Caribbean Export Diversification Along its Development Path

by

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Outline of Presentation

- Introduction
- Objective of Study
- Data
- Methodology
- Results
- Limitations
- Conclusion

Introduction

- **The trade theory takes two views:**
  - **Specialization**
  - **Diversification**

- **A stylized fact is that along the growth path both are at play; countries experience increasing diversification followed by re-concentration:**
  - **Cadot et al (2010), Koren and Terenyo (2007), Klinger and Lederman (2004) and Imbs and Wacziarg (2003).**

- **From a policy perspective this creates little room for intervention.**

Objective

- **This paper examines whether Caribbean countries undergo increasing diversification followed by re-concentration using 16 countries over the period 1990-2008.**
  - **These countries have a limited ability to diversify.**
  - **Cadot et al (2010) excluded small island economies.**

Data

- **Two main sources of data are employed:**
  - **HS6 COMTRADE export data (4 991 export lines) covering.**
  - **Bulmer-Thomas (2010)GDP per capita data.**

Methodology:

Diversification Measures

- **Diversification is measured for every country year at the intensive and extensive product margin.**
  - **Intensive product margin: exporting a larger volume of existing products to old markets.**
  - **extensive product margin: an increase in export lines via new products and markets.**

Methodology Cont'd:

Diversification Measures

- **Three inequality indices are used to measure diversification at the intensive product margin.**
  - **Herfindahl Index**
  - **Theil Index**
  - **Gini Index**

Methodology Cont'd:

Diversification Measures

- **The Herfindahl index is calculated by taking the square of the export share of all export categories in the market.**

- **When normalized between 0 and 1:**

$$H^* = \frac{\sum_k (S_{ij})^2 - 1/n}{1 - 1/n}$$

where 1 is perfect specialization and 0 diversification.

Methodology Cont'd:
Diversification Measures

- **The Theil index is calculated by shares are weighed by the logarithms of the export share of each category.**

$$T = 1/n \sum^{n}_{i=1} X_{ij} / \mu \ln (X_{ij} / \mu)$$

$$\text{where } \mu = \sum^{n}_{i=1} X_{ij} / n$$

Methodology Cont'd:

Diversification Measures

- The **Gini index** is calculated using Brown's formula:
  - Cumulative export shares, $X_{ij} = \sum^{ij}_{l=1} x_l / \sum^{n}_{l=1} x_l$
  - Cumulative shares in the number of export lines are ij/n
  - Then:

$$G = \left| 1 - \sum^{n}_{ij=1} (X_{ij} - X_{ij-1}) (2_{ij} - 1)/n \right|$$

where 1 is perfect specialization and 0 diversification

Methodology Cont'd:

Pairwise Correlation Coefficients

	Herfindahl	Theil	Gini
Herfindahl	1.0000	0.8530 (0.0000)	0.8098 (0.0000)
Theil	0.8530 (0.0000)	1.0000	0.9862 (0.0000)
Gini	0.8098 (0.0000)	0.9862 (0.0000)	1.0000

Methodology Cont'd:

Diversification Measures

- **To measure diversification at the extensive margin the Number of active product lines "Nber" is used (Cadot et al 2010).**

- **It counts the number of active product lines.**

- **It is Positively correlated to diversification.**

Results

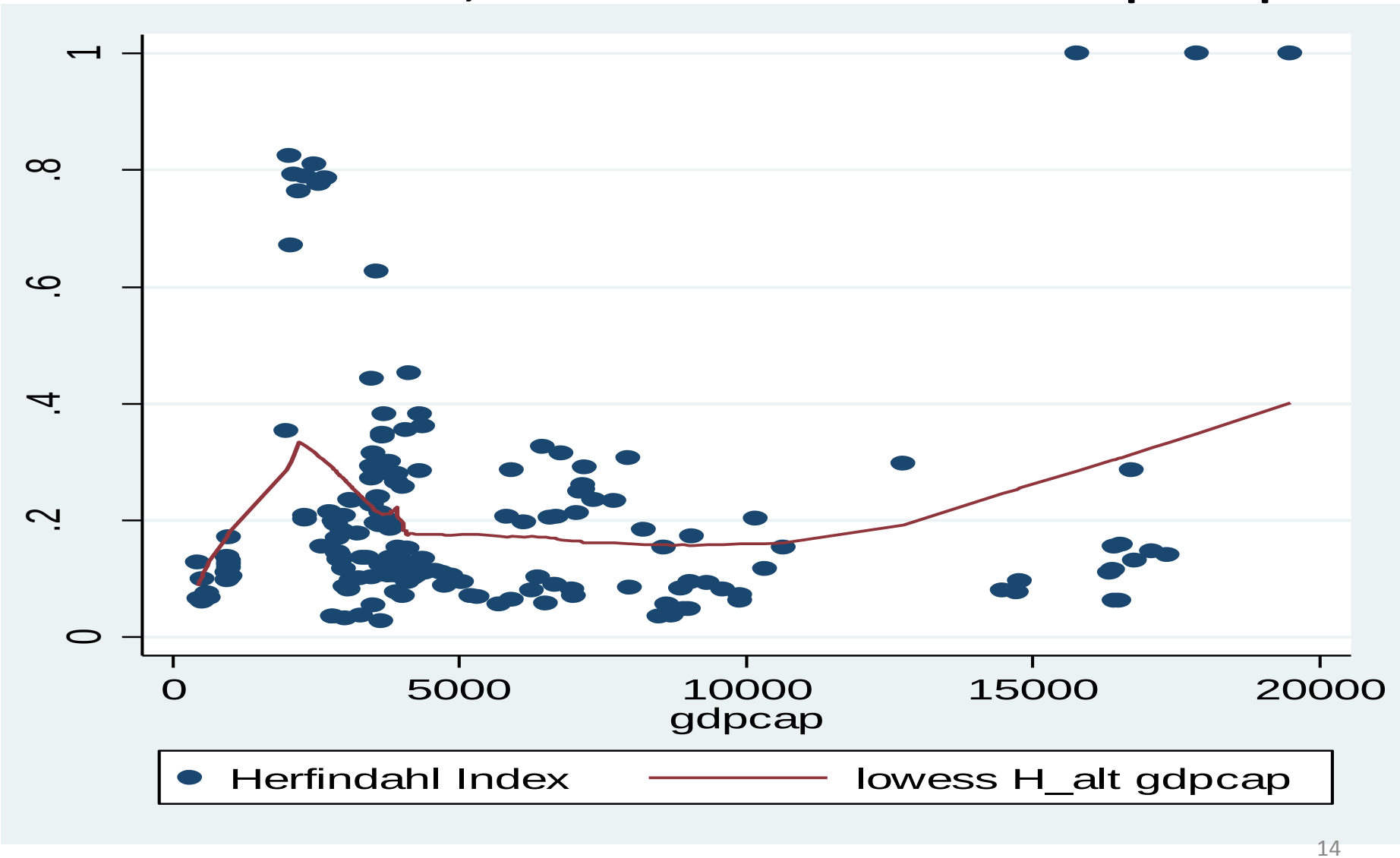
- **Caribbean Diversification Ranking**

Herfindahl Index		Number of active export lines	
1990s	2000s	1990s	2000s
BHS	DOM	TTO	TTO
TTO	GRD	BHS	DOM
GRD	DMA	CUB	JAM
BLZ	GUY	JAM	GUY
GUY	TTO	BLZ	CUB
DMA	VCT	DOM	BHS
VCT	LCA	GUY	LCA
JAM	BHS	LCA	SUR
KNA	MSR	KNA	VCT
LCA	AIA	VCT	GRD
SUR	CUB	SUR	KNA
	BLZ	DMA	DMA
	KNA	GRD	BLZ
	JAM	MSR	AIA
	SUR	HTI	MSR

Source: Author's Calculation.

Results cont'd:

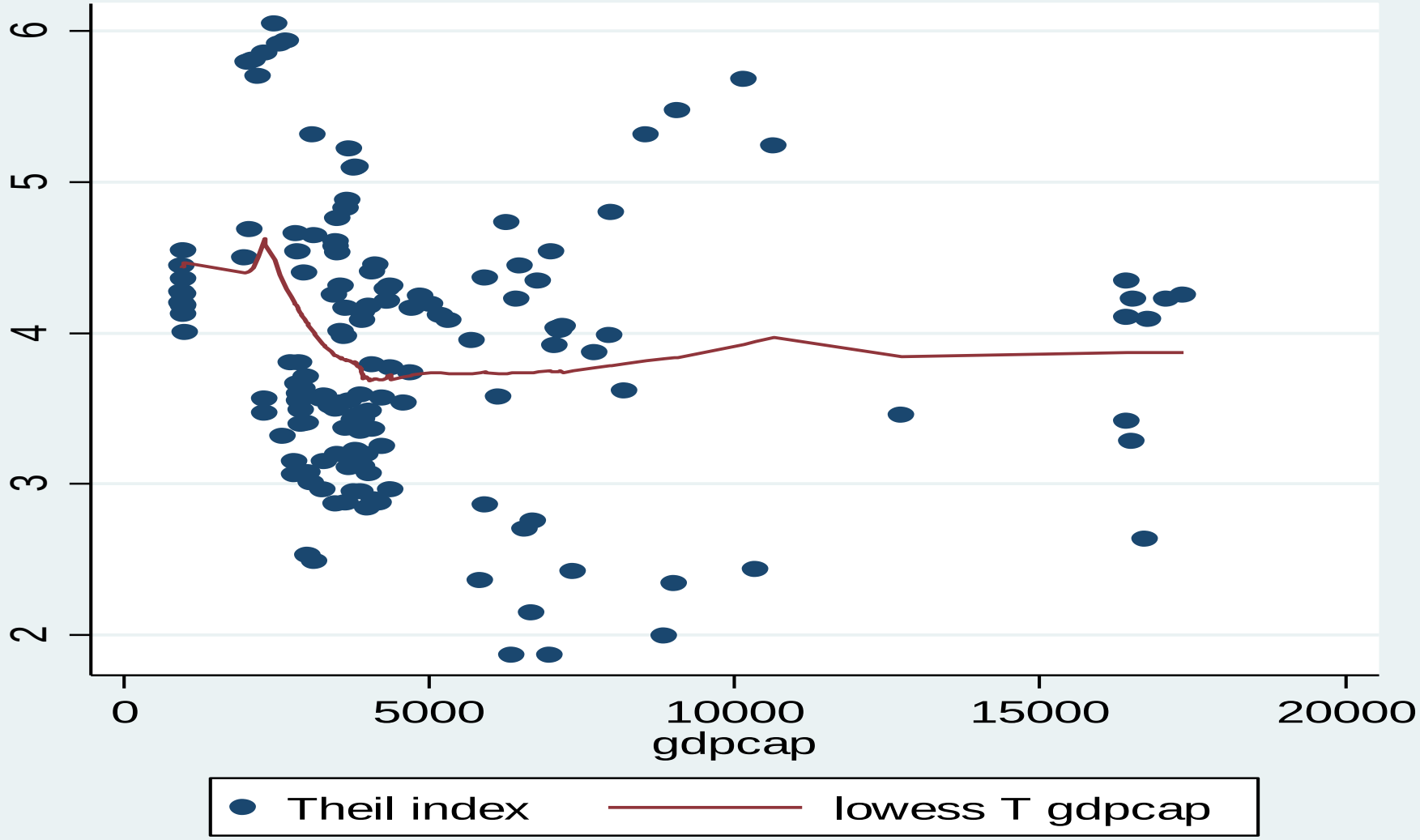
LOWESS Estimator, Herfindahl Index versus GDP per capita



Source: Author's Calculation

Results cont'd:

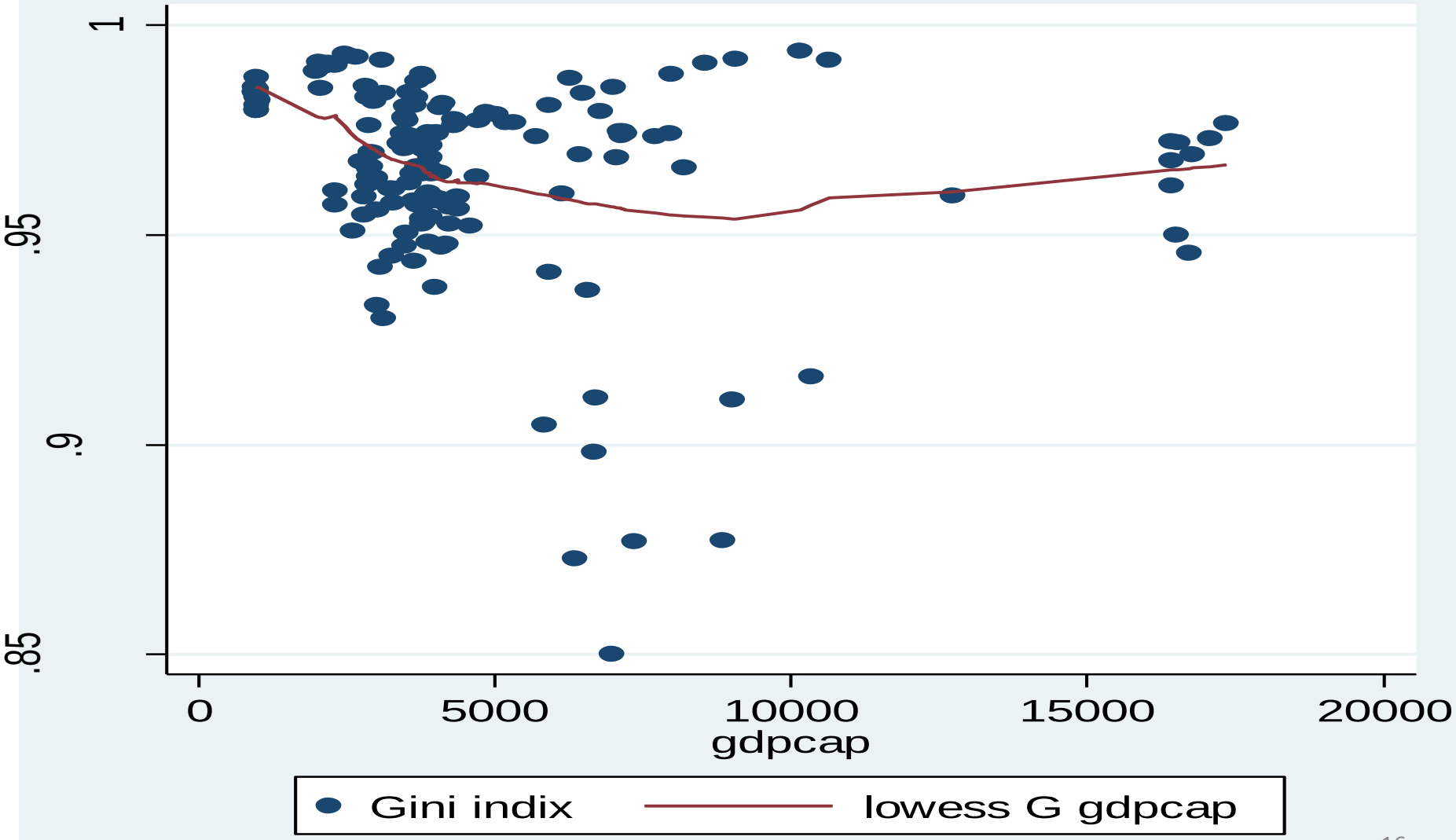
LOWESS Estimator , Theil Index versus GDP per capita



Source: Author's Calculation

Results cont'd:

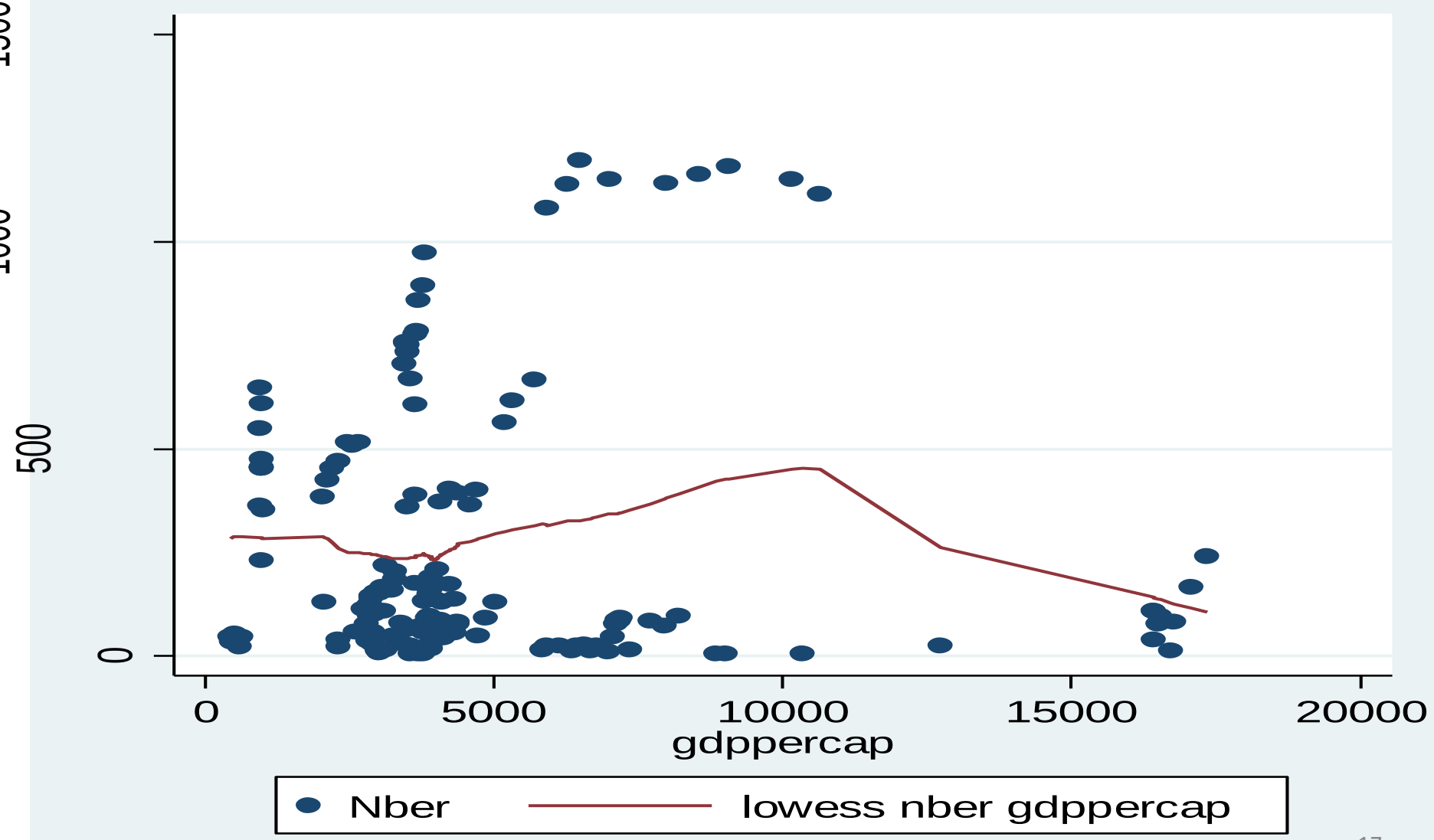
LOWESS Estimator, Gini Index versus GDP per capita



Source: Author's Calculation.

Results cont'd:

LOWESS Estimator, Nber versus GDP per capita

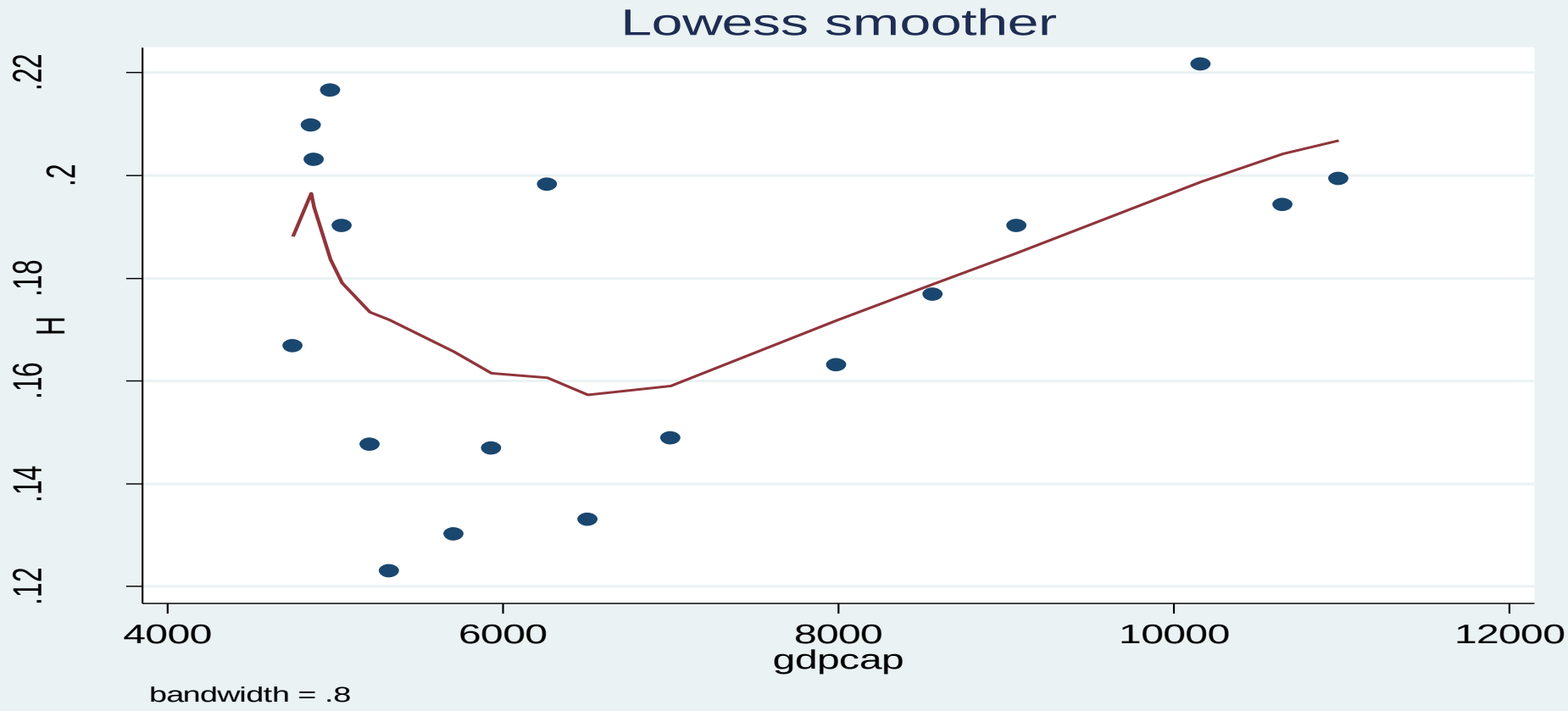


Source: Author's Calculation.

Results cont'd:

LOWESS Estimator, Increasing Specialization

Trinidad and Tobago

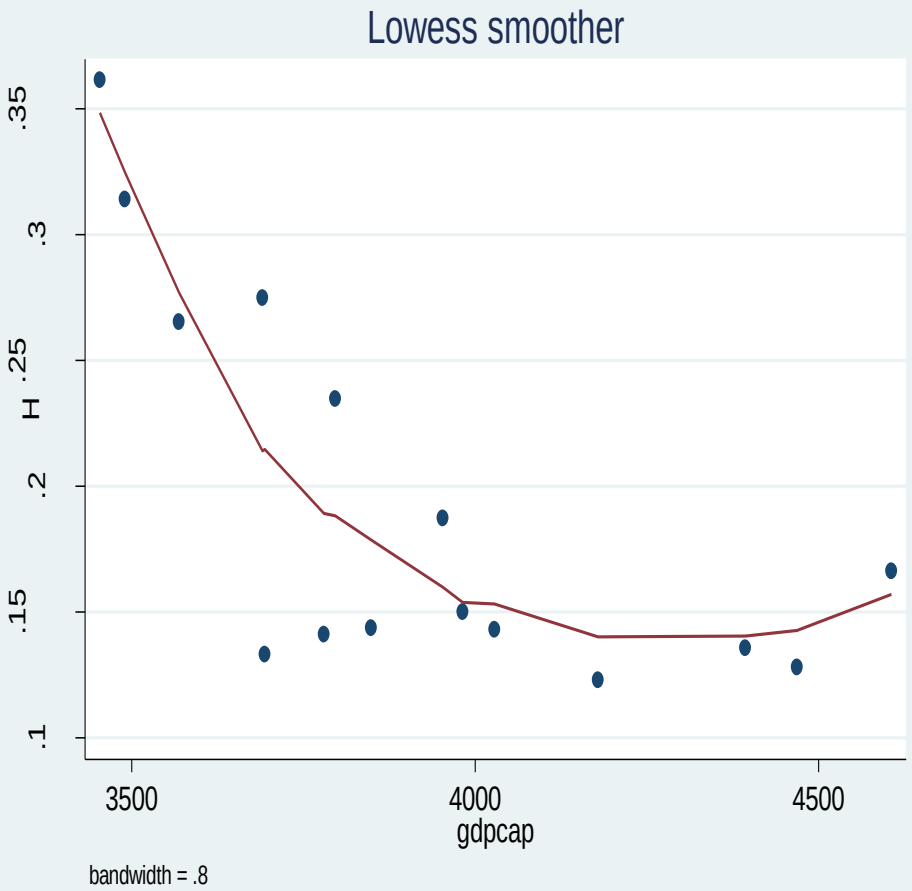


Source: Author's Calculation.

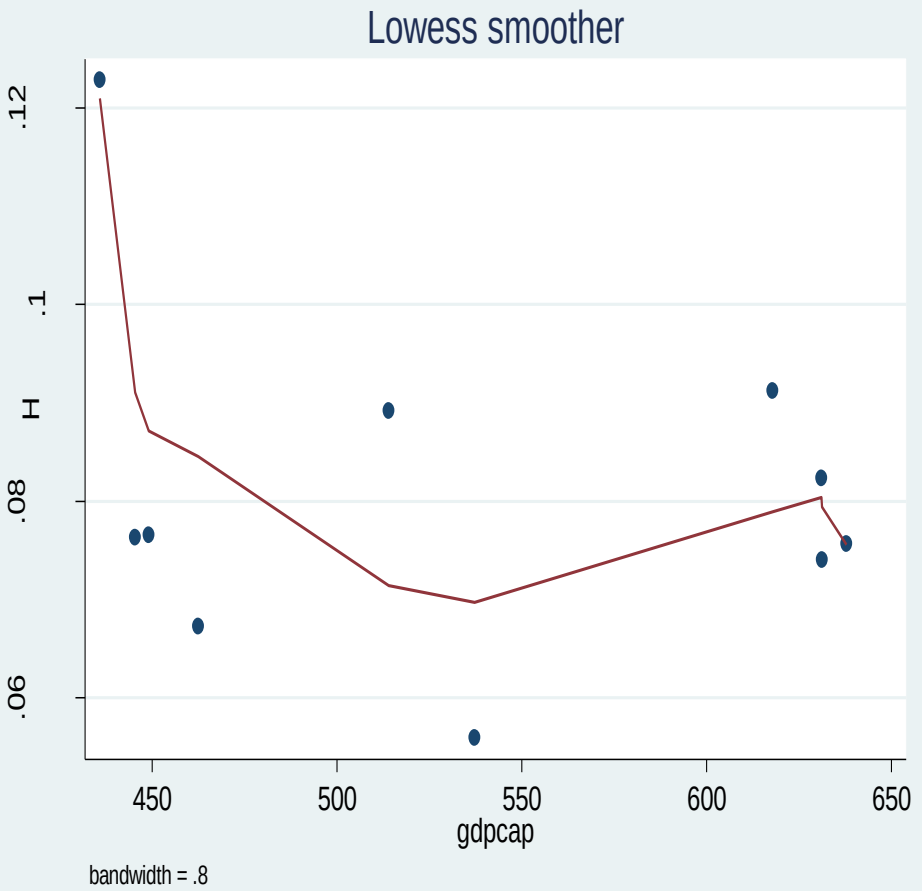
Results cont'd:

LOWESS Estimator, Increasing Specialization

Dominica



Haiti



Source: Author's Calculation.

Results Cont'd:

Fixed Effects Panel Regression

- **Quadratic Fixed Effects panel regression model is run:**

$$\text{Herfindahl, Gini, Theil and Nber} = \beta_0 + \beta_1 (\text{GDP per capita}) + \beta_2 (\text{GDP per capita})^2$$

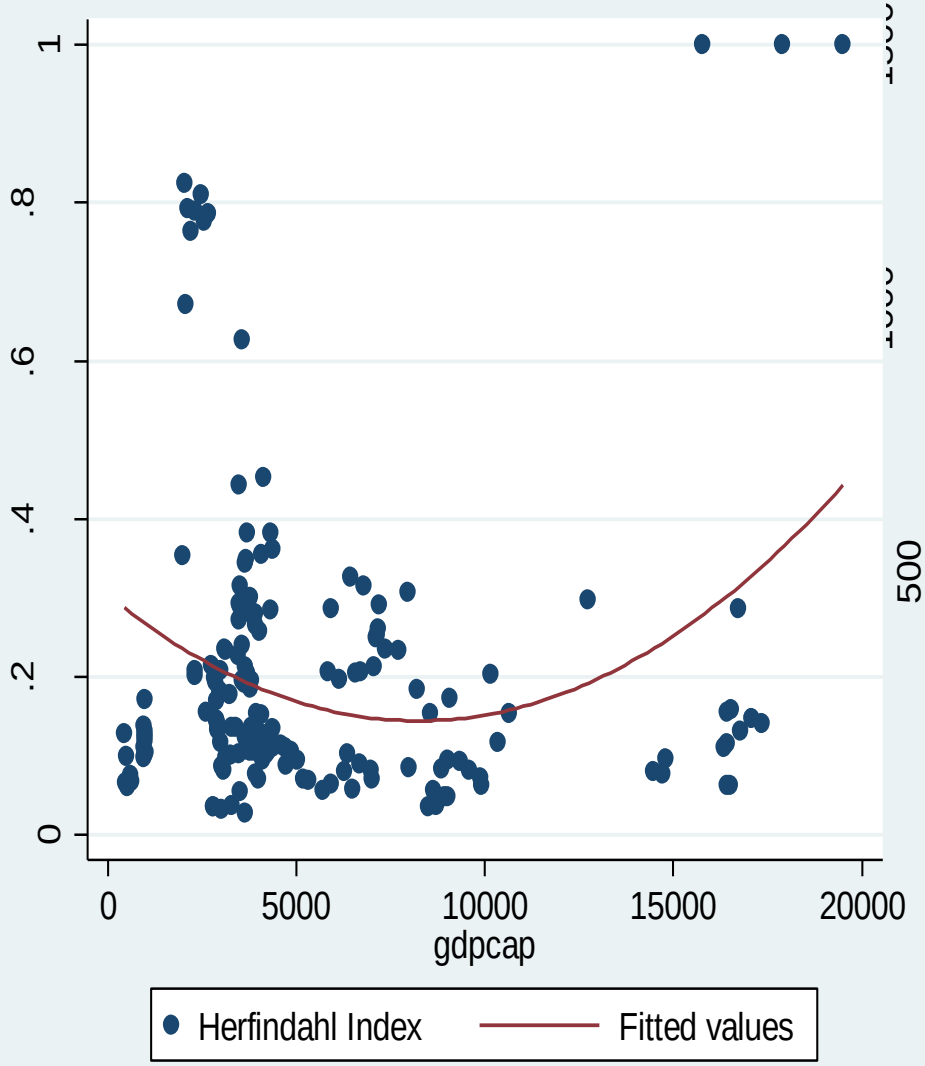
Results Cont'd:

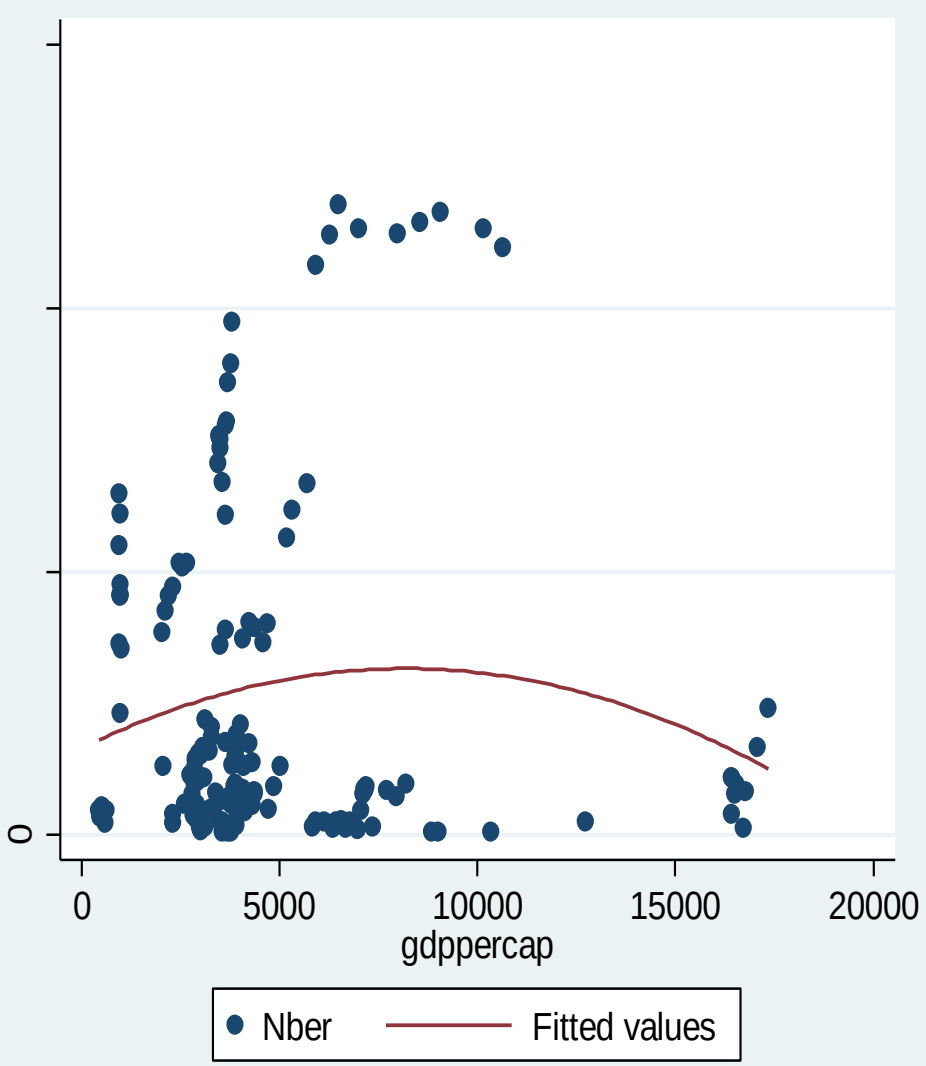
FE Panel Regression

	Fixed Effects Results			
Variable	**Coefficient**			
	Herfindhal	**Theil**	**Gini**	**Nber**
GDPpc	**-.0001277*** **	**-.0001739 ** **	**-.0000123 *** **	**.3171667*** **
GDPpcsq	**9.22e-09*** **	**2.35e-08*** **	**8.66e-10*** **	**-.0000124*** **
Turning point	**6 927**	**10851**	**7 122**	**12768**
R sq	**0.06**	**0.05**	**0.05**	**0.44**

****,**,* Significane at 1%, 5% and 10 % level.*

Results Cont'd: Fitted Values





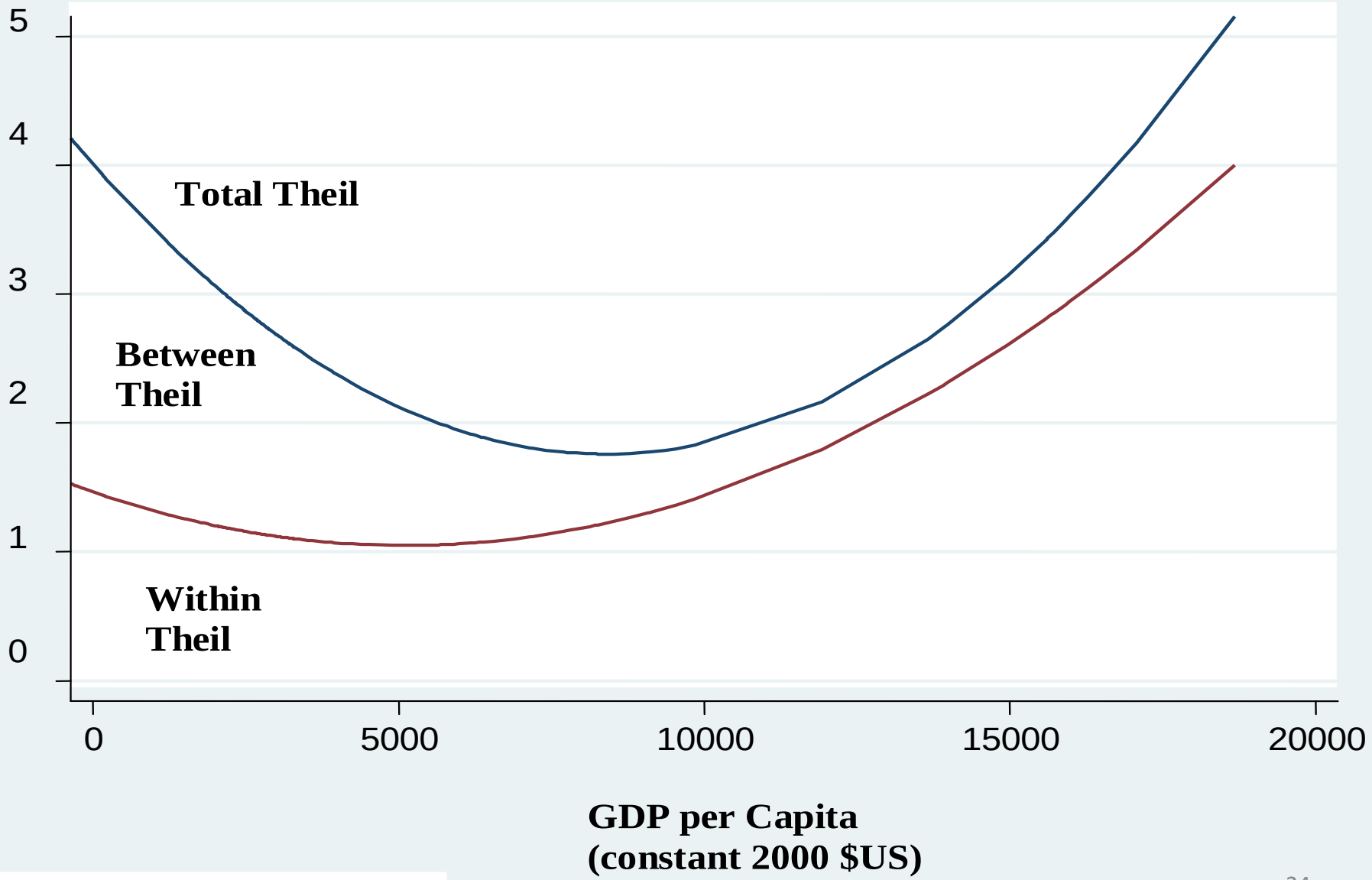
Source: Author's Calculation.

Results Cont'd:

- Countries on either side of the turning point.

Country	GDP per capita in 2008 (constant 2000) US$	Diversification	Specialization
AIA	16 844	BLZ	AIA
BHS	17 473	CUB	BHS
BLZ	3 691	DMA	KNA
CUB	4 355	DOM	TTO
DMA	4 760	GRD	
DOM	3 731	GUY	
GUY	1 015	HTI	
GRD	4 778	JAM	
HTI	390	LCA	
JAM	3 910	MSR	
KNA	8 465	VCT	
LCA	4 988	SUR	
MSR	6 589		
SUR	2 613		
VCT	4 454		
TTO	10 931		

Theil Decomposition



Source; Author's Calculation.

Limitations

- **COMTRADE data incomplete:**
  - **Missing values**
  - **Missing product lines**
  - **Service exports not include**
- **Geographic diversification not studied.**
- **LOWESS sensitive to outliers.**
- **Assume that causality runs from exports to growth and not the other way around.**

Conclusion

- **Caribbean countries undergo increasing diversification followed by re-specialization along their development path.**
- **The turning point for the Caribbean is much smaller than that of the world.**
- **Higher income Caribbean countries will continue to endure specialization and the lower income countries diversification.**

Going Forward

- **To determine the new product lines that create Caribbean diversification.**

- **To determine the product lines that are closed down and cause Caribbean re-concentration.**

Thank You for the Courtesy of your Attention!