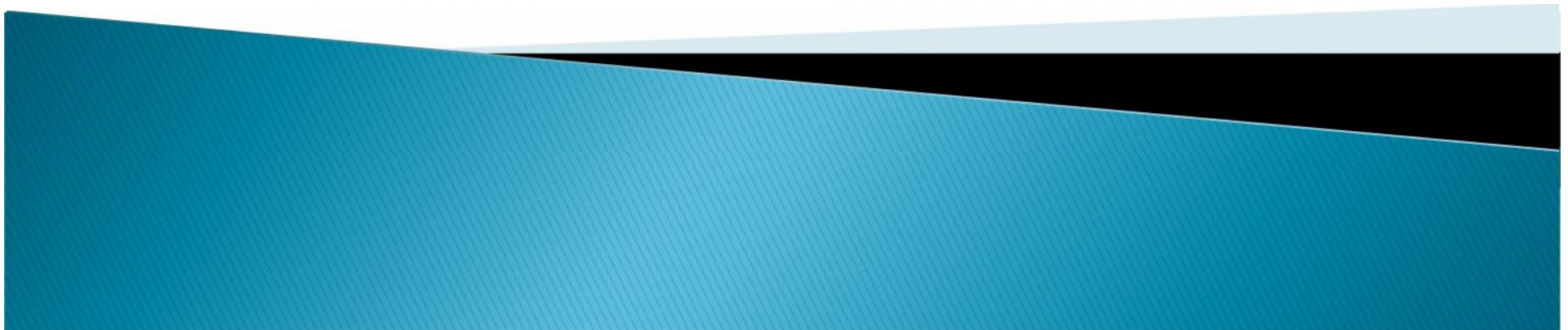


Estimation of Quarterly National Accounts for the LAC Region

Seminar on National Accounts, Santiago
4–6 August 2014

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Our Presentation

- ▶ Overview of QNA published in the LAC region
- ▶ Few words on methodology for quarterly disaggregation and seasonal adjustment
- ▶ Results
- ▶ Future plans



Overview of QNA published

PAIS	$PIB_{(país)}/PIB_{ALC}$	Oficina	ULTIMO TRIMESTRE DE PUBLICACION	DESAGREGACION	BRUTO (O=OFERTA, D=DEMANDA, M=CORRIENTES, K=CONSTANTES)	AJUSTADO (O=OFERTA, D=DEMANDA, M=CORRIENTES, K=CONSTANTES)
Antigua y Barbuda	0.0%	ECC				
Argentina	6.7%	Banco Central de la Republica de Argentina	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	DK (Solo Base 93. Nueva base publicó solo variaciones)
Bahamas	0.3%	Central Bank of Bahamas				
Barbados	0.1%	Central Bank of Barbados				
Belice	0.0%	Central Bank of Belize				
Bolivia	0.4%	Instituto Nacional de Estadísticas de Bolivia	IV 2013	OFERTA - DEMANDA	OM - OK DM - DK	
Brasil	32.3%	Instituto Brasileiro de Geografia y Estadísticas	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	OK(indice 100=95) DK (indice 100=95)
Chile	4.6%	Banco Central de Chile	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	OK - DK
Colombia	5.4%	Banco de la Republica de Colombia	I 2014	OFERTA - DEMANDA		OM - OK DM - DK
Costa Rica	0.7%	Banco Central de Costa Rica	I 2014	OFERTA - DEMANDA	OK DM - DK	PIB M
Cuba	1.6%	Oficina Nacional de Estadísticas e Información				
Dominica	0.0%	ECC				
Ecuador	1.5%	Banco Central de Ecuador	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	
El Salvador	0.6%	Banco Central de Reserva de El Salvador	I 2014	OFERTA	OM - OK	
Grenada	0.0%	ECC				
Guatemala	1.0%	Banco Central de Guatemala	I 2014	OFERTA	OM - OK	
Guyana	0.0%	Bank of Guyana				
Haiti	0.2%					
Honduras	0.4%	Banco Central de Honduras	IV 2013	OFERTA - DEMANDA	OM - OK DM - DK	DM - DK
Jamaica	0.4%	Statistics Institute of Jamaica	IV 2013	OFERTA	OM - OK	OK
México	31.7%	INEGI	I 2014	OFERTA	OM - OK DM - DK	OM - OK DM - DK
Nicaragua	0.2%	Banco Central de Nicaragua	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	
Panamá	0.6%	Contraloría General de la Republica/ Instituto Nacio	I 2014	OFERTA	OK	
Paraguay	0.3%	Banco central del paraguay	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	
Perú	2.9%	Banco Central de la reserva de Peru	I 2014		OK (indice 100=2007)	
República Dominicana	1.2%	Banco Central de la Republica Dominicana	I 2014	OFERTA - DEMANDA	OM DM	
San Cristobal y Nieves	0.0%	ECC				
San Vicente y las Granadinas	0.0%	ECC				
Santa Lucía	0.0%	ECC				
Suriname	0.1%	Central bank van Suriname				
Trinidad y Tobago	0.6%	Central Bank of Trinidad y Tobago	III 2013	OFERTA	OK - (indice 100=2000, solo variaciones)	
Uruguay	0.6%	Banco Central de Uruguay	I 2014	OFERTA - DEMANDA	OM - OK DM - DK	
Venezuela	5.3%	Banco Central de Venezuela	IV 2013	OFERTA - DEMANDA	OK - DK	PIB K

Overview of QNA published

TOTAL	BRUTO	AJUSTADO	
33	19	9	
Combinación	PAISES CON INFORMACION	ΣPIB	PAISES ASOCIADOS
BOM	14	82.0%	Ecuador, El Salvador, Guatemala, Honduras, Jamaica, México, Nicaragua, Paraguay, República Dominicana, Uruguay
BOK	19	90.9%	Argentina, Bolivia, Brasil, Chile, Colombia, Costa Rica, Rep. Dominicana, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, México, Nicaragua, Panamá, Paraguay, Perú, Uruguay, Venezuela
BDM	13	83.6%	Argentina, Bolivia, Brasil, Chile, Costa Rica, Ecuador, Honduras, México, Nicaragua, Paraguay, Perú, República Dominicana, Uruguay
BDK	13	87.7%	Argentina, Bolivia, Brasil, Chile, Costa Rica, Ecuador, Honduras, México, Nicaragua, Paraguay, Perú, Uruguay, Venezuela
AOM	3	37.4%	Colombia, Honduras, México
AOK	6	74.8%	Brasil, Chile Colombia, Honduras, Jamaica, México
ADM	3	37.4%	Colombia, Honduras, México
ADK	6	81.1%	Argentina, Brasil, Chile, Colombia, Honduras, México

Methodology for quarterly disaggregation

- ▶ Indirect indicator method, based on quarterly indicator(s) and regression


$$y(t) = f[c, x(t), \varepsilon(t)]$$

- ▶ Model = Linear / Log-linear / Multiplicative
- ▶ Maintain = Sum / Average / Final / Weighted
- ▶ Residual model = RW1 / AR1 / RWAR1 / RW2
- ▶ Example: Chow-Lin model

$$y_t = \alpha + \beta x_t + \varepsilon_t$$

$$\varepsilon_t = \rho \varepsilon_{t-1} + u_t$$


Methodology for disaggregation

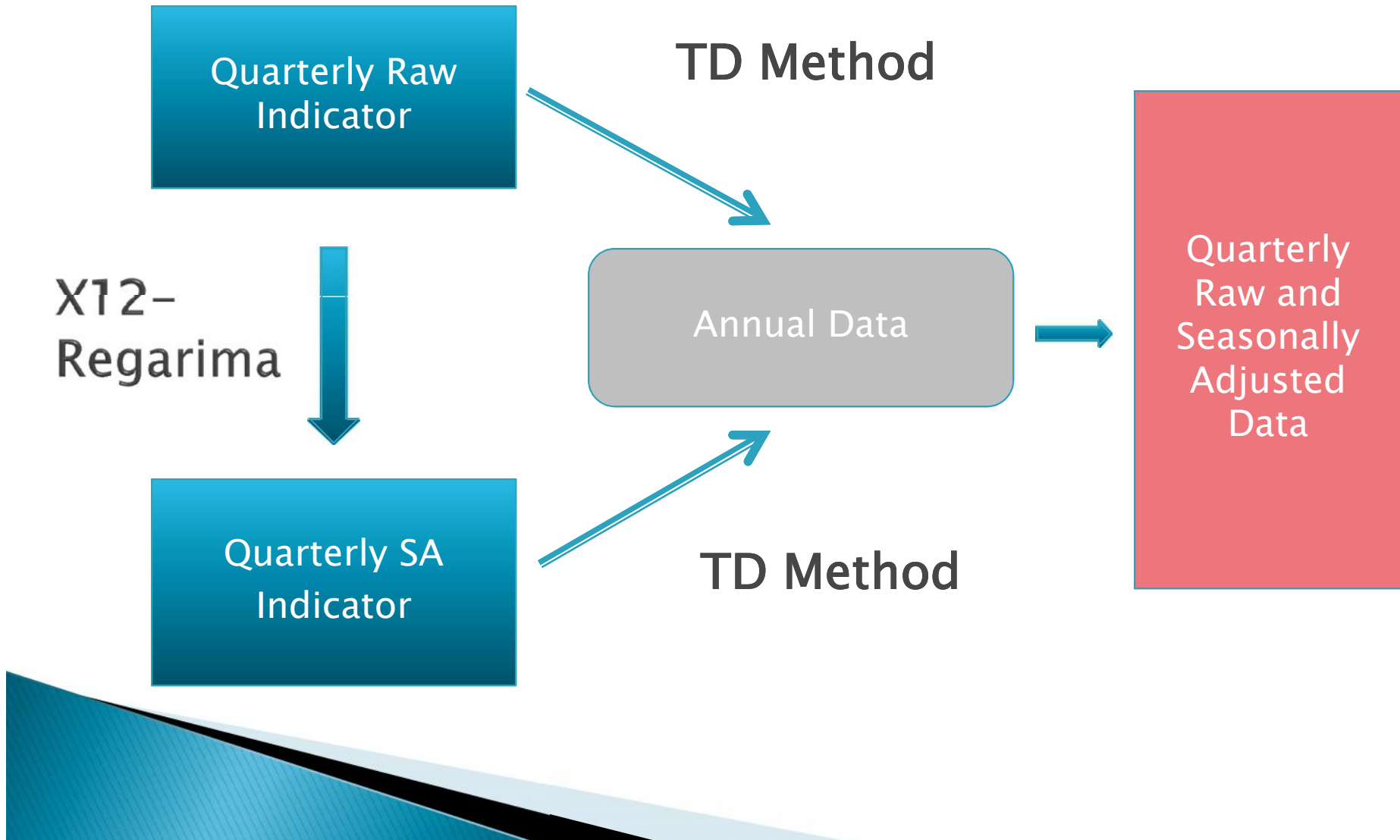
- ▶ **Model=Linear, AR1:** is Chow and Lin (1971), "Best Linear Unbiased Interpolation, Distribution and Extrapolation of Time Series by Related Series", RES, vol 53, pp 372–375
 - ▶ **Model=Linear, RW1:** is Fernandez (1981), "A Methodological Note on the Estimation of Time Series", RES 63, pp 471–478
 - ▶ **Model=Linear, RWAR1:** is Litterman (1983), "A Random Walk, Markov Model for the Distribution of Time Series", JBES 1, pp 169–173
 - ▶ **Model=Multiplicative, RW:** is the proportional Denton (1971), "Adjustment of Monthly or Quarterly Series to Annual Totals: An Approach Based on Quadratic Minimization," JASA 66(333), pp 99–102
 - ▶ **Model=Linear, RW with no related series:** is a generalization of Boot, Feibes, Lisman (1967), "Further methods of Derivation of Quarterly Figures from Annual Data", AS 16, pp 65–75
- 

Methodology for disaggregation

Model	Log-likelihood
Chow-Lin (1971)	-83.77
Fernandez (1981)	-84.32
Litterman (1983)	-83.85
Denton (1971)	-81.15
Boot-Feibes-Lisman (1967)	-112.76
I (2)	-84.89



Time Disaggregation and SA



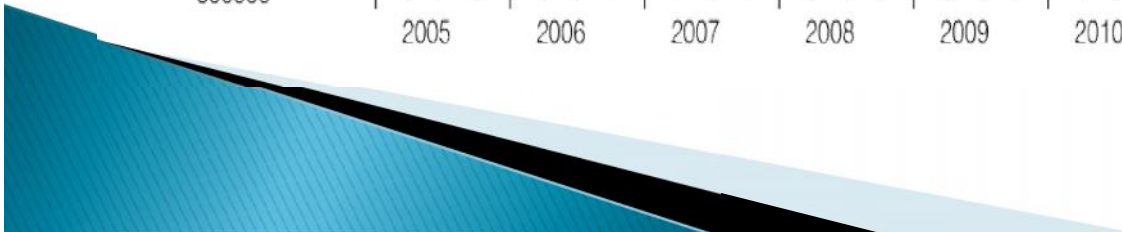
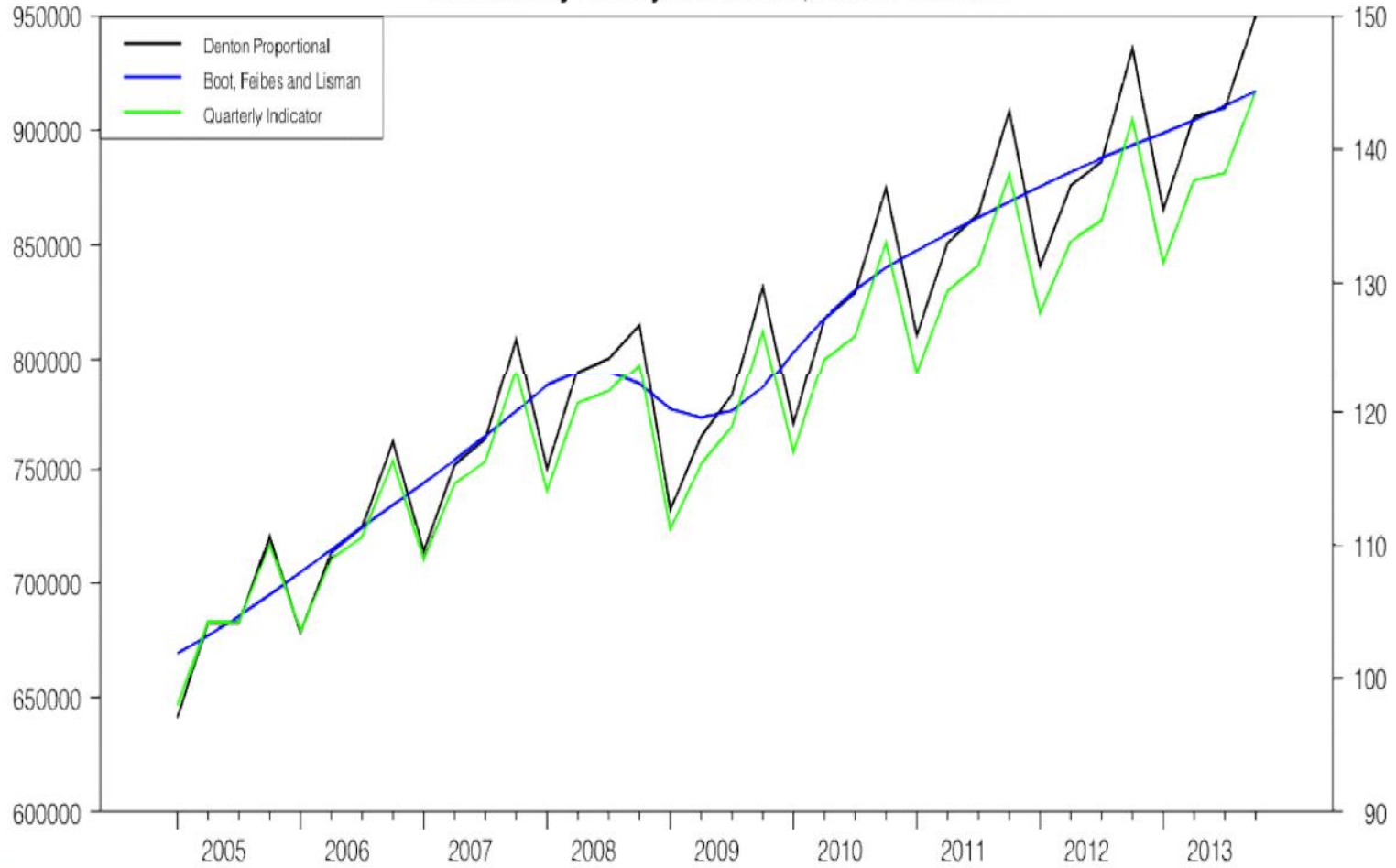
Procedure

- ▶ Analysis of supply-side, constant prices, 4 branches of economic activity
- ▶ Construction of raw indices of QNA in constant US \$ of 2005 of GDP, or VA by (4) branches
- ▶ Quarterly disaggregation of annual totals for 33 countries with the related series obtained for 19 countries
- ▶ SA with X12-Regarima of indicators, and new disaggregation to obtain SA quarterly data
- ▶ Sample period: 2005Q1 – 2013Q4
- ▶ Comparison of methods / Direct vs Indirect



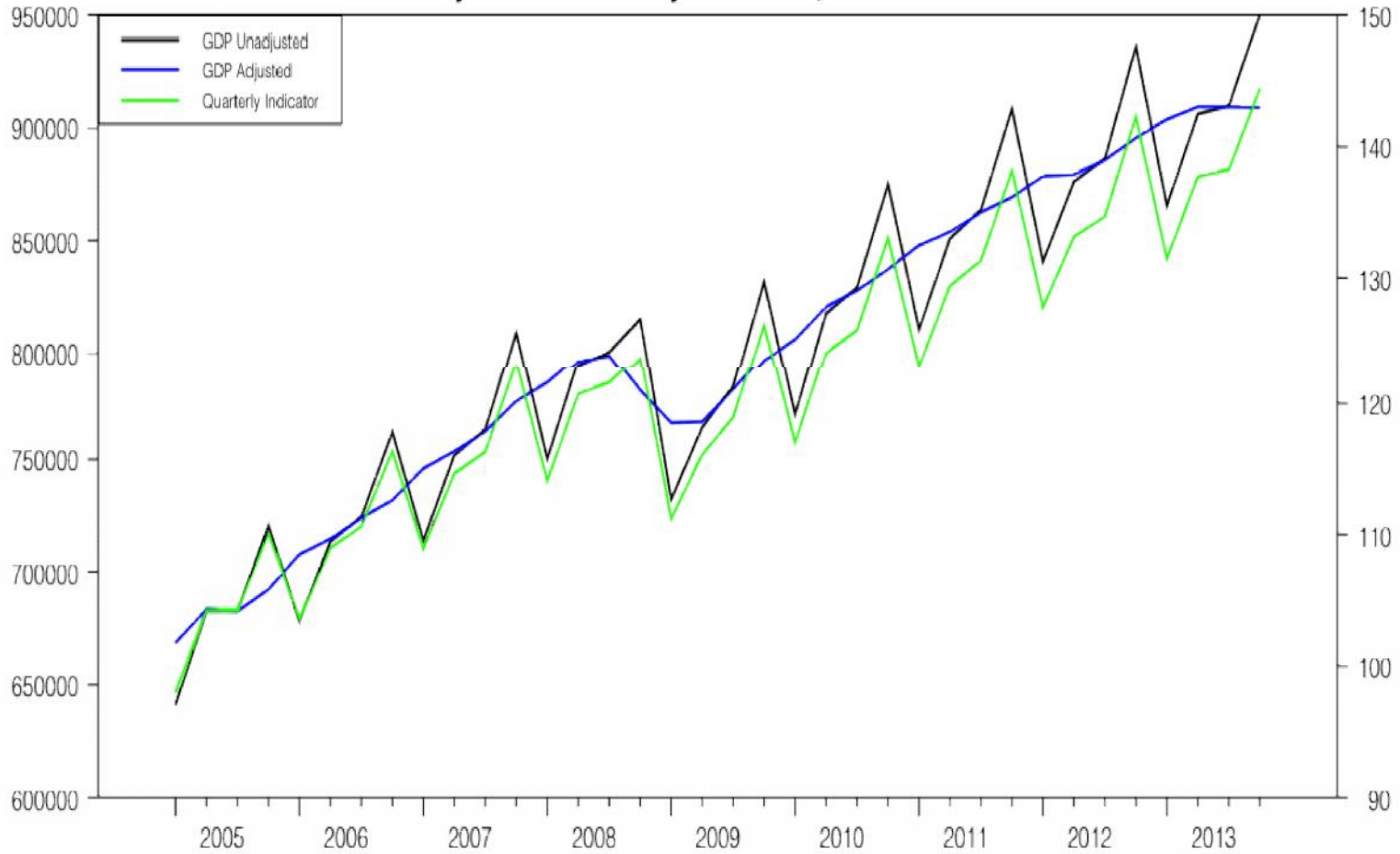
Results

Seasonally Unadjusted Data, Direct Method

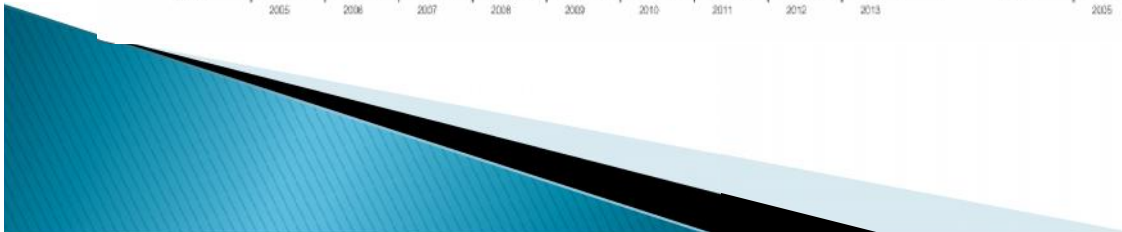
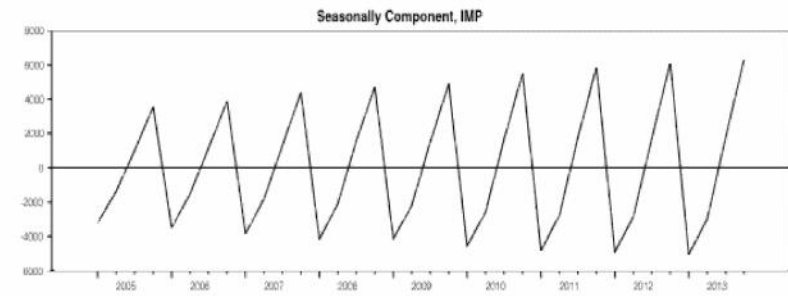
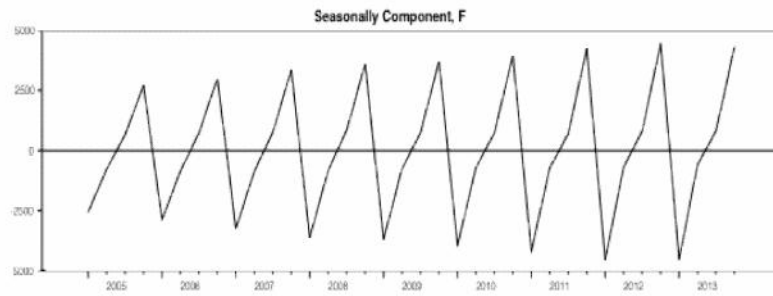
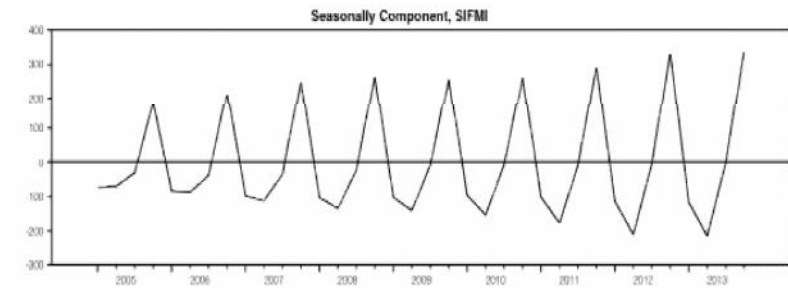
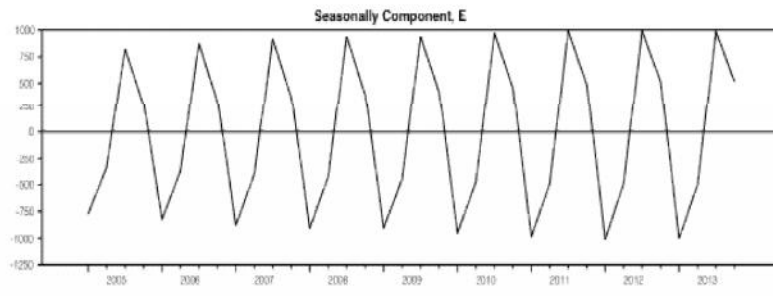
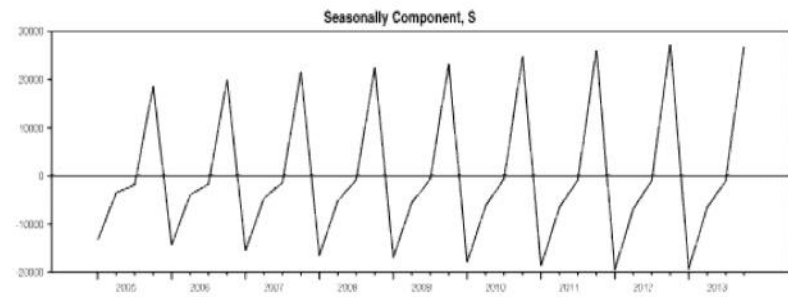
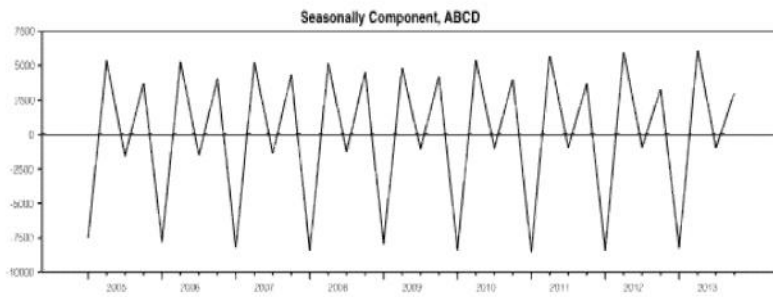


Results

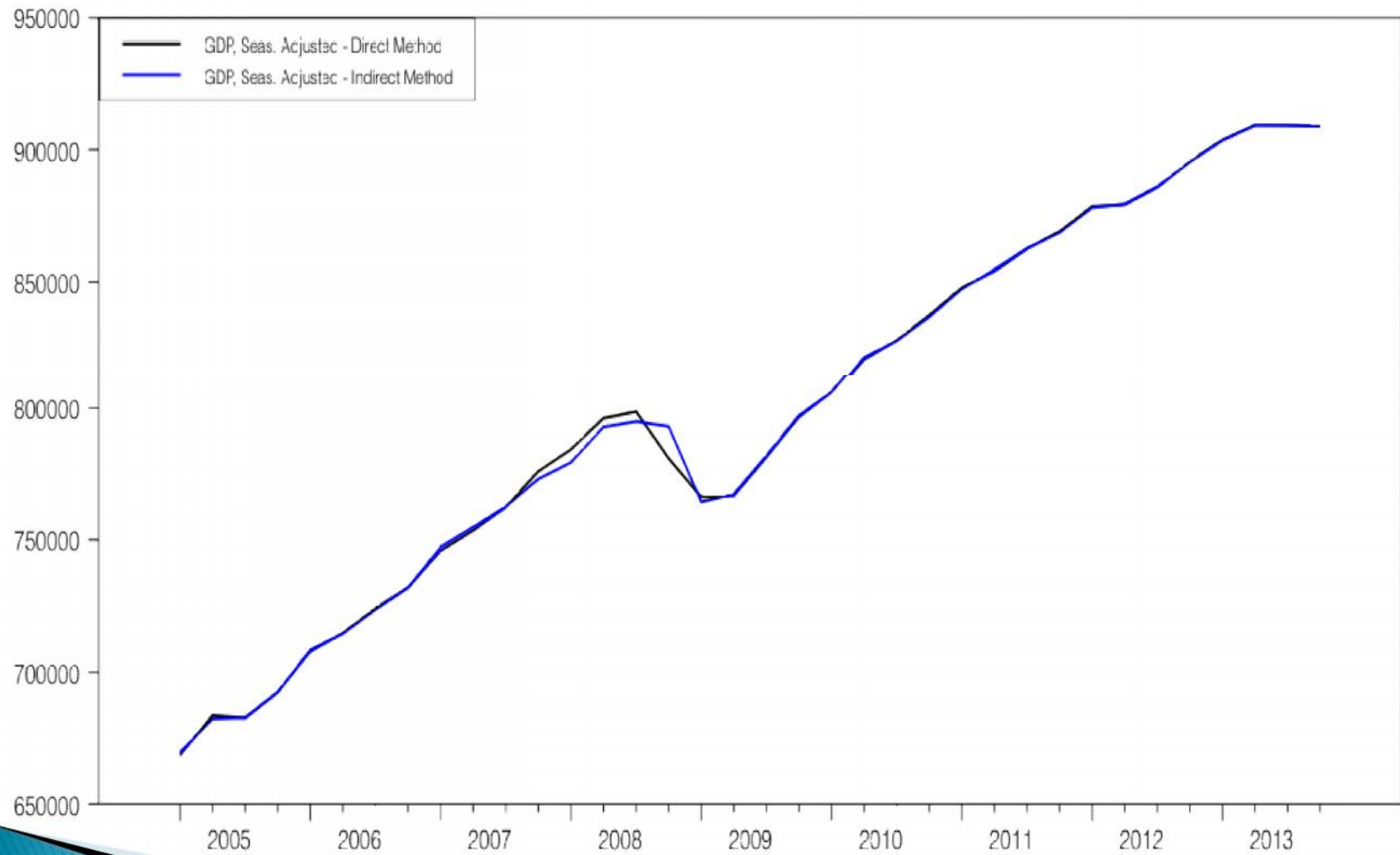
Adjusted and Unadjusted GDP, Direct Method



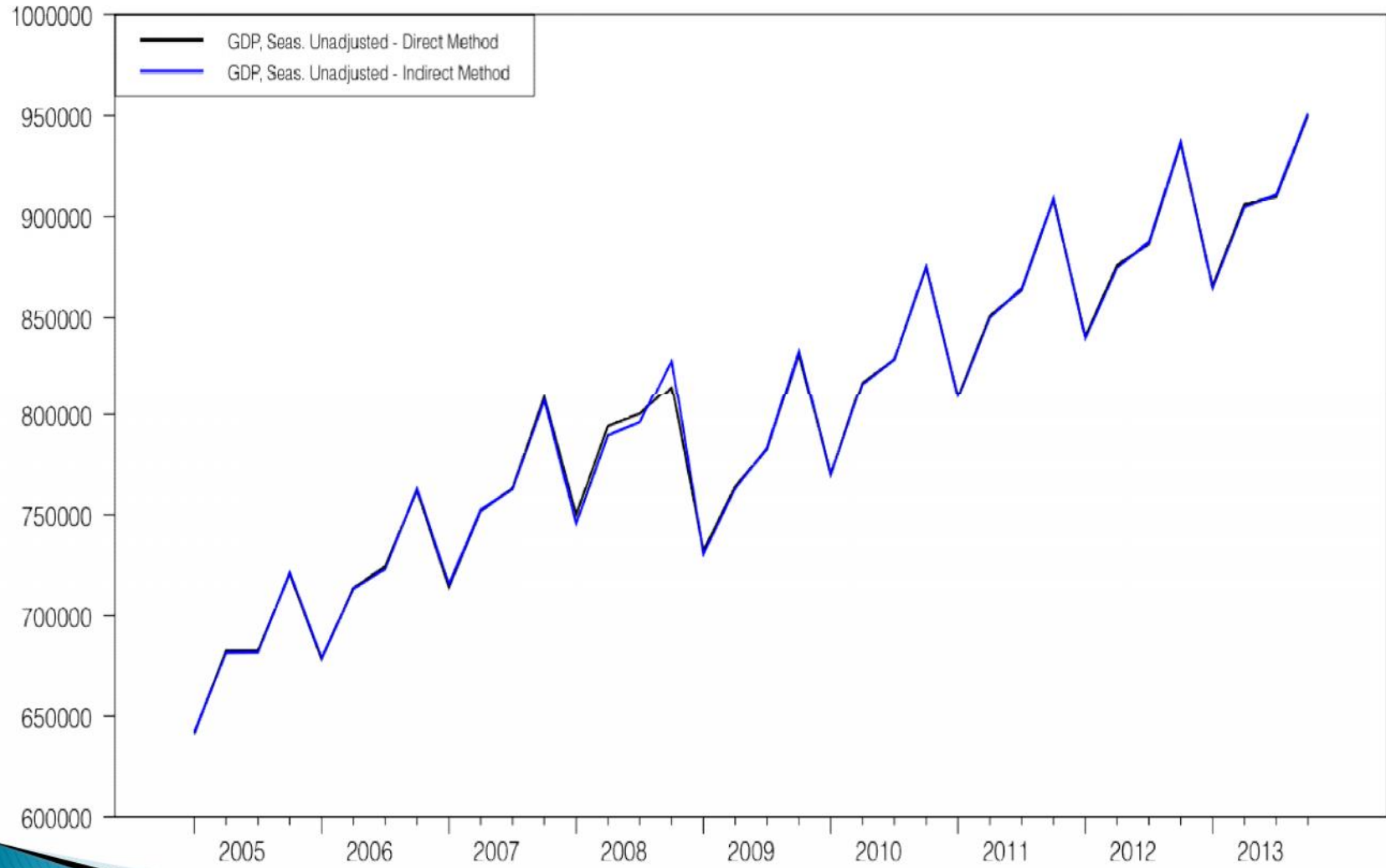
Results



Results

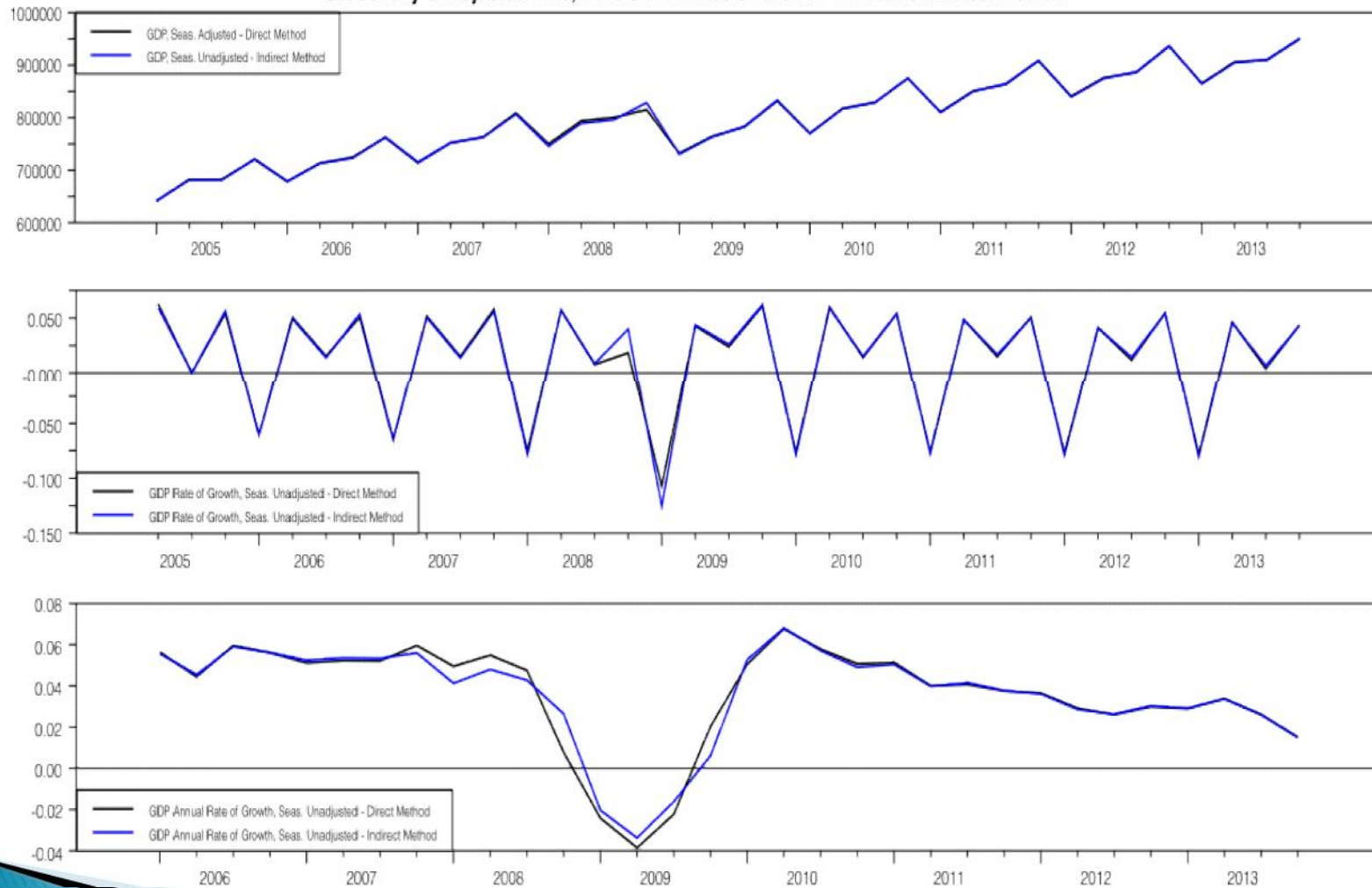


Results



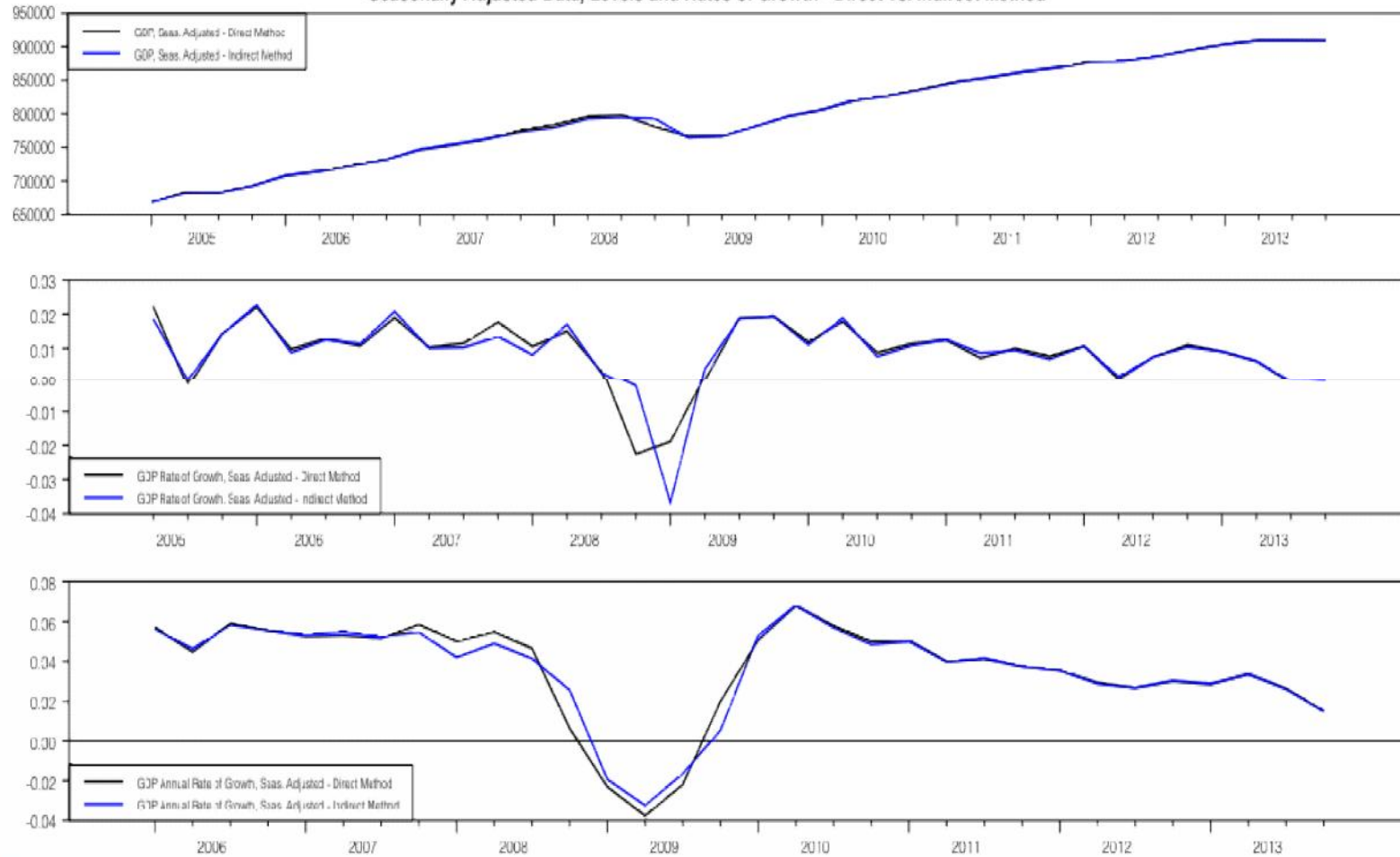
Results

Seasonally Unadjusted Data, Levels and Rates of Growth - Direct vs. Indirect Method



Results

Seasonally Adjusted Data, Levels and Rates of Growth - Direct vs. Indirect Method



Some remarks and further steps

- ▶ Need for further development of QNA in the region, especially in the Caribbean
- ▶ Strong need for greater convergence of methods, scope, and dissemination practices and policies
- ▶ ECLAC – Importance of availability of an index of LAC business cycle development and regional QNA
- ▶ Further refinements of the technique used: enlargement of scope, analysis of forecasts / simulations with different TD models to evaluate out-of-sample performances and differences with benchmarks (future annual data)

