

# **TRADE HETEROGENEITY AND INTRA-REGIONAL EXPORTABILITY**

A study of small island economies in the  
Caribbean and the South Pacific



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# Presentation Outline

- Introduction and Statement of Hypothesis
- Explain rationale using Case Studies
- Streamline into 2 research questions
- Discuss 1<sup>st</sup> research question, methodology and key findings
- Integrate this into: 2<sup>nd</sup> research question, present methodology and key findings
- Summary

# Introduction

- “Protectionism is back” as phrased by *The Economist* (2018) however for the smaller island nations, evidences suggest that the island countries perform better together than alone (Warner and Anatol 2015; Bishop *et. al* 2011; Simms and Simms 2007 and Bennett 1999).
- Trade Protectionism vs. Trade Liberalism: in the midst of this debate, the one certain element is that *consumers’ preferences for variety* is at the core of international trade (Bernard et al. 2012; Antras & Helpman 2004; and Melitz 2003).
- **Our Hypothesis:** *heterogeneous/diversified production is a catalyst for establishing export markets.*

## Cont...

- For Pacific and Caribbean countries it is seen that while the two regions have ongoing intra-regional trade agreements which should allow more trade amongst regional partners; they have **little to trade** that continuously cause conflicts.
- **Case Studies (WTO,2008):**
  - Under MSG - Vanuatu vs. other PICs
    - Solomon Islands vs. Vanuatu
    - Fiji vs. other PICs
  - Under CARICOM - smaller Caribbean nations vs. Jamaica and Trinidad & Tobago

# Research Questions

with reference to the selected Pacific and Caribbean countries

1. Whether regional integrations really enhance regional trade flows?

Method to tackle this: Revised Gravity Model

2. Whether heterogeneous export baskets play a significant role in increasing regional trade?

Method: The Random Effects Generalized Least Square (GLS) regression

# Q1: Contributors to Regional Trade Flow?

- The Traditional Gravity Model (Tinbergen 1962; Leamer & Levinsohn 1995; Feenstra 2004).

$$X_{ij} = Y_i E_j / d_{ij}^2$$

$Y_i$  - mass of goods or labor or other factors of production supplied at origin  $i$ ,

$E_j$  - mass of demand for goods or labor at destination  $j$

$d_{ij}$  - distance between  $i$  and  $j$

- The Revised Gravity Model (Novy 2008; Anderson 2010)

$$100\% = \left( \frac{2\Delta \ln \left( \frac{y_i y_j}{y^w} \right)}{\Delta \ln(x_{ij} x_{ji})} \right) + (\Delta \ln(x_{ij} x_{ji}) - \Delta \ln(x_{ii} x_{jj})) - \left( \Delta \ln \left( \frac{y_i / y^w}{x_{ii} / y_i} \right) + \Delta \ln \left( \frac{y_i / y^w}{x_{jj} / y_j} \right) \right)$$

Simply, 100% growth in trade flow = contribution from GDP growth + contribution from bilateral trade cost reduction + contribution from multilateral trade cost reduction.

## Decomposition of Regional Trade Flow for the Pacific Countries (%)

Fiji	1981-1990	1991 - 2000	2001 -2010
<b>Growth of Trade Flow</b>	<b>18.57</b>	<b>-1.72</b>	<b>28.52</b>
<b>1. Contribution of GDP growth</b>	-31.77	-316.28	49.09
<b>2. Contribution of bilateral trade cost reduction</b>	59.68	302.92	50.36
<b>3. Contribution of multilateral trade cost reduction</b>	72.10	113.36	0.55
<b>Papua New Guinea</b>			
<b>Growth of Trade Flow</b>	<b>11.88</b>	<b>6.03</b>	<b>21.53</b>
<b>1. Contribution of GDP growth</b>	-23.06	55.07	92.35
<b>2. Contribution of bilateral trade cost reduction</b>	28.05	116.38	26.18
<b>3. Contribution of multilateral trade cost reduction</b>	95.01	-71.45	-18.53
<b>Samoa</b>			
<b>Growth of Trade Flow</b>	<b>9.37</b>	<b>29.70</b>	<b>25.86</b>
<b>1. Contribution of GDP growth</b>	-73.17	45.06	68.56
<b>2. Contribution of bilateral trade cost reduction</b>	-94.06	68.49	44.11
<b>3. Contribution of multilateral trade cost reduction</b>	267.23	-13.56	-12.67

## Decomposition of Regional Trade Flow for the Pacific Countries (%) cont.

Solomon Islands	1981-1990	1991-2000	2001-2010
<b>Growth of Trade Flow</b>	<b>-2.18</b>	<b>-5.86</b>	<b>14.88</b>
1. Contribution of GDP growth	-36.96	-126.78	76.55
2. Contribution of bilateral trade cost reduction	586.60	194.85	18.71
3. Contribution of multilateral trade cost reduction	-449.64	31.93	4.75
<b>Tonga</b>			
<b>Growth of Trade Flow</b>	<b>-3.84</b>	<b>19.23</b>	<b>20.44</b>
1. Contribution of GDP growth	-77.57	49.86	72.07
2. Contribution of bilateral trade cost reduction	418.63	68.22	24.48
3. Contribution of multilateral trade cost reduction	-241.06	-18.08	3.45

Note: Author's calculation

Source: The Direction of Trade Statistics (2013), IMF

## Decomposition of Regional Trade Flow for the Caribbean Countries (%)

Dominica	1981-1990	1991 - 2000	2001 -2010
<b>Growth of Trade Flow</b>	<b>10.17</b>	<b>16.41</b>	<b>23.41</b>
<b>1. Contribution of GDP growth</b>	132.84	95.59	25.91
<b>2. Contribution of bilateral trade cost reduction</b>	-80.93	-7.82	44.83
<b>3. Contribution of multilateral trade cost reduction</b>	48.09	12.23	29.26
Haiti			
<b>Growth of Trade Flow</b>	<b>-13.33</b>	<b>9.35</b>	<b>12.99</b>
<b>1. Contribution of GDP growth</b>	0.00	75.38	70.70
<b>2. Contribution of bilateral trade cost reduction</b>	184.46	-233.78	63.95
<b>3. Contribution of multilateral trade cost reduction</b>	-84.46	258.40	-34.66
Jamaica			
<b>Growth of Trade Flow</b>	<b>-0.90</b>	<b>-7.42</b>	<b>13.13</b>
<b>1. Contribution of GDP growth</b>	-697.52	-219.82	46.25
<b>2. Contribution of bilateral trade cost reduction</b>	1365.50	351.87	59.95
<b>3. Contribution of multilateral trade cost reduction</b>	-567.98	-32.04	-6.21

## Decomposition of Regional Trade Flow for the Caribbean Countries (%) cont.

Saint Lucia	1981-1990	1991-2000	2001-2010
<b>Growth of Trade Flow</b>	<b>2.40</b>	<b>-17.66</b>	<b>30.64</b>
<b>1. Contribution of GDP growth</b>	586.37	-86.43	23.81
<b>2. Contribution of bilateral trade cost reduction</b>	-609.52	213.53	48.32
<b>3. Contribution of multilateral trade cost reduction</b>	123.15	-27.10	27.87
<b>Trinidad&amp; Tobago</b>			
<b>Growth of Trade Flow</b>	<b>-10.29</b>	<b>6.33</b>	<b>24.36</b>
<b>1. Contribution of GDP growth</b>	44.66	194.18	58.80
<b>2. Contribution of bilateral trade cost reduction</b>	147.21	-166.95	41.39
<b>3. Contribution of multilateral trade cost reduction</b>	-91.87	72.76	-0.19

Note: Author's calculation

Source: The Direction of Trade Statistics (2013), IMF

# Key Results

- An overall increase in trade flow for both the regions. *But why?*

- 1981-1990:

Pacific region - the main contributory factor for trade flow growth was mostly multilateral trade cost reduction; with the exception of the Solomon Islands and Tonga

Caribbean region- mostly bilateral trade cost reduction caused regional trade to increase; with the exception of Dominica and St. Lucia.

- 1991-2000:

Pacific region - a stark change from multilateral trade cost reduction to bilateral trade cost reduction for all

Caribbean region - a combination of reduction in both the bilateral and multilateral trade costs.

- 2001-2010:

Pacific region and Caribbean region - mostly due to bilateral trade cost reduction and GDP growth

## Q2: Does heterogeneous export basket impact regional trade significantly?

- Export Diversification Index =  $\left( \sum_i \left| \frac{\sum_d x_{isd}}{\sum_d X_{sd}} - \frac{\sum_{wd} x_{iwd}}{\sum_{wd} X_{wd}} \right| \right) \div 2$

Result : With 95% level of confidence we approximate that for;

The *Pacific* Region's mean estimation ranges between 1.64 to 2.82;  
*Pacific's heterogeneity with a point estimation of **2.23**.*

The *Caribbean* Region's mean estimation ranges between 2.34 to 3.39;  
*its diversification with a point estimation of **2.86***

# The Random Effects Generalized Least Square (GLS) regression

- *Phase 1: Impact of an array of variables selected from literature readings upon relative price of export products.*

$$\text{Relative Price} = \beta_0 + \beta_1 (\text{Remoteness}) + \beta_2 (\text{Area}) + \beta_3 (\text{Distance}) + \beta_4 (\text{Labor Participation}) + \beta_5 (\text{FDI}) + \beta_6 (\text{LPI})$$

- *Phase 2: Estimation of the impact of predicted relative price variable upon heterogeneity variable.*

$$\text{Diversification} = \beta_0 + \beta_1 (\text{Predicted Relative Price}) + \beta_2 (\text{Export Share}) + \beta_3 (\text{Regional Trade Share}) + \beta_4 (\text{Regional Hirschmann Share}) + \beta_5 (\text{Trade Overlap})$$

- *Phase 3: Impact of predicted value of heterogeneity variable upon the bilateral exports of countries in the two regions.*

$$\text{Bilateral Exports} = \beta_0 + \beta_1 (\text{Predicted Diversification index}) + \beta_2 (\text{Income Control}) + \beta_3 (\text{D. Bilateral Exports})$$

# Key Results

Does heterogeneous export basket impact regional trade significantly?

- The diversification index holds a positive and statistically significant position in contributing towards bilateral exports within both the Pacific (1.358\*\*\*) and the Caribbean (0.554\*) regions.
- The impact of having diversified products for the Pacific countries is almost double that of the Caribbean countries.
- Additionally, previous year's bilateral exports as well as GDP growth influence regional exports significantly
- Simply, an increase in either one of the variables would result in an increase in bilateral exports for the regions.

# Summary

Whether regional integrations really enhance regional trade flows?

Yes, bilateral trade cost reduction impacts the growth in trade largely. Meaning, regional trade negotiations are critically influential!

Whether heterogeneous export baskets play a significant role in increasing regional trade?

Positively and significantly yes ! Twice the impact for Pacific countries compared to the Caribbean nations.

Thank you