

SURPLUS, SURPLUS, WHO'S GOT THE (TWIN) DEFICIT?

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*"An ultimate reality in a capitalist economy is the set of
interrelated balance sheets among the various units."
Minsky (1975:118)*

In response to increasing pleas to reduce the US federal deficit in the mid-1980s, Eisner (1986:41) asked the question: "Deficit, deficit, who's got the surplus?" He modelled his question after Tobin (1963: 49) who in the 1960s already asked: "Deficit, deficit, who's got the deficit?" Both Eisner (1986:41-46) and Tobin (1963:49-55) reminded their readers that a deficit run by government is reflected as a surplus run by the private sector (and/or the foreign sector in an open economy). The reason for this is that the expenditure of one sector represents the receipts of another. Both Eisner and Tobin couched their arguments in terms of national accounts data and focused on the flows between the various sectors.

With the increasing focus on fiscal sustainability in the 1980s and 1990s, the question became whether or not these flows are sustainable. Because sustainability focuses on the rate of change in the *stock* of debt relative to the rate of change in income, the debate on fiscal sustainability introduced a stock dimension into the discussion of the financial position of government. Attention turned to the possible determinants of the change in the debt/GDP ratio, which, besides non-interest expenditure and income flows, also includes the interest rate and the economic growth rate. One reason for the shift in focus to the interest rate and the economic growth rate is that the last two decades saw real interest rates internationally soar to levels known before only in times of crises, whereas economic growth, on average, was lower than in the preceding two or three decades (Ciocca & Nardozzi, 1996:3-5). In many countries since the 1980s the real interest rate has exceeded and still exceeds the real economic growth rate by a substantial margin (Fourie & Burger, 2000). This

¹ Chairperson, Department of Economics, University of the Free State. I would like to thank Frederick Fourie and Chris Torr for their valuable comments on earlier versions of this work. The usual disclaimers apply. An extension and elaboration of arguments found in this paper can be found in Burger, P. (Forthcoming). *Sustainable fiscal policy and economic stability: Theory and practice*. New Directions in Modern Economics series. Cheltenham: Edward Elgar.

coincided with a substantial and continuous increase in the public debt/GDP ratios as public deficits and debt reached record sizes both in developed countries such as the United States (Morgan, 1995:148), Italy and Belgium during the 1980s and early 1990s and emerging market countries such as South Africa during the early 1990s. This increase caused alarm amongst economists, politicians and in some cases even the broader public.

However, since the mid- and late 1990s several governments have reversed the upward trend in public debt and deficits, among them the United States and South Africa. During this period the US government turned the federal government deficit into a federal government surplus (Board of Governors 2001:11-13) and ran a primary surplus. As a consequence of this policy reversal, the public debt/GDP ratio in the United States has decreased significantly. The federal government debt held by the public as percentage of nominal GDP decreased from approximately 50% in the early 1990s to below 35% in 2001. Also in South Africa government has stabilised the debt/GDP ratio by running a primary surplus. Thus, since some governments heeded the pleas made in the 1980s and early 1990s to stabilise their debt/GDP ratios by running a primary surplus, the question Eisner asked in 1986 is reversed. It now reads: 'Surplus, surplus, who's got the deficit?' At issue here is a *primary* surplus and deficit, and not as in the case of Tobin and Eisner, the current or conventional surpluses and deficits.

The paper shows that linked to this question is the so-called 'twin deficit' problem experienced in the US. In the US the large public sector deficits of the 1980s and 1990s coincided with a persistent trade deficit (Federal Reserve 2002a:14; 2002b:14), hence giving rise to the so-called 'twin deficit' phenomenon. With the shift to a primary surplus in the mid-1990s the 'twin deficit' problem in the US was resolved, or so it seemed. The paper argues that the problem was never truly resolved; only the sectors constituting the twins changed. This raises the question 'surplus, surplus, who's got the twin deficits?' To consider this question and to relate it to the question 'surplus, surplus, who's got the deficit?' the paper uses the general balance framework.

The general balance framework used in this paper expands on the framework set out in Fourie and Burger (2000) and links the budget constraint of government with those of other economic agents on a macroeconomic level. The framework can be

used to track how the effect of changes in the budgets of one group of agents is transmitted to the budgetary position of other agents.

The paper is organised in four sections. Section 1 sets out the indicator commonly used to establish whether or not fiscal policy is sustainable. Section 2 presents the general balance framework, while sections 3 considers the question ‘surplus, surplus, who’s got the deficit?’ Section 4 considers the so-called ‘twin deficit’ problem of the US with the use of the general balance framework.

1 FISCAL SUSTAINABILITY: DEFINED AND MEASURED

Equation 1a is the indicator usually used to measure fiscal sustainability (Fourie and Burger 2000: 213-215; Roux 1993:327; Hemming & Miranda 1991:70-72):

$$\Delta D_{gt}/Y_t \equiv (r_{gt} - g_t)D_{gt-1}/Y_t + B_{gt}/Y_t + R_{gt}/Y_t \quad (1a)$$

where D_g : Total public debt

Y : Nominal GDP

B_g : The nominal primary balance of the public sector (+ deficit; - surplus), i.e. the gap between *non-interest* expenditure and total revenue

r_g : The real interest rate

g : The real economic growth rate

R_g : A residual factor applicable to the public sector. It also captures the effect of debt monetisation (Fanizza and Mourmouras, 1994:10-11).

The relationship between r and g in equation 1 indicates whether or not government can run a primary deficit:

- If $r > g$, the relationship will be positive, indicating upward pressure on the debt/GDP ratio. Government will need to run a primary surplus (a negative B in equation (1a)) to prevent the debt/GDP ratio from increasing.
- If $r < g$, the relationship will be negative, indicating downward pressure on the debt/GDP ratio. Government can run a primary deficit (a positive B in equation 1a) without putting upward pressure on the debt/GDP ratio.

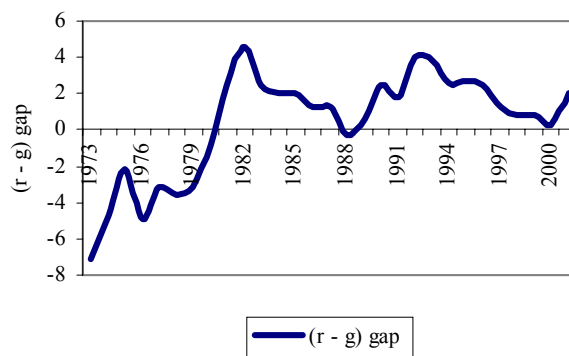
Unsustainability is indicated as a position where the real interest rate (r_{gt}) exceeds the real economic growth rate (g_t) and where the primary balance (B_t) *persistently* is either in a deficit, or in a surplus not large enough to cover the excess of the real interest rate over the real growth rate.

What is the nature of the differential between interest rates and GDP growth rates in practice? Have there been any significant changes? It seems to be agreed that the world entered a high-interest-low-growth era in the 1980s and 1990s, as opposed to the low-interest-high-inflation era of the 1970s. In the G7 group, the unweighted average real growth rate for 1976–80 was 3.4%, in contrast with an unweighted average government bond interest rate level of 0.3% (IMF 2002). For 1981–85 the relationship switched, with the average growth rate equalling 1.8% and the government bond rate equalling 4.6%. This switched relationship continued for the remainder of the 1980s and all of the 1990s (for 1986–90, 1991–95 and 1996–2000 respectively the average growth rate was 3.6%, 1.9% and 2.3%, while the average government bond rate was 4.7%, 4.9% and 3.4%). Masson and Mussa (1995:13,15–18) argue that the lower growth rates accompanied by increasing unemployment, particularly in Europe, contributed to the increase in deficits as revenue declined and benefit programmes for the unemployed expanded. Two matters are apparent:

1. The post–1980 phase can be characterised as a high real interest rate era that persisted into the 1990s. Masson and Mussa (1995:15–18) argue that anticipated inflation exceeded actual inflation (because of persistent inflationary expectations), causing the actual real interest rate to be higher than the expected real interest rate. Phelps and Zoega (1998:788) confirm the significant increase in the average level of real interest rates in the world since approximately 1981/82 (see also OECD 1993). Easterly and Schmidt-Hebbel (1994:29) argue that the increasing liberalisation of interest rates since the mid-1970s caused deficits to become more sensitive to real interest rates.
2. Real growth rates for the major industrial countries have declined, and real GDP growth rates have been significantly *below* real interest rates since the 1980s: $r > g$ by an average of 2% for G7 countries (see Figure 1, which shows a positive $(r - g)$ gap since 1980). For 1981–85, 1986–90, 1991–95 and 1996–2000 respectively the average $(r - g)$ gap was 2.7%, 1.1%, 3% and 1.1% (IMF 2002). This is in direct

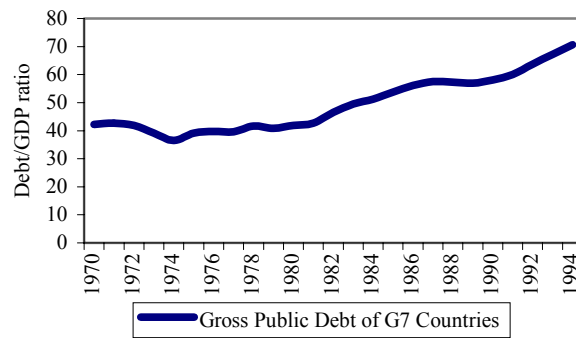
contrast to the 1970s – an era of widespread and sustained high *inflation* – when g exceeded r by some margin (*i.e.* a negative $(r - g)$ gap). For instance, for 1976–1980 the $(r - g)$ gap was -3.1% .

A common pattern seems to emerge: high global real interest rates manifested in most countries since the early 1980s, which in most cases were accompanied by declines in growth rates to well below the real interest rate (see Figure 1 below). In addition, this pattern in interest rates and growth rates coincided with rising public debt/GDP ratios for the 1980s and early 1990s (see Figure 2 below). Since the mid-1990s the public debt/GDP ratios in some of the major industrialised countries stabilised, as can be seen for the US in Figure 3. Figure 4 shows that the stabilisation of the US debt/GDP ratio coincided with a decrease in the US $(r - g)$ gap. Some of the other G7 countries also managed to stabilise their debt/GDP ratio. For instance, France and Germany stabilised it at approximately 60%, while Italy managed a decrease from 120% to below 110%. This poses the question: Does the stable (or lower) public debt/GDP ratios mean that the sustainability problem was solved? To consider this question the next section develops the general balance framework.



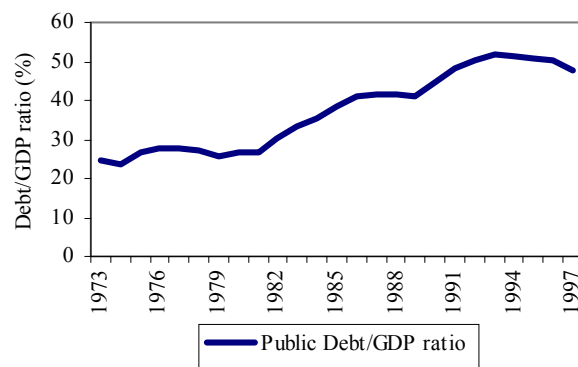
Source: Tanzi and Fanizza (1995) and IMF

Figure 1: The interest rate-growth rate gap for G7 countries



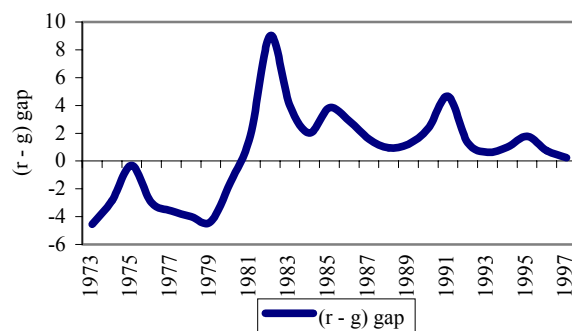
Source: Tanzi and Fanizza (1995)

Figure 2: Gross Public Debt/GDP of G7 countries



Source: IMF

Figure 3: The US public debt/GDP ratio



Source: IMF

Figure 4: The $(r - g)$ gap in the US

2 THE GENERAL BALANCE FRAMEWORK

To create the general balance framework requires the expression of the financial position of all sectors and agents in terms whereby one can determine whether or not they are sustainable and solvent. The sectors chosen for this analysis are all those included in the National Financial Accounts (NFA), i.e. the household sector, the corporate sector, the public sector, the financial sector and the foreign sector. Minsky (1992:4-5), for instance, emphasises the importance of focusing on all these sectors when considering the debt position of an economy. The public sector is defined as the SNA definition of the general government, while the corporate sector includes all incorporated non-financial companies. The financial sector includes all financial institutions and the central bank. The household sector includes among others actual households, non-incorporated businesses such as partnerships and clubs while the foreign sector includes all people and institutions outside the economy and who contributed funds to or borrowed funds from the domestic economy. For each of these sectors of the NFA a budget constraint is derived in terms similar to the budget constraint of government. The NFA is an extension of the National Accounts Framework (Fourie, Falkena & Kok, 1992:23-32; SARB 1999). The broader framework of the NFA is concerned mainly with the *relationship* between the *balances* on the various sectoral accounts that make up the NFA. In the same spirit, the general balance framework links (non-interest) surpluses and deficits of the different sectors to one another.

The general balance framework is not a general equilibrium model, because all the equations included are identities and therefore represent technical rather than behavioural relationships. The paper postulates some behaviour (that of debtors and creditors), but does not discuss the typical behavioural questions such as whether or not agents maximise utility or profits. Therefore, the unsustainability discussed in this paper is still more on technical level than on a behavioural level, i.e. in this paper unsustainability merely means the net debt/GDP ratio is increasing unboundedly and at an accelerating rate.

(a) Fiscal sustainability or the sustainability of the public sector refined

In equation 1a, which serves as a short-run indicator of fiscal policy, government is only a debtor, with no financial assets. It does not indicate that government can own securities (Cogan *et al.* 1994:142 & 149). In some countries, such as the US, government runs elaborate social security schemes. Citizens contribute social security taxes to these funds while government pays out the social security benefits. These funds may run surpluses which government must then invest in securities (usually its own securities). Therefore, equation 1a is refined to include government holdings of financial assets, as indicated in equation 1b below (changes to equation 1a are shown in bold).

$$\Delta D_{gt}/Y_t - \Delta \mathbf{A}_{gt}/Y_t \equiv (r_{gt} - g_t)D_{gt-1}/Y_t - (\mathbf{r}_{gAt} - g_t)\mathbf{A}_{gt-1}/Y_t + B_{gt}/Y_t \quad (1b)$$

A_g = Financial assets held by the public sector

r_{gA} = The average real rate of return earned by the public sector

The primary balance is:

$$B_g \equiv I_g + G - T_c - T_w \quad (2)$$

I_g = Investment by the public sector

G = Consumption expenditure by the public sector

T_c = Tax revenue collected from corporate income taxation

T_w = Tax revenue collected from wages and salaries

Note, however, that in many countries the amount of securities that government holds is negligible or much smaller compared to its total debt.

(b) Financial sustainability of the household sector

What determines whether or not the financial position of the household sector is sustainable? The household sector comprises various autonomous households. Should

a household decide to spend in excess of its income, that household is a deficit unit with debt to its name and interest to pay on that debt. Should a household spend less than its disposable income, it is a surplus unit.

The sustainability of the financial position of households can be depicted in the same manner as that of government. This is done in equation 3, which depicts the sum of the changes in the financial position of households (equation 3 can also be applied to a single household).

$$\Delta D_{ht}/Y_t - \Delta A_{ht}/Y_t \equiv (r_{ht} - g_t)D_{ht-1}/Y_t - (r_{hAt} - g_t)A_{ht-1}/Y_t + \mathbf{B}_{ht}/Y_t \quad (3)$$

D_h = Total household debt

A_h = Total securities held by households

B_h = Nominal ‘primary balance’ of households, i.e. the difference between the non-interest expenditure and the non-interest income of households

r_{hAt} = The average rate of return (dividend and interest rate) received on securities held by households

r_h = The real interest rate paid by the household sector (r_h is the average interest rate on, among others, mortgage bonds and household credit)

The *non-bold right-hand* area in equation 3 relates to interest flows, whereas the *bold right-hand* area indicates the non-interest flows of the household sector. In addition to a change in their *debt* position ($\Delta D_{ht}/Y_t$), households can also have a change in their financial *asset* position ($\Delta A_{ht}/Y_t$). As a result they also *earn* interest $((r_{hAt} - g_t)A_{ht-1}/Y_t)$ in addition to the interest they *pay* $((r_{ht} - g_t)D_{ht-1}/Y_t)$. This is a true depiction of the financial position of most households because the average household normally has a home loan to repay and simultaneously participates in a saving scheme to provide for retirement and precautionary purposes. The net result represents their accumulated savings. The net position for a single household is usually non-zero because some households are deficit units, particularly young households, whereas others are surplus units, particularly older households, even in retirement (Browning and Lusardi, 1996:1820). Because of the non-zero net position some households receive (pay) more interest than they pay (receive). The net interest they receive (pay) improves (causes a deterioration in) their financial position.

Whereas equation 1b is used to determine public sector sustainability, equation 3 is used to determine whether or not the financial position of the household sector is sustainable, i.e. is the household sector solvent in a technical sense. Unsustainability in a technical sense is an explosive increase in net household debt (debt less financial assets) relative to GDP. It occurs if the real interest rate households pay exceeds the real economic growth rate, while the primary surplus of the household sector is insufficient to cover the excess, after allowing for interest income. The primary balance (B_h) (+ deficit; – surplus) of households is defined as:

$$B_h \equiv (T_w + C) - (W_c + W_g) \quad (4)$$

T_w = Personal income tax paid on incomes of households

C = Consumption of households

W_c = Wages and salaries paid by the corporate sector to households

W_g = Wages and salaries paid by the public sector to households

The primary surplus of the household sector is its saving out of wage income, thus, keeping interest income aside and out of the picture.²

(c) Financial sustainability of the corporate sector

Along the same lines as households, companies also borrow, save, earn income and dispose of their income. Non-interest spending by companies takes the form of investment spending on capital goods bought domestically, wages and salaries, and imports of capital goods. The non-interest earnings of companies derive from sales of investment goods to government and other companies, exports and the sale of consumption goods to households and government.

Companies finance themselves, as households do, through credit lines at banks. What distinguishes companies from households is that they issue bonds and shares. Bank credit and bonds are forms of debt on which the company must pay interest, while shares constitute equity on which the company pays dividends. The dividend

² Thus, to arrive at total household saving, one needs to add saving out of interest income.

rate may be higher than the interest rate due to the preferential treatment of the interests of bondholders over equity holders. However, they should be closely and positively correlated.

Companies can also own financial assets. This may, among other things, take the form of bank deposits, the holding of securities of other companies, local and foreign, and commercial credit extended to households to finance their purchase of goods from the company. Companies will earn interest and dividends (expressed in this chapter as a rate of return on financial assets) on these financial assets.

Similar to households, a company is unlikely to attempt to balance its net financial asset position. It usually incurs credit not with the aim of buying securities but to finance its production and distribution operations. Should it borrow funds to purchase securities in another company the other company will normally use the raised funds to finance its operations, so that the net effect over the two companies will still be an increase in debt. Therefore, the financial position of companies is analogous to that of households because companies can earn non-interest income, they have non-interest expenditure, they pay and earn interest and dividends. The change in their net financial position can therefore be depicted in an equation analogous to that of households. This is done in equation 5, which is applicable to the corporate sector in the aggregate but can also be used to denote the change in the financial position of a single company.

$$\begin{aligned}\Delta D_{ct}/Y_t + \Delta E_{dt}/Y_t - \Delta A_{ct}/Y_t &\equiv (r_{ct} - g_t)D_{ct-1}/Y_t \\ &+ (d_{dt} - g_t)E_{dt-1}/Y_t \\ &- (r_{cAt} - g_t)A_{ct-1}/Y_t + B_{ct}/Y_t\end{aligned}\quad (5)$$

D_c = Total corporate debt of domestic companies

E_d = Total equity of domestic companies

A_c = Financial assets held by the corporate sector

B_c = The nominal 'primary balance' of the corporate sector (+ deficit; – surplus),
i.e. the difference between their non-interest expenditure and their non-interest income

r_c = The average real interest rate paid by the corporate sector

r_{cA} = The average real rate of return earned by the corporate sector

d_d = The real dividend rate on domestic shares paid by companies

The *non-bold right-hand* area relates to the interest and dividend outflows (r_c and d_d) and inflows (r_{cA}) of the corporate sector. The *bold right-hand* area indicates the *non-interest* flows of the corporate sector. The simplifying assumption is made that all profits are paid out as dividends. This, in effect, means that the dividend rate is equal to the rate of return on equity capital. However, equation 5 looks the same whether or not the company pays out all profits or retains part thereof. The terms $((r_{ct} - g_t)D_{ct-1}/Y_t)$ and $((d_{dt} - g_t)E_{dt-1}/Y_t)$ denote the interest and dividends paid on debt and equity of previous periods. This formulation allows equation 5 to reduce to the standard textbook equation used to value equity and bonds when a perpetual constant stream of income is expected (the variables ΔD_{ct} and ΔE_{dt} , will equal zero when no new investment is undertaken so that no growth (g_t) in corporate income or in the economy is expected). The primary balance of the corporate sector is defined as:

$$B_c \equiv (W_c + M) + T_c - (I_c + C + C_g + I_g + X) + I_c \quad (6)$$

I_c = Investment spending by the corporate sector on domestic investment goods,
which also represents sales of investment goods by producers of investment
goods

W_c = Wages and salaries paid by the corporate sector

C = Consumption

C_g = Expenditure on consumption goods by the public sector

I_g = Investment by the public sector (assuming government buys the material for
public investment from the corporate sector)

M = Imports of goods

X = Exports of goods

T_c = Corporate taxes

Note that $(W_c + M) - (I_c + C + G + I_g + X) \equiv$ the *operating profits* of the corporate sector, i.e. profit before the payment of interest and dividends. Thus, equation 6 is the same as equation 7 where P equals the operating profit (– a profit; + a loss).

$$B_c \equiv P + I_c \quad (7)$$

Thus, the primary surplus of the corporate sector is the difference between the operating profits of the corporate sector and investment. Therefore, it could be interpreted as that part of operating profit not absorbed by investment.

Note further that the analysis does not consider depreciation. Thus, all investment is net investment. The model can be altered to allow for depreciation, but it would only complicate the analysis without adding additional insight. (If it is altered depreciation will be included with W_c and M as expenditure for companies depreciating their capital and with $I_c + C + G + I_g + X$ as income for companies selling replacement capital goods. If a company does not replace all its old capital, so that in fact its capital stock decreases, the decrease in capital should be handled as negative investment.)

The comments made with regard to households when comparing them with the public sector also hold for the corporate sector. Should companies be faced with an interest rate exceeding the real economic growth rate and should they not run a primary surplus sufficiently sized to compensate for the excess caused by the real interest rate exceeding the real growth rate (after allowing for interest income), the financial position of the corporate sector will be unsustainable in a technical sense.

(d) Financial sustainability of the financial sector

What determines the financial sustainability of the financial sector? Financial institutions include banks, pension funds, unit trusts and other institutions. Financial institutions differ from companies and households in one important respect. The predominant activities of companies and households (business, consumption and saving) are reflected in their primary balances, whereas those of the financial sector are reflected in their interest flows. The reason is that financial institutions trade predominantly in financial instruments. As a result financial institutions, unlike companies, households and government, do attempt to balance their financial asset and liability positions. It is therefore possible to assume that their interest income and interest cost will be highly correlated and almost equal, with allowance for the profit margin paid out as a dividend to their shareholders, between the two. This makes

possible the simplifying assumption that financial institutions do not have non-interest flows. In reality they do pay salaries and incur other costs. They also charge non-interest fees for services. However, the general balance framework does not lose descriptive and analytical value by abstracting from these costs and incomes. Equation 8 then depicts the financial position of the financial sector. (Equation 8 can also be applied to a single institution.)

$$\Delta D_{bt}/Y_t + \Delta E_{bt}/Y_t - {}_t\Delta A_{bt}/Y_t \equiv (r_{bt} - g_t)D_{bt-1}/Y_t + (d_{bt} - g_t)E_{dt-1}/Y_t - (r_{bAt} - g_t)A_{bt-1}/Y_t \quad (8)$$

D_b = Debt of the financial sector

E_b = Equity issued by banks

A_b = Financial assets of the corporate sector

r_b = The average real interest rate paid by the financial sector

r_{ba} = The average real rate of return earned by the financial sector

d_b = The real dividend rate on domestic shares issued by banks

Although the financial asset position of the financial sector (and that of a single institution) will probably be balanced, its financial position could be unsustainable. The securities it holds may stem from sectors that become increasingly sensitive to interest rates due to their increasing debt and unsustainable financial positions; thus the financial position of the financial sector will also be unsustainable in a technical sense.

(e) Financial sustainability of the foreign sector

The position of the foreign sector is measured by the balance of payments. Improvements in the current account of the balance of payments are reflected in either decreases on the capital account of the balance of payments or increases in foreign reserves or both (Fourie 2001:170). The reverse is true for decreases in the current account. The balance of payments (relative to GDP) may therefore be depicted as in equation 9. Equation 9 represents the capital account (*non-bold left-hand* area where – net capital inflow; + net capital outflow), the changes in the foreign reserves (*bold left-hand* area where + increase in reserves and – decrease in reserves) and the current

account (*right-hand* area where – decrease in the current account; + increase in the current account).

$$\Delta S_{ft}/Y_t - \Delta A_{ft}/Y_t + \Delta R_{ft}/Y_t \equiv (r_{ft} - g_t)S_{ft-1}/Y_t + (0 - g_t)R_{ft-1}/Y_t - (r_{fa} - g_t)A_{ft-1}/Y_t + B_{ft}/Y_t \quad (9)$$

- ΔS_f = Change in the foreign securities financed by domestic funds
- ΔA_f = Change in the domestic securities financed by foreign funds
- ΔR_f = Change in foreign reserves (+ increase in reserves and – decrease in reserves)
- B_f = The nominal ‘primary balance’ of the foreign sector = $(X - M)$, where imports are a non-interest income and exports a non-interest expenditure for foreigners.
- r_f = The real interest rate paid by foreign sector on debt
- r_{fa} = The real interest rate earned by foreign sector on its financial assets

Note that the foreign sector is treated as merely another sector of the economy and not as something outside the economy, so that equation 9 is depicted from the viewpoint of the foreign sector. Thus, interest payments to the foreign sector are depicted as interest income, while a trade account surplus $((X - M) > 0)$ is depicted as a primary deficit. In this way all sectors are treated similarly.

If the foreign sector is in a net debt position to the domestic economy, the interest payments to the domestic economy probably exceed interest receipts. To ensure that its indebtedness towards the domestic economy does not increase, the foreign sector requires a primary surplus. Thus, from the viewpoint of the domestic economy a trade deficit is needed.

(f) The link between financial positions – the general balance effect

How is the sustainability of different sectors related to each other? This question requires a framework where the sustainability conditions of all sectors are considered *simultaneously*, i.e. where the sustainability positions of all the sectors and agents are related to each other in a technical sense. Fourie and Burger (2000) indicated that

this is done by relating the primary balances of all the sectors. The technical link between the financial positions of economic agents creates the channels through which the behaviour of one agent affects the financial position of others. Thus, the framework created in this paper can serve as an accounting framework within which to analyse economic behaviour.

Fourie and Burger (2000) indicates that because the sum of all non-interest receipts must equal the sum of all the non-interest expenditure, the sum of all the primary balances must sum to zero, as depicted in equation 10.³

$$B_{gt} + B_{ht} + B_{ct} + B_{ft} \equiv 0 \quad (10)$$

Since $B_{gt} + B_{ht} + B_{ct} + B_{ft}$ is the sum of all the “primary balances” and since they have to sum to zero, a surplus run by one sector, e.g. government, must be reflected as a deficit in one or more of the other sectors.

3 SURPLUS, SURPLUS, WHO’S GOT THE DEFICIT?

Given the link between the financial positions of economic agents, the scene is set to consider the impact of a shift to a sustainable fiscal policy on the financial position of non-governmental agents. Whereas government by definition ran a primary deficit or too small a primary surplus when fiscal policy was unsustainable, it will have to switch to a large enough primary surplus if it wants to establish a sustainable fiscal policy. Because the primary balances of all sectors have to sum to zero, a larger primary surplus in the government sector means that one or more of the non-governmental sectors will have to run a larger primary deficit or a smaller primary surplus.

Only the net *earners* (as opposed to net payers) of interest income can run a primary deficit without their net financial asset position deteriorating (i.e. the *net* debt/GDP ratio does not increase). These are agents with a positive net financial asset position, which means that their financial assets exceed their debt. However, these agents will not necessarily prevent their net financial asset position from increasing,

i.e. run a sufficiently large primary deficit. Up to the moment when government decides to pursue fiscal sustainability, financial asset holders financed the increase in the public debt/GDP ratio, so that their financial asset/GDP ratio increased.⁴ If government changes its policy to one of fiscal sustainability it does not necessarily imply that financial asset holders will also simultaneously decide to stabilise their financial asset/GDP ratio; such co-ordination would be very rare. Thus, they may continue to grow their financial asset/GDP ratio by running primary surpluses.

If financial asset holders do not run a sufficient primary deficit, it means that net debtors (also then the net payers of interest) run primary deficits.⁵ These deficits are financed by the further growth in the financial asset/GDP ratios of financial asset holders. Thus, the debt/GDP ratios of net debtors will deteriorate. *The implication of this is that if government (or any other sector for that matter), decides to become sustainable by changing to a primary surplus, unsustainability may be shifted to another sector of the economy.*

One can therefore argue that when government decides to establish fiscal sustainability, it shifts the *imbalance* in its financial position to another sector. However, whether or not this shift in imbalance also means that government shifts the *unsustainability* to that sector depends on whether or not the primary surplus of that sector is large enough to absorb the imbalance. If not (as in the case of the debtors above), a *general balance effect* occurs. The general balance effect occurs when net financial asset positions deteriorate because there is a mismatch between the primary balances that are required to prevent a deterioration in these positions and the actual primary balances run by agents.

The above suggests that the focus of mainstream theory on fiscal sustainability is too narrow, as it only considers the effect that the establishment of fiscal sustainability will have on the financial position of government. The link between

³ Note that total non-interest expenditure in the economy $\equiv (I_g + G + W_g) + (T_w + C) + (I_c + W_c + M + T_c) + X$, which, in turn, equals total non-interest receipts, which $\equiv (T_w + T_c) + (W_c + W_g) + (I_c + C + G + I_g + X) + M$.

⁴ Only when there is complete crowding out will this not happen.

⁵ Depending on the context, debtors may run primary deficits willingly or unwillingly. A willingness may be created when the supply of funds from financial asset holders (in the face of a decreasing demand for funds from government), causes interest rates to decrease, creating an incentive for households and companies to spend more. They may then spend more to such an extent that they run a primary deficit instead of the required primary surplus. This is more likely to occur if the reduction in the interest rate coincides with an economic boom phase when expectations are buoyant. Alternatively,

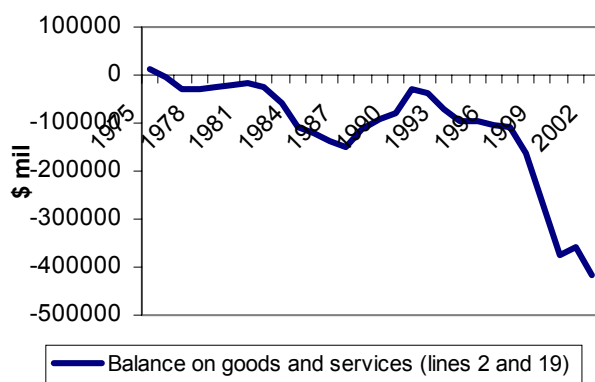
financial positions identified by the general balance framework allows one to make explicit the impact of the switch to a sustainable fiscal policy on the financial position of non-governmental agents and sectors. The possibility that the switch to a sustainable fiscal policy shifts the unsustainability to another sector in the economy means that the concept of fiscal sustainability must be broadened to overall, system-wide, multi-sector sustainability. Otherwise government runs the risk of unsustainability merely being ‘passed around’ between sectors as debtors (including government) attempt to regain sustainability. If this happens, unsustainability may never truly be addressed unless it is flushed out of the system by means of a spate of bankruptcies.

4 THE US ‘TWIN DEFICIT’ PROBLEM

The need for broadening the concept of fiscal sustainability to overall, system-wide, multi-sector sustainability particularly becomes clear when considering the confusion surrounding the so-called ‘twin deficit’ problem. During the 1980s and early 1990s the US public debt/GDP ratio soared to almost 50%. This increase in deficits and debt is said to have caused interest rates to soar (Fourie and Burger 2000), which, in turn, caused the dollar to appreciate and hence, the trade account to deteriorate (Elmendorf and Mankiw 1998:12-13). The confusion stems from the fact that when deficits turned into surpluses and the public debt/GDP ratio started to decrease, interest rates also decreased, but the trade deficit persisted (see Figure 5 and 6 below)(Federal Reserve 2002a:14; 2002b:14).

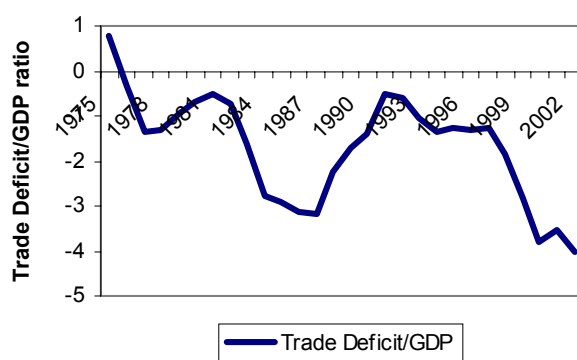
In terms of equation 10 above, the ‘twin deficit’ problem could be described as a government that ran a primary deficit (i.e. a positive B_{gt}) and a foreign sector that ran a primary surplus (a negative B_{ft} , i.e. a trade account deficit; recall from subsection (e) above that the trade account deficit is the primary surplus of the foreign sector). In general the financial position of households and the corporate sector was more or less sustainable, meaning their financial positions did not deteriorate.

debtors may run deficits unwillingly as a result of a loss in income resulting from the negative multiplier effect of the switch that government made from a deficit to a surplus.



Source: Bureau of Economic Analysis

Figure 5: The US trade deficit



Source: Bureau of Economic Analysis

Figure 6: The US trade deficit/GDP ratio

From the mid- to late 1990s the US government under President Bill Clinton ran budget and primary surpluses in excess of what was needed to stabilise its public debt/GDP ratio (Friedman 2000:9-10; Elmendorf and Sheiner 2000:57,59). Aided by the long economic upswing of the 1990s, the Clinton administration reversed the upward trend of the public debt/GDP ratio following the deficit years of the Reagan and Bush administrations. (Ironically, two Republican (i.e. conservative) administrations allowed the accumulation of debt whereas a Democratic (i.e. liberal) administration reversed the trend.) These surpluses caused a decline of 8% in public debt in the US in 2000 (Financial Markets Center 2001) so that federal government debt held by the public fell below 35% of GDP in 2001, down from the 50% some six years earlier (Board of Governors 2001:11-13). Thus, the 'twin deficit' problem was resolved (or so it seemed), despite the fact that the trade account continued to register deficits, where these deficits increased, even as percentage of GDP.

However, the US is a prime example of a country where the decrease in the public debt/GDP ratio coincided with an increase in private debt/GDP ratios (Godley 2001; 2000a; 2000b; 2000c). The Financial Markets Center (2001) reports that total outstanding household debt in the US increased from 87% of disposable income in 1990 to 101.2% at the end of 2000. Total debt service payments increased to 14.08% of disposable income in 2000, the highest level since 1986/7. In addition, the net worth of households and non-profit organisations fell in 2000 for the first time in 50 years.

The US corporate sector is not in a much better position. The net new issue of equity since 1994 has been negative (Financial Markets Center 2001; Kaufman 2000:348). Debt as a percentage of net worth climbed from 51.5% at the end of 1998 to 56.3% in 2000. Thus, the debt/equity ratio of the US corporate sector has clearly increased. Debt as a percentage of tangible assets increased from 40% in 1990, to 45.8% in 1998, to 50.1% in 2000.

The financial sector also saw an increase in its leverage to levels never seen previously. Outstanding financial sector debt as a percentage of outstanding domestic non-federal non-financial debt increased from 31.3% in 1990 to 56.4% in 2000 (Financial Markets Center 2001).

While the financial position of government improved and that of the household, corporate and financial sector deteriorated, the trade account of the balance of payments remained in a deficit. Thus, in terms of equation 10, whereas, B_{gt} , the primary balance of government, turned from a deficit into a surplus, the primary balances of the household and corporate sectors (B_{ht} and B_{ct}) turned from a surplus (a negative B_{ht} and B_{ct}) into a deficit, while that of the foreign sector remained in a surplus.

Recall that a general balance effect occurs and net financial asset positions deteriorate when there is a mismatch between the primary balances that are required to prevent a deterioration in these positions and the actual primary balances run by agents. Note that this does not mean that the action of the government sector is necessarily the cause of the household and corporate sector primary deficits. It merely indicates that the household, corporate and foreign sectors failed to make the necessary adjustments in their primary balances to absorb the shift of imbalance from the government to the non-governmental sectors (see footnote 5). As a result the net

debt/GDP ratios of the corporate and household sector and the net financial asset/GDP ratio of the foreign sector continues to increase. Thus, the shift of imbalance from the government to the household and corporate sector coincides with a shift of unsustainability in the same direction.

What this application of the general balance framework indicates, is that the ‘twin deficit’ problem was not resolved when government switched from a primary deficit to a primary surplus. What changed was the set of twins; when government ran the primary deficit, the twins were the government (primary) deficit and the trade deficit (i.e. a foreign sector primary surplus). However, since the mid-1990s the twins were the private (household and corporate) sector (primary) deficit and the trade deficit. Thus, the ‘twin deficit’ problem existed all along during the 1990s, with only the combination of sectors changing.

Since the September 11 attacks and the recessionary conditions that characterise the US economy from 2001, it seems possible that the twins may revert back to the original set (i.e. a (primary) deficit of government and trade deficit (i.e. a foreign sector primary surplus)(cf. Friedman 2003, Kogan 2003 for more on the proposed budget). Because the ‘twin deficit’ problem existed all along in some or another combination during the 1990s it is not set to *reappear* when the US government starts to run a primary deficit again; it is only the sectors comprising the ‘twin deficits’ that are set to change again. What might change in addition is that the *twins* may expand to a set of *triplets*, where both the government and the private sector are running primary deficits, while the foreign sector runs a trade deficit (i.e. primary surplus).

5 SOME FINAL THOUGHTS

This paper creates a framework that links the financial positions of economic agents, including that of government. The framework allows one to trace how changes in one financial position affect other financial positions. This reminds one of the statement by Minsky (1975:118) that “(a)n ultimate reality in a capitalist economy is the set of interrelated balance sheets among the various units.” The paper demonstrates, with the general balance framework, how a move to a sustainable fiscal policy may cause unsustainability in non-governmental financial positions – the shift of imbalance from government to non-governmental agents may also imply a shift of unsustainability

from government to non-governmental agents. This unsustainability in the financial position of non-governmental agents is reflected in a continuous and accelerating increase in their debt/GDP ratios that may ultimately culminate in bankruptcy and insolvency.

How serious one judges the possible threat of exploding debt accumulation, wide-scale bankruptcy and insolvency to be, depends on one's economic point of view. From a classical orientated point of view, the general balance effects that may occur when government or any other sector attempts to restore sustainability may be considered short-run and transitory effects because the economy is assumed to always return to a stable equilibrium in the (not so distant) long-run. If they are transitory, sectoral problems do not justify much concern. At the root of this mainstream point of view is the old classical idea that the economic system is inherently stable.

From a more Keynesian point of view the economy may not display a tendency to return to some unique long-run equilibrium and if it does, the tendency may be weak (so that the long-run is quite distant). Thus, the effect of a move to a sustainable fiscal policy, that causes the financial position of non-governmental agents to become unsustainable, will not necessarily be a transitory phenomenon. The same is true for any other sector that attempts to restore its financial sustainability by running a large enough primary surplus. In these cases the general balance framework is a useful framework to understand how unsustainability (financial and fiscal) spreads throughout the economy via the various channels between the multitudes of balance sheets and income statements. Given that most wide-scale economic crises during the last two decades were debt crises (e.g. Mexico in the 1980s and 1990s, the Savings and Loan crisis in the US in the late 1980s, the debt-overhang in Japan, the Asian crisis and the recent crises in Russia, Brazil, Argentina and the current debt-overhang of the US private sector), indicates that such an understanding is of more than just theoretical (and transitory) value.

The general balance framework also makes clear that the 'twin deficit' problem that the US faced in the 1980s and 1990s was not resolved when the government switched to a primary surplus policy. The unsustainability merely shifted from the government to the household and corporate sector, while the trade deficit persisted. Thus, the 'twin deficit' problem remained since the only change was the sectors constituting the 'twin deficits'. Therefore, the current household and corporate debt overhang in the

US is merely the manifestation of a continuing ‘twin deficit’ problem. In addition, the ‘twins’ now threaten to expand and become the ‘deficit triplets’.

APPENDIX 1 – DERIVING THE EQUATIONS

Equation 4.1 derives from the government budget constraint (Roux, 1993:326–327):

$$D_{gt} \equiv i_g D_{gt-1} + D_{gt-1} + B_{gt}$$

i_g = The nominal interest rate paid by the public sector

Equation 1a differs slightly from the inflationary to the non-inflationary case. For the inflationary case:

$$\Delta D_{gt}/Y_t \equiv [(r_{gt} - g_t)/(1 + g_t)] D_{gt-1}/Y_{t-1} + B_{gt}/Y_t$$

For the non-inflationary case:

$$\Delta D_{gt}/Y_t \equiv (r_{gt} - g_t) D_{gt-1}/Y_t + B_{gt}/Y_t$$

The same procedure can be followed to derive equations 3, 5 and 9. However, equation 8 on the financial sector is a little different. It is assumed that on the liability side of their balance sheets financial institutions have overnight loans (ONL_t), debt in the form of deposits and other liabilities owed to their clients (D_{bt}), equity (E_{bt}), as well as net profit in the form of net (nominal) interest income ($i_{lt}L_{t-1} - i_{bt}D_{bt-1} - i_{ot}ONL_t$), which is paid out as a dividend ($d_{nbt}E_{dt-1}$, where d_{nbt} is the nominal dividend rate to be distinguished from d_{bt} , the real dividend rate). On the asset side of their balance sheets they have financial assets in the form of loans and other financial investments (L_t) and reserves (BR_t). The net financial position of the financial institutions (excluding the central bank) is then equal to:

$$\begin{aligned} ONL_t + E_{bt} + D_{bt} - L_t - BR_t &\equiv ONL_{t-1} + D_{bt-1} - L_{t-1} - BR_{t-1} + i_{bt}D_{bt-1} \\ &+ i_{ot}ONL_t - i_{lt}L_{t-1} + d_{nbt}E_{dt-1} \end{aligned}$$

which (under a non-inflationary assumption), can be transformed to:

$$\begin{aligned} \Delta ONL_t/Y_t + \Delta E_{bt}/Y_t + \Delta D_{bt}/Y_t - \Delta L_t/Y_t - \Delta BR_t/Y_t \\ \equiv (r_{ot} - g_t)ONL_{t-1}/Y_t + (r_{bt} - g_t)D_{bt-1}/Y_t + (d_{bt} - g_t)E_{dt-1}/Y_t \\ - (r_{lt} - g_t)L_{t-1}/Y_t - (0 - g_t)BR_{t-1}/Y_t \end{aligned}$$

The financial position of the central bank can be depicted as:

$$\Delta ONL_t/Y_t + \Delta R_{ft}/Y_t \equiv \Delta BR_t/Y_t + (r_{ot} - g_t)ONL_t/Y_t + (0 - g_t)R_{ft-1}/Y_t - (0 - g_t)BR_{t-1}/Y_t$$

The net financial position of the financial sector (including the central bank) is then:

$$\begin{aligned} \Delta D_{bt}/Y_t + \Delta E_{bt}/Y_t - \Delta L_t/Y_t - \Delta R_{ft}/Y_t \equiv (r_{bt} - g_t)D_{bt-1}/Y_t + (d_{bt} - g_t)E_{dt-1}/Y_t \\ - (r_{lt} - g_t)L_{t-1}/Y_t - (0 - g_t)R_{ft-1}/Y_t \end{aligned}$$

Combining the financial assets $(-\Delta L_t/Y_t - \Delta R_{ft}/Y_t)$ and the interest earned on those assets $(-(r_{lt} - g_t)L_{t-1}/Y_t - (0 - g_t)R_{ft-1}/Y_t)$ gives equation 8:

$$\Delta D_{bt}/Y_t + \Delta E_{bt}/Y_t - {}_t\Delta A_{bt}/Y_t \equiv (r_{bt} - g_t)D_{bt-1}/Y_t + (d_{bt} - g_t)E_{dt-1}/Y_t - (r_{bAt} - g_t)A_{bt-1}/Y_t \quad (8)$$

The difference between the net financial position of financial institutions and that of the sector as a whole stems from the fact that the assets of financial institutions held at the central bank constitutes liabilities to the central bank and *vice versa*. Thus, they cancel out in calculating the net position of the financial sector as a whole. Furthermore, interest paid by banks to the central bank on overnight loans constitutes income to the central bank. Thus, again the two cancel out. The net result is equation 8.

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