

Mateane, Lebogang

Working Paper

Risk preferences, global market conditions and foreign debt: Is there any role for the currency composition of FX reserves?

Suggested Citation: Mateane, Lebogang (2020) : Risk preferences, global market conditions and foreign debt: Is there any role for the currency composition of FX reserves?, ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:

<https://hdl.handle.net/10419/227484>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Online Appendix: Risk preferences, global market conditions and foreign debt: Is there any role for the currency composition of FX reserves?

Lebogang Mateane*

December 10, 2020

1 Appendix B: South Africa - FX reserves returns statistics

This section reports two normality tests, namely the Jarque-Bera test and the Kolmogorov-Smirnov tests for the individual returns on FX reserves for South Africa using the perfect foresight (PF) model for short-term returns (Table B1), for Mexico using the PF model for long-term returns (Table C1), for India using the Purchasing Power Parity (PPP) model for short-term returns (Table D1) and for Turkey using the PPP model for long-term returns (Table E1). For all the countries, the tests consistently reject normality at all relevant levels of significance and thus showing that it is appropriate to incorporate higher return moments . Furthermore, this section reports the covariance and co-skewness matrices associated with each country and the relevant method of computing expected FX reserves returns.

*University of Cape Town, School of Economics, Rondebosch, Cape Town, 7701, South Africa. E-mail: Lebogang.Mateane@uct.ac.za , Acknowledgments: I would like to thank Godfrey Charles-Cadogan, Haim Abraham, Mark Ellyne, Willi Semmler, Christian Proaño and Lucas Bernard for helpful comments that have vastly improved earlier drafts of this paper.

Table B1: Variance-covariance matrix of short-term FX reserves returns using perfect foresight model for South Africa

2010:01-2018:12	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
Mean return (%)	0.99	0.61	0.80	0.40	0.34
Variance	9.68	9.91	11.66	13.56	9.35
Skewness	5.52	7.77	-15.62	18.46	10.88
Jarque-Bera stat	1.31 (0.44)	1.69 (0.35)	5.29 (0.053)	3.08 (0.14)	3.71 (0.10)
Kolmogorov-Smirnov stat	0.39 (0.000)	0.33 (0.000)	0.35 (0.000)	0.29 (0.000)	0.27 (0.000)
Variance-covariance					
U.S. dollar	9.68				
Euro	7.14	9.91			
British pound	8.40	8.89	11.66		
Japanese yen	9.01	8.11	8.23	13.56	
Swiss franc	6.24	8.08	7.68	7.57	9.35

Notes: Values in parantheses are p-values of the associated test statistic

Table B2: Co-Skewness U.S. dollar matrix of short-term FX returns using perfect foresight model for South Africa

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	5.52	6.11	1.16	12.03	2.57
Euro	6.11	6.48	2.76	12.59	4.31
British pound	1.16	2.76	-4.17	7.81	0.80
Japanese yen	12.03	12.59	7.81	18.92	8.17
Swiss franc	2.57	4.31	0.80	8.17	6.81

Table B3: Co-Skewness Euro matrix of short-term FX returns using perfect foresight model for South Africa

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	6.11	6.48	2.76	12.59	4.31
Euro	6.48	7.77	4.18	14.42	8.17
British pound	2.76	4.18	-2.42	10.75	4.22
Japanese yen	12.59	14.42	10.75	19.74	11.32
Swiss franc	4.31	8.17	4.22	11.32	9.12

Table B4: Co-Skewness British Pound matrix of short-term FX returns using perfect foresight model for South Africa

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.16	2.76	-4.17	7.80	0.80
Euro	2.76	4.18	-2.42	10.75	4.22
British pound	-4.17	-2.42	-15.62	3.38	-2.67
Japanese yen	7.80	10.75	3.38	16.59	8.81
Swiss franc	0.80	4.22	-2.67	8.81	5.71

Table B5: Co-Skewness Japanese yen matrix of short-term FX returns using perfect foresight model for South Africa

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	12.03	12.59	7.80	18.92	8.17
Euro	12.59	14.42	10.75	19.74	11.32
British pound	7.80	10.75	3.38	16.59	8.81
Japanese yen	18.92	19.74	16.59	18.46	14.79
Swiss franc	8.17	11.32	8.81	14.79	16.04

Table B6: Co-Skewness Swiss franc matrix of short-term FX returns using perfect foresight model for South Africa

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	2.57	4.31	0.80	8.17	6.81
Euro	4.31	8.17	4.22	11.32	9.12
British pound	0.80	4.22	-2.67	8.81	5.71
Japanese yen	8.17	11.32	8.81	14.79	16.04
Swiss franc	6.81	9.12	5.71	16.04	10.88

2 Appendix C: Mexico - FX reserves returns statistics

Table C1: Variance-covariance matrix of long-term FX reserves returns using perfect foresight model for Mexico

2010:01-2018:12	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
Mean return (%)	2.85	2.53	2.36	0.73	0.998
Variance	6.78	8.32	9.32	11.86	9.02
Skewness	1.19	-1.78	-16.86	2.75	7.85
Jarque-Bera stat	0.17 (0.50)	0.14 (0.50)	9.18 (0.019)	0.10 (0.50)	4.91 (0.06)
Kolmogorov-Smirnov stat	0.66 (0.000)	0.60 (0.000)	0.63 (0.000)	0.35 (0.000)	0.38 (0.000)
Variance-covariance					
U.S. dollar	6.78				
Euro	4.72	8.32			
British pound	5.67	6.83	9.32		
Japanese yen	6.76	6.21	6.00	11.86	
Swiss franc	4.88	6.98	6.37	6.53	9.02

Notes: Values in parantheses are p-values of the associated test statistic

Table C2: Co-Skewness U.S. dollar matrix of long-term FX returns using perfect foresight model for Mexico

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.19	-1.19	-3.47	1.92	-3.44
Euro	-1.19	-2.10	-4.06	1.96	-3.21
British pound	-3.47	-4.06	-7.85	-2.21	-4.72
Japanese yen	1.92	1.96	-2.21	5.02	-1.52
Swiss franc	-3.44	-3.21	-4.72	-1.52	1.03

Table C3: Co-Skewness Euro matrix of long-term FX returns using perfect foresight model for Mexico

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	-1.19	-2.09	-4.06	1.96	-3.21
Euro	-2.09	-1.78	-2.54	4.19	1.06
British pound	-4.06	-2.54	-7.00	1.22	-0.93
Japanese yen	1.96	4.19	1.22	7.40	2.28
Swiss franc	-3.21	1.06	-0.93	2.28	3.62

Table C4: Co-Skewness British Pound matrix of long-term FX returns using perfect foresight model for Mexico

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	-3.47	-4.06	-7.85	-2.21	-4.72
Euro	-4.06	-2.54	-7.00	1.22	-0.93
British pound	-7.85	-7.00	-16.86	-4.68	-5.39
Japanese yen	-2.21	1.22	-4.68	3.25	0.30
Swiss franc	-4.72	-0.93	-5.39	0.30	2.45

Table C5: Co-Skewness Japanese yen matrix of short-term FX returns using perfect foresight model for Mexico

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.92	1.96	-2.21	5.02	-1.52
Euro	1.96	4.19	1.22	7.40	2.28
British pound	-2.21	1.22	-4.68	3.25	0.30
Japanese yen	5.02	7.40	3.25	2.75	2.81
Swiss franc	-1.52	2.28	0.30	2.81	9.14

Table C6: Co-Skewness Swiss franc matrix of long-term FX returns using perfect foresight model for Mexico

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	-3.44	-3.21	-4.72	-1.52	1.03
Euro	-3.21	1.06	-0.93	2.28	3.62
British pound	-4.72	-0.93	-5.40	0.30	2.45
Japanese yen	-1.52	2.28	0.30	2.81	9.14
Swiss franc	1.03	3.62	2.45	9.14	7.85

3 Appendix D: India - FX reserves returns statistics

Table D1: Variance-covariance matrix of short-term FX reserves returns using PPP model for India

2010:01-2018:12	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
Mean return (%)	0.005	0.68	0.80	0.52	0.26
Variance	1.24	1.08	0.79	0.78	1.13
Skewness	0.56	0.29	0.21	0.20	0.58
Jarque-Bera stat	4.05 (0.086)	1.68 (0.35)	19.28 (0.00)	3.82 (0.095)	4.20 (0.081)
Kolmogorov-Smirnov stat	0.11 (0.15)	0.27 (0.00)	0.41 (0.00)	0.27 (0.00)	0.12 (0.08)
Variance-covariance					
U.S. dollar	1.24				
Euro	-0.97	1.08			
British pound	-0.68	0.72	0.79		
Japanese yen	-0.74	0.78	0.71	0.78	
Swiss franc	-1.02	1.03	0.79	0.84	1.13

Notes: Values in parantheses are p-values of the associated test statistic

Table D2: Co-Skewness U.S. dollar matrix of short-term FX returns using PPP model for India

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	0.56	-0.16	0.1	0.05	-0.06
Euro	-0.16	-0.09	-0.14	-0.14	-0.17
British pound	0.1	-0.14	-0.1	-0.12	-0.22
Japanese yen	0.05	-0.14	-0.12	-0.17	-0.24
Swiss franc	-0.06	-0.17	-0.22	-0.24	-0.30

Table D3: Co-Skewness Euro matrix of short-term FX returns using PPP model for India

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	-0.16	-0.09	-0.14	-0.14	-0.17
Euro	-0.09	0.29	0.181	0.21	0.32
British pound	-0.14	0.18	0.180	0.18	0.30
Japanese yen	-0.14	0.21	0.183	0.22	0.31
Swiss franc	-0.17	0.32	0.30	0.31	0.42

Table D4: Co-Skewness British pound matrix of short-term FX returns using PPP model for India

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	0.10	-0.14	-0.10	-0.12	-0.22
Euro	-0.14	0.181	0.18	0.18	0.30
British pound	-0.10	0.18	0.21	0.20	0.29
Japanese yen	-0.12	0.183	0.20	0.21	0.294
Swiss franc	-0.22	0.30	0.29	0.29	0.43

Table D5: Co-Skewness Japanese yen matrix of short-term FX returns using PPP model for India

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	0.05	-0.14	-0.12	-0.17	-0.24
Euro	-0.14	0.21	0.18	0.22	0.31
British pound	-0.12	0.18	0.20	0.21	0.29
Japanese yen	-0.17	0.22	0.21	0.20	0.34
Swiss franc	-0.24	0.31	0.29	0.34	0.44

Table D6: Co-Skewness Swiss franc matrix of short-term FX returns using PPP model for India

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	-0.06	-0.17	-0.22	-0.24	-0.30
Euro	-0.17	0.32	0.30	0.31	0.42
British pound	-0.22	0.30	0.29	0.294	0.43
Japanese yen	-0.24	0.31	0.294	0.34	0.44
Swiss franc	-0.30	0.42	0.43	0.44	0.58

4 Appendix E: Turkey - FX reserves returns statistics

Table E1: Variance-covariance matrix of long-term FX reserves returns using PPP model for Turkey

2010:01-2018:12	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
Mean return (%)	3.07	3.01	2.78	1.26	1.33
Variance	1.37	2.07	1.52	1.04	1.26
Skewness	2.34	1.69	1.41	1.32	1.24
Jarque-Bera stat	170.78 (0.00)	7.09 (0.03)	21.88 (0.00)	109.70 (0.00)	40.96 (0.00)
Kolmogorov-Smirnov stat	0.90 (0.00)	0.82 (0.00)	0.83 (0.00)	0.52 (0.00)	0.49 (0.00)
Variance-covariance					
U.S. dollar	1.37				
Euro	1.08	2.07			
British pound	1.19	1.52	1.52		
Japanese yen	0.99	1.20	1.08	1.04	
Swiss franc	1.10	1.47	1.30	1.04	1.26

Notes: Values in parantheses are p-values of the associated test statistic

Table E2: Co-Skewness U.S. dollar matrix of long-term FX returns using PPP model for Turkey

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	2.34	1.86	1.87	1.96	1.88
Euro	1.86	1.53	1.61	1.55	1.52
British pound	1.87	1.61	1.61	1.59	1.58
Japanese yen	1.96	1.55	1.59	1.62	1.55
Swiss franc	1.88	1.52	1.58	1.55	1.51

Table E3: Co-Skewness Euro matrix of short-term FX returns using PPP model for Turkey

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.86	1.53	1.61	1.55	1.52
Euro	1.53	1.69	1.41	1.43	1.40
British pound	1.61	1.41	1.39	1.30	1.35
Japanese yen	1.55	1.43	1.30	1.37	1.30
Swiss franc	1.52	1.40	1.35	1.30	1.29

Table E4: Co-Skewness British pound matrix of short-term FX returns using PPP model for Turkey

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.87	1.61	1.61	1.60	1.58
Euro	1.61	1.41	1.39	1.30	1.35
British pound	1.61	1.39	1.41	1.30	1.36
Japanese yen	1.59	1.30	1.30	1.32	1.28
Swiss franc	1.58	1.35	1.36	1.28	1.30

Table E5: Co-Skewness Japanese yen matrix of long-term FX returns using PPP model for Turkey

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.96	1.55	1.59	1.62	1.55
Euro	1.55	1.43	1.30	1.37	1.30
British pound	1.59	1.30	1.30	1.32	1.28
Japanese yen	1.62	1.37	1.32	1.324	1.31
Swiss franc	1.55	1.30	1.28	1.31	1.25

Table E6: Co-Skewness Swiss franc matrix of long-term FX returns using PPP model for Turkey

	U.S. dollar	Euro	British pound	Japanese yen	Swiss franc
U.S. dollar	1.88	1.52	1.58	1.55	1.51
Euro	1.52	1.40	1.35	1.30	1.29
British pound	1.58	1.35	1.36	1.28	1.30
Japanese yen	1.55	1.30	1.28	1.31	1.25
Swiss franc	1.51	1.29	1.30	1.25	1.24