \Delta Ab_i$	$\Sigma_i^F \Delta Af_i$	0

Notes: * The matrix ignores government capital transfers to the private sector ($\Delta KTgp$). In our empirical work we take all capital transfers and current subsidies into account (as negative taxes) when estimating total disposable income of the private sector, consistently with the NIPA tables.

$ All transactions with the rest of the world in a consistent SAM are denominated in domestic currency, after multiplying the foreign-denominated value of the transaction by the exchange rate expressed in terms of domestic currency per unit of foreign currency.

in the aggregate, which can be expressed by a simple accounting rule, eventually consistent with equation [1]:

$$NL_p + NL_g + NL_b + NL_f \equiv 0 \Leftrightarrow PNS - PSBR - CAS \equiv 0$$
$$\Leftrightarrow Y \equiv C_p + I_p + C_g + I_g - IM + EX + YF \quad ...(2)$$

To derive the stock balances of the institutions, the same matrix format can be adapted so that rows represent liabilities, and columns assets. Stock values at the end of the period are calculated from the sum of the opening stocks, plus the transactions recorded above, plus two other accounting entries. One is 'holding gains' and the other is 'other changes of volume' (Systems of National Accounts 1993; UN et al 1993: 278]. Of these, the former is particularly critical in this analysis, because of the significant impact of real balance effects on institutional behaviour.

$$ST_t \equiv ST_{t-1} + FF_t + HG_t + \Delta V_t \quad ...(3)$$

where ST stands for stocks of any type, HG for holding gains, ΔV for other changes of volume, and FF for flow-of-funds transactions.

Non-financial assets (fixed assets, inventories, etc.) require other sets of matrices of rank (1,n), where n is the number of institutions.[8]

The net worth of an institution at the end of the period (t) is straightforward:

$$NW_{it} \equiv \Sigma_{it}\ Aji + K_{jt} - \Sigma_{jt}\ Lji \quad ...(4)$$

where financial assets (A) and liabilities (L) as well as non-financial assets (K) represent the stocks which need to be calculated as in equation (3).

'Other changes of volume' have not (yet) appeared significant from a macroeconomic perspective.[9] Holding gains, on the other hand, are critical to the analysis of structural patterns and institutional behaviour in the US. Here, three broad categories can be distinguished. First, financial assets and liabilities such as deposits, debt and money do not change value in nominal terms. But when the system is converted into real terms, financial assets in the presence of inflation incur a meaningful loss for the holder of financial assets and, correspondingly, a gain for the holder of liability.[10] Second, holding gains appear when stocks are accumulated across national boundaries: assets held abroad in foreign currency would gain value with a dollar devaluation (without affecting the value of the liability on the other side), and vice versa.[11] The third case of holding gains refers to those accrued to real estate and equity holders.

Since all stocks are subject to 'holding losses' in real terms, only those assets which appreciate at a faster pace than the general price level lead to real balance effects. In short, total holding gains are the sum of those accruing to financial (superscript f) and non-financial – superscript nf – assets, which in turn can be disaggregated into assets which do not change nominal value (such as deposits, debt, etc), and those which change value due to exchange rate variations and market valuations:

$$HG_{it} \equiv HG^{f}_{it} + HG^{nf}_{it} \equiv HG^{v}_{it} + HG^{h}_{it} + HG^{x}_{it} + HG^{w}_{it} \quad ...(5)$$

(where the superscript v represents financial assets which do not change nominal value, the superscripts h and x represent real estate and equities respectively (which generally gain market value), and the superscript w represents assets abroad denominated in foreign currency).

Holding losses in real terms due to increases of the general price level (p) can be estimated using a general expression (hl):[12]

$$hl_v = (\hat{p}*V_{t-1})/p$$
$$hl_h = (\hat{p}*H_{t-1})/p$$
$$hl_x = (\hat{p}*X_{t-1})/p$$
$$hl_w = (\hat{p}*W_{t-1})/p \quad ...(6)$$

(where V, H, X and W are the corresponding assets obtained from the system of matrices derived above; and $\hat{p} = \Delta p/p_{t-1}$).

Since real estate, equities and assets abroad are subject to changing market values, the corresponding asset appreciation derived from such market valuations (hm) could be calculated, in real terms, as:

$$hm_h = (\hat{ph}*H_{t-1})/p \quad ...(7)$$

$$hm_x = (\hat{px}*X_{t-1})/p$$

$$hm_w = \left[\left(\frac{-\hat{xr}}{1+\hat{xr}}\right)*W_{t-1}\right]/p$$

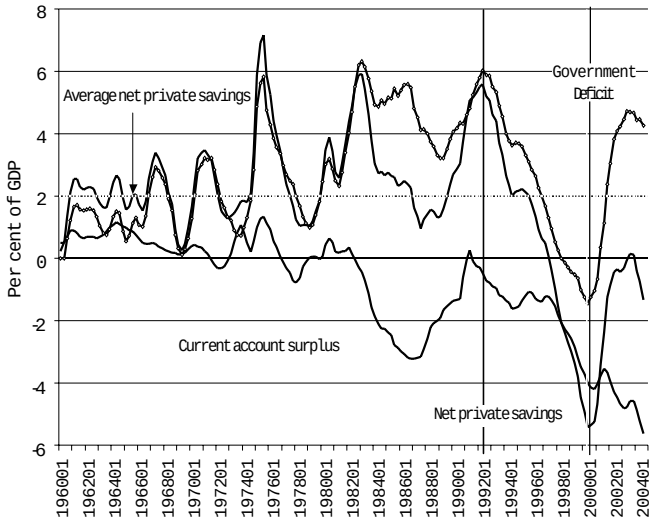
(where the specific rate of change due to house price inflation is $\hat{ph} + \Delta ph/ph_{t-1}$, equity price inflation is $\hat{px} = \Delta px/px_{t-1}$ and dollar devaluation $\hat{xr} = \Delta xr/xr_{t-1}$).[13]

Table 2: Condensed Matrices of Financial and Physical Stock Balances[7]

		Financial Stocks				ΣLiab
		Private	Government	Banks and Fed.	RoW	
Financial Liabilities	Private	{HG^{f}p}		$Lbp_{t-1} + \Delta Lbp + \Delta Vbp$	$Lfp_{t-1} + \Delta Lfp$	$\Sigma_j(L_jp + \Delta L_jp) + \Delta Vbp$
	Government	$Bpg_{t-1} + \Delta Bpg$	{HG^{f}g}	$Bbg_{t-1} + \Delta Bbg$	$Bfg_{t-1} + \Delta Bfg$	$\Sigma_j(B_jg + \Delta B_jg)$
	Banks	$Dp_{t-1} + \Delta Dp$	$Dg_{t-1} + \Delta Dg$	{HG^{f}b}	$Df_{t-1} + \Delta Df$	$\Sigma_j(D_jb + \Delta D_jb)$
	RoW	$Fpf_{t-1} + \Delta Fpf$	$Fgf_{t-1} + \Delta Fgf$	$Fbf_{t-1} + \Delta Fbf + \Delta Vbf$	{HG^{f}f}	$\Sigma_j(F_jp + \Delta F_jp) + \Delta Vbf$
ΣAs.+HG		$\Sigma_i Ap_i$ + HG^{f}p	$\Sigma_i Ag_i$ + HG^{f}g	$\Sigma_i Ab_i$ + HG^{f}b + $\Sigma_i \Delta Vb_i$	$\Sigma_i Ap_i$ + HG^{f}p	
		Non-Financial Assets				Σ
		Private	Government	Banks	RoW.	
ΣK		**Kp_{t-1}+Ip+HG^{k}p+ΔV^kp**	**Kg_{t-1}+Ig+HG^{k}g+ΔV^kg**			

Figure 1: The Accumulation Balance in the US

Private, Government and External Sectors as Per Cent of GDP
(centred moving averages)



The effective holding loss or gain (hg) in real terms follows straightforwardly for each type of stock:

$$hg_v = -hl_v = \left(-\hat{p} * V_{t-1}\right) / p \quad \text{...(8)}$$

$$hg_h = hm_h - hl_h = \frac{\left(p\hat{h} - \hat{p}\right) * H_{t-1}}{p} \quad \text{...(9)}$$

$$hg_x = hm_x - hl_x = \frac{\left(p\hat{x} - \hat{p}\right) * X_{t-1}}{p} \quad \text{...(10)}$$

$$hg_w = hm_w - hl_w = \frac{-\left[\hat{p} + \left(\frac{x\hat{r}}{1 + x\hat{r}}\right)\right] * W_{t-1}}{p} \quad \text{...(11)}$$

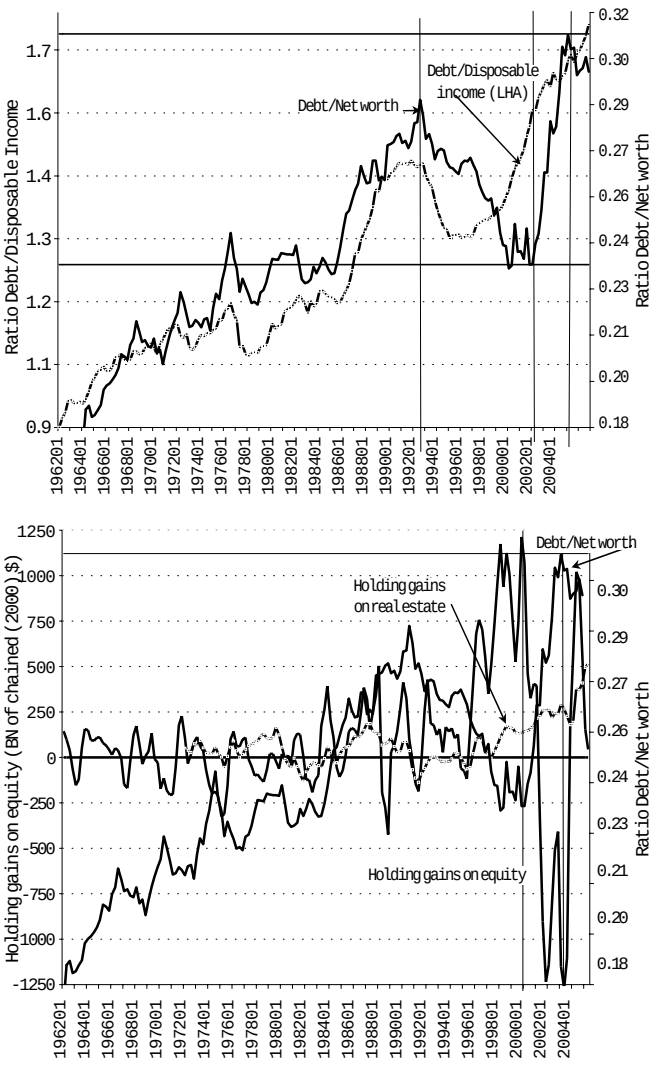
Underlying Macroeconomic Structure of US

Table 1 shows the accumulation balance defined in equation (1) covering the period 1960-2004Q4 (vertical bars indicating the previous macroeconomic cycle 1992-2000). The private and the external sectors are shown as in surplus and the government is shown in deficit. The norm for the US and many developed economies is that the public sector is likely to run deficits of about 2 to 4 per cent of GDP, while the private sector tends to be a net saver (accumulating financial wealth) at about 2 to 4 per cent of GDP. The external sector would, therefore, fluctuate around a balance. However, these patterns were different throughout the previous economic cycle.[14] Quite unlike previous upswings, the US economy recovered from the 1991-92 recession by tightening the fiscal stance, which was matched nearly one-to-one by an increase of private sector spending at a faster rate than its income (reflected by the downward slope of both lines). Net export demand was increasingly negative.

First Proposition: Unsustainable Financial Performance of Private Sector

Three central propositions can be made from this plot. The first one is regarding the role of the private sector in the previous cycle. Through eight-and-a-half years of expansion, the private sector weakened its financial position by about 12 per cent of

Figure 2: Growth of Private Sector Debt



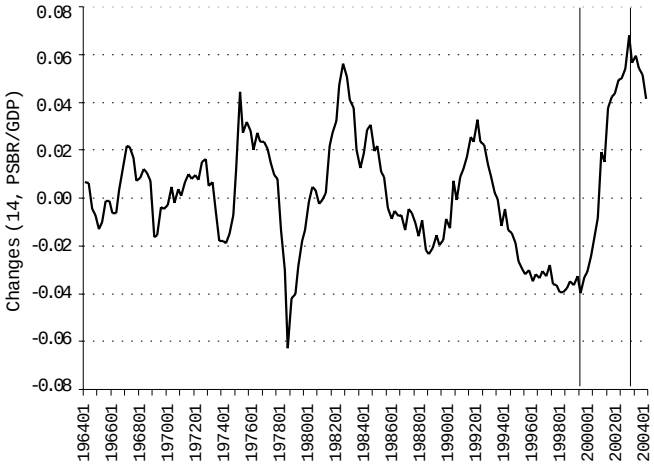
GDP, and became a net borrower by 1997, in sharp contrast with the patterns observed over the past four decades. For the private sector to be able to increase expenditure at such a pace, the rate of credit had to proportionately increase which, judging from recent history, seemed unsustainable. This was the central concern expressed by Wynne Godley and associates. At the peak of the economic boom, while the majority of analysts and official institutions were reassured by sustained productivity growth and public sector surpluses which were seen as preconditions for structural growth, Godley argued that such a structure of aggregate demand was unsustainable.

Very few analysts had expressed concerns about the rapidly rising debt-to-income ratio when private net saving was turning negative (see, for example the illuminating comments of B Martin, 2002, about the 'Benderly debt model').[15] What mattered for most observers was whether the growth of debt was used to build up net worth via the acquisition of real estate, equities and other assets.[16] According to this view, the balance position of the private sector had actually improved because of rapid asset appreciation.

As the upper plot of Figure 2 shows, such an assessment seemed to be correct for the period between 1993 and 2000 and, to a certain extent, for the last couple of quarters. But a sliding ratio

of debt (which is nominally fixed) to net worth (which is dependent on market valuations) can as well represent asset market bubbles (which at some point would burst). At the end of 2000, the stock market started a two-year slide which brought the S&P common stock price index to its mid-1997 figure (still 60 per cent higher than that of 1992). Even if real estate appreciation held pretty well (and subsequently accelerated), the setback in the equity market worsened the debt-to-networth ratio (it rose almost 10 times faster to reach this peak compared to that of the previous peak). The trend is reproduced in the plot underneath, in comparison with holding gains on real estate (hg_h) and equities (hg_x), calculated as in equations (9) and (10). One can only speculate about the implications of a more dramatic stock market crash, or a combined equity and real estate depreciation.[17] Hence, concerns about debt vulnerability through the previous boom seemed justified. It was reasonable to expect that a correction of lending patterns, which would affect the private sector spending, would therefore cause a recession, as stated in Godley and Izurieta.[18]

Figure 3: Changes in the Government Deficit over 3½-Year Periods



Second Proposition: Fiscal Policy Was Relevant

The recession which occurred in 2000-01 (at the point indicated by the second vertical bar in Figure 1) was shallow and short-lived, which raises a second proposition. Apparent in the same plot, at the first signs of weakening of private sector demand there was a turnaround in the fiscal stance reflecting the tax and spending measures used throughout the first presidency of G W Bush. The scale of the fiscal stimulus, shown in Figure 3 below, was unprecedented. The growth performance suggests that such a policy action mattered,[19] despite the fact that the 'multiplier effect' could have been much greater had the spending and tax reforms been addressed towards the poor, as correctly argued in Papadimitriou, Shaikh, Santos and Zezza.[20]

Throughout the recovery period, both the private and public sectors found themselves running deficits, implying that the overall position of the US *vis-à-vis* the external sector had deteriorated and continued to do so. Given this assessment, our next step is to make inferences about the driving forces of adjustment considering the new constraints imposed by macroeconomic imbalances.

Third Proposition: Large Deficits in All Sectors Make an Adjustment More Difficult

The third proposition is that the financial weakening of all sectors which has been allowed to develop implies that an adjustment is harder to achieve and would likely lead to severe consequences for the US and global economies.

The private sector has played a critical role as a force of aggregate demand in this new economic cycle. However, in order to withstand the current deficit position, a flow of net lending equal to 16 per cent of disposable income is required. As of the fourth quarter of 2004 the stock of debt had reached 172 per cent of disposable income. The confidence expressed by policymakers over the recent improvement of the debt-to-net-worth ratio may be – again – misleading. Because borrowing is not significantly receding, a rise of the debt-to-net-worth ratio from its near record level seems inevitable, unless that the real estate bubble keeps inflating (as Figure 2 illustrates, holding gains on equities are in fact very small in real terms). What is more, there is a perverse effect of holding gains, which will be explored in more detail in the next section. Namely, asset appreciations may be encouraging insofar they last because wealth increases and such have a positive effect on aggregate demand ('real balance effects'). But wealth increases are not true cash income and therefore induce spending *out of credit*, which would exacerbate a debt explosion. It seems plausible to consider the possibility that at some point the private sector would have to stop accumulating debt.

When a turnaround of the private sector's behaviour took place four years ago, an aggressive relaxation of the fiscal stance, accompanied by monetary loosening, came to the rescue with some success. Could this still be valid under the present circumstances? Figure 3 shows that throughout the three-and-a-half year period in which the private sector moved towards saving (from minus 6 per cent of GDP to zero) the fiscal expansion required to avoid a lasting recession was equivalent to 6 per cent of GDP. If the private sector were to experience a movement towards saving of about 4 per cent of GDP, the fiscal stimulus required to avoid a recession would be, in the first instance, roughly equal to 4 per cent of GDP. But if a fiscal relaxation were to succeed in achieving an acceptable growth path, imports would have to rise in line with its trend over the last three to four years, which implies a continuing deterioration in the current account of about 2 per cent of GDP. A successful policy action would be required to compensate for such a leakage, too. All in all, for fiscal policy to matter again, if private demand recedes significantly the deficit of the general government would need to increase from 4 per cent of GDP (in 2004Q4) to about 10 per cent, on moderate assumptions.[21] The question is, how plausible can imbalances of this size be? The underlying dynamics of adjustment for this and alternative scenarios are explored in the next section.

Dynamics of Macroeconomic Adjustment between the US and the Global Economy

Private Sector: Holding Gains, Capital Inflows and Spending

The private sector has shown, ex-post, an abnormal growth in expenditure which has fuelled the US economy through the previous cycle, while also contributing to present imbalances. Of particular interest is whether such an unusual performance

reflects a 'new' kind of behaviour (which could substantiate the view that growth in the US might be self-sustained, based on a different set of motives and constraints).

Empirical analysis suggests that there is no significant 'new' behaviour. Private expenditure can be satisfactorily explained by the 'Cambridge view'.[22] Two elements can bring the 'Developments of the Model' [Godley and Cripps 1983, chapter 13] to life in an empirical analysis of the US economy. Firstly, capital inflows (a liability only for the dollar-issuing agent) filter through the economy adding to the financial stock which influences spending patterns of private agents operating in the US independently of their 'nationality'. Secondly, holding gains (as derived in the previous section) need to be incorporated in the calculation of financial wealth. This gives a theoretically consistent interpretation of 'real balance effects' in line with the underlying dynamics of adjustment of expenditure flows and wealth stocks.

The suggested interpretation of the stock-flow relation à la Cambridge, which applies for the US private expenditure function (xp_p) has the following general form:

$$xp_p = \Psi\left\{ yd_p ;\ \sum A_{p_{t-1}} ;\quad hg_v ;\ hg_h ;\ hg_x ;\ hg_w ;\ \Delta L_{fp} ;\ldots\right\} \quad \ldots(12)$$

where yd_p is disposable income, $\Sigma A_{p(t-1)}$ and the 'hg' terms are the stock of inherited financial wealth and holding gains derived in the methodological section, and ΔL_{fp} stand for capital inflows from abroad. The first two terms correspond to the original 'Cambridge equation', while the rest correspond to the broader categories of holding gains and portfolio inflows described above. The relation fits satisfactorily various econometric specifications. Figure 4 shows the implied correlation of holding gains (aggregated) and foreign inflows with changes in private expenditure, calculated in chained dollars. The combined effect of holding gains and inflows on expenditure seems consistent throughout the last 25 years at least (where official data is available). There is no apparent change of behaviour that might convincingly suggest something 'structurally new' in private sector behaviour in the US. Rather, it is the scale and variations of the 'regressors' that has forced changes in the 'regressand' accordingly.

The implications of this finding can be pursued further. Both portfolio inflows and holding gains *encourage spending out of non-earned cash-flow income* and translate into greater credit flows to the private sector. Such an outcome could analytically be represented by a function that explains lending flows to the private sector (ΔL_{bp}) with such variables, to which one would plausibly add the influence of interest rates (r) deflated by the price index.

$$\Delta L_{bp} = \Psi\left\{ \Delta L_{fp} ;\quad hg_v ;\ hg_h ;\ hg_x ;\ hg_w ;\ r - \hat{p} \right\} \quad \ldots(13)$$

The relationship, confirmed econometrically,[23] is shown in Figure 5. As expected, there is a sustained opposite trend between the real interest rate and lending, which would not entirely explain variations of the latter unless the influence of holding gains and portfolio inflows is taken into account.

While ready to accept the usual critique regarding the parsimony of this model, the findings described here clearly resonate with the widely expressed belief that capital gains in the stock market and house prices have led to an acceleration of lending and mortgage equity withdrawal during the boom of the 1990s.[24] It is worth emphasising, moreover, that the evidence so far suggests that these behavioural patterns existed before and also after that boom (i e, there are no convincing grounds to believe

Figure 4: Private Expenditure, Capital Inflows and Holding Gains

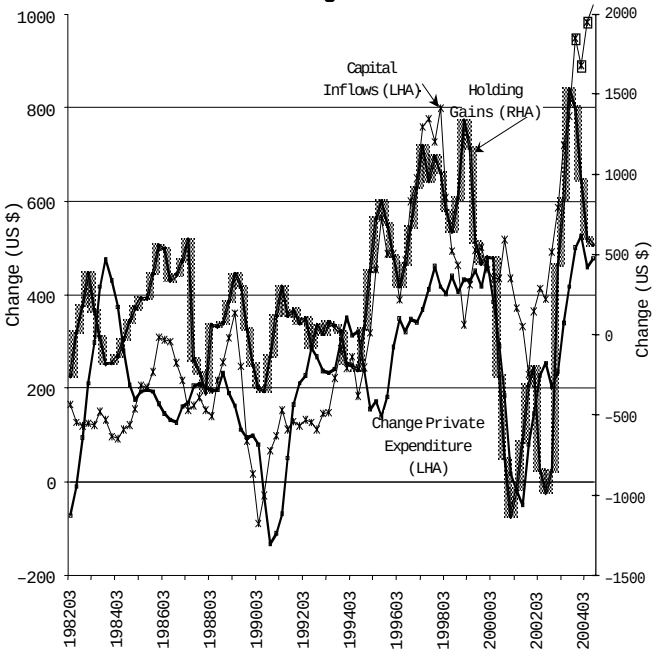
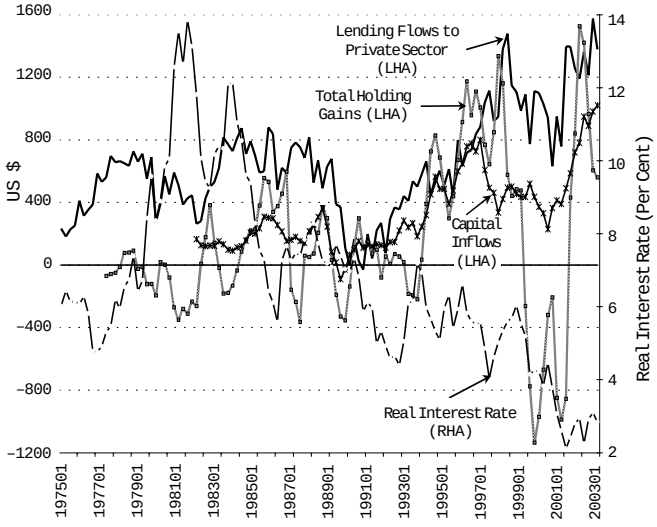


Figure 5: Private Net Borrowing, Capital Inflows, Holding Gains and Interest Rate



that the US economy has shifted to a structurally different paradigm). It may be more debatable whether capital inflows lead to lending to the private sector or whether it is private spending which exacerbates current account deficits and that this in turn causes portfolio inflows. In such a case, the balance of payments account will be entirely dependent on the trade and factor payments account. There is a considerable degree of endogeneity in these relations (which could, to an extent, be clarified by a simultaneous equations model). What can be advanced so far is that capital inflows tend to cause changes in private spending via implied changes in financial wealth (equation 12). On the other hand, there also seems to be a pattern by which capital inflows are generally *greater* than what is necessary to compensate current account deficits, and that the degree of over-borrowing (which materialises into capital outflows) may tend to track the

Figure 6: Outflows, Inflows, and the Exchange Rate

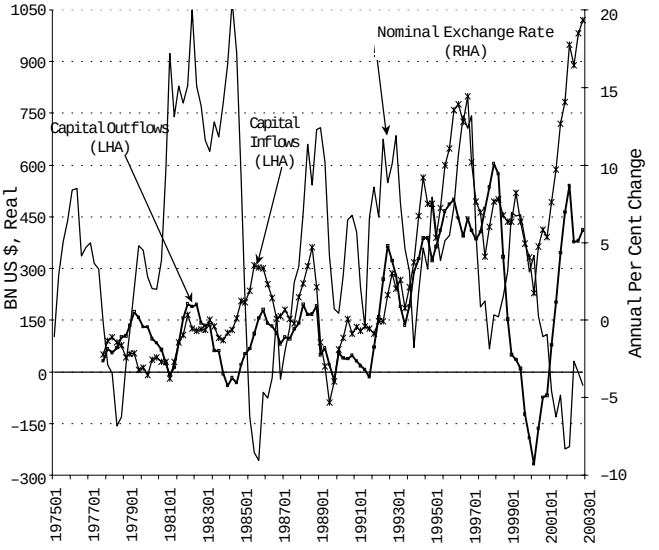
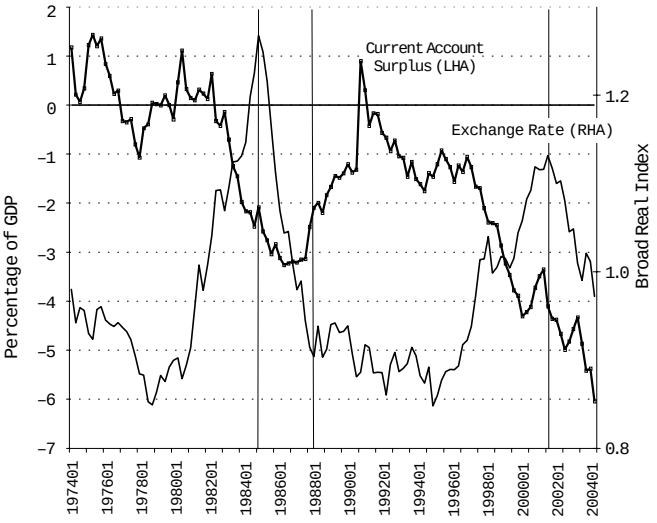


Figure 7: Current Account Balance and Real Exchange Rate



movements of the exchange rate.[25] The relevant trends are shown in Figure 6 and can be expressed analytically by an expression suggesting that outflows respond to inflows, exchange rate movements and differential interest rates between the US and relevant economies abroad:

$$\Delta F_{pf} = \Psi\left\{ \Delta L_{fp} \; ; \; xr^{e} \; ; \; r_{w}^{e} - r^{e} \; ;... \right\} \qquad ...(14)$$

A Corollary of Lending and Spending Patterns in US: "The Griffin Effect"

The stylised patterns of private spending in the US can be summed up by stating that spending shows a stable relation with disposable income and the inherited stock of wealth (in the wider sense which allows for holding gains) and is also significantly correlated with capital inflows. Moreover, since capital inflows and holding gains lead to spending of non-earned income, the corollary is a straightforward, inverse causal relation between capital inflows and private saving. Such a pattern, known in the literature as the 'Griffin effect', was consistently confirmed over decades of studies on financing economic development by Keith Griffin and associates.[26]

The macroeconomic implications of the Griffin effect are varied and it would be simplistic to draw mechanical conclusions for the US. Yet, even if the US enjoys a different status (because of the sheer size of its economy and the fact that it issues a reserve currency), what seems to hold true is the following. There should be hardly anything to worry about provided that the current situation continues indefinitely. But betting on such a prognosis may be too adventurous, especially considering the dynamics of adjustment in the external sector.

External Sector: Exchange Rates, Prices and Global Demand

The external imbalance in the US economy is vast and growing. Many analysts rightly express concerns about the potential implications of an abrupt change in behaviour by foreign investors. As the previous section emphasised, perhaps more important are the perverse dynamics of increasing capital inflows: firstly, they substitute for domestic saving and do not help improving export performance; secondly, by adding to credit flows they contribute to debt overhang/net-equity-vulnerability of domestic sectors; and thirdly, by exacerbating financial and real estate price inflation they threaten overall stability. Another reason for concern is that such an external deficit is a huge leakage from the circular flow of income with perceptible impact on aggregate demand.

A known recipe to help correct the imbalance is (a real) devaluation.[27] Even if problems caused by a devaluation were minor, and assuming that a devaluation could be manufactured to the desired degree, the question is: would it help? History tells that it might. As Figure 7 shows, the experience of the 1980s confirms that a devaluation of about 35 per cent in real terms over nearly three years led to a sustained correction of the current account, turning a deficit of about 3.5 per cent of GDP in 1985 to a small surplus in 1991.

The underlying set of behavioural equations which 'explain' the changes in the balance of trade can be written as:

$$m_{n} = \Psi\left\{ \; p_{mn} \; ; \; p \; ; \; \hat{xp}_{p} \; ;... \right\} \qquad ...(15)$$

$$\mathrm{p_{mn}} = \Psi\{ \; \mathrm{xr} \; ; \quad \mathrm{p_{w}} \; ;... \} \qquad ...(16)$$

$$x_{n} = \Psi\left\{ \; \hat{\rho}_{w} \; ; \; \frac{p_{xn}}{\left(p_{w}/xr\right)} \; ;... \right\} \qquad ...(17)$$

$$\mathrm{p_{xn}} = \Psi\{ \; \mathrm{p} \; ; \quad \mathrm{xr} \} \qquad ...(18)$$

where m_n is imports excluding oil, p_{mm} is its price deflator expressed in dollars, x_n and p_{xn} are non-agricultural exports and their price, p_w represents the foreign price expressed in foreign currency, and ρ refers to the rate of growth of trade partners (other variables are defined above). Such a set of relations is generally to be found statistically significant in many empirical studies (including the *Strategic Analyses* series produced at the Levy Economics Institute and the Cambridge Endowment for Research in Finance). In short, import and export performance depend on, respectively, the exchange rate and the domestic and external economic growth performance. The former is supposed to alter the 'terms of trade' (the ratio of export prices over import prices) making imports relatively more expensive in domestic currency than domestic products, and making the return on exports measured

Figure 8: Exchange Rate and Terms of Trade

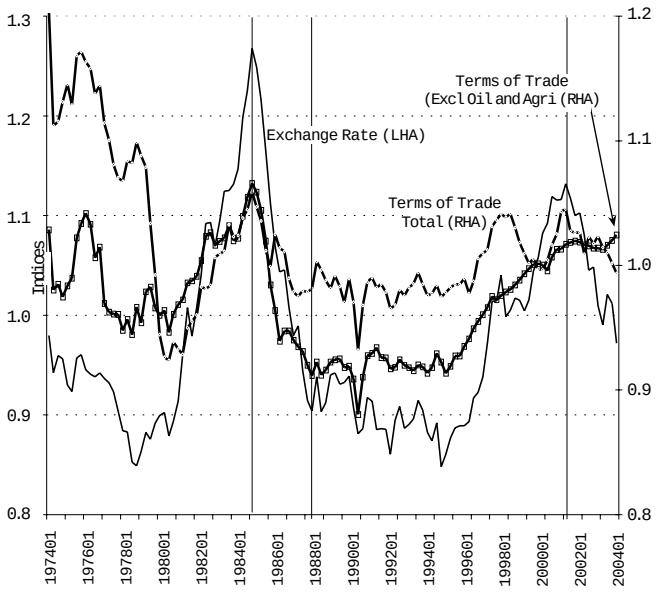
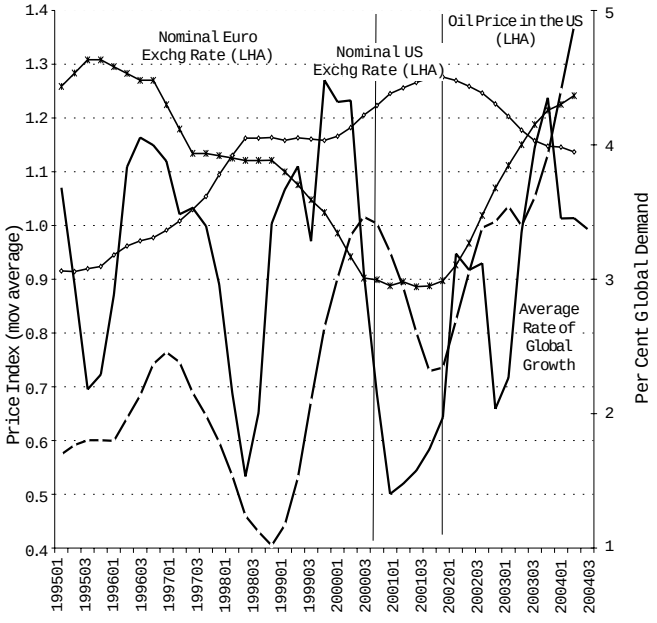


Figure 9: Oil Price, Exchange Rates and Global Demand



in domestic currency relatively higher.

However, Figure 7 suggests that, for the three-year period after 2002Q1, in which there was a devaluation nearly half that of the 1980s, there was no correction of the trade imbalance at all. Some analysts would argue that the usual time lag to start perceiving the effect of devaluation on trade is between three to four years (and indeed recent monthly trade figures could be confirming such a prognosis). However, the relevant terms of trade have either not changed at all, or have done so in a perverse way, as Figure 8 shows. Meanwhile, in the previous episode (1985-1988), terms-of-trade deteriorations followed suit.

To explain the relationship between terms-of-trade and a dollar devaluation, the behaviour of exporters to the US needs to be considered. Facing a devaluation, foreigners seem to be either willing to accept an erosion of the mark-up (producers in developed economies who enjoy a pseudo-oligopolistic position) or a relative loss (other exporters) in order to protect their market shares in the US. Also, there seems to be some (weak) evidence that when oil prices rise (which would affect consumers' purchasing power) retailers in the consumer-goods market may be trying to lower their prices by persuading wholesale foreign providers to accept smaller mark-ups.[28]

The relevant specification for the prices of foreign goods (i e, the denominator of terms-of-trade), including obviously the growth of global demand ($\hat{\rho}_{w+u}$), is:

$$p_w = \Psi\{\ \hat{\rho}_{w+u}\ ;\ xr\ ;\ p_{mo}\ ;...\} \qquad ...(19)$$

Further, the role of oil imports (m_o) and prices (pm_o) in the trade balance is also troublesome. The following system is shown to be statistical significant:

$$m_o = k_o \rho_u \qquad ...(20)$$

$$pm_o = \Psi\{\ xr\ ;\quad \hat{\rho}_u\ ;\quad \hat{\rho}_w\ ;...\} \qquad ...(21)$$

Oil import demand is rigid (a stable proportion of US GDP) and supply is constrained by natural resources or political conditions. This means that higher rates of growth in the US or abroad lead, under normal circumstances, to higher oil prices. More importantly, as explained in *Oxford Analytica*[29] oil (and primary commodity) producers who sell to the US tend to import mostly from Euro-zone and non-dollar countries. Thus, a dollar devaluation forces these producers, who are mostly price-setters by the characteristics of the market, to raise their price in dollars in tandem with the dollar devaluation in order to protect their purchasing power. If one considers, moreover, that the bulk of the dollar devaluation has taken place against the Euro, such a devaluation is likely to produce a meaningful deterioration of the current account in the US via the increase in value of oil imports.

The relevant trends are plotted in Figure 9. The price of oil absorbed by US importers follows closely (in the most recent period) the symmetrical movements of dollar and euro exchange rates. Noticeably, the overall euro appreciation is much sharper than the overall decline of the dollar, and the oil price replicates the slope of the euro more closely, consistent with the above discussion. Further, oil price movements can only be more fully explained after taking into account demand movements. In the same plot, an estimate of global growth rate (weighted average of the US and the rest-of-the-world economy) suggests such a correlation.

Shifts in the exchange rate have yet another effect which impedes a correction of the current account. A dollar devaluation significantly increases holding gains on assets held abroad by US residents, while not affecting in any manner the value of liabilities because these are generally denominated in dollars. Thus, the net worth of US residents improves. More specifically, at the end of 2001, the net debt position of the US reached 23 per cent of GDP (which resulted from the accumulation of external deficits since 1991). The current account deficit over 2002-04 adds up to about 13 per cent of GDP. Hence, if there was no dollar devaluation and neither domestic nor foreign asset valuations changed significantly, the net debt position at the end of 2004 would be about 36 per cent of GDP. But it was actually 21 per cent of GDP. The gap of 15 per cent of GDP is mostly due to the effective 25 per cent dollar devaluation against currencies which circulate outside the country of issue (the 'major' index calculated by the FED). The assets of US residents denominated in such currencies are about 60 per cent of US' GDP.

The problem is that, as has been argued all along, changes of value of assets are not cash-flow incomes. For such gains to materialise, the assets need to be repatriated. But only a partial repatriation would set the dollar devaluation into reverse, at the very least. On the other hand, such changes in the value of assets ('holding gains') lead to real balance effects on US domestic spending and thus imports. Via this mechanism, the current account would tend to deteriorate following a sustained devaluation.

A Corollary of Import and Export Patterns for the US: 'Growing Imbalances'

This analysis implies that a devaluation may be somewhere between ineffective and counterproductive. Taking the moderate stance that it would be ineffective (or, for the sake of simplicity, assuming no devaluation in the foreseeable future) and therefore the mid-term future would somehow be a continuation of the past, external deficits would keep adding to the net liability position of the US which therefore leads to the payments that would exacerbate the external deficit. Analytically, this can be expressed as:

$$yf = \Psi\left\{ \left(F_{pf} - L_{fp}\right);\ r\ ;\ r_w^e\ ;\ \hat{p}\ ;... \right\} \qquad ...(22)$$

The relation was core to projections of future scenarios through successive strategic analyses of the US [Godley and Izurieta, ibid]. Other projections of the external position of the US considering the same effects [such as C Mann 2004] also posit worrisome scenarios, indicating current account deficits of about 12 to 13 per cent of GDP, five years from now if no policy change takes place.

In order to correct the external imbalance, there remains the alternative of a worldwide income redistribution. Sustained external demand caused by faster global growth, together with a slow-down in US domestic demand would produce, simultaneously, meaningful changes in exports and imports consistent with equations (17) and (15). However, recent trends suggest that the redistributive changes required may amount to true structural shifts in trade and income policies worldwide. Imports grew over the last four quarters by nearly $ 250 billion, about the same as at the peak of the previous expansion. This means that such a pattern is what one would expect if the economy were to keep growing at trend rates. Meanwhile, the annual growth of exports for given rest-of-the-world demand (and taking into account a considerable devaluation) was about $100 billion. In order to expect a partial correction of the current account deficit, say from $ 650 billion to $ 300 billion, one would need an acceleration of exports from $ 100 billion to $ 500 billion, which seems unlikely. Alternatively, one could devise a combination of measures requiring meaningful import contractions. Any such scenario would imply a recession in the US (from mild to severe and lasting) with a knock-on effect on the US' trade partners and the world economy. No wonder the preferred option of 'market forces' seems to be a status quo: inertia, growing imbalances…

Conclusion: A Dilemma Passed on to the Rest of the World

The above sections explained the mechanisms underlying the functioning of the private and external sectors. The central proposition from the SAM framework is obvious: the government deficit cannot be any different than the sum of the private sector net saving and the current account deficit. The economic logic underneath such a simple accounting observation will hopefully now be clearer. For a *given rate of economic growth* and any assumed combination of domestic tax and interest rates, market valuations, exchange rates and external conditions (global income growth and savings and thus inflows into the US), there would be a unique set of disposable incomes, domestic expenditures, import and export volumes consistent with the structural patterns explored above. An attempt by the government to apply discretion would cause the economy to deviate from the growth path. Cutting expenditure in order to alleviate the deficit, for example, would either decrease aggregate demand or, if compensated by private spending, would leak out via the external imbalance. Likewise, a discretionary measure to increase taxation for the same purpose will take away from private demand, slowing income growth to a similar degree. In sum, for any given structural conditions, either the fiscal deficit is endogenous, or something else has to give.

In round numbers, as of 2004Q4, the government deficit of about 4 per cent of GDP is equal to a private sector saving of minus 2 per cent of GDP and an external deficit of 6 per cent of GDP. The continuation of this situation (status quo) implies growing current account deficits together with nearly equally growing private sector deficits. In four years from now, the US economy might find itself with external deficits of about 8 to 10 per cent of GDP and private deficits of about 4 to 6 per cent of GDP. Accordingly, the public sector will be running deficits of 4 per cent of GDP. The underlying debts carried over would be astronomical by today's standards. External debt would be about 50 to 60 per cent of GDP (from 25 per cent today), government debt would be about 60 per cent of GDP (from nearly 45 per cent today) and private sector debt could approach 180 per cent of GDP (from nearly 150 per cent today).

Such a prognosis sounds implausible. Opting for an inertia-driven status quo seems an invitation to speculate about plausible, catastrophic scenarios. The status quo can only be brought forward by exacerbating the conditions that make matters increasingly unsustainable. Corrective measures, such as a slow-down in asset appreciation (particularly real estate markets), or restrictive monetary policy in combination with a 'strong dollar', would cool private spending demand via negative 'real balance effects'. Together with the credit crunch that would result from both policy and negative net worth effects, the likely implication would be a severe, perhaps a lasting recession. At this point foreign investors facing a recession in the US may decide to divert financial flows elsewhere, which would make matters worse. With some certainty, however, a downward spiral in the US would affect the global economy and erode its net saving capacity. And so on…

These stylised scenarios allow for the following conclusions: (a) There is no domestic solution to the imbalances in the US economy which will not carry considerable costs in terms of loss of income and satisfaction of demand and thus welfare. (b) The rest of the world will be forced anyway to share the burden of any type of adjustment manufactured within the US. (c) If the final verdict was in the hands of US agents alone, a continuation of the status quo would seem the most unproblematic option, for as long as it lasts. (d) For the status quo to continue, the rest of the world will need to keep saving at the accelerating rate required by US dis-saving. (e) In sum, the dilemma is passed

on to the rest of the world. The alternatives are not many. If each country individually accommodates the imbalances in the US, this would make them seemingly safe. But in reality, they would be increasingly vulnerable to the consequences of a collapse (imminent or distant, manufactured or chaotic). Alternatively, countries might devise a coordinated strategy to pursue sustainable growth and income distribution *while helping the US economy* contain a dramatic outcome. EPW

Email: a.izurieta@cerf.cam.ac.uk

Variable Descriptors

$\Delta KTgp$	=	Government capital transfer
ΔV	=	Other changes of volume
Σ^F	=	Sum of flow-of-funds transactions
ΣA	=	Sum of stocks of (financial) assets
ρ_u; ρ_w	=	GDP in real terms, of the US and of the rest-of-the-world, respectively
ρ_u; ρ_w	=	Rate of growth of the US and of the rest of the world
A, ΔA	=	Assets, acquisition of assets
B, ΔB	=	Government bond, net government bond emissions
C_g	=	Consumption of the government
C_p	=	Consumption of the private sector
D, ΔD	=	Bank deposits, changes of bank deposits
EX	=	Exports
F, ΔF	=	Financial assets held abroad and changes
FF	=	Flow of funds transactions
GDP	=	Gross Domestic Product
H	=	Stock of real estate
HG, hg	=	Holding gains, nominal and real
hl	=	Holding loss in real term
hm	=	Asset appreciation as a result of change in market values
I_g	=	Capital expenditure (investment) of the government
IM	=	Imports
I_p	=	Capital expenditure (investment) of the private sector
K	=	Stock of non-financial assets
L, ΔL	=	Liabilities (debt) and lending
m_n	=	Import volume, excluding oil
m_o	=	Oil imports, volume
NL	=	Net lending
NW	=	Net worth
p	=	General price
$\hat{p}$	=	Price inflation
p_{mn}	=	Price index of non-oil imports (expressed in dollars)
p_{mo}	=	Oil price index (expressed in dollars)
p_w	=	Foreign price index (expressed in foreign currency)
p_{xn}	=	Price index of non-agricultural export (expressed in dollars)
Q_{dom}	=	Domestically generated commodities
Q_{int}	=	Intermediate inputs
r	=	Interest rate
r^e	=	Domestic interest rate, expected
r^e_w	=	Interest rate abroad, expected
ST	=	Stocks, general expression
T	=	Tax revenue
V	=	Stock of financial assets
W	=	Stock of assets abroad (denominated in foreign currency)
X	=	Stock of equities
xp	=	Total expenditure (consumption + investment), could be private or public, depending on the suffix
xr	=	Exchange rate
xr^e	=	Exchange rate, expected
Y	=	National income
YF, yf	=	Factor payments
Yd_p	=	Private disposable income

Notes

[The author is grateful to his organisation, Cambridge Endowment for Research in Finance, University of Cambridge, UK, for making this research possible. This paper is the first of a series of 'Strategic Scenarios for the World Economy', resulting from the cooperation of CERF (University of Cambridge), Alphametrics (Cambridge and Bangkok), the International Development Economists Association (IDEAS), the Secretariat of the 'G24' (Group of 24, D.C.) and the sponsorship of United Nations Development Programme (UNDP).
He would like to thank the UNDP for financial support and Judit Val Castello and Donna Harris for their valuable research assistance. Encouragement from and discussions with Terry McKinley, Francis Cripps, Terry Ward and John Eatwell were remarkably useful. This paper, as others in the recent past, draws from insights gathered over some years of fruitful collaboration with Wynne Godley, at the Levy Economics Institute and CERF. Usual disclaimer applies.]

1 The Congressional Budget Office (CBO) states that the US economy continues to grow at a healthy pace. The conditional forecast for 2005 is 3.8 per cent, 3.7 per cent for 2006, and nearly 3 per cent for the 2007-15 period (Table 3, p 17; CBO, 2005, January). The OECD projects the US economy to be in a temporary lull for the next few quarters while it absorbs the energy price shock. Thereafter, the annualised GDP growth should exceed its potential rate of about 3.25 per cent and eventually, the momentum from consumption and investment should push real GDP above 3.5 per cent in 2006 (OECD, *Economic Outlook*, 76, 2004, December, p 38). See also World Bank's *World Prospects 2005: Overview* (2005, April, Table 2.1).

2 A Greenspan, Testimony Before the Budget Committee (April 21, 2005): "The combination of an aging population and the soaring costs of its medical care' which is 'certain to place enormous demands on our nation's resources and to exert pressure on the budget that economic growth alone is unlikely to eliminate." Moreover, "so long as health-care costs continue to grow faster than the economy as a whole, the additional resources needed for these programmes will exert intense pressure on the federal budget."

3 The emphasis on accounting consistency as a prerequisite for macroeconomic analysis is characteristic of the work done in Cambridge after J M Keynes and R Stone. This led to the construction of 'systems of national accounts (SNA)' [UN 1968]. Social accounting matrices, as extensions of the input-output tables proposed by L Leontief, were developed by G Pyatt, J Round and A Roe in the 1970s. These tools were popularised by the work done by L Taylor (MIT and New School, NY) and the Institute of Social Studies (The Hague) in many developing countries and were at last included in the 1993' revision of the SNA. The incorporation of stock-flow consistency requirements in macroeconomic models, which integrate real and financial variables, is one of salient features pioneered by W Godley and followed by his associates in Cambridge and New York. The construction of consistent time series of social accounting matrices and flow of funds subsystems for transactions, holding gains and stock balances is explained in Izurieta (2000), which draws on the insights and work done by A Roe, E V K FitzGerald and R Vos.

4 Take $Y=C_p+I_p+C_g+I_g+EX-IM+YF$, subtract *T* from both sides and move C_p and I_p to the LHS.

5 See Pyatt and Round (1977), van Heemst (1996), Vos (1989, 1991), Taylor (2004).

6 The primary surplus and derived accounts of this sector are incorporated in the non-financial corporate sector, which in turn forms part of the aggregate private sector.

7 Each cell in the matrix of financial stocks signifies a liability of the institution in the row and an asset for the institution in the column.

Exceptions to this are holding gains (hence the { }), which originate from market valuations rather than from previously agreed transactions and thus, do not imply changes in the value of the liability from the issuer's point of view even when materialised.

8 Time series can be built by adding matrices of transactions, holding gains and other volume changes, and, finally, stock balances, as explained in Izurieta (2000), Chapter 6. The exposition here is simplified by proposing the 'stock balance identity' in one single set of matrices of financial stocks.

9 The hypothetical case of widespread bankruptcies bailed-out by the Federal Reserve or absorbed by the banking system would however turn 'other changes of volume' relevant.

10 In passing, a political economy tale can be told about the emphasis on controlling inflation by central bankers and the political elites who are linked with financial capital around the globe. Inflation redistributes wealth between the wealthy and the relatively poor in the opposite direction, to the extent that it affects the purchasing power of income earners. In the US, for example, where the financial debt of the personal sector is nearly one and a half times its aggregate income, inflation per se would alleviate the debt burden of households more than eroding their incomes.

11 The US enjoys a unique position in this respect; unlike most countries, the liabilities vis-à-vis the rest of the world are denominated in the 'local currency'.

12 In order to estimate the loss in real terms, the deterioration of purchasing power is deflated by the current price level [see Izurieta 2000:196-97].

13 The different form for the estimation of asset appreciation in dollars of stocks held in foreign currency is dependent on the definition of the exchange rate. We use the 'broad exchange rate index' calculated by the Federal Reserve, which is expressed in terms of 'foreign currency per unit of dollar'. Hence, a devaluation is a fall in the value of the index.

14 Strategic analyses of the US produced by the Levy Economics Institute and, more recently the Cambridge Endowment for Research in Finance (CERF), such as Godley 1999, Godley and Izurieta 2001a, Godley, Izurieta and Zezza 2004; Papadimitriou, Shaikh, Santos and Zezza 2005.

15 Martin, B 2002, 'Benderly Debt Model', UBS Global Asset Management, London.

16 See, for example, B Bernanke, 2005, 'Remarks: Finance Committee Luncheon of the Executives' Club of Chicago', Chicago, March 8: "Some observers have expressed concern about rising levels of household debt, and we at the Federal Reserve follow these developments closely. However, concerns about debt growth should be allayed by the fact that household assets (particularly housing wealth) have risen even more quickly than household liabilities." Similar remarks can be found in A Greenspan, 2005, 'Testimony before the Committee on Banking, Housing, and Urban Affairs, US Senate', February 16. D Kohn, 2005, falls short of showing concern: "[…] the resultant boost to net worth must be one of the reasons households have felt comfortable directing so little of their current income to saving. However, whether low interest rates and other fundamental factors can fully explain the current lofty level of housing prices is the subject of substantial debate"; 'Remarks at the 15th Annual Hyman P Minsky Conference', Levy Economics Institute of Bard College, NY, April 22.

17 Financial assets whose values fluctuate with the stock market represent 30 per cent of total net worth of the private sector, while real estate represents 40 per cent, according to Fed's Flow of Funds figures (the first set of assets are calculated by adding lines 23, 24 and 27 of table B100, while real estate assets are calculated by adding line 3 of tables B100 and B102).

18 Godley and Izurieta (2001b and 2002b).

19 See Godley and McCarthy (1988) for a formal justification of the need to relax the fiscal stance, written at a time when the effort needed was smaller. Three years later, the fiscal stimulus required to compensate the upturn of the private sector towards balance was so large that the model simulations proposed then were discarded as 'implausible' [Godley and Izurieta, 2001a, 2001b, 2002a, 2002b and 2002c]. See also Izurieta (2003) for an analysis of the combined effect of fiscal and monetary relaxation.

20 Papadimitriou, D, A Shaikh, C dos Santos and G Zezza, 2003, 'Deficits, Debts and Growth: A Reprieve but Not a Pardon', *Strategic Analysis*, October, Anandale-on-Hudson, The Levy Economics Institute of Bard College, NY.

21 If no significant changes take place in external conditions and the dollar exchange rate, the current account deficit would be broadly determined by the import and export elasticities, assuming that both the US and the rest of the world grow at par with trend [see Godley, Izurieta and Zezza 2004].

22 W Godley and F Cripps (1983) formalised this view by showing that '[private] expenditure in any period will be equal to a proportion of [disposable] income plus a proportion of the inherited stock of money [or financial wealth]', p 62. It was this proposition and the underlying macroeconomic model explained in this book which became core to the empirical analysis of the UK and the world economy, carried out by the Cambridge Economic Policy Group (CEPG) in the 1970s and 1980s.

23 These econometric findings are not to be taken as an all-encompassing model of credit flows, which might require a more elaborated financial model. The reader should also be warned that official institutions produce only net flow figures (credit minus repayments). The empirical work on which this paper is based has proceeded in two ways. One experiment generated a rough estimate of gross lending (by adding to the net figure the difference between the Fed's 'debt burden of the personal sector' extrapolated to the aggregate private sector, minus our estimate of interest payments). The other used the official net lending figure. In both experiments, lending yielded significant relations with capital inflows and holding gains.

24 See the remarkable review of cases of asset price inflation in relation to credit bubbles by E Chancellor (2005a) and a recent note, specifically on house prices (2005b).

25 Such an observation cannot be taken as a foolproof, convincing explanation of movements of capital across the border. Yet, the opposite type of causality is counter-intuitive: are foreign investors only responsive to the financing requirements of the US? If such was the case, one should find that inflows match closely the current account deficit plus a relatively stable amount of investment abroad, as often found in economies subject to binding foreign-exchange constraints [Vos, R 1989].

26 Strictly speaking the Griffin effect would say that inflows lead to increased consumption instead of investment, thus substituting rather than complementing current savings. Meanwhile, in this study the notion of private (total) expenditure is used and therefore there is no specific distinction between consumption and investment. However, as indicated, the apparent rise in investment spending that follows inflows in the US seem to represent mostly price effects (holding gains) and not real investment.

27 Not surprisingly, a devaluation is generally resisted by 'markets' and by policy-makers. It is often argued that a devaluation either leads to 'imported inflation' or to changes in the valuation of the external debt. But such a resistance maybe more justified in developing economies than in the US. The effect on domestic price inflation tends to be relatively negligible in the US. The 'external debt' of the US is almost entirely denominated in dollars, and it is actually the asset position of US residents that would improve with a devaluation.

28 Further research will be required on this.

29 *Oxford Analytica*, 2005, 'Euro-dollar Exchange Has Global Impact', March 31.

References

Bernanke, B (2005): 'Remarks: Finance Committee Luncheon of the Executives' Club of Chicago', Chicago, March 8.

Congressional Budget Office (CBO) (2005): 'The Budget and Economic Outlook: Fiscal Year 2006 to 2015', January.

Chancellor, E (2005a): 'Crunch Time for Credit? An Inquiry into the State of the Credit System in the United States and Great Britain', *Intelligent Investor Special Report.*

– (2005b): 'Property Could Fall Like a House of Cards', *Financial Times, Comments and Analysis*, April 26.

FitzGerald, E V K (1978): *Public Sector Investment Planning*, Macmillan, London.

– (2002): 'The Instability of the Emerging Markets Asset Demand Schedule', *UNU/Wider Discussion Paper* DP 2002/80.

FitzGerald, E V K and R Vos (eds) (1989): 'Financing Economic Development: A Structural Approach to Monetary Policy', Aldershot and Brookfield, Gower.

Greenspan, A (2005): 'Testimony before the Committee on Banking, Housing, and Urban Affairs, US Senate', February 16.

– (2005): 'Testimony of the Federal Reserve's Chairman before the Budget Committee', April 21.

Godley, W (1999c): rev 2000, 'Seven Unsustainable Processes: Medium-Term Prospects and Policies for the United States and the World', Special

Report, The Levy Economics Institute of Bard College, Annandale-on-Hudson, NY.
– (2002a): 'Kick-start Strategy Fails to Fire Sputtering US Economic Motor', *Policy Note* 2002/1, The Levy Economics Institute of Bard College, Annandale-on-Hudson, NY.
– (2002b): 'Huge Fiscal Expansion Shortened US Recession', *Financial Times*, Letters to the Editor, August 8.
– (2003): 'The US Economy: A Changing Strategic Predicament: Strategic Analysis', The Levy Economics Institute of Bard College, Annandale-on-Hudson, NY, February.
Godley, W and F Cripps (1983): 'Macroeconomics', Oxford University Press, Oxford.
Godley, W and A Izurieta (2001a): 'The Developing US Recession and Guidelines for Policy', *Strategic Analysis*, The Levy Economics Institute of Bard College, Annandale-on-Hudson, NY, October.
– (2001b): 'As the Implosion Begins?' *Strategic Analysis*, The Levy Economics Institute of Bard College, Annandale-on-Hudson, NY, June.
– (2002a): 'Prospects and Policies for the US Economy', *Strategic Analysis*, The Levy Institute of Bard College, Annandale-on-Hudson, NY, June.
– (2002b): 'The Case for a Severe Recession', *Challenge*, Vol 45 (2), April, pp 27-51.
– (2002c): 'Strategic Prospects for the US Economy: A New Dilemma' *Cambridge Endowment for Research in Finance Working Paper Series* No 4, University of Cambridge, Cambridge, November.
– (2003): 'The US Economy: Weaknesses of the Strong Recovery', *Banca Nazionale del Lavoro Quarterly Review*, June, Vol 57, No 229, pp 131-40.
– (2004): 'Deficits That Need a Global Answer', *Financial Times*, Comments and Analysis, December 3.
Godley, W and G McCarthy (1998): 'Fiscal Policy Will Matter', *Challenge*, Vol 41, No 1, January/February: 38-54.
Gramlich, E M (2004): 'Budget and Trade Deficits: Linked, Both Worrisome in the Long Run, But Not Twins', *Remarks presented at the Los Angeles Chapter of the National Association for Business Economic Luncheon, Los* Angeles, California, March 31.
Griffin, K (1970): 'Foreign Capital, Domestic Savings and Economic Development', Bulletin of the Oxford University Institute of Economics and Statistics, May.
– (1973): 'The Effect of Aid and Other Resource Transfers on Savings and Growth in Less-developed Countries: A Comment', *The Economic Journal*, Vol 83, No 331, September, pp 863-66.
– (2002): 'Growth, Inequality and Poverty in Armenia', *Studies for the UNDP Office in Armenia*.
Izurieta, A (2000): 'Crowding Out or Bailing Out: Fiscal Deficits and Private Wealth in Ecuador', PhD Dissertation, Institute of Social Studies, The Hague.
– (2003): 'Economic Slowdown in the US, Rehabilitation of Fiscal Policy and the Case for a Coordinated Global Reflation', *Cambridge Endowment for Research in Finance Working Paper Series*, No 6, University of Cambridge, Cambridge.
– (2004): 'Slow Recovery Fable in Growth-recession Times? An Appraisal of US Main Imbalances and Implications for the World Economy', Studies on International Monetary and Financial Issues for the G24, September.
– (2005, forthcoming): 'The US Economy: Off to Grow with Deficits in All Sectors?' *Working Paper, EPC Series, Cambridge Endowment for Research in Finance.*
Kohn, D (2005): 'Remarks at the 15th Annual Hyman P Minsky Conference', Levy Economics Institute of Bard College, NY, April 22.
Leontief, W (1941): 'The Structure of American Economy', New York, 2nd ed, 1919-39, New York, 1951.
Mann, C (2004): 'Managing Exchange Rates: Achievement of Global Re-balancing or Evidence of Global Co-dependency?' *Business Economics*, July, pp 20-29.
Martin, B (2002): 'Benderly Debt Model', UBS Global Asset Management, London.
OECD (2004): 'World Economic Outlook'. December, p 38.
Oxford Analytica (2005): 'Euro-dollar Exchange has Global Impact', March 31.
Papadimitriou, D, A Shaikh, C dos Santos and G Zezza (2003): 'Deficits, Debts and Growth: A Reprieve but not a Pardon'. *Strategic Analysis*, October, The Levy Economics Institute of Bard College, Anandale-on-Hudson, NY.
– (2005): 'How Fragile is the US Economy', March, The Levy Economics Institute of Bard College, Anandale-on-Hudson, NY.
Persaud, A (2003): 'A Plunging Dollar Needs Handling with Care', *Financial Times*, Comments, September 23.
Pyatt, G and J Round (1977): 'Social Accounting Matrices for Development Planning', *The Review of Income and Wealth*, Vol 23, No 4, December, pp 339-63.
– (1979): 'Accounting and Fixed Price Multipliers in a Social Accounting Matrix Framework', *Economic Journal*, December, pp 850-73.
Roe, A (1977): 'An Approach to Social Accounting for Welfare Planning', Dept of Economics, University of Warwick, Coventry.
Roe, A and G Pyatt, with J Round and Robert Lindley (1977): 'Social Accounting for Development Planning with Special Reference to Sri Lanka', Cambridge University Press, Cambridge, New York.
Roubini, N and B Setser (2005): 'Will Bretton Wood Regime 2 Unravel Soon? The Risk of a Hard Landing in 2005-2006', Paper presented at the Symposium on the 'Revived Bretton Woods System: A New Paradigm for Asian Development?' organised by the Federal Reserve Bank of San Francisco and UC Berkeley, San Francisco, February 4.
Stone, R (1954): 'Measurement of Consumers' Expenditure and Behaviour', Vol 1, Cambridge.
Taylor, L (1993): 'Fiscal Issues in Macroeconomic Stabilisation: A Structuralist Perspective' in R Faini and J de Melo (eds), *Fiscal Issues in Adjustment in Developing Countries*, MacMillan, London.
– (2004): 'Reconstructing Macroeconomics: Structuralist Proporsals and Critiques of the Mainstream', Harvard University Press, Cambridge, Massachusetts; London.
UN (1968): 'A System of National Accounts', United Nation, New York.
UN, OECD, IMF, WB, CE (1993): *System of National Accounts*, Brussels/ Luxemburg, New York, Paris, Washington, DC.
van Heemst, J (1991): 'Introduction: The Social Accounting Framework for Development' in J Alarcon, J van Heemst, S Keuning, W de Ruiter and R Vos (eds), *The Social Accounting Framework for Development*, Avebury, London.
– (1996): 'National Accounting: Basic Concepts and Extensions', Teaching Handout, Institute of Social Studies, The Hague.
Vos, R (1989a): 'Ecuador: Windfall Gains, Unbalance Growth and Stabilisation' in E V K FitzGerald and R Vos (eds), *Financing Economic Development: A Structural Approach to Monetary Policy*, Gower, Aldershot and Brookfield.
– (1989b): 'Macroeconomic Social Accounting Framework: An Example', Mimeo, Institute of Social Studies, The Hague.
– (1991): 'Social Accounts and Capital Accumulation' in J Alarcón, J van Heemst, S Keuning, W de Ruijter and R Vos (eds), *The Social Accounting Framework for Development*, Avebury, Aldershot.
World Bank (2005): 'World Prospects: Overview.' April, table 2.1.