

***FEASIBLE LIMITS FOR  
EXTERNAL DEFICITS AND DEBT***

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# FEASIBLE LIMITS FOR EXTERNAL DEFICITS AND DEBT

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**Abstract:**

*Rising current account deficits and foreign debt levels remain a source of concern for international financial markets and policymakers. Yet, exactly what constitutes an “excessive” external deficit or liability position for an economy at any time has not been adequately defined. This paper addresses this question by proposing measures of the maximum feasible limits of current account deficits and foreign debt levels based on international macroeconomic relationships. It proposes that investment opportunities essentially define the limit of feasibility for current account deficits, whereas the capital to output ratio sets the feasible foreign debt to GDP limit. Benchmark estimates of these limits are presented for advanced economies that have borrowed heavily since 1990.*

JEL: F34, F40

## 1. INTRODUCTION

Current account imbalances and external liability positions across major trading areas have changed markedly over recent decades. Major borrower economies include the United States, Australia, New Zealand and the United Kingdom whose external deficits are funded by economies in East Asia, especially Japan, and the European Union. External deficits and foreign debt levels attract considerable attention because of concerns about their implications for financial and macroeconomic stability. In particular, policymakers have worried that deficits and debt levels that are sizeable by historical standards are unsustainable because they expose countries to sudden shifts in investor sentiment that may affect exchange rates, precipitate financial crises and change the pattern of growth.<sup>1</sup>

International capital reversals of the kind experienced by East Asia in 1997-98 for instance imposed short-term economic, social and political costs on countries through large exchange rate depreciations, financial distress, higher domestic interest rates, lost output and higher inflation. For this reason, external imbalances and debt levels feature prominently in empirical studies of the primary causes of currency crises, although to date no consensus exists on their explanatory power.<sup>2</sup>

Concern has also been expressed that large deficit countries are relying too much on foreign saving to fund the growth of their capital stocks. For instance, US Federal Reserve Chairman Alan Greenspan (2002) recently commented on this point that: “Countries that have gone down that path invariably have run into trouble and so would we. Eventually, the current account will have to be restrained.” Meanwhile, there is an apparent policy consensus that any economy’s external deficit is “excessive” if it approaches 5 per cent of its GDP (Milesi-Ferreti and Razin 1996, Freund 2000 and Summers 2000).

Yet, this rule of thumb has never been justified analytically and seems quite arbitrary in light of the potential for larger differences between domestic saving and investment in individual economies. A substantial body of econometric evidence, inspired by Feldstein-Horioka (1980),

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1 See International Monetary Fund (2002) and Mann (1999, 2002) and Rogoff (2002).

2 Berg and Patillo (1998), and Esquivel and Larrain (1998), Radelet and Sachs (2000) suggest that external imbalances significantly contribute to currency crises, whereas Frankel and Rose (1996), Calvo (2000), Summers (2000) and Edwards (2001) conclude the opposite.

shows that domestic saving and investment correlations remain higher than would be expected in a world characterized by perfect capital mobility. The corollary is that as capital mobility increases with greater financial globalisation, the correlation between saving and investment should fall and saving–investment imbalances accordingly rise to levels not previously experienced.

Numerous authors (Milesi-Ferreti and Razin 1996, and Edwards 2001) have sought to explain what external sustainability means by applying precepts of intertemporal analysis. This has involved testing current account movements to see if they meet a solvency requirement founded on permanent income approaches to consumption and saving. However, no study to date has focused on investment rather than consumption to define the bounds of external sustainability in terms of the maximum size of current account deficits and foreign debt levels relative to GDP, nor ascertained an economy’s proximity to such bounds at any particular time.

Interestingly, and contrary to policy perceptions, modern approaches to current account determination do not imply deficits, per se, are problematic. For instance, the intertemporal model, based on the saving–investment approach, (Sachs 1981, 1982, Frenkel and Razin 1996, Obstfeld and Rogoff 1996 and Makin 2000) proposes that current account imbalances arise through the equalization of discrepant expected rates of return on capital across borders and that deficits actually enhance economic welfare by raising consumption possibilities and national income.

This paper analyses these issues by examining the links between saving, investment, the current account, external debt servicing and national income. It is structured as follows. Sections 2 and 3 respectively examine the macroeconomic conditions that define feasible limits for current account deficits and foreign debt to GDP levels. In preview, the theory suggests that the quantum of domestic investment opportunities essentially defines the upper feasible limit for current account deficits at any time, whereas the capital to output ratio ultimately sets the limit of feasibility for the foreign debt to GDP ratio. Section 4 then ascertains the proximity to feasible limits of select advanced economies that have experienced significant external deficits and debt levels by comparing actual and estimated feasible limits since 1990. Section 5 concludes the paper.

## 2. THE MAXIMUM FEASIBLE CAD

The basic solvency condition for an external debtor economy requires that the difference between domestic production and consumption plus government spending,  $Y_{t+1} - (C_{t+1} + G_{t+1})$ , be at least sufficient to meet the servicing costs of foreign debt,  $r^* F_t$  plus scheduled capital repayments. That is,

$$Y_{t+1} - (C_{t+1} + G_{t+1}) \geq (r^* + \gamma)F_t \quad (1)$$

where  $\gamma$ ,  $1 \geq \gamma \geq 0$ , the proportion of loan principal repaid each period, varies according to the nature and term of the external liability. It ranges from unity for one period loans to zero in the case of rollover loans, perpetual bonds or equities.

National output exceeds national income in debtor economies according to:

$$Y_{t+1}^n = Y_{t+1} - (r^* + \gamma)F_t \quad (2)$$

where  $Y$  is national output and  $Y^n$  is national income net of debt servicing costs.

Recalling (1), this can be rewritten as

$$Y_{t+1}^n - C_{t+1} - G_{t+1} - (r^* + \gamma)F_t \geq 0 \quad (3)$$

$$\text{or } S_{t+1}^n \geq 0 \quad (3a)$$

since the left side of (3) defines  $S^n$ , net national saving after debt servicing.

This fundamental solvency condition has implications for the size of the current account deficit, which over any period equates to the economy's saving-investment imbalance:

$$CAD = I - S \quad (4)$$

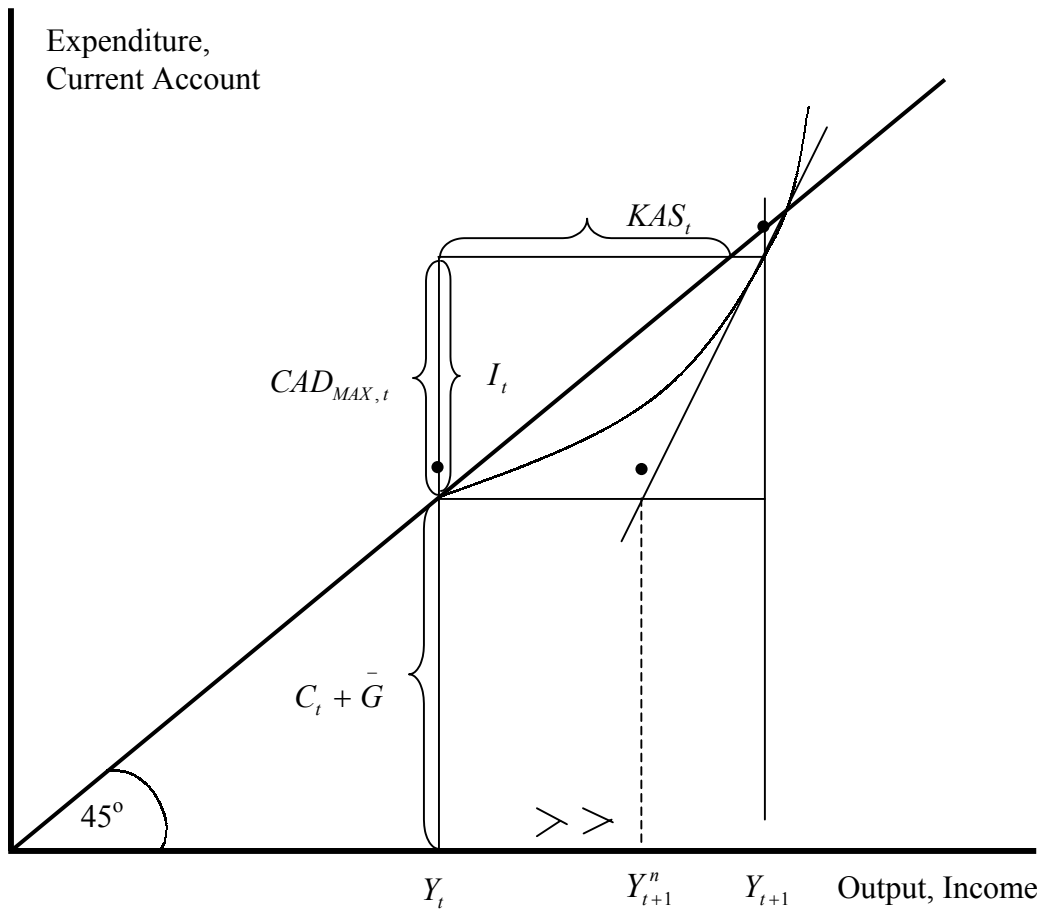


Figure 1

The critical point beyond which insolvency occurs is  $S_{t+1}^n = 0$  which suggests the maximum feasible current account deficit,  $CAD_{MAX}$ , is then simply defined by the present flow of net private investment undertaken by profit maximizing firms,

$$CAD_{MAX,t} = I_t \quad (5)$$

Figure 1 shows why a  $CAD$  solely defined by investment is sustainable. When  $S_{t+1}^n = 0$  at  $Y_t$ , private and public consumption plus previous debt servicing exhausts available income. However, additional net investment and the associated rise in external liabilities,  $F_t$  enables higher subsequent production of  $Y_{t+1}$  via a Fisherian investment opportunities frontier. Of this higher output, part is paid abroad as interest, which is geometrically equal to distance  $r * F_t$  and part as principal, depending on the nature of the borrowing arrangement.

Hence, a  $CAD$  defined by investment opportunities alone would prove sustainable if borrowers and lenders were well informed. The corollary of this condition is that an economy's actual  $CAD$  will be well under the feasible limit the larger is its net domestic saving. Indeed, in high saving economies, for a given set of productive investment opportunities, private and public consumption may well be increased significantly to raise living standards before affecting the economy's external solvency limit.

### 3. THE MAXIMUM FEASIBLE DEBT LIMIT

The maximum feasible *CAD* also suggests an upper bound for an economy's *CAD* that has a stock counterpart for foreign debt.

The dynamic equations are:

$$F_{t+1} = F_t + CAD_{t+1} \quad (6)$$

$$K_{t+1} = K_t + I_{t+1} \quad (7)$$

Let  $k$  denote the economy's capital-output ratio:

$$k_t = \frac{K_t}{Y_t} \quad (8)$$

Assume dynamic stability is characterized by a stable foreign debt to income ratio:

$$\frac{F_{t+1}}{Y_{t+1}} = \frac{F_t}{Y_t} \quad \text{or} \quad F_{t+1} = \frac{Y_{t+1}}{Y_t} F_t \quad (9)$$

$$\text{For a given capital to output ratio, } k_{t+1} = k_t \Rightarrow \frac{K_{t+1}}{Y_{t+1}} = \frac{K_t}{Y_t} \Rightarrow \frac{Y_{t+1}}{Y_t} = \frac{K_{t+1}}{K_t} \quad (10)$$

Rearranging (7)

$$K_{t+1} - K_t = I_{t+1} \quad (11)$$

Substituting (6) into (9),

$$F_t + CAD_{t+1} = \frac{K_{t+1}}{K_t} F_t \quad (12)$$

$$CAD_{t+1} = F_t \left( \frac{K_{t+1}}{K_t} - 1 \right) \quad (13)$$



$$CAD_{t+1} = \frac{F_{t+1}}{K_t}(K_{t+1} - K_t) \quad (14)$$

$$CAD_{t+1} = (I_{t+1}) \frac{F_{t+1}}{K_t} \quad (15)$$

As  $CAD_{MAX,t} = I_t$ , it follows that:

$$CAD_{MAX,t+1} = (I_{t+1}) \frac{F_t}{K_t} = CAD_{MAX,t+1} \frac{F_t}{K_t} \quad (16)$$

Hence,

$$\frac{F_t}{K_t} = 1 \text{ or } F_t = K_t \quad (17)$$

This means that a continuous series of maximum feasible *CADs* eventually results in foreigners having claim to the economy's entire capital stock. Consequently, the economy's external solvency limit in terms of its foreign debt to GDP ratio is ultimately equal to  $k$ , the capital-output ratio.

#### 4. BENCHMARK ESTIMATES FOR SELECT ECONOMIES

The foregoing theory suggests straightforward empirical measures for assessing how close deficit and indebted economies are to their limit values. In the case of current account imbalances, it implies that, *ceteris paribus*, economies experiencing external deficits could permit external deficits to rise by the extent of their positive net saving. Put differently, for given domestic investment opportunities domestic consumption could increase to eliminate net saving, thereby allowing domestic capital accumulation to be fully funded by foreign saving at a rate corresponding to the maximum feasible current account deficit.

Charts 1-4 plot estimates of maximum feasible deficits for four advanced economies - Australia, New Zealand, the United States and the United Kingdom - that experienced significant current account deficits as a proportion of GDP in the 1990's. In the charts, the vertical distance between the value of actual deficits and maximum feasible deficits is equivalent to national saving, net of income paid abroad. The actual current account deficit data includes IMF estimates, whereas the maximum feasible deficit series ends at 2000 as this is the most recent year saving data are available for the four countries on a comparable basis. The data reveals that external deficits recorded over this period were generally well below feasible limits.

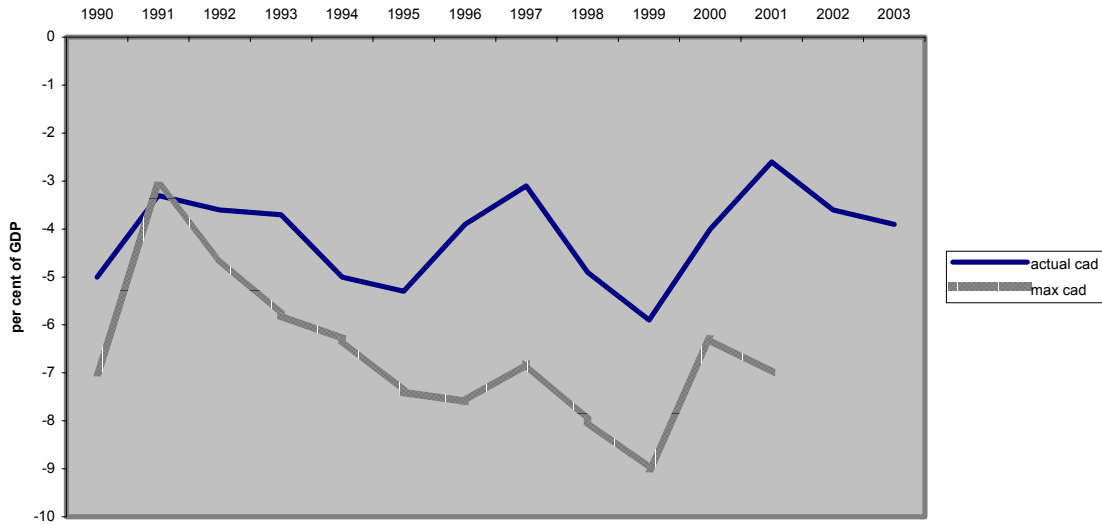
The exceptions however were the Australian deficit of 1991, and more notably the New Zealand deficits 1991-1992 when recorded deficits exceeded estimated limit values. As these economies suffered major recessions during that period, it is possible that foreign saving temporarily funded excess domestic public and private consumption, consistent with the consumption-smoothing role that current account deficits may play in the short run<sup>3</sup>, but from which this paper has largely abstracted.

It is also likely that recorded net saving data is understated in advanced economies to the extent that national accounting convention treats most public expenditure on education and health as consumption. Yet, such spending may alternatively be perceived as investment in human capital, and if re-classified as such in the national accounts, would yield higher estimated measures of

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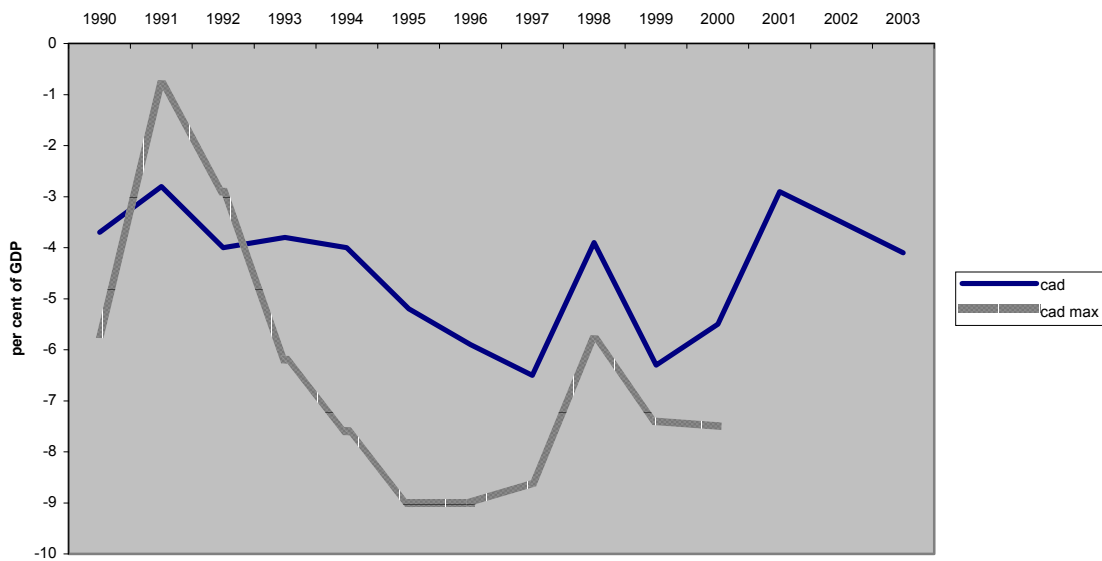
<sup>3</sup> See Ghosh and Ostry (1995) and Mansoorian (1998).

**Chart 1- Australia**

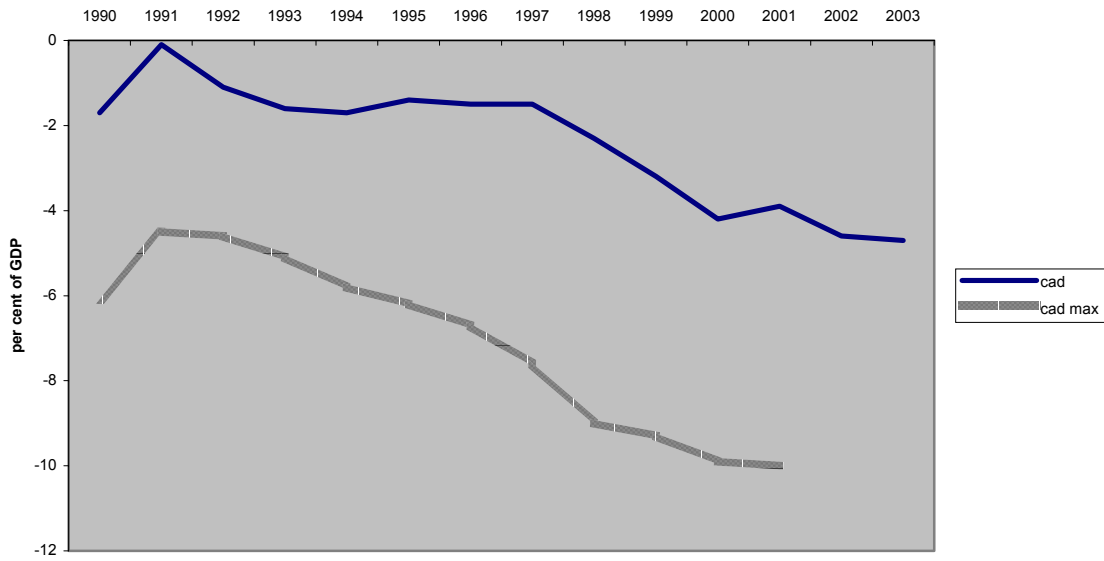


Data sources: *OECD National Accounts, IMF World Economic Outlook, 2002.*

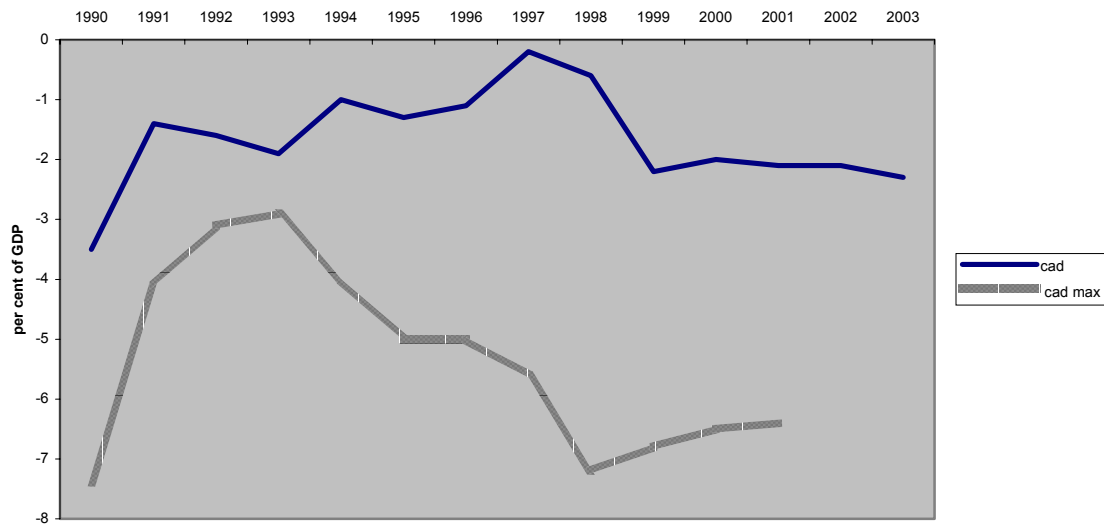
**Chart 2 - New Zealand**



Data sources: *OECD National Accounts, IMF World Economic Outlook, 2002.*

**Chart 3 - United States**

Data source: *OECD National Accounts, IMF World Economic Outlook, 2002.*

**Chart 4 - United Kingdom**

Data source: *OECD National Accounts, IMF World Economic Outlook, 2002.*

national saving. This would mean recorded saving rates and hence feasible limits would be higher than shown in the Figures.

With regards to feasible foreign debt limits, we saw above that these were ultimately determined by the capital to output ratio, a readily available statistic for many debtor economies. For advanced economies, the  $k$  ratio ranges between 2.5-3, which implies a feasible upper limit for the external debt to GDP ratio of approximately 250-300% for advanced economies. On the other hand, emerging economies tend to have lower  $k$  ratios, suggesting that their solvency limits are accordingly lower.

## 5. QUALIFICATIONS AND CONCLUSION

This paper has sought to define the feasible limits that current account deficits and external debt levels may reach with reference to capital-theoretic variables. In summary, it suggests that an economy's productive investment opportunities alone set a feasible upper limit for its external deficit over any period and that the economy's capital-output ratio then ultimately sets the feasible limit of its foreign debt to GDP ratio. These boundaries are only broadly indicative however and subject to some qualifications.

For instance, by focusing on saving, investment, national income, the capital stock and foreign debt, this paper has abstracted from the state of the economy's financial system and the role that it plays as the conduit for channeling domestic and foreign saving to the most productive domestic investment opportunities. In reality however, information problems, such as asymmetric information between ultimate borrowers and lenders may prevent the optimal allocation of saving. In turn, this implies the additional income generating capacity of foreign funded capital accumulation may not be strong as the pure theory outlined above suggests.

Emerging economies experiencing large external deficits are also more likely to be prone to sudden capital flow reversals than advanced economies, if foreign investors perceive the financial systems of emerging economies to be poorly developed with weak prudential supervision. In the event of capital flow reversals and associated sharp currency depreciations, economies with fragile banking and financial systems would therefore be subject to greater macroeconomic strain, as the currency crises in East Asia and Latin America demonstrated.

Nonetheless, the limits proposed above provide a useful means of assessing the proximity of actual current account deficits and external debt levels to boundary values, especially for advanced economies experiencing intensified financial globalisation and enhanced international capital mobility. New information about the relative feasibility of external positions at any time should also allow financial markets to improve exchange rate forecasts and enable policymakers to make more informed judgements about the appropriate stance of fiscal and monetary policies.

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