

Economics and Finance in Mauritius

Indranarain Ramlall

Economics and Finance in Mauritius

A Modern Perspective

palgrave
macmillan

Indranarain Ramlall
University of Mauritius
Moka, Mauritius

ISBN 978-3-319-39434-3 ISBN 978-3-319-39435-0 (eBook)
DOI 10.1007/978-3-319-39435-0

Library of Congress Control Number: 2016948430

© The Editor(s) (if applicable) and The Author(s) 2017

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Cover image © Peter Hermes Furian / Alamy Stock Photo

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Dedicated to my parents, to all those who are striving hard for a better world and to God.

Noble people use their intelligence, knowledge, time and efforts to create things for the betterment of the society and the world. Certain people use their intelligence and knowledge to backstap other people or to create hurdles in the advancing path of the noble people. Just imagine how world would have been if all people were noble!

An unknown knowledge seeker.

This book breaks new ground in Mauritius, bears testimony to the author's dedication to a thorough understanding of the various components of the economic and financial sectors. Academic researchers and students will have ample opportunities to wade through the calculations in support of the findings, whereas policy-makers will have food for thought, and possibly action, in the light of those findings.

—Pierre Dinan, *Fellow of the Institute of Chartered Accountants in England and Wales.*

Preface

This book seeks to provide a comprehensive analysis of the economic and financial conditions of Mauritius. A rigorous analysis of the financial sector of Mauritius is provided, incorporating the banking sector, the stock market, and monetary policy, as well as the capital structure of Mauritian firms. The author not only builds a credit risk model for Mauritian bankers, but also develops a financial stability model to provide the reader with a full account of the Mauritian economy. The hedging practices of Mauritian firms are given due consideration, and the book also includes an in-depth analysis of the housing market. The book builds on the author's lifetime of experience as an academic and practitioner within the Mauritian economy, within the realm of both the private and public sectors. In a spirit of patriotism the author hopes that this book will offer a valuable contribution to the future development of his country. The author ends with a chapter outlining his hopes for a 2030 vision for Mauritius. He anticipates that this book will provide a new window for researchers, students, policymakers, central bankers and economists.

Comments and suggestions about the book can be made to the following email addresses: i.ramlall@uom.ac.mu or iiramii3@gmail.com.

April 2016

Dr. Indranarain Ramlall

Contents

Part I	An Overview of the Mauritian Economy	1
1	An Overview of the Mauritian Financial System and Its Economy	3
Part II	The Mauritian Banking Sector	25
2	Banking Sector Analysis	27
3	Developing a Credit Risk Model for Mauritian Bankers	53
Part III	The Stock Market in Mauritius	73
4	Stock Market Analysis	75
5	The Behaviour of Foreign Investments in the Stock Exchange of Mauritius	97

6	The Impact of US Subprime Crisis on SEMDEX	135
Part IV	Monetary Policy in Mauritius	151
7	Monetary Policy Analysis	153
8	Money Demand Analysis in Mauritius	167
9	Impact of Debit and Credit Cards on Currency in Circulation in Mauritius	195
10	A Posthumous Note on the Lombard Rate in Mauritius	213
Part V	The Business Sector and Its Financing Structure in Mauritius	227
11	What Drives the Capital Structure of Non-Listed Mauritian Firms?	229
12	Capital Structure Analysis of Exporting and Non-exporting Mauritian Firms: A Pre- and Post-crisis Investigation	249
Part VI	Hedging in Mauritius	275
13	What Factors Drive Hedging Among Mauritian Firms?	277

	Contents	xiii
Part VII Financial Stability Risk Assessment in Mauritius		309
14 Developing a Financial Stability Model for Mauritius		311
Part VIII House Price Modelling in Mauritius		361
15 Determinants of House Prices in Mauritius: A Hedonic Price Model à la Quantile Bootstrapped Approach		363
Part IX Stylised Facts and Vision for Mauritius		415
16 Stylized Facts About the Mauritian Economy		417
17 Author's Vision for 2030		423
Bibliography		431
Index		451

List of Figures

Fig. 1.1	Sector contribution to GDP	7
Fig. 1.2	Components of expenditures on Gross Domestic Product	8
Fig. 1.3	Composition of consumption in Mauritius	9
Fig. 1.4	Structure of exports and imports under expenditures on Gross Domestic Product	10
Fig. 1.5	Unemployment rate	11
Fig. 1.6	Tourist earnings and arrivals	12
Fig. 1.7	Gross Domestic Product per capita	12
Fig. 1.8	Headline inflation rate-year end	13
Fig. 1.9	ICE Brent Crude (US\$ per barrel)	14
Fig. 1.10	Budget deficit to GDP in per cent	15
Fig. 1.11	Sector-wise distribution of credit as at end December 2015	16
Fig. 1.12	Evolution of Key Repo Rate	17
Fig. 1.13	Interest rate spread for the banking sector	18
Fig. 1.14	Interest rate spread from the World Bank Development Indicators	18
Fig. 1.15	Evolution of the exchange rates-Clash of the Titans	19
Fig. 1.16	Composition of corporate debt structure in Mauritius	20
Fig. 1.17	Balance of payments	21
Fig. 1.18	Public sector debt	22
Fig. 2.1	Banking sector assets to GDP	29
Fig. 2.2	Chernoff faces for the Mauritian banking sector	48
Fig. 2.3	Network analysis for period June 2005 to December 2010	50

xvi **List of Figures**

Fig. 2.4	Network analysis for period January 2011 to July 2016	51
Fig. 4.1	Market capitalization on official market as at end December 2015	78
Fig. 4.2	Bank financing versus equity financing	80
Fig. 4.3	Banking sector assets versus market capitalisation	82
Fig. 4.4	Price-earnings ratio	83
Fig. 4.5	Foreign investments (official market) on the Stock Exchange of Mauritius	84
Fig. 4.6	Turnover and volume analysis on official market	85
Fig. 4.7	Performance of indices on the official market	86
Fig. 4.8	Analysing conventional blue chips stocks in SEM under normalised values	88
Fig. 4.9	Transposing Figure 4.8 into an Elliott Wave analysis	89
Fig. 4.A.1	Diagrammatical view of the interactions among various sectors (Source: Author's Illustration)	91
Fig. 5.1	An overview of SEM features	103
Fig. 5.2	Foreign transactions in SEM	104
Fig. 7.1	Schema of the interactions among households, banks and public debt in Mauritius	158
Fig. 7.2	Effectiveness of the various channels of transmission mechanism in Mauritius	160
Fig. 8.1	Response to Cholesky One S.D. innovations	185
Fig. 8.2	Variance decomposition	186
Fig. 8.A.1	Inverse roots of AR characteristic polynomial	189
Fig. 9.1	Ratio of debit to credit cards	200
Fig. 12.1	Theories of capital structure	252
Fig. 14.1	Stress index BoM Z-score	336
Fig. 14.2	Stress index BoM capital ratio	336
Fig. 14.3	Stress index-MCB bad debts	337
Fig. 14.4	Stress index-MCB Z-score	337
Fig. 14.5	MCB deposit gap and loan gap	338
Fig. 14.6	Index-MCB beta	338
Fig. 14.7	Stress index-loan to deposit ratio	339
Fig. 14.8	Domestic credit by banks stress index	339
Fig. 14.9	USD volatility stress index	340
Fig. 14.10	EUR volatility stress index	340
Fig. 14.11	GBP volatility stress index	341
Fig. 14.12	Exchange market pressure index	341
Fig. 14.13	Tourist arrivals stress index	342

Fig. 14.14	Tourist earnings stress index	342
Fig. 14.15	Cheques stress index	343
Fig. 14.16	MACSS stress index	343
Fig. 14.17	Balance of payments stress index	344
Fig. 14.18	Government debt stress index-cyclical components	344
Fig. 14.19	Cyclical components of GDP and public debt	345
Fig. 14.20	Public debt sustainability metric index	345
Fig. 14.21	Stress-interbank market	346
Fig. 14.22	Bid-cover stress index	346
Fig. 14.23	TED spread stress index	347
Fig. 14.24	Monetary condition stress index	347
Fig. 14.25	Currency in circulation stress index	348
Fig. 14.26	Broad money multiplier stress index	348
Fig. 14.27	Excess cash holdings stress index	349
Fig. 14.28	Net international reserves stress index	349
Fig. 14.29	Import cover stress index	350
Fig. 14.30	Oil stress index	350
Fig. 14.31	Trade finance stress index	351
Fig. 14.32	SEMDEX stress index	351
Fig. 14.33	Net foreign investments	352
Fig. 14.34	Cyclical components of GDP	352
Fig. 14.35	Mauritius financial system strength index	353
Fig. 15.1	Concave and convex	380
Fig. 17.1	Static economic progress	424
Fig. 17.2	Real effective economic progress	425

List of Tables

Table 2.1	Risk-weighted capital adequacy ratio	28
Table 2.2	ABC Banking Corporation Limited	30
Table 2.3	AfrAsia Bank Limited	32
Table 2.4	Bank of Baroda Limited	35
Table 2.5	Bank One Limited	38
Table 2.6	Banque des Mascareignes Limited	40
Table 2.7	The Mauritius Commercial Bank Limited	42
Table 2.8	The State Bank of Mauritius Limited	45
Table 2.9	Sectors considered in analysing the sector-wise distribution of credit in Mauritius	49
Table 3.1	Econometric results under OLS approach	59
Table 3.2	Econometric results for limited dependent models	66
Table 3.A.1	List of variables	69
Table 3.A.2	Summary statistics	69
Table 3.A.3	Correlation matrix of independent variables used in the model	70
Table 4.A.1	List of ATS operators (January 2016)	92
Table 4.A.2	List of issuers on official market	93
Table 5.1	Definition of the variables	106
Table 5.2	Summary statistics for stock market returns	110
Table 5.3	ADF unit root tests	111
Table 5.4	Results for cointegration between purchases and sales for the post-crisis period	113

xx List of Tables

Table 5.5	Results for cointegration between bank rate and NetPurchases: pre crisis period	114
Table 5.6	Results for cointegration between bank rate and purchases: pre crisis period	116
Table 5.7	Results for cointegration between bank rate and sales: pre crisis period	117
Table 5.8	Results for NetPurchases and USDOLLAR: pre crisis	119
Table 5.9	Results for PURCHASES and USDOLLAR: pre crisis	120
Table 5.10	Results for SALES and USDOLLAR: pre crisis	121
Table 5.11	Dependent variable: net purchases under SEMDEX pre crisis and post crisis results	122
Table 5.12	Dependent variable: net purchases under MCB pre crisis and post crisis results	122
Table 5.13	Dependent variable: net purchases under SBM pre crisis and post crisis results	123
Table 5.14	Dependent variable: net purchases under SUN pre crisis and post crisis results	124
Table 5.15	Dependent variable: net purchases under NMH pre crisis and post crisis results	124
Table 5.16	Dependent variable: net purchases under ROGERS pre crisis and post crisis results	125
Table 5.17	Dependent variable: net purchases under IBL pre crisis and post crisis results	125
Table 5.18	Dependent variable: D(SEM) under SEM pre crisis and post crisis results	126
Table 5.19	Dependent variable: D(MCB) under SEM pre crisis and post crisis results	127
Table 5.20	Dependent variable: D(SBM) under SEM pre crisis and post crisis results	128
Table 5.21	Dependent variable: D(SUN) under SEM pre crisis and post crisis results	128
Table 5.22	Dependent variable: D(NMH) under SEM pre crisis and post crisis results	129
Table 5.23	Dependent variable: D(ROGERS) under SEM pre crisis and post crisis results	130
Table 5.24	Dependent variable: D(IBL) under SEM pre crisis and post crisis results	131
Table 6.1	Summary statistics for stock market returns	138

Table 6.2	Results for granger causality	139
Table 6.3	Unit root tests	139
Table 6.4	Cointegration results under monthly horizon analysis	142
Table 6.5	Results for Group 1 (FTSE, DAX and CAC-40)	143
Table 6.6	Results for Group 2 (DJIA and BSE)	146
Table 6.7	Results for Group 3 (NIKKEI 225 and JSE)	148
Table 8.1	Definition of variables	176
Table 8.2	Descriptive statistics	178
Table 8.3	Correlation coefficients	179
Table 8.4	Unit root tests	180
Table 8.5	Empirical results for Mauritius	181
Table 8.A.1	VEC Residual serial correlation LM tests	189
Table 8.A.2	VEC Residual portmanteau tests for autocorrelations	190
Table 8.A.3	VEC residual heteroskedasticity tests: no cross terms (only levels and squares)	190
Table 8.A.4	VEC Residual heteroskedasticity tests: includes cross terms	191
Table 9.1	Using number of credit, debit cards and ATMs as independent variables	204
Table 9.2	Using a proxy for debit card usage as independent variable	206
Table 9.A.1	Correlation coefficients for the variables	210
Table 10.1	Summary statistics for Lombard Rate and yields on different maturities	216
Table 10.2	Unit root tests	216
Table 10.3	Results of the cointegration test under weekly horizon	217
Table 10.4	Results of the cointegration test under weekly horizon	219
Table 10.A.1	Results for 91 days	222
Table 10.A.2	Results for 182 days	222
Table 10.A.3	Results for 364 days	223
Table 10.A.4	Results for bank rate	223
Table 10.A.5	Results for 91 days and 182 days	224
Table 10.A.6	Results for 91 days and 364 days	224
Table 10.A.7	Results for 182 days and 364 days	225
Table 11.1	Definition of variables	235
Table 11.2	Summary statistics	235
Table 11.3	Correlation coefficients	239
Table 11.4	Correlation coefficients	240

xxii **List of Tables**

Table 11.5	Results of regression	241
Table 12.1	Definitions of variables	259
Table 12.2	Summary statistics for exporting and non-exporting firms in the pre crisis period	260
Table 12.3	Summary statistics for exporting and non-exporting firms in the pre crisis period	260
Table 12.4	Results under short-term leverage	265
Table 12.5	Results under long-term leverage	266
Table 13.1	Pearson correlation coefficients	298
Table 13.2	Determinants of the decision to hedge under probit and logit	299
Table 14.1	Components of the Mauritian financial system stress index	316
Table 14.2	Composition of MFSSI	331
Table 14.A.1	Vector error correction estimates for MCB loans and deposits	353
Table 14.A.2	Vector error correction estimates for current account and external debt	354
Table 15.1	Components of characteristics scrutinized in the model	372
Table 15.2	Weight based on average values to sieve out core determinants	392
Table 15.A.1	Quantile regressions	398
Table 15.A.2	Quantile regression based on bootstrapped standard errors	400
Table 15.A.3	Semi-log regression under bootstrapped approach	403
Table 15.A.4	Summary of main findings	406
Table 15.A.5	Summary statistics	407
Table 15.A.6	Correlation coefficients	408