

FISCAL SUSTAINABILITY & COMPETITIVENESS IN EUROPE & ASIA

RAMKISHEN S. RAJAN
TAN KHEE GIAP
TAN KONG YAM



Fiscal Sustainability and Competitiveness in Europe and Asia

This page Intentionally left blank

Fiscal Sustainability and Competitiveness in Europe and Asia

Ramkishen S. Rajan

*Adjunct Senior Research Fellow, Asia Competitiveness Institute (ACI) and
Visiting Professor Lee Kuan Yew School of Public Policy, National University of
Singapore and Professor, School of Public Policy, George Mason University, USA*

Tan Khee Giap

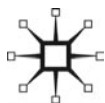
*Co-Director, Asia Competitiveness Institute (ACI) and
Associate Professor, Lee Kuan Yew School of Public Policy,
National University of Singapore*

and

Tan Kong Yam

*Co-Director, Asia Competitiveness Institute (ACI) and
Professor of Economics, School of Humanities and Social Sciences,
Nanyang Technological University, Singapore*

palgrave
macmillan



© Ramkishen S. Rajan, Tan Khee Giap and Tan Kong Yam 2014
Softcover reprint of the hardcover 1st edition 2014 978-1-137-40696-5

All rights reserved. No reproduction, copy or transmission of this publication may be made without written permission.

No portion of this publication may be reproduced, copied or transmitted save with written permission or in accordance with the provisions of the Copyright, Designs and Patents Act 1988, or under the terms of any licence permitting limited copying issued by the Copyright Licensing Agency, Saffron House, 6–10 Kirby Street, London EC1N 8TS.

Any person who does any unauthorized act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

The authors have asserted their rights to be identified as the authors of this work in accordance with the Copyright, Designs and Patents Act 1988.

First published 2014 by
PALGRAVE MACMILLAN

Palgrave Macmillan in the UK is an imprint of Macmillan Publishers Limited, registered in England, company number 785998, of Houndmills, Basingstoke, Hampshire RG21 6XS.

Palgrave Macmillan in the US is a division of St Martin's Press LLC, 175 Fifth Avenue, New York, NY 10010.

Palgrave Macmillan is the global academic imprint of the above companies and has companies and representatives throughout the world.

Palgrave® and Macmillan® are registered trademarks in the United States, the United Kingdom, Europe and other countries

ISBN 978-1-349-48808-7 ISBN 978-1-137-40697-2 (eBook)
DOI 10.1057/9781137406972

This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources. Logging, pulping and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

A catalogue record for this book is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Fiscal sustainability and competitiveness in Europe and Asia / Ramkishen S. Rajan, Kong Yam Tan, Khee Giap Tan.
pages cm

Summary: "Over the last two decades the fiscal positions of many advanced economies have deteriorated significantly, leading to ever-growing levels of public debt and mounting concerns about debt sustainability. Fiscal positions are set to weaken further on account of the worsening demographics which are likely to place upward pressure on public social expenditures. This book examines key issues and policy concerns relating to fiscal sustainability and competitiveness in European and Asian economies. In addition to estimating the extent of fiscal capacity or lack thereof for these economies, this book supplements the empirical analysis with country case studies" – Provided by publisher.

1. Fiscal policy – Europe. 2. Fiscal policy – Asia. 3. Competition, International I. Rajan, Ramkishen S. II. Tan, Kong Yam. III. Tan, Khee Giap.

HJ1000.F575 2014
339.5'2095 – dc23

2014019731

Contents

<i>List of Figures</i>	vii
<i>List of Tables</i>	xii
1 Overview	1
2 Fiscal Sustainability and Competitiveness: Definitions, Issues, and Measures	4
2.0 Introduction	4
2.1 What is fiscal sustainability?	4
2.2 Impact of debt on export competitiveness	9
2.3 Application to Europe and Asia	12
2.4 Concluding remarks	26
3 Nordics	27
3.0 Introduction	27
3.1 Sweden	28
3.2 Finland	36
3.3 Denmark	45
3.4 Norway	53
3.5 Concluding remarks	60
4 GIPSIs	61
4.0 Introduction	61
4.1 Greece	62
4.2 Italy	70
4.3 Portugal	79
4.4 Spain	87
4.5 Ireland	97
4.6 Concluding remarks	105
5 North Asia and India	107
5.0 Introduction	107
5.1 Japan	108
5.2 China	116
5.3 Hong Kong	121
5.4 South Korea	128

5.5	India	134
5.6	Taiwan	141
5.7	Concluding remarks	145
6	Southeast Asia	147
6.0	Introduction	147
6.1	Singapore	148
6.2	Malaysia	154
6.3	Indonesia	161
6.4	Thailand	166
6.5	The Philippines	171
6.6	Concluding remarks	177
7	Drawing Lessons	178
	<i>Notes</i>	184
	<i>Bibliography</i>	191
	<i>Index</i>	199

List of Figures

1.1	Gross government debt (% of GDP)	2
1.2	Public social expenditure in selected OECD countries, 1995–2012 (% of GDP)	2
2.1	Debt-to-GDP ratios (2012) – GIPSIs and Nordics	14
2.2	Debt-to-GDP ratios (2012) – Emerging Asian economies	15
2.3	Debt-to-GDP ratios (2012) – Advanced Asian economies	15
2.4	Net debt-to-GDP ratios (2012) – GIPSIs, Nordics, and Japan	16
3.1a	Real GDP growth and inflation (%)	29
3.1b	Fiscal balance (% of GDP)	30
3.1c	Gross government debt (% of GDP)	31
3.1d	Unit labour costs (ULC) and exports	32
3.1e	Real effective exchange rates (REER)	32
3.1f	Savings-investment-current account balance (% of GDP)	33
3.1g	Gross government and private savings (% of GDP)	33
3.1h	General government expenditures (% of GDP)	34
3.1i	Private debt (% of GDP)	35
3.2a	Real GDP growth and inflation (%)	37
3.2b	ULC and exports	38
3.2c	Savings-investment-current account balance (% of GDP)	39
3.2d	Government and private savings (% of GDP)	40
3.2e	Labour productivity per person employed	41
3.2f	Gross government debt (% of GDP)	41
3.2g	Fiscal balance (% of GDP)	42
3.2h	General government expenditures (% of GDP)	43
3.2i	Tax revenues (% of GDP)	44
3.2j	Gross private debt (% of GDP)	45
3.3a	Real GDP growth and inflation (%)	46
3.3b	ULC and exports	47
3.3c	Savings-investment-current account balance (% of GDP)	48
3.3d	Government and private savings (% of GDP)	49
3.3e	Gross government debt (% of GDP)	50
3.3f	Fiscal balance (% of GDP)	50
3.3g	Tax revenues (% of GDP)	51
3.3h	General government expenditures (% of GDP)	52
3.3i	Gross private debt (% of GDP)	52

3.4a	Real GDP growth and inflation (%)	54
3.4b	Government and private savings (% of GDP)	55
3.4c	Savings-investment-current account balance (% of GDP)	55
3.4d	REER and ULC	56
3.4e	Fiscal balance (% of GDP)	57
3.4f	Gross and net debt (% of GDP)	58
3.4g	General gross government expenditure (in million Norwegian krone)	59
3.4h	Private sector indebtedness (% of GDP)	59
4.1a	Real GDP growth and inflation (%)	62
4.1b	Long-term interest rates (%)	63
4.1c	Savings-investment-current account balance (% of GDP)	64
4.1d	Domestic credit to private sector (% of GDP)	64
4.1e	Gross government and private savings (% of GDP)	65
4.1f	REER and ULC	66
4.1g	Export performance	67
4.1h	Debt and deficits (% of GDP)	69
4.1i	Government expenditures and components (% of GDP)	69
4.2a	Real GDP growth and inflation (%)	71
4.2b	Private debt (% of GDP)	72
4.2c	Gross household savings rate (%) and debt-income ratio	72
4.2d	Savings-investment-current account balance (% of GDP)	73
4.2e	Gross government and private savings (% of GDP)	74
4.2f	Labour cost index and labour productivity per person employed	75
4.2g	REER	75
4.2h	Export performance index	76
4.2i	Debt and deficits (% of GDP)	77
4.2j	General government expenditure and components (% of GDP)	78
4.3a	Real GDP growth and inflation (%)	79
4.3b	Long-term interest rates (%)	80
4.3c	Private debt (% of GDP)	81
4.3d	Savings-investment-current account balance (% of GDP)	82
4.3e	Gross household savings rate (%) and debt-income ratio	82
4.3f	Export performance	83
4.3g	REER	84
4.3h	Labour cost index and labour productivity per person employed	84
4.3i	Debt and deficits (% of GDP)	85
4.3j	General government expenditure and components (% of GDP)	86

4.4a	Real GDP growth and inflation (%)	87
4.4b	Domestic credit to private sector (% of GDP)	88
4.4c	Long-term interest rates (%)	89
4.4d	Debt and deficits (% of GDP)	89
4.4e	House price index	90
4.4f	Household debt-income ratio	91
4.4g	Gross government and private savings (%)	91
4.4h	Savings-investment-current account balance (% of GDP)	92
4.4i	REER	93
4.4j	Labour cost index and labour productivity per person employed	94
4.4k	Export performance	94
4.4l	General government expenditure and components (% of GDP)	96
4.5a	Real GDP growth and inflation (%)	97
4.5b	Long-term interest rates (%)	98
4.5c	REER and labour cost index	99
4.5d	Savings-investment-current account balance (% of GDP)	99
4.5e	Export performance	100
4.5f	Domestic credit to private sector (% of GDP)	101
4.5g	House price index	101
4.5h	Household debt-income ratio	102
4.5i	Gross government and private savings (% of GDP)	103
4.5j	Debt and deficits (% of GDP)	104
4.5k	General government expenditure and components (% of GDP)	105
5.1a	Growth and inflation (%)	108
5.1b	Gross and net debt (% of GDP)	110
5.1c	Fiscal balance (% of GDP)	110
5.1d	Tax revenues (% of GDP)	111
5.1e	General government revenue and expenditure (% of GDP)	112
5.1f	Public social spending (% of GDP)	113
5.1g	Interest rates and interest payments (%)	113
5.1h	Current account balance and savings-investment (% of GDP)	114
5.1i	REER	115
5.2a	Growth and inflation (%)	116
5.2b	Fiscal balance (% of GDP)	117
5.2c	Social expenditures, 2007–2012 (% of GDP)	119
5.2d	Savings-investment-current account balance (% of GDP)	120
5.2e	REER and ULC	120
5.2f	Growth in labour productivity (%)	121

5.3a	Growth and inflation (%)	122
5.3b	Interest rates (%)	123
5.3c	Property index (2010 = 100)	123
5.3d	Fiscal balance (% of GDP)	125
5.3e	REER and ULC	126
5.3f	Private credit (% of GDP)	126
5.3g	Savings-investment-current account balance (% of GDP)	127
5.4a	Growth and inflation (%)	128
5.4b	Household debt and net financial assets	129
5.4c	Gross government debt and fiscal balance (% of GDP)	130
5.4d	Social expenditures (% of GDP)	131
5.4e	REER and ULC	132
5.4f	Savings-investment-current account balance (% of GDP)	132
5.4g	Export growth (%)	133
5.5a	Growth and inflation (%)	134
5.5b	Fiscal indicators of central and state governments (% of GDP)	136
5.5c	Composition of central government expenditures (% of GDP)	137
5.5d	Government debt (% of GDP)	138
5.5e	Savings (% of GDP)	139
5.5f	Savings-investment-current account balance (% of GDP)	140
5.5g	REER	141
5.6a	Growth, inflation, and exports (% of GDP)	142
5.6b	Gross government debt and fiscal balance (% of GDP)	143
5.6c	REER and ULC	144
5.6d	Savings-investment-current account balance (% of GDP)	145
6.1a	Real GDP growth, exports, and inflation (%)	149
6.1b	Debt and deficits (% of GDP)	150
6.1c	Residential property index and credit to households	151
6.1d	Savings-investment-current account balance (% of GDP)	152
6.1e	REER and ULC	153
6.1f	Real GDP growth, productivity, and ULC (%)	153
6.2a	Real GDP growth, exports, and inflation (%)	154
6.2b	Debt and deficits (% of GDP)	155
6.2c	Credit to households and property prices	157
6.2d	Household debt-to-GDP ratio	158
6.2e	Savings-investment-current account balance (% of GDP)	159
6.2f	REER and ULC	160
6.2g	Labour productivity and wage growth (%)	160
6.3a	Real GDP growth and inflation (%)	161

6.3b	Debt and deficits (% of GDP)	162
6.3c	Savings-investment-current account balance (% of GDP)	164
6.3d	REER and ULC	165
6.4a	Real GDP growth and inflation (%)	166
6.4b	Debts and deficits (% of GDP)	167
6.4c	Credit to private sector (in Thai Baht)	169
6.4d	Property price index	169
6.4e	Savings-investment-current account balance (% of GDP)	170
6.4f	REER	171
6.5a	Real GDP growth and inflation (%)	172
6.5b	Debt and deficits (% of GDP)	173
6.5c	Savings-investment-current account balance (% of GDP)	175
6.5d	REER	176
6.5e	Investment rates in the Philippines and other Southeast Asian countries	176

List of Tables

2.1	List of sample economies	10
2.2	General government debt-to-GDP ratio (full sample): three-year moving average	12
2.3	General government debt-to-GDP ratio (developing countries): three-year moving average	13
A.2.1	Estimating fiscally sustainable primary balance for selected countries in Europe and Asia	17

1

Overview

Over the past two decades the fiscal positions of many advanced economies have deteriorated rather precipitously, leading to ever-growing levels of public debt (in absolute terms and as a share of GDP) and mounting concerns about debt sustainability. The ratio of gross government debt¹ to GDP for advanced economies was 60 per cent in 2000 and peaked at about 110 per cent in 2012.² In contrast, the public debt-to-GDP ratio for emerging market economies has remained stable since 2005, ranging from about 35 to 40 per cent (Figure 1.1).³

While some of the abrupt deterioration of the fiscal positions in the advanced economies is no doubt cyclical due to the Great Recession (the gross public debt of advanced economies was just under 75 per cent of GDP at the end of 2007), there have been structural reasons behind it as well. In particular, tax revenues as a share of GDP for the advanced OECD economies hovered at around 35 per cent between 1995 and 2007 before they started falling because of the recession.⁴ This compares favourably to many emerging economies, a number of which continue to struggle with leaky and narrow tax bases. In addition, the problem in advanced economies has been the sharp rise in government expenditures. Even before the global financial crisis, government expenditures were around 38 per cent of GDP in 2001, reaching nearly 40 per cent in 2007 at the onset of the crisis, before jumping up significantly to a peak of 45 per cent in 2009 due to the stimulus and fiscal stabilisers (IMF 2013a). However, because of the fiscal consolidation measures taken in advanced economies since then, the general government expenditure as a share of GDP started gradually declining and stood at 42.5 per cent in 2012.

Broadly, about half of these expenditures relate to social expenditures, including public pensions and public health expenditures (Figure 1.2).⁵

2 Fiscal Sustainability and Competitiveness

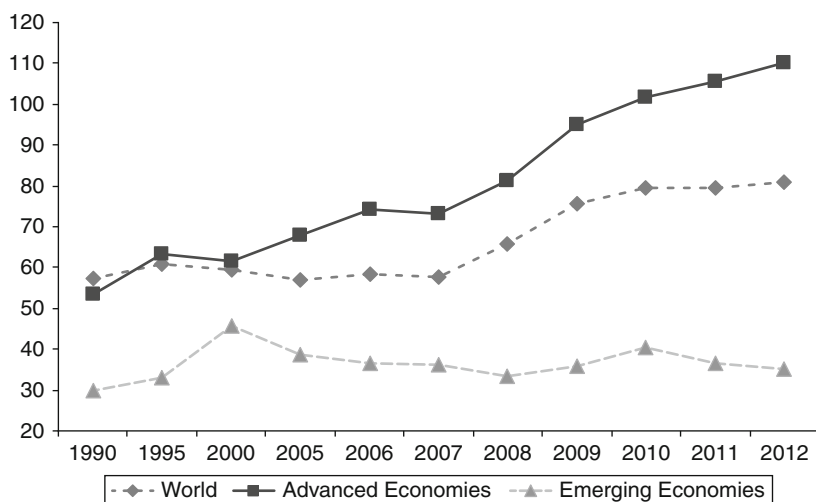


Figure 1.1 Gross government debt (% of GDP)

Note: Figures for analytical country groupings are PPPGDP-weighted averages. All the figures and tables for Europe and Asia are based on a combination of OECD, Eurostat, IMF World Economic Outlook and fiscal monitor databases, unless and otherwise specified.

Source: For a detailed list of definitions and the sources for each figure and table, see Rajan, Tan and Tan (2014).

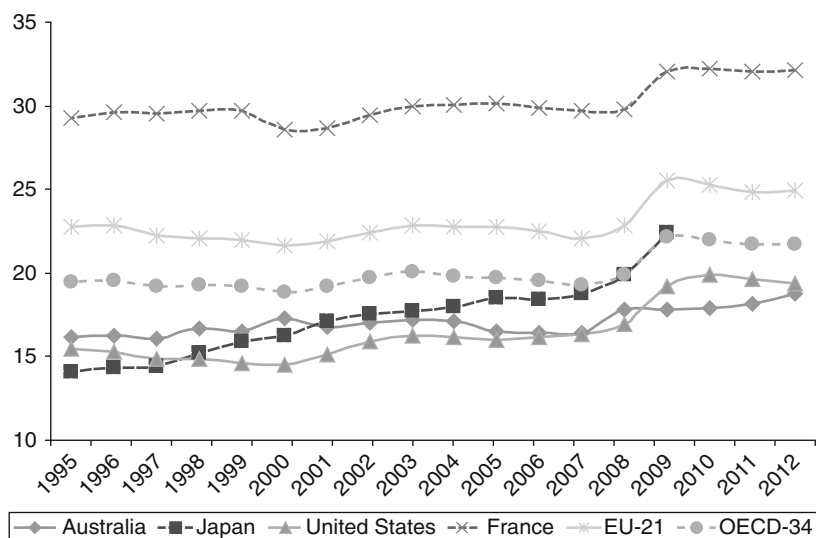


Figure 1.2 Public social expenditure in selected OECD countries, 1995–2012 (% of GDP)

Given worsening demographics in advanced economies, there will inevitably be upward pressure on such expenditures, making fiscal consolidation all the more imperative. Reinhart and Rogoff (2011, 3) note that the “combination of high and climbing public debts...and the protracted process of private deleveraging makes it likely that the ten years from 2008 to 2017 will be aptly described as a decade of debt”. While financial markets have already passed the verdict that the fiscal positions of some European countries are not sustainable (notably the GIPSIs),⁶ there is a vigorous debate on how to undertake the required fiscal adjustment in many of the other economies in light of the Eurozone crisis.

This monograph examines issues relating to fiscal sustainability, competitiveness, and external balances in a set of European and Asian economies. Chapter 2 explores definitions and concepts relating to fiscal sustainability and estimates the extent of fiscal space or lack thereof for a set of European and Asian economies. Chapters 3 through 6 supplement the empirical analysis in Chapter 2 with case studies of the various economies. The aim is to examine the various country experiences using a broadly similar template subject to available data. Chapter 7 draws a set of conclusions based on the case studies and crises experiences in the two regions.

In Europe, we examine two sets of countries – selected Scandinavian countries, including Denmark, Finland, Norway, and Sweden (Chapter 3), and the crisis-hit Eurozone economies that include Greece, Ireland, Portugal, Spain, and Italy (Chapter 4). In Asia, we focus on Japan, South Korea, Hong Kong, Taiwan, and China as well as India (Chapter 5) along with a set of Southeast Asian economies, namely, Singapore, the MIT economies (Malaysia, Indonesia, and Thailand) and the Philippines (Chapter 6).

2

Fiscal Sustainability and Competitiveness: Definitions, Issues, and Measures

2.0 Introduction

This chapter explores the issue of fiscal sustainability and the nexus between public debt and export competitiveness with applications to selected European and Asian economies. The next section briefly outlines some analytical concepts relating to fiscal sustainability as well as their practical limitations. Section 2.2 directly links the issue of export competitiveness with fiscal sustainability and focuses on empirical estimates of debt thresholds. Section 2.3 uses the estimates derived to ascertain the extent of fiscal space or lack thereof in a set of country case studies in Europe and Asia. Section 2.4 concludes.

2.1 What is fiscal sustainability?

There is no single definition of or theoretical benchmark for fiscal sustainability (FS), though it broadly refers to limits on government debt or debt accumulation. At a general level, the IMF (2011a, 5) notes that a “fiscal policy stance can be regarded as unsustainable if, in the absence of adjustment, sooner or later the government would not be able to service its debt”. The most commonly used definition is that the government cannot engage in a Ponzi scheme (i.e., borrowing just to meet interest payments, leading to a ballooning of debt). Buiter (1985) and Blanchard et al. (1990) establish an intertemporal fiscal solvency criterion that essentially requires that the present discounted value of all future primary surpluses equal the initial level of public debt (or some target level). However, such types of intertemporal solvency criteria

allow a government to run persistent deficits for a prolonged period as long as there are surpluses at some time in the future and as long as the debt issuance does not rise faster than the real interest rate on debt (transversality condition). These criteria, while useful analytically, are rather loose and offer little by way of policy guidance as to specific limits on debt accumulation.

2.1.1 Long-run sustainable debt

At an operational level, FS often refers broadly to how public debt evolves over time and where debt stabilises as a share of GDP. Based on this definition, one derives the result that the debt ratio will continue to rise indefinitely as long as the real interest rate exceeds real GDP growth unless the primary budget is in sufficient surplus.¹ Conversely, if a country is expected to run a primary deficit (thus adding to the stock of debt), then the economic growth rate must exceed (real) interest rates in order for the debt-to-GDP ratio to decrease.² Thus, for instance, if the historical average interest rate for a decade is 2 per cent, the economy grows at 6 per cent, and primary deficit is 3 per cent of GDP, then the debt-to-GDP ratio ought to stabilise at 75–80 per cent of GDP.³ There are, of course, several problems with this framework – for example, it is a partial equilibrium by nature, assumes that primary balance, interest rates, and economic growth are exogenous variables, and does not incorporate uncertainty, etc.⁴ Nonetheless, given that it is parsimonious and commonsensical, this formula is quite a useful as a yardstick of FS or, more precisely, as a measure of long-run sustainable debt.

2.1.2 Other methods

Another commonly used operational definition of FS is based on tests to ascertain the univariate statistical properties of individual public finance variables (Hamilton and Flavin 1986; Trehan and Walsh 1991). This strand of the literature tests the stationarity of public debt and the primary balance relative to GDP, with non-stationarity interpreted as an unsustainable policy. However, the problem with such time series approaches is that they are “backward looking” and do not factor in estimates of future revenue and expenditures and also do not offer any guidance about the “fiscal reaction” needed to ensure debt sustainability. To that end, alternative measures include estimating fiscal reaction functions of government; the idea here is to estimate the relationship between a country’s primary surplus and public debt and to test how primary balance responds to changes in public debt (Bohn 1998). In other words, do the fiscal authorities behave in line with a so-called

Ricardian fiscal regime and react to debt accumulation, thus suggesting that they care about sustainability of public finances?

In addition, there are other supposed forward-looking measures of FS that forecast future developments of public finances based upon currently available information. A specific type of forward-looking measure is the generational accounting by Auerbach et al. (1999) that not only undertakes long-term projections but also signals FS problems defined broadly to involve the absence of intergenerational fairness. However, these alternative measures are more complicated, more assumption-laden, and are not always easy to operationalise. In addition, all these measures of FS face a similar problem in that their focus is essentially on solvency. They do not pay attention to the possibility of a forced adjustment by markets if creditors decide not to continue financing the sovereign.⁵

2.1.3 Liquidity measures

Is there a certain debt-to-GDP threshold beyond which a country becomes susceptible to disruptions/painful adjustments?⁶ This question is tied closely to the concept of “fiscal stress”, which can be broadly defined as a situation reflecting severe difficulties of government funding. To this end the IMF and other institutions have developed non-parametric methods or signal approaches to help alert governments to the possibility of a sovereign debt crisis (for instance, see Berg et al. 2004; IMF 2011a; Manasse and Roubini 2005). Baldacci et al. (2011), for instance, have developed a fiscal monitoring framework that will help in assessing government rollover risk that emerges when a government faces solvency issues. They propose two complementary measures to assess rollover risk: a fiscal vulnerability index and a fiscal stress index. These indices are computed based on a set of fiscal indicators that measure the risk to fiscal sustainability. The list of variables are grouped into three themes: The first relates to current and expected fiscal variables, such as stock of public debt, current and projected primary fiscal balances, and the growth-adjusted interest rate on public debt. The second relates to long-term demographic and economic trends, including spending related to demographic developments. The third relates to examining characteristics of a government’s assets and liabilities given the outlook for fiscal solvency to see if their balance sheet composition exposes countries to large rollover needs.

More generally, fiscal stress tests are designed to serve as early warning signs (EWS) regarding the potential inability of the government to pay its sovereign debts; in other words, this implies a path of fiscal unsustainability. A “signalling” approach identifies a critical threshold beyond

which a set of indicators signals a crisis.⁷ Many of the EWS-type models remain plagued by fairly high Type I and II errors,⁸ and their reliability remains somewhat suspect. This is not altogether surprising given that financial markets are driven by investor psychology, news, and herding behaviour. As Manasse et al. (2003, 21) note, “[a] sound EWS model should be good at predicting more systematically the more recent genre of crises without sending too many false alarms. It is also possible that the unpredictability of some recent episodes may be consistent with the view that, in a region of fragile fundamentals, multiple equilibria may occur, depending on investors’ expectations and behavior”.⁹

2.1.4 Debt Laffer curve and tipping points

Another and potentially more promising method involves estimating thresholds in the sense that if debt rises beyond a certain point, it may start becoming a severe drag on economic growth. Apart from the usual crowding out channel via long-term interest rates, the debt overhang literature emphasises concerns about increases in future taxes or the possibility of future inability to repay debt (debt Laffer curve); this might discourage further domestic and foreign investment (Krugman 1988; Sachs 1989).¹⁰

Reinhart and Rogoff (2010) continue with the theme of a possible inverted-U relationship between growth and debt. They examine histograms of data from 44 countries over two centuries (1790–2009) and find that there appears to be a tipping point at a public debt-to-GDP ratio of about 90 per cent – that is, median growth rates fall by 1 per cent beyond the threshold.¹¹ In a companion study they estimate the external debt-to-GDP ratio to be also at about 90 per cent of GDP for developed countries and 60 per cent for developing ones (Reinhart et al. 2012). Their data for developing economies included both public and private external debt. They find that when total external debt reaches 60 per cent of GDP, annual growth declines by about 2 per cent. Support for this inverted-U or inverted-V relationship of external debt and growth can also be found in the work of Pattillo et al. (2002, 2004) who use a large panel of developing countries over the period from 1969 to 1998. Their specific turning points are 35–40 per cent for debt-to-GDP ratio and 160–70 per cent for debt-to-exports ratio.

Estimating a dynamic panel growth equation for 38 developed and developing economies (with a population of over 5 million), Kumar and Woo (2010) examine the link between the initial ratio of public debt-to-GDP and growth over the period from 1970 to 2007. They estimate the threshold of the debt Laffer curve to be at around 90 per cent of

GDP, consistent with Reinhart and Rogoff (2010). They find that, on average, an increase by 10 percentage points in the initial debt-to-GDP ratio corresponds to an annual slowdown of real growth in per capita GDP of around 0.2 percentage points per year for all economies and of around 0.15 percentage points for developed economies.

Canner et al. (2010) estimate a growth threshold least squares (Hansen 2000) to determine a threshold for the nexus between long-run growth and average public debt-to-GDP ratio for a panel involving 101 economies between 1980 and 2008. Their results suggest the tipping points of public debt to be 77 per cent of GDP for developed economies and 64 per cent for developing economies. They further find that if public debt surpasses these thresholds, every additional percentage point of debt reduces annual real GDP growth by 0.017 and 0.02 percentage points for the developed and developing economies, respectively.

Continuing with this theme, Cecchetti et al. (2011) use a panel dataset for 18 OECD countries from 1980 to 2010 to examine the effect of corporate and household debt, as well as government debt on per capita growth. They find a negative effect on growth once government debt passes 85 per cent of GDP. They further find that trend growth falls by around one-tenth of a percentage point for every 10 per cent increase in government debt-to-GDP.

The thresholds developed by the papers discussed above are higher than the prudential benchmarks used by the IMF. The IMF Fiscal Monitor that computes scenarios for long-term adjustment needs of advanced and emerging economies places the debt thresholds for advanced economies at 60 per cent of GDP and for emerging economies at 40 per cent of GDP (IMF 2013a).¹²

Taken together, the studies suggest quite a wide band of debt thresholds ranging from 60 to 90 per cent of GDP for advanced economies (75 per cent mean estimate) and 40 to 70 per cent (55 per cent mean estimate) for the emerging economies.¹³ However, IMF (2008, 2009) examined whether the effectiveness of countercyclical fiscal policy was conditional on the starting level of debt-to-GDP. They found that the effectiveness of fiscal policy is smaller or sometimes negative when public debt is above 60–75 per cent of GDP in industrial countries or above 25 per cent of GDP in emerging markets. IMF (2011b) finds that primary surpluses respond positively to public debt increases, and the reaction gets much stronger when public debt crosses a threshold of just under 80 per cent. They interpret this to mean that fiscal policy is tightened once the threshold is crossed, presumably because the policy is no longer sustainable.