

“Exploring the Evolution and Persistence of
Revealed Comparative Advantage in
Caribbean Economies”

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CCMF Conference

**October 17th 2011
Barbados Hilton**

Objective

- To observe the changes in the pattern of comparative advantage in 4 Caricom and 1 OECS economy over the period 1991 - 2008
- Outlining the theory of Revealed Comparative Advantage
- Calculate Balassa Index for each economy for the period 1991 – 2008
- To explore evolution and persistence in RCA in these 5 economies over the period 1991 – 2008 using
 - Galtonian Regressions
 - Markov Chains and Transition Probability Matrices
- Associated Policy Recommendations

Revealed Comparative Advantage

- Balassa (1965) suggested that comparative advantage could be “revealed” by observed trade patterns that reflect differences in factor endowments across nations.
- Measuring RCA using the Balassa Index – the most widely used index in the literature
- Calculating the index for the time period 1991 – 2009 for each country

Balassa Index

$$RCA_{ij} = (X_{ij} / X_{it}) / (X_{nj} / X_{nt})$$

Where:

X = exports

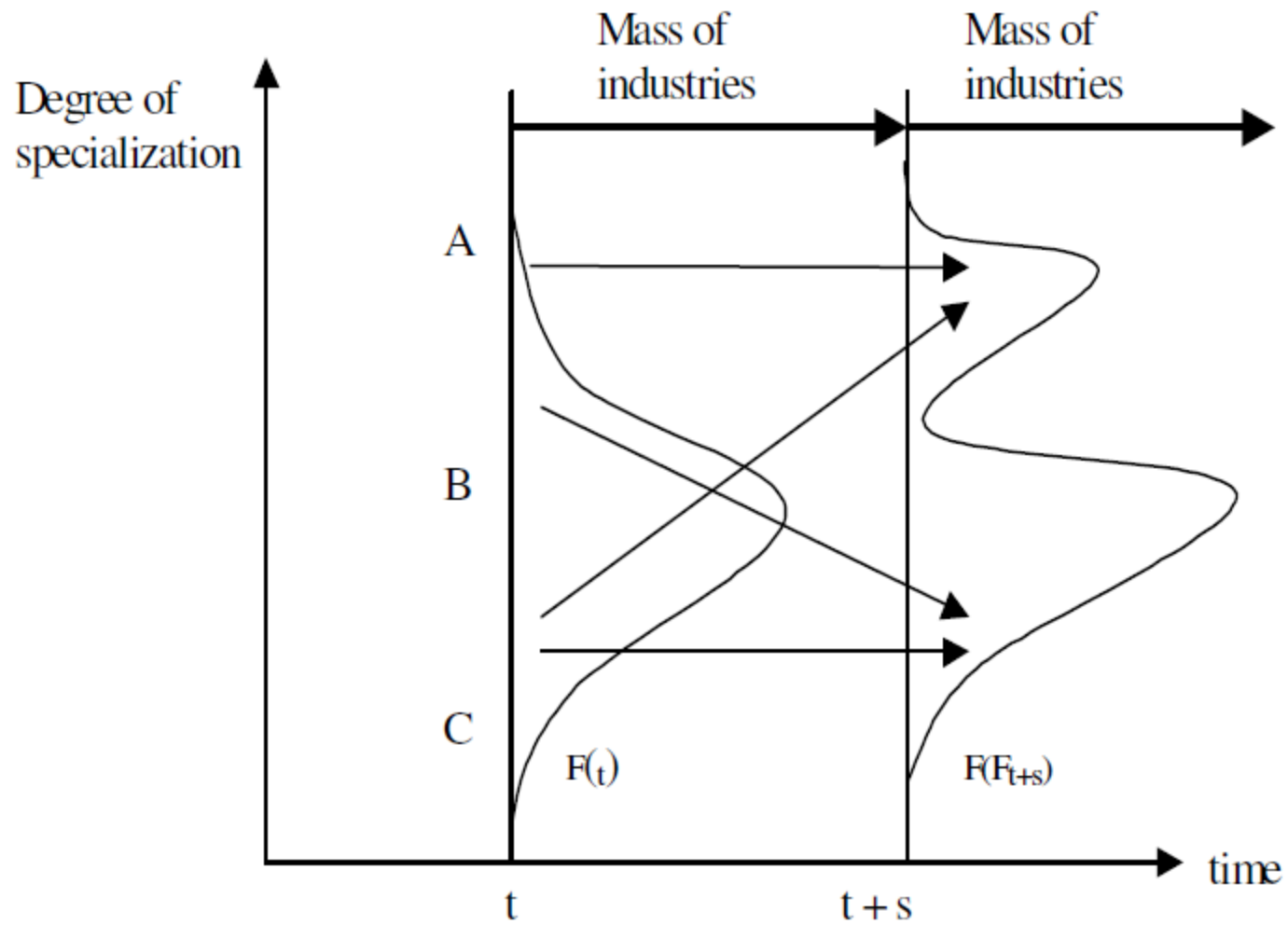
i = country index

j = commodity index

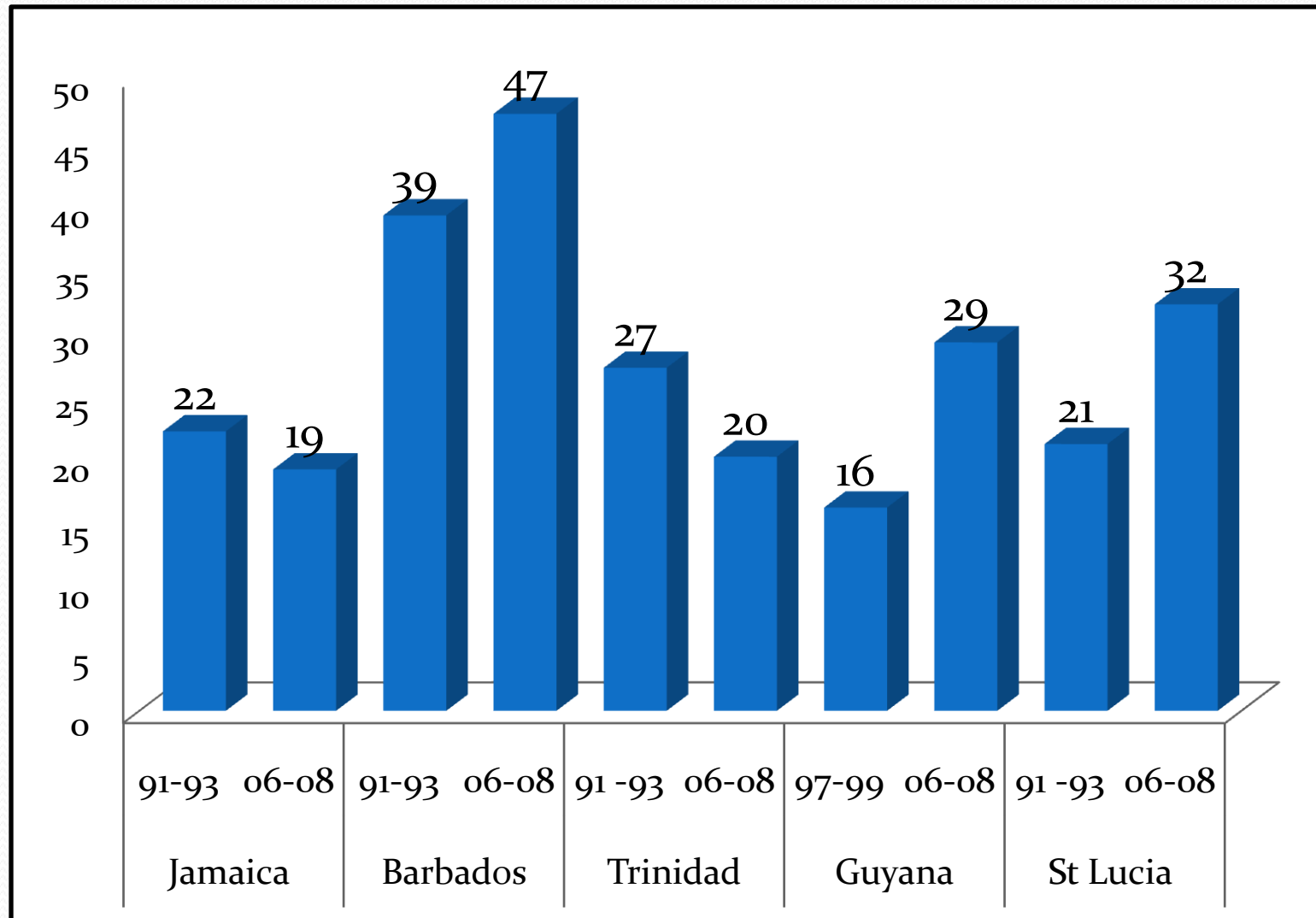
n = set of countries

t = set of commodities

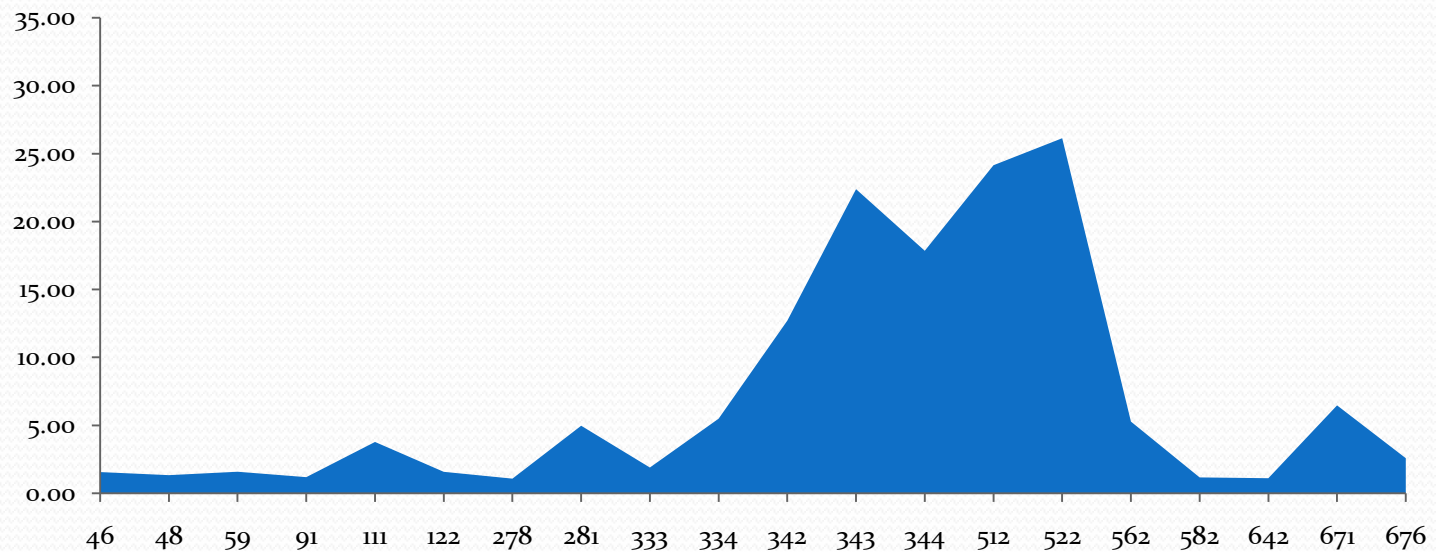
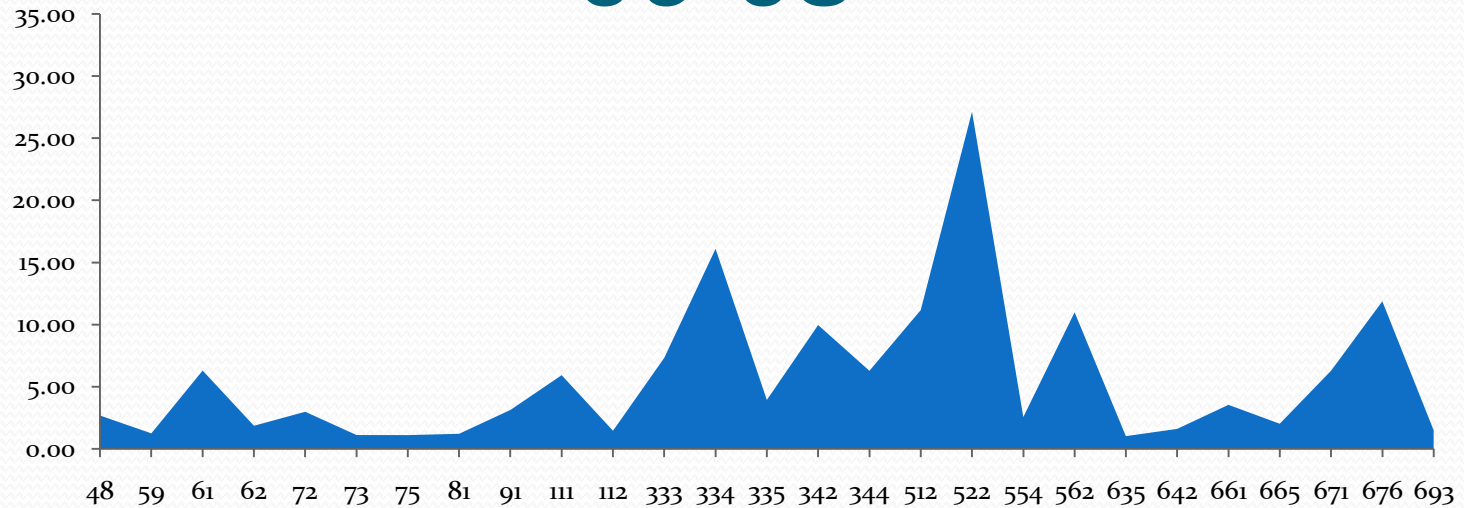
State	Value of Balassa Index	Result
State A	0 – 1	Industries with comparative disadvantage
State B	1 – 2	Industries with weak comparative advantage
State C	2 – 4	Industries with medium comparative advantage
State D	Greater than 4	Industries with strong comparative advantage



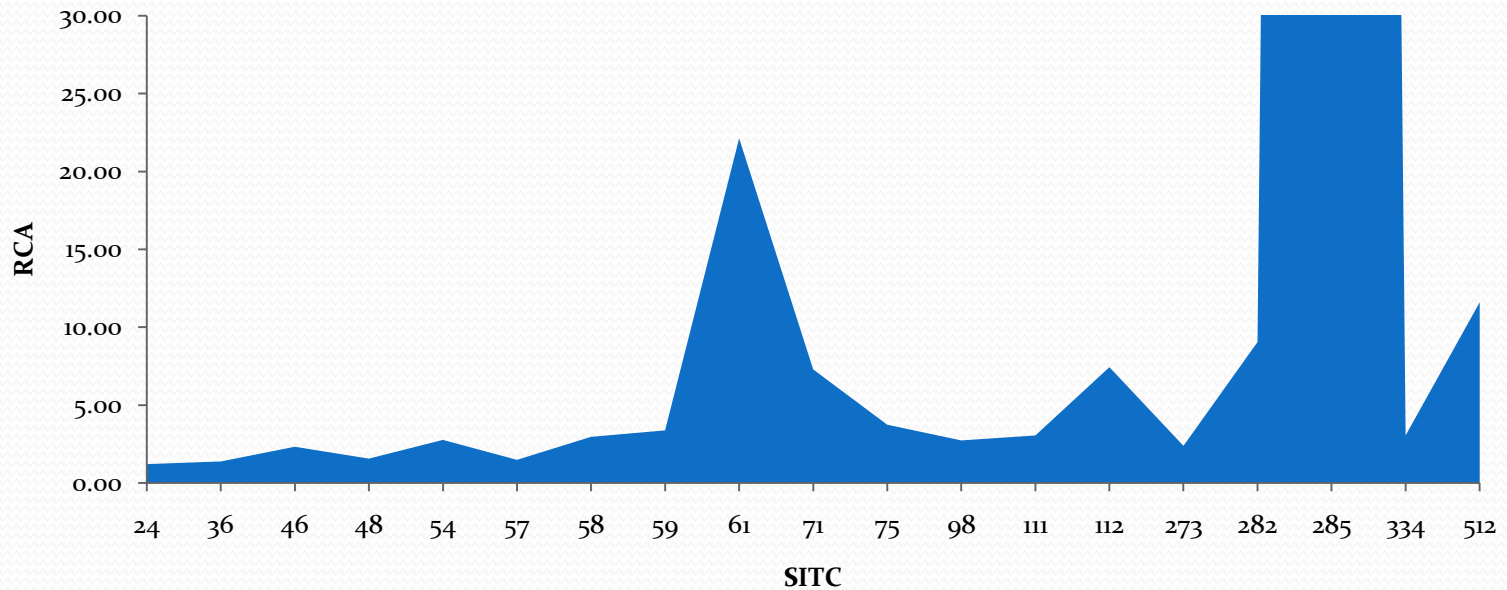
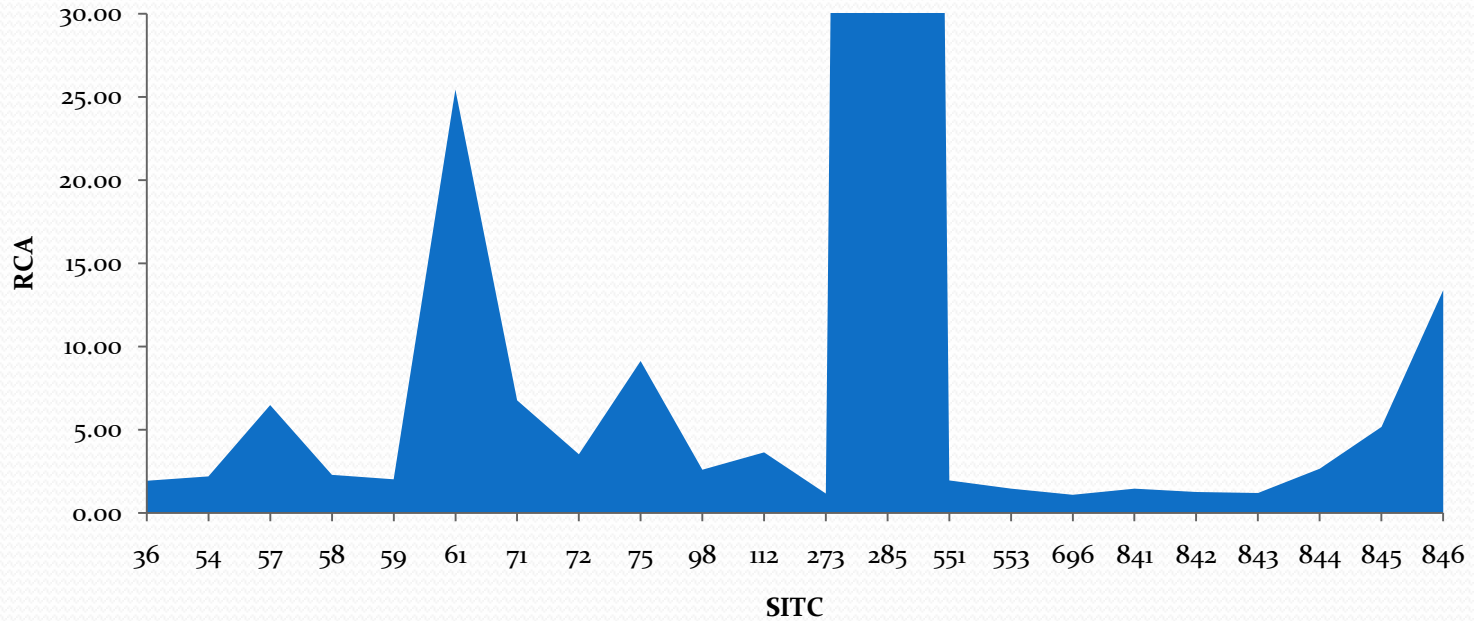
Total Industries with $RCA > 1$ for all countries for both time periods



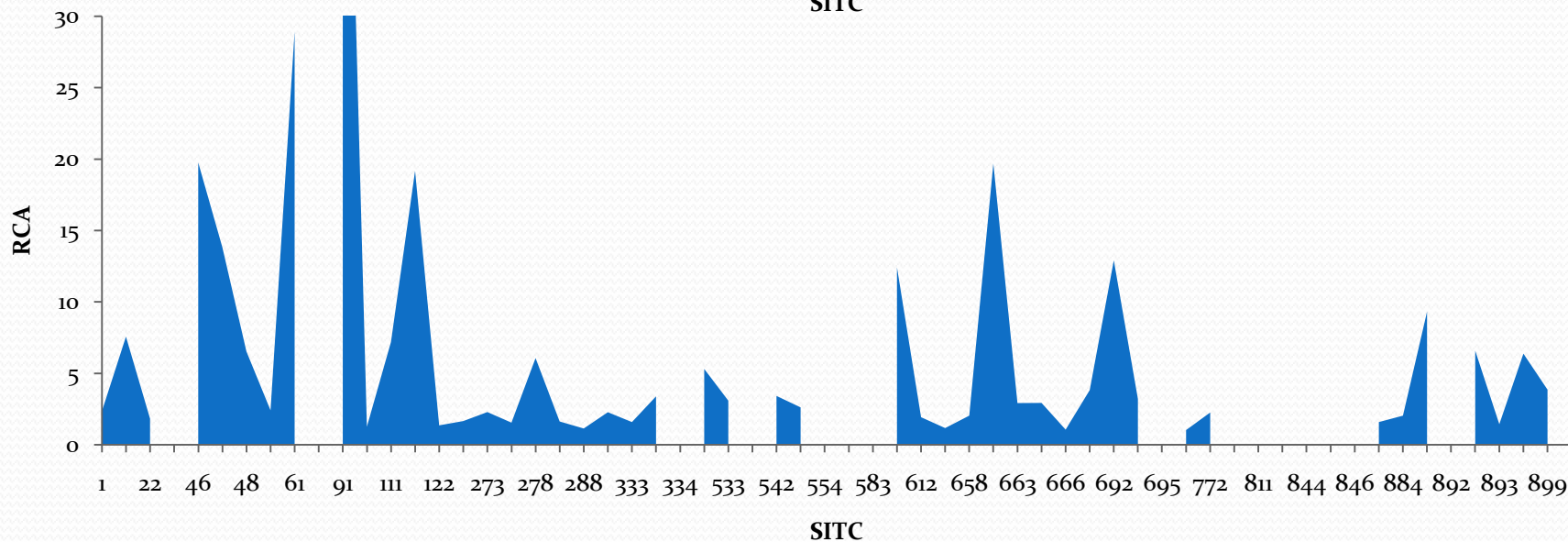
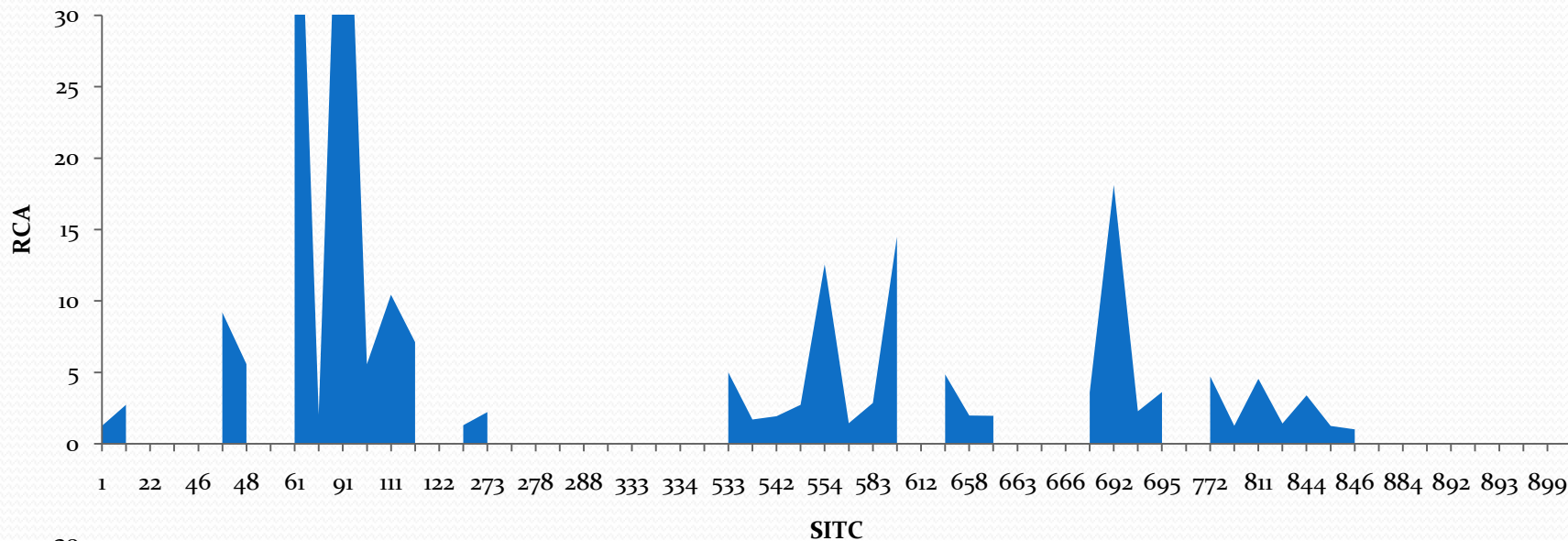
Trinidad and Tobago RCA 91-93 vs. 06-08



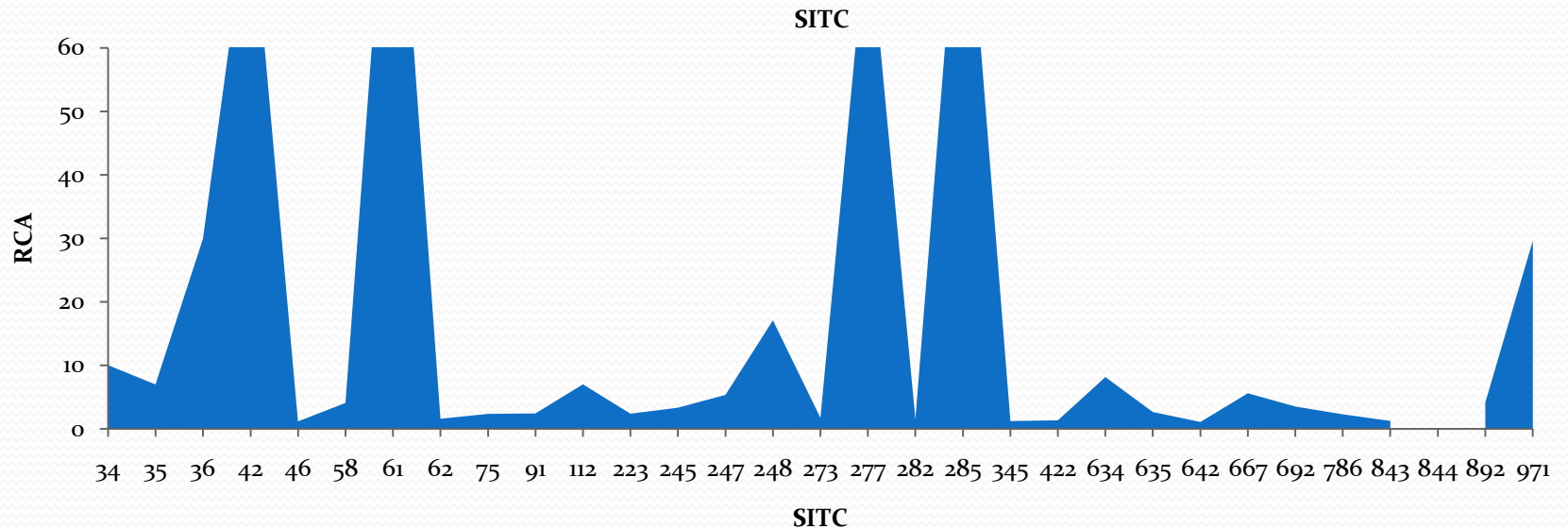
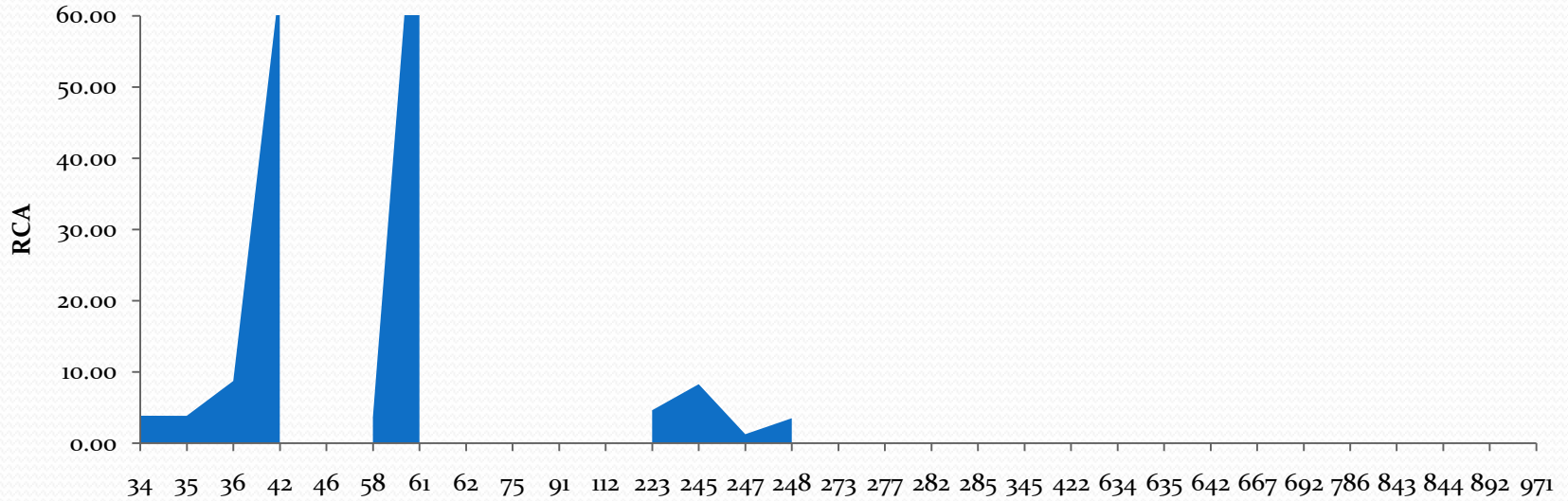
Jamaica RCA 91-93 vs. 06-08



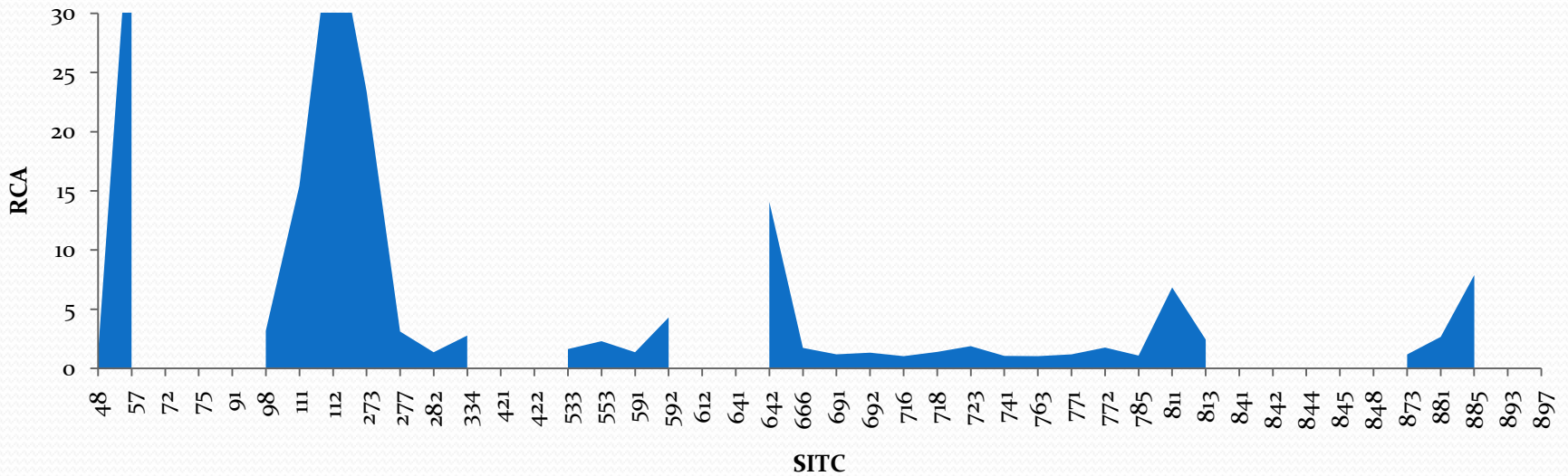
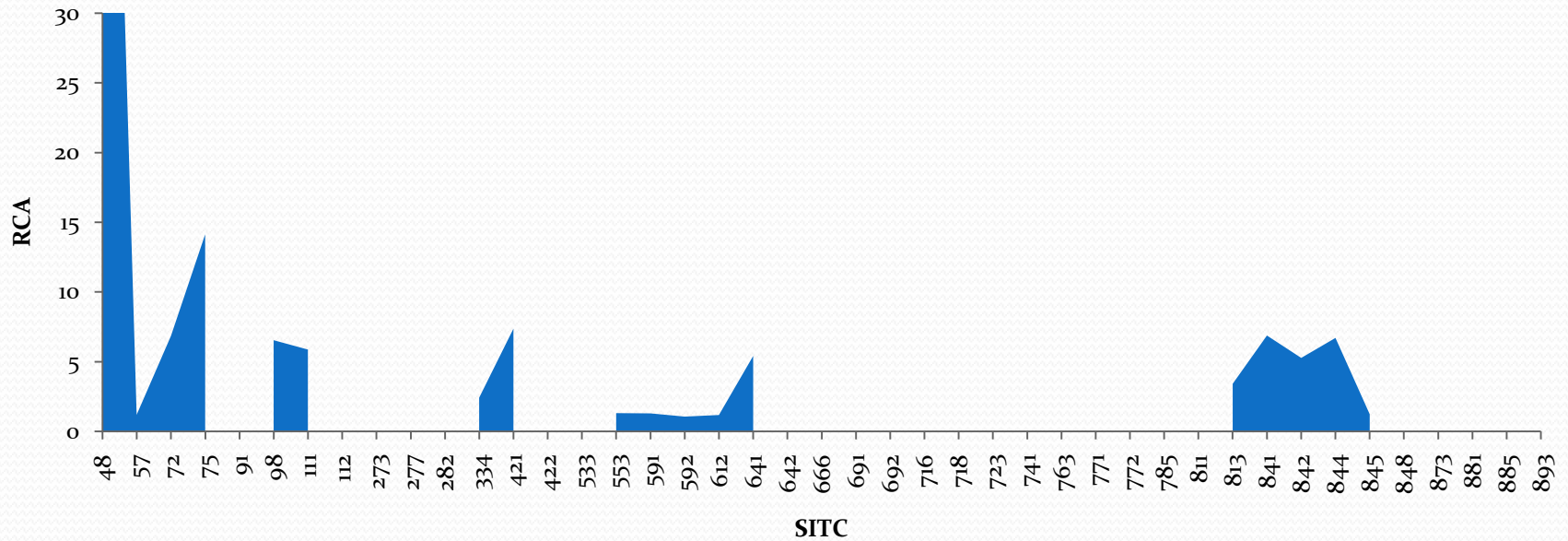
Barbados RCA 91-93 vs. 06-08



Guyana RCA 97-99 vs. 06-08



St Lucia RCA 91-93 vs. 06-08



	Jamaica		Barbados		Trinidad		Guyana		St Lucia	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1^*	T_2	T_1	T_2
Median	0.013	0.019	0.063	0.087	0.028	0.015	0.004	0.013	0.029	0.069
Maximum	379.90	473.48	52.85	63.71	27.14	6.13	111.98	105.29	84.00	41.09
Std. Dev.	24.28	30.22	5.02	5.18	2.55	3.01	10.14	11.91	5.66	4.26
Skewness	15.42	15.50	8.62	8.19	6.55	6.80	8.81	7.18	13.72	7.50
Kurtosis	240	242	85	88	56	51	84	55	201	64
Jarque-Bera	587,817	595,984	74,975	79,780	31,678	26,659	71,985	30,665	389,177	38,601
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	246	246	255	255	257	257	250	250	234	234

Galtonian Regression

- $RCA_{t_2} = \alpha_0 + \beta_1 RCA_{t_1} + e_{t_2}$
- $\beta = 1$: there is no change in the degree of specialization between the two time periods.
- $\beta > 1$: the economy has become more specialized in its area of comparative advantage and less specialized in product categories in which it carried a low level of specialization.
- $0 < \beta < 1$: product categories with initially high values of RCA experience a decline between the listed time periods whilst those with initially low scores experience growth over time and so overall a β score in this range indicates that the specialization pattern has not changed.
- If $\beta < 0$, it means that there is a sharp reversal in comparative advantage.

Galtonian Regression Results for 5 Countries

<i>Dependent variable</i>	(1)	(2)	(3)	(4)	(5)
Average RCA 06-08	Jamaica	Barbados	Trinidad	Guyana*	St Lucia
Number of observations	246	255	257	250	234
<i>Independent Variables</i>					
Average RCA 91-93	1.242472	0.86551	1.238186	1.026633*	0.499983
- <i>standard error</i>	0.00	0.04	0.05	0.04	0.04
- <i>t-statistics</i>	263.66	24.45	16.12	28.30	13.53
- <i>Probability</i>	0.0000	0.0000	0.0000	0.0000	0.0000
R squared	0.996502	0.702654	0.504741	0.763499	0.440881
DW Stats	1.63	1.98	1.23	1.97	1.60
Jarque-Bera normality test	18233	6585	41824	228518	54273
Heteroskedasticity test	0.04	0.00	0.00	0.20	0.26
AIC	4.011294	4.928034	4.349007	6.362785	5.170142
SC	4.039793	4.955809	4.376626	6.390957	5.199674
Log likelihood	-491.389	-626.324	-556.847	-793.348	-602.907
Wald test ($C_1=1$)	0.0000	0.0002	0.0000	0.4636	0.0000

Markov Chains and Transition Probability Matrix

- A Markov Chain may be simply defined as a sequence of random values whose probability values at time period t hinge on the value of the number in the time interval $t-1$.
- A transition probability matrix is defined as a square array of non negative numbers such that the rows tally to unity and represent a discrete Markov chain.

Jamaica 91-93 to 06-08

To

		States	a	b	c	d
From	a		0.969	0.009	0.013	0.009
	b		0.625	0.125	0.250	0.000
	c		0.286	0.000	0.571	0.143
	d		0.429	0.000	0.143	0.429

Trinidad 91-93 to 06-08

To

		States	a	b	c	d
From	a		0.974	0.017	0.000	0.009
	b		0.778	0.222	0.000	0.000
	c		0.714	0.286	0.000	0.000
	d		0.091	0.091	0.182	0.636

Barbados 91-93 to 06-08

To

		States	a	b	c	d
From	a		0.903	0.051	0.023	0.023
	b		0.538	0.077	0.308	0.077
	c		0.455	0.000	0.364	0.182
	d		0.067	0.133	0.200	0.600

Guyana 97-99 to 06-08

To

		States	a	b	c	d
From	a		0.936	0.034	0.013	0.017
	b		0.250	0.500	0.000	0.250
	c		0.000	0.000	0.500	0.500
	d		0.000	0.000	0.250	0.750

St Lucia 91-93 to 06-08

To

		States	a	b	c	d
From	a		0.892	0.061	0.028	0.019
	b		0.556	0.333	0.000	0.111
	c		0.500	0.000	0.500	0.000
	d		0.400	0.000	0.100	0.500

Conclusion

- Jamaica and Trinidad and Tobago have become more specialized in their pattern of exports
- Barbados and St Lucia both appear to have become more diverse in their export base
- Guyana has not seen much of a change in their pattern of RCA
- Barbados's and St Lucia's export growth is due to the tourism sector, they are thus heavily reliant on the tourism sectors for export earnings. This can create problems for Barbados as they are vulnerable to shocks in the tourism market as experienced by the global economic crisis.
- Jamaica's export of bauxite and aluminum products are vulnerable to fluctuating world demand for these products.

Scope for further work

- An in-depth analysis on the trends in exports in all countries
- Exploring how export diversification has affected economic growth in the five economies
- Comparing the distributions of RCA in each economy.



Thank You