

# Evaluating the Trade and Welfare Effects of Developing RTAs

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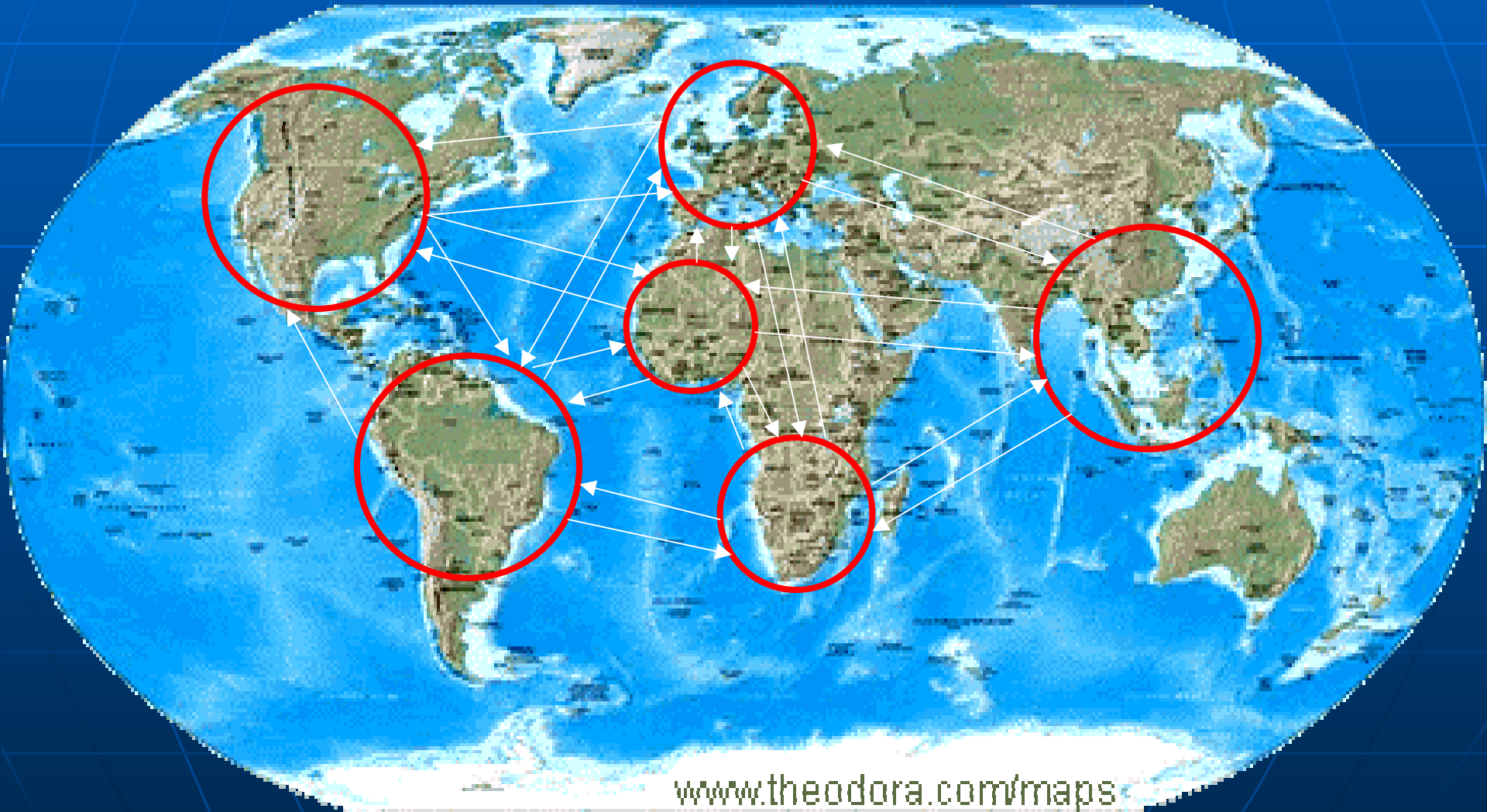
# Motivation

- Any country involved in a regional trade agreement expects a welfare gain
- Many empirical papers have addressed the issue of RTA trade effects, but not clearly linked to welfare effects
- Papers dealing with trade effects come out with different trade effects for the same RTAs
- Need to properly measure trade effects
- Need to connect these effects to welfare issues

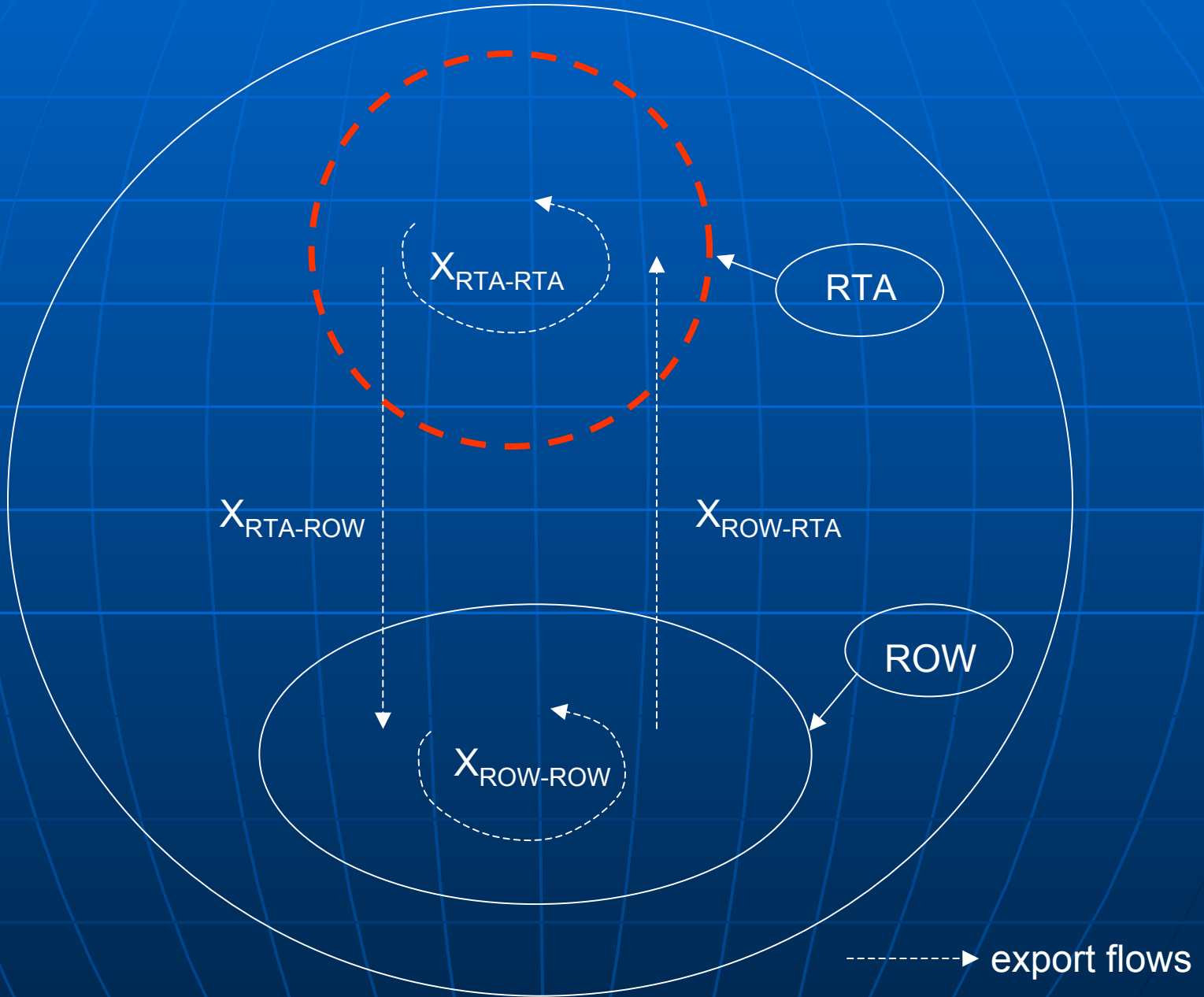
# Literature Review

	<b>Net trade creation</b>	<b>Net trade diversion</b>
<b>AFTA/ASEAN</b>	Elliot & Ikemoto (2004)	Dee & Gali (2003)
	Gosh & Yamarik (2002)	Soloaga & Winters (2000)
	Cernat (2001)	
<b>LAFTA/LAIA</b>	Dee & Gali (2003)	Soloaga & Winters (2000)
	Gosh & Yamarik (2002)	
	Soloaga & Winters (2000)	
<b>MERCOSUR</b>	Gosh & Yamarik (2002)	Dee & Gali (2003)
	Cernat (2001)	Krueger (1999)
	Soloaga & Winters (2000)	

# Geographical Framework



# Theoretical Framework



# A New RTA Measure

- Focusing on the number of years of participation of a member  $i$  at date  $t$ :  $YP(i,t)$
- $V_{RTA-ROW}(i,j,t) = YP(i,t)$  if  $i$  belongs to RTA, 0 otherwise
- $V_{ROW-RTA}(i,j,t) = YP(j,t)$  if  $j$  belongs to RTA, 0 otherwise
- $V_{RTA-RTA}(i,j,t) = \min\{YP(i,t), YP(j,t)\}$  if  $i$  and  $j$  belongs to RTA, 0 otherwise

# A New Estimation Approach

- Estimate a traditional gravity model with country-pair and time fixed effects
- Extract trade residuals
- Use these trade residuals to estimate RTAs trade effects using a kernel method
- Bootstrap over these three steps to construct a CI of the estimated trade effects
- Infer on welfare effects using Winters (1997) framework combined with regional integration theory

# The Econometric Model

- Traditional gravity equations:

- $\text{Ln}X_{ijt} = \alpha_0 \text{LnDist}_{ij} + \alpha_1 \text{LnGDP}_{it} + \alpha_2 \text{LnGDP}_{jt} + \beta_1 \text{LnPOP}_{it} + \beta_2 \text{LnPOP}_{jt} + \theta_1 \text{LnRER}_{it} + \theta_2 \text{LnRER}_{jt} + \gamma t + \delta \square + \text{FE}_i + \text{FE}_j + \text{FE}_t + \square_{ijt} \quad (1)$

- $\text{Ln}X_{ijt} = \alpha_1 \text{LnGDP}_{it} + \alpha_2 \text{LnGDP}_{jt} + \beta_1 \text{LnPOP}_{it} + \beta_2 \text{LnPOP}_{jt} + \theta_1 \text{LnRER}_{it} + \theta_2 \text{LnRER}_{jt} + \gamma t + \delta \square + \text{FE}_{ij} + \text{FE}_t + \square_{ijt} \quad (2)$

- Combined with kernel regressions:

1.  $E(\square_{ijt} | V_{\text{RTA-ROW}}) = f_1(V_{\text{RTA-ROW}})$

2.  $E(\square_{ijt} | V_{\text{ROW-RTA}}) = f_2(V_{\text{ROW-RTA}})$

3.  $E(\square_{ijt} | V_{\text{RTA-RTA}}) = f_3(V_{\text{RTA-RTA}})$

- $f(x) = (\sum_i K(x_i) y_i) / (\sum_i K(x_i))$

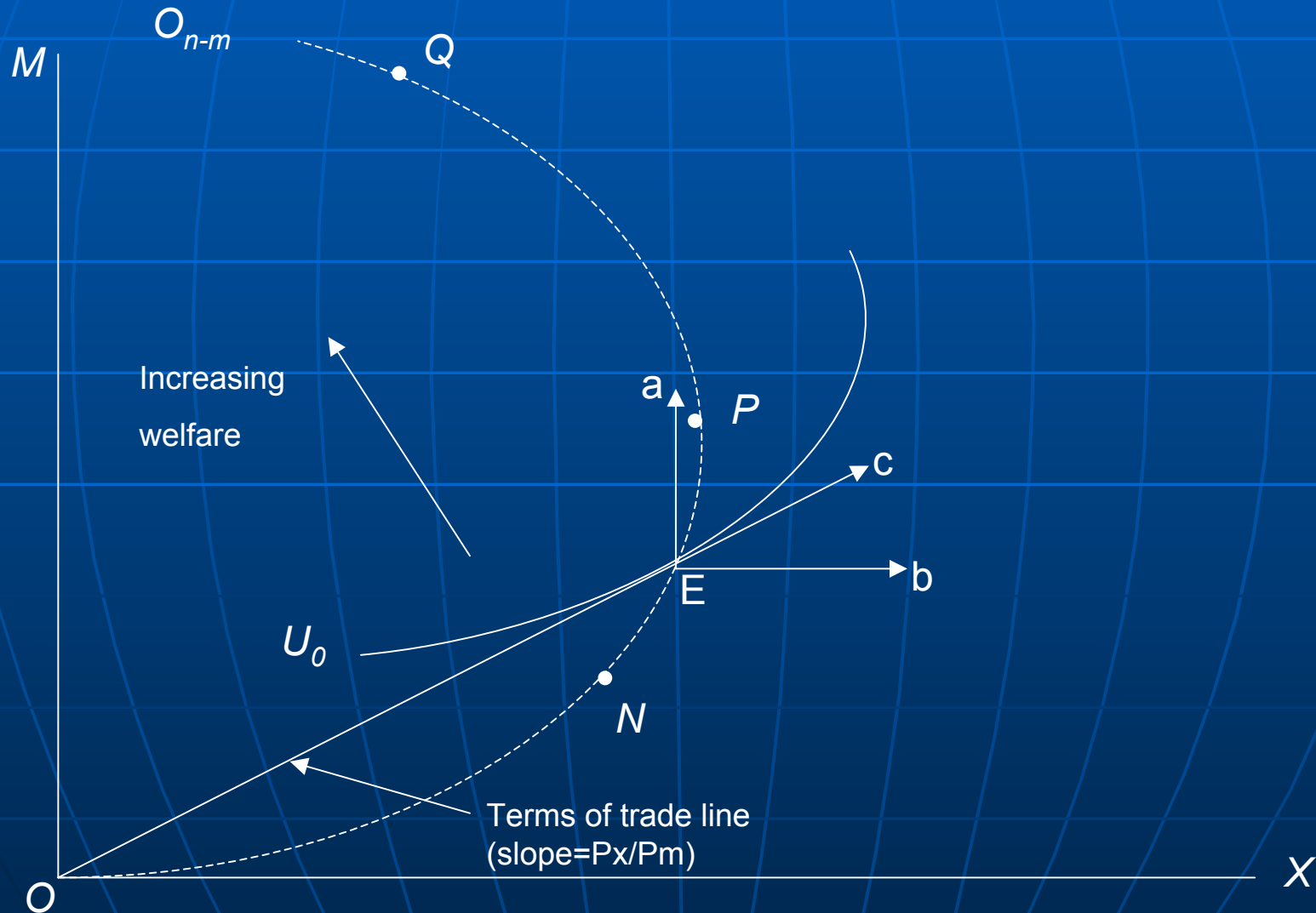
- Tricube kernel function:

- $K(x_i) = [1 - (|x_i - x|/h)^3]^3$  for  $|x_i - x|/h < 1$

- $K(x_i) = 0$  for  $|x_i - x|/h \geq 1$

# Connection with Welfare Effects (1)

## Winters (1997)



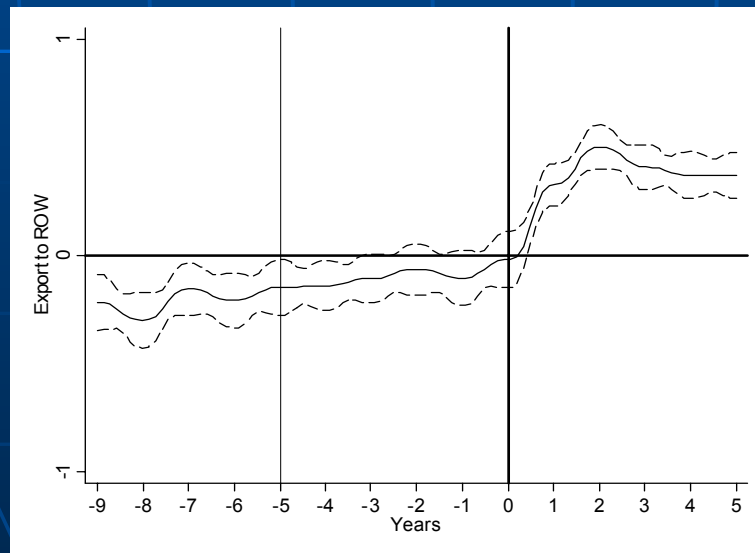
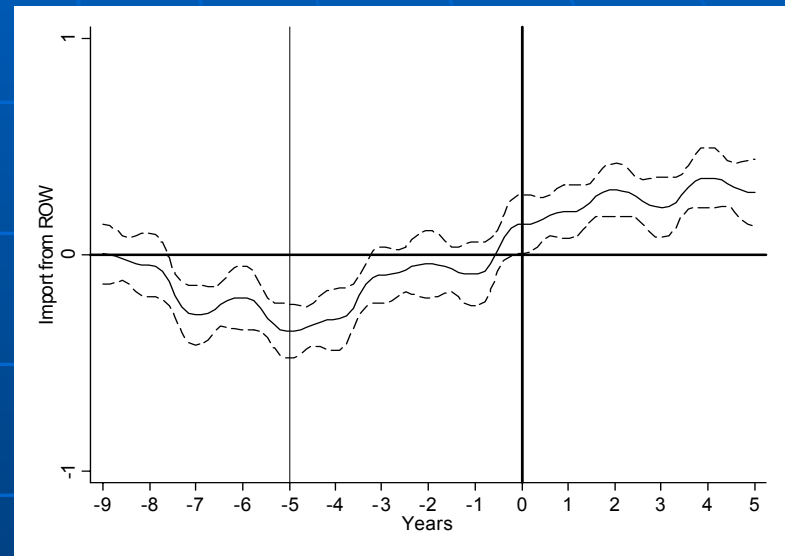
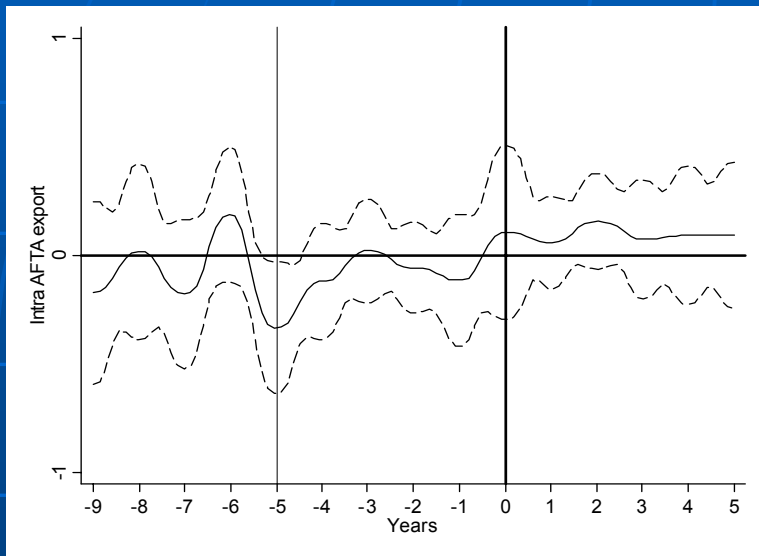
# Connection with Welfare Effects (2)

Trade effects			Welfare effects	
$X_{RTA \rightarrow ROW}$	$X_{ROW \rightarrow RTA}$	$X_{RTA \rightarrow RTA}$	RTA	ROW
+	+	+	+	?
+	-	+	?	+
-	-	0	-	?

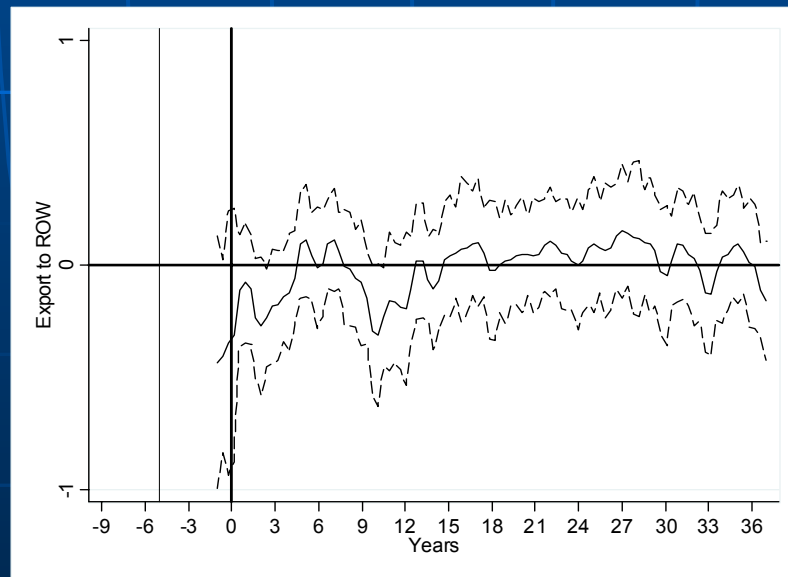
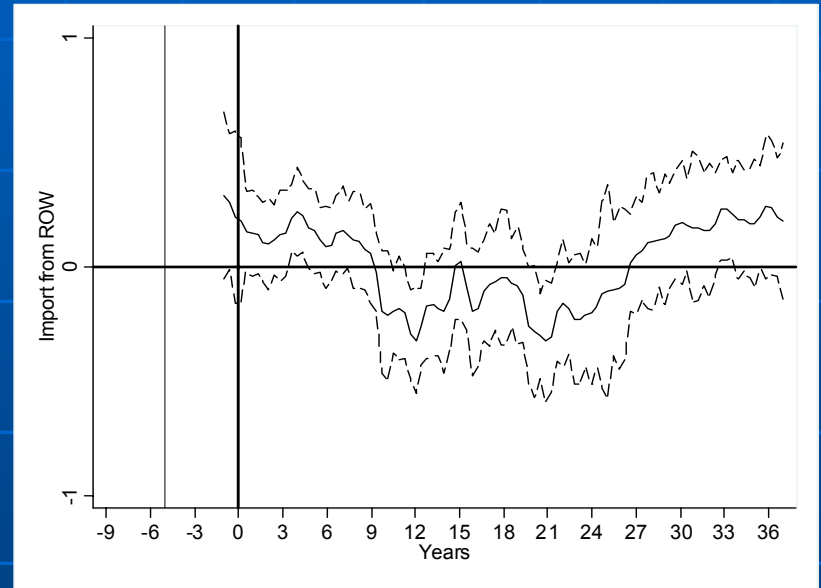
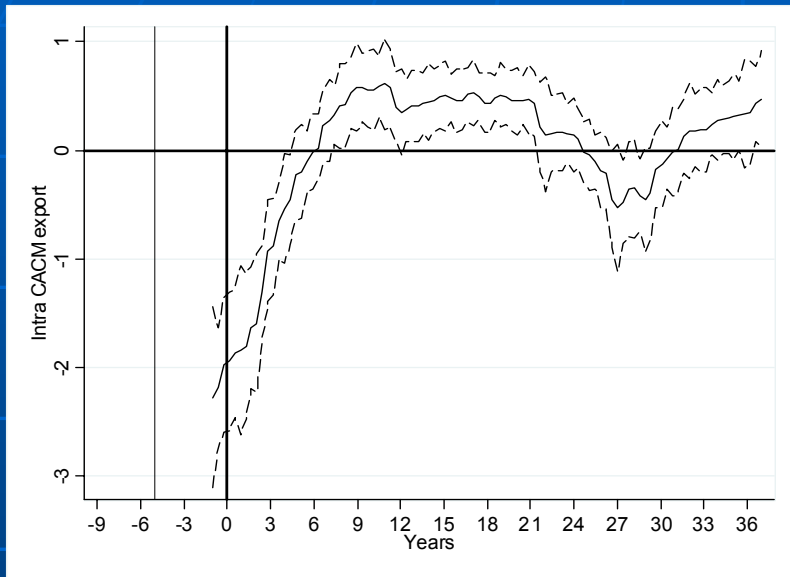
# Data and Estimation Issues

- Rose (2003) database: Bilateral export flows among 179 countries over the period 1960-1996
- Unbalanced panel ⑨ Robust standard errors estimator
- Zero trade flows ⑨ Include Mills ratio as regressor
- In the kernel estimation: use a bandwidth  $h=1$  (smooth over one year period)
- Compute the 95% CI of estimated trade effects

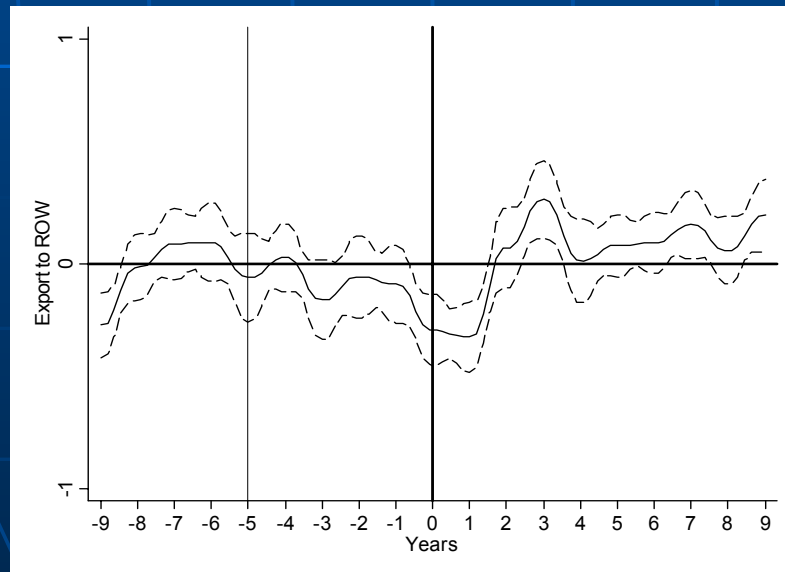
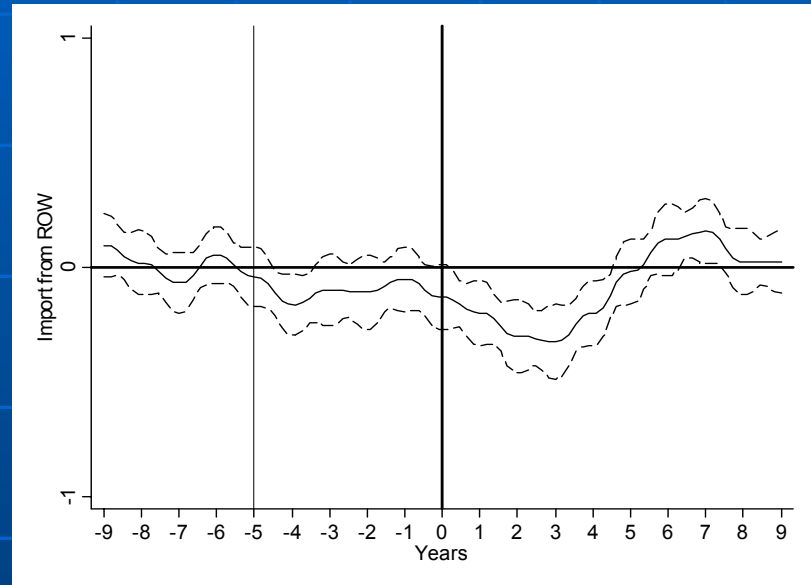
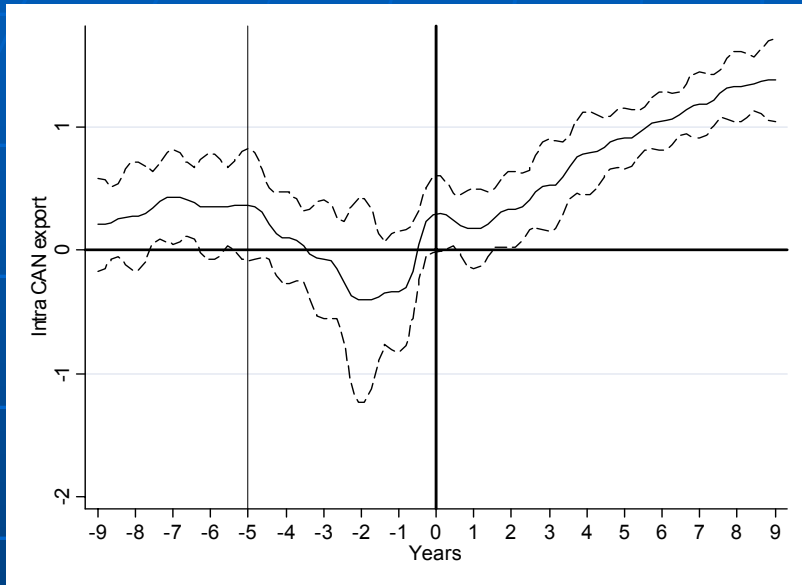
# AFTA Trade Effects



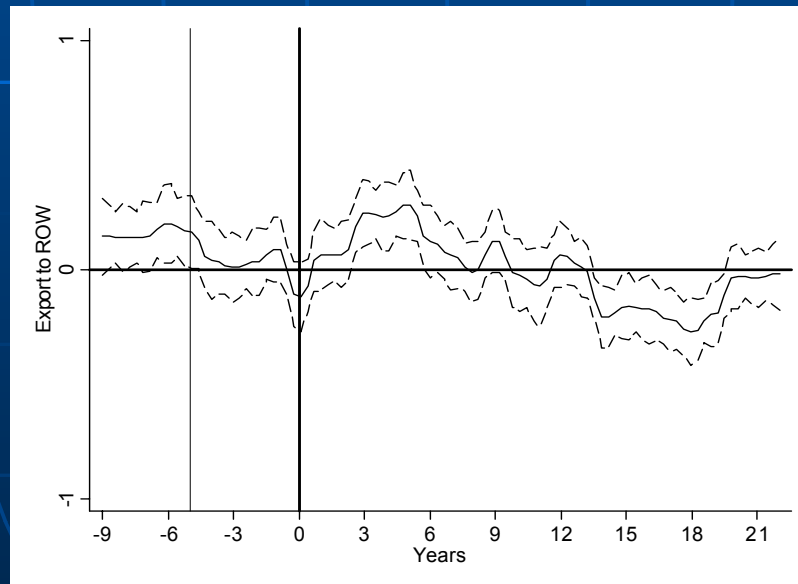
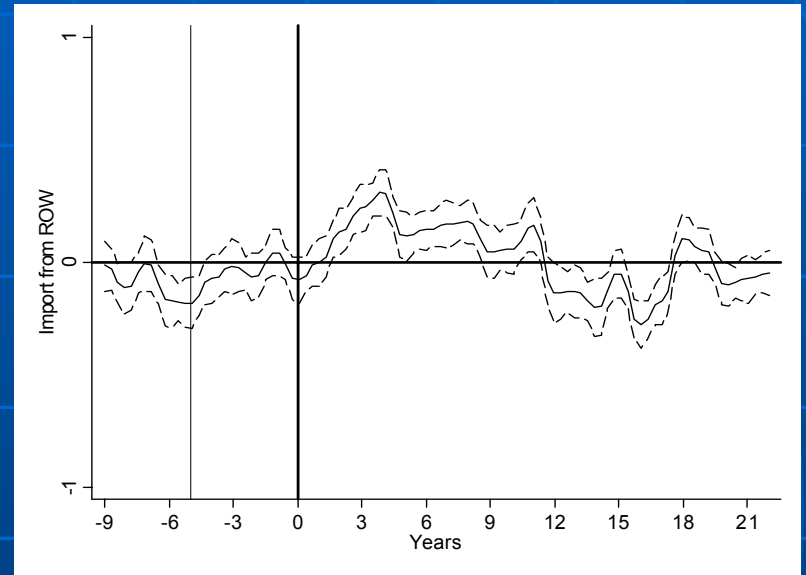
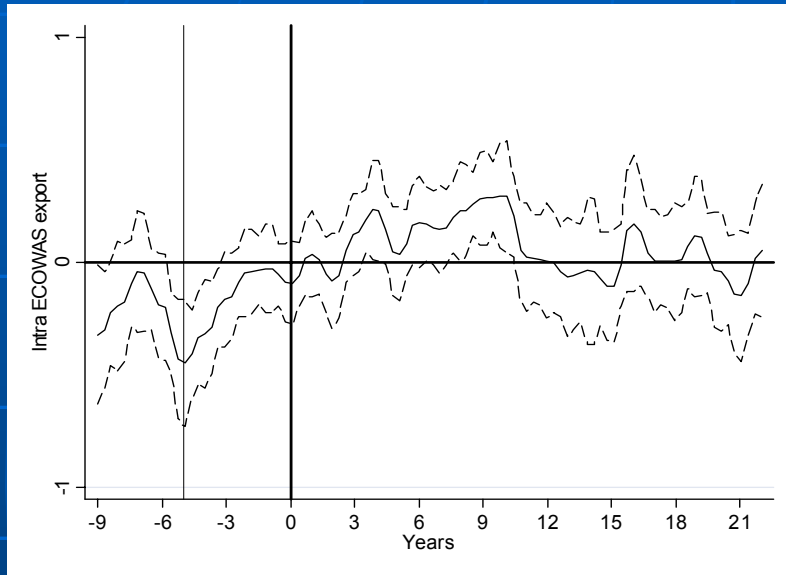
# CACM Trade Effects



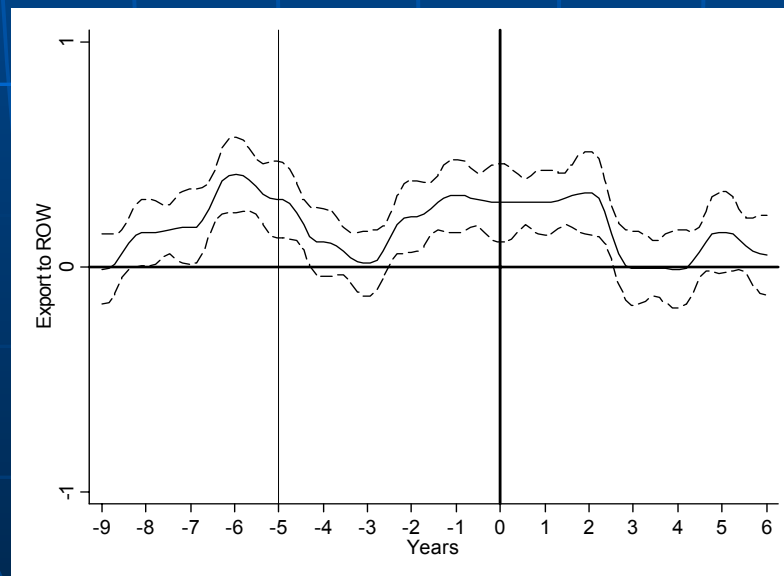
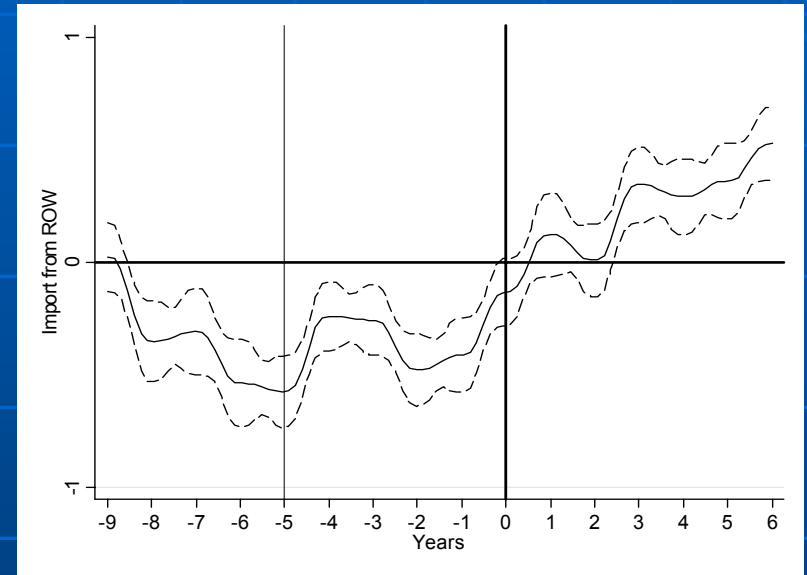
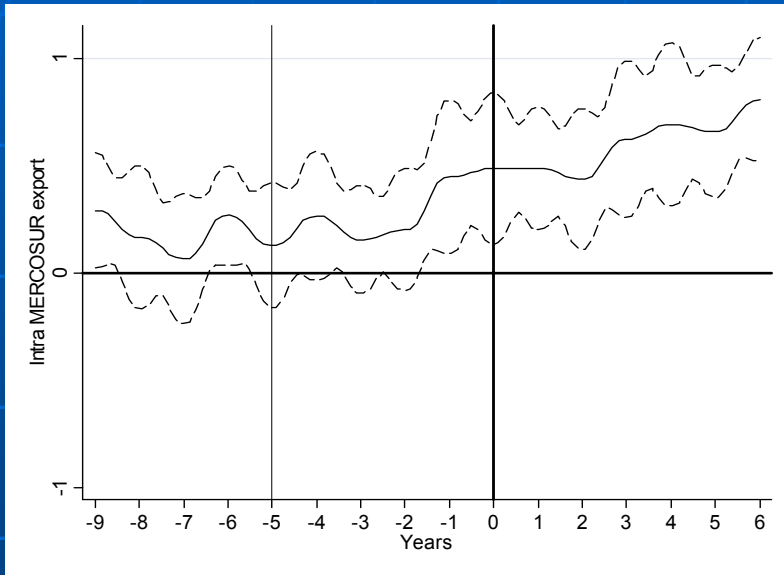
# CAN Trade Effects



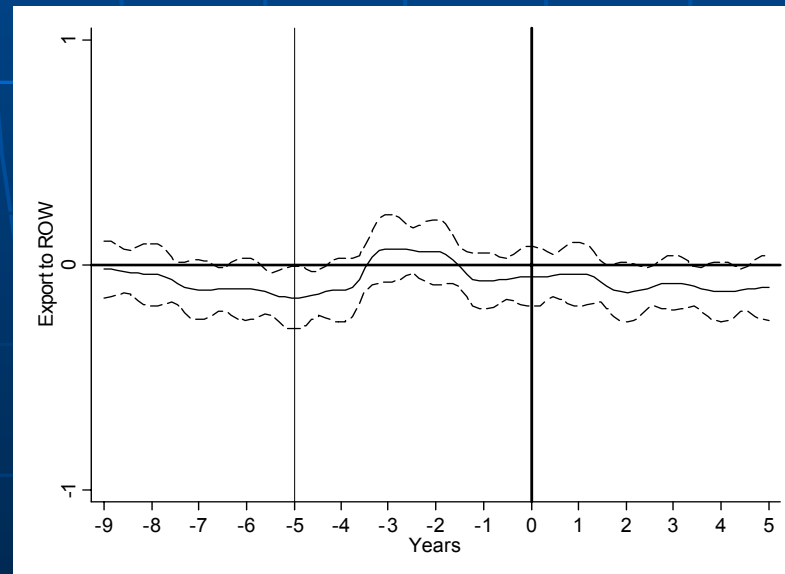
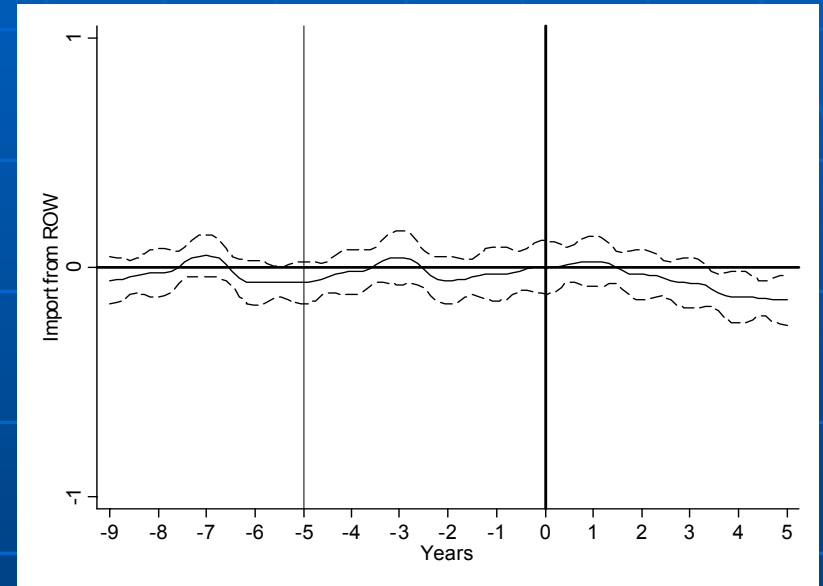
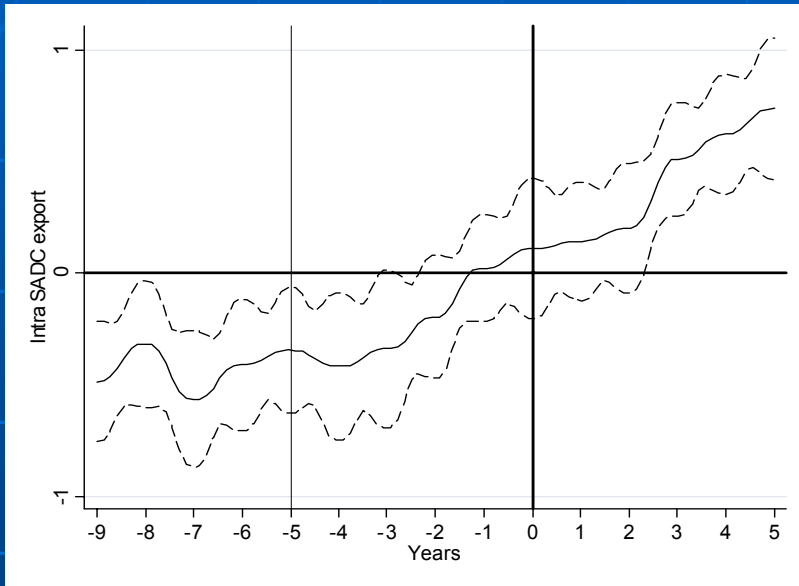
# ECOWAS Trade Effects



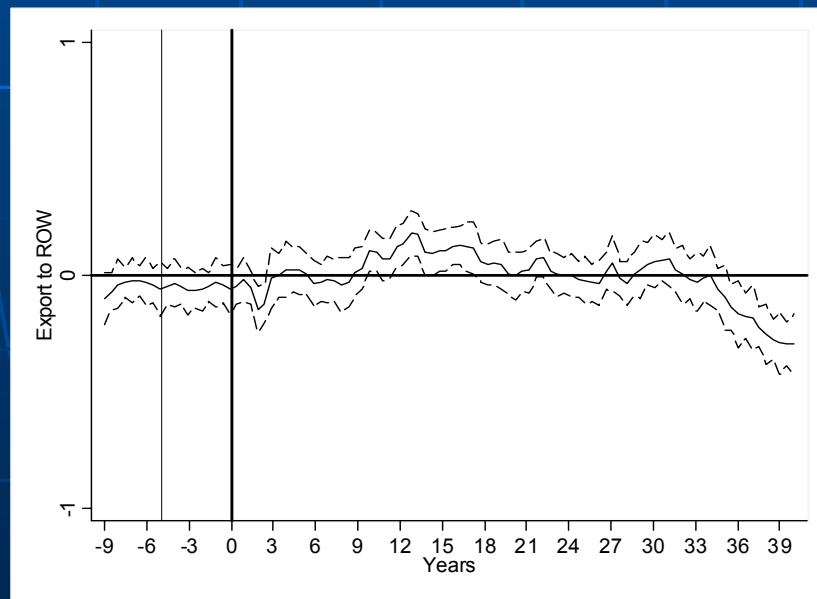
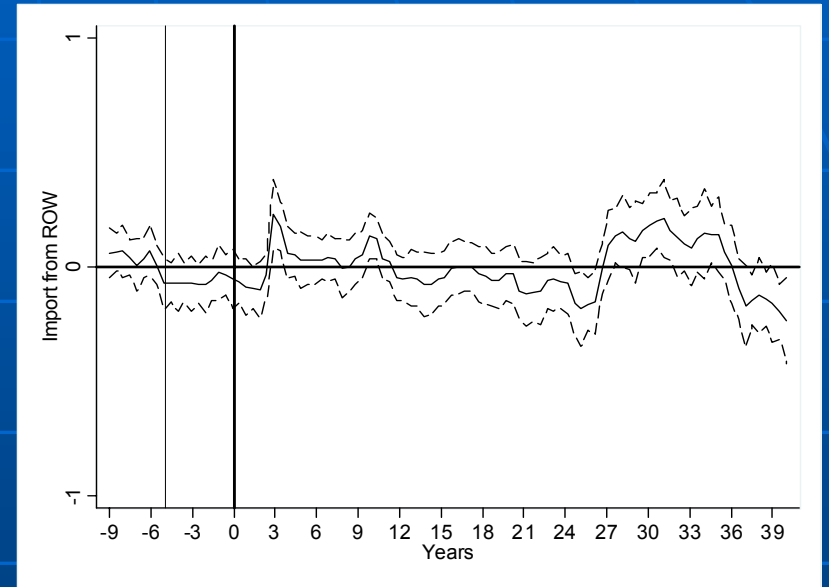
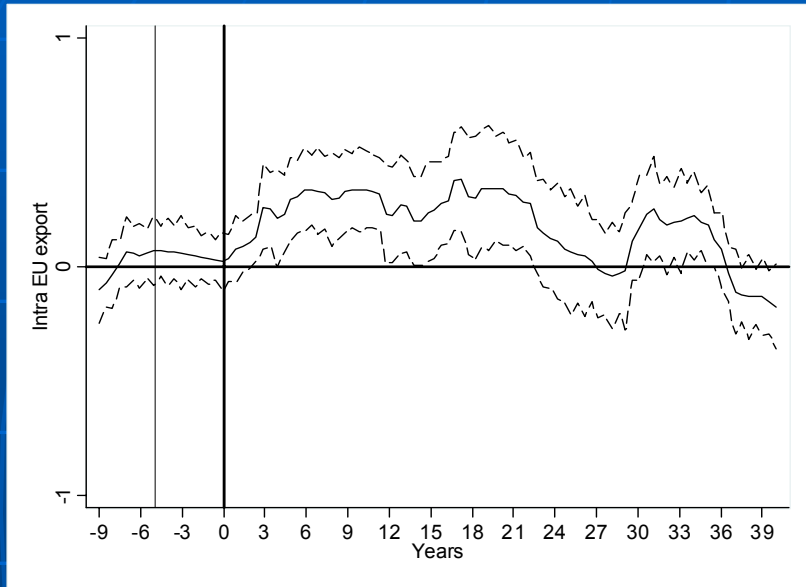
# MERCOSUR Trade Effects



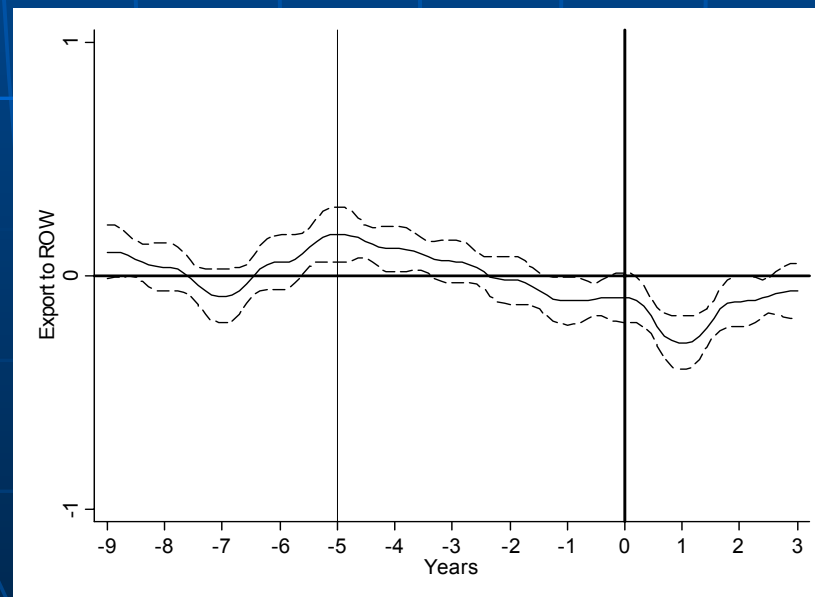
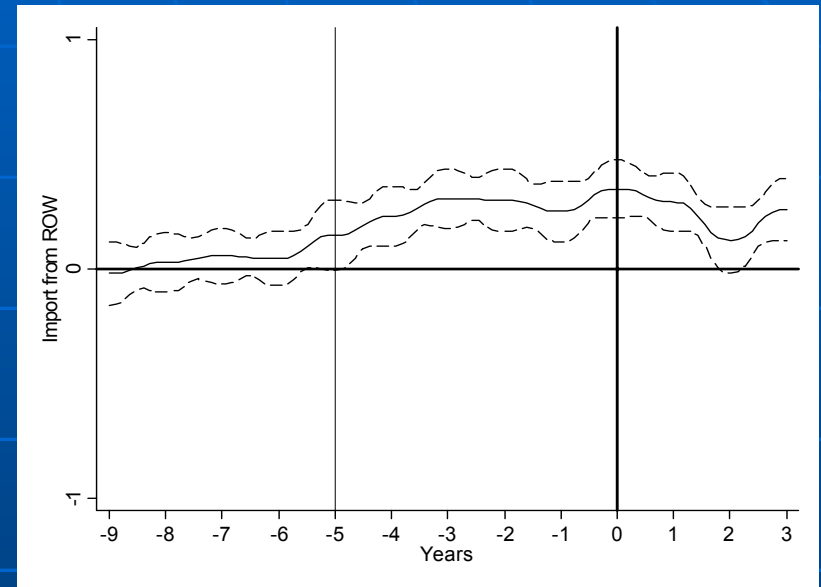
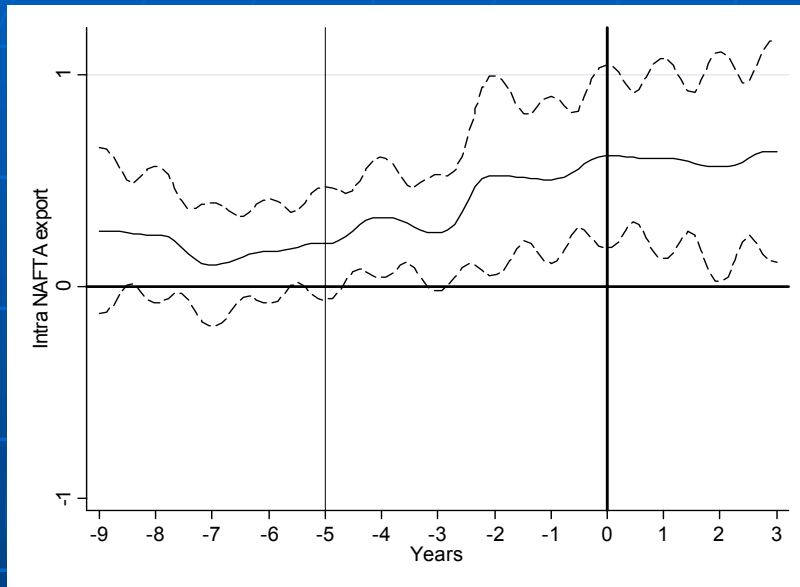
# SADC Trade Effects



# EU Trade Effects



# NAFTA Trade Effects



# Some General Results

- RTAs created in the nineties ⑨ first years of participation are rewarded by a positive trade and welfare effects for members, and sometimes for the ROW too
- RTAs created in the seventies ⑨ more volatile trade and welfare profiles as the number of years of participation of the members keep increasing
- Clear anticipation effects for most of the RTAs under consideration

# Conclusion

- Alternative measure of RTAs focusing on years of participation
- Direct inspection of trade effects through non-parametric technics
- Connection with welfare
- Easy to implement (but computation-intensive)
- Current extension: Evaluating the WTO trade impact

# Some Limitations of this Work

- Only focuses on 6 developing RTAs (but can be easily extended)
- Does not focus on precise dates (but we can use an “events study” approach)
- Simplistic evaluation of welfare

**Thanks for your attention**