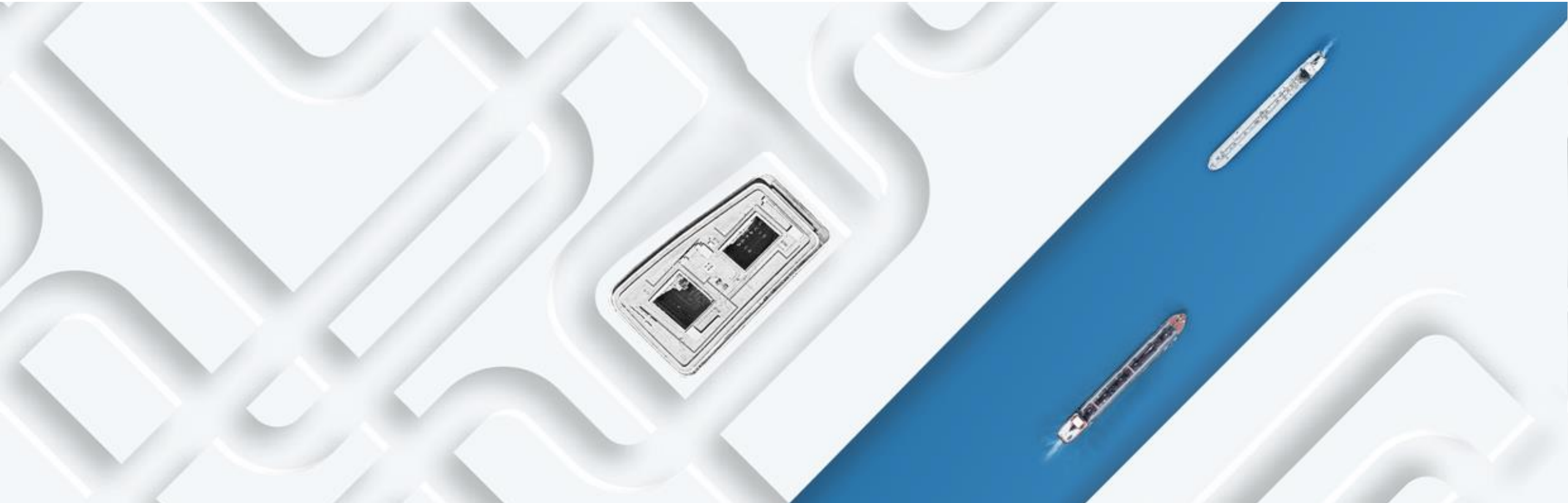




# Globalization and Economic Growth: Accounting for Non-linearities

AIECE Meeting



# Some stylized facts (I)

Global GDP and World Trade; 1980=100, 2018-2023 IMF forecast



Source: IMF

# Globalization and economic growth



## Globalization

- Economy
- Society
- Politics



## Productivity

- Ressource allocation
- Technology transfer
- Competition from abroad



## Economic growth

Images sources: geralt – Pixabay, PublicDomainPictures - Pixabay

# Productivity growth and globalisation

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k} \Delta y_{i,t} + \sum_{i=n} y_{i,t} \Delta \theta_{i,t}$$

McMillan/Rodrik (2011)

Change in productivity on the sectoral level via

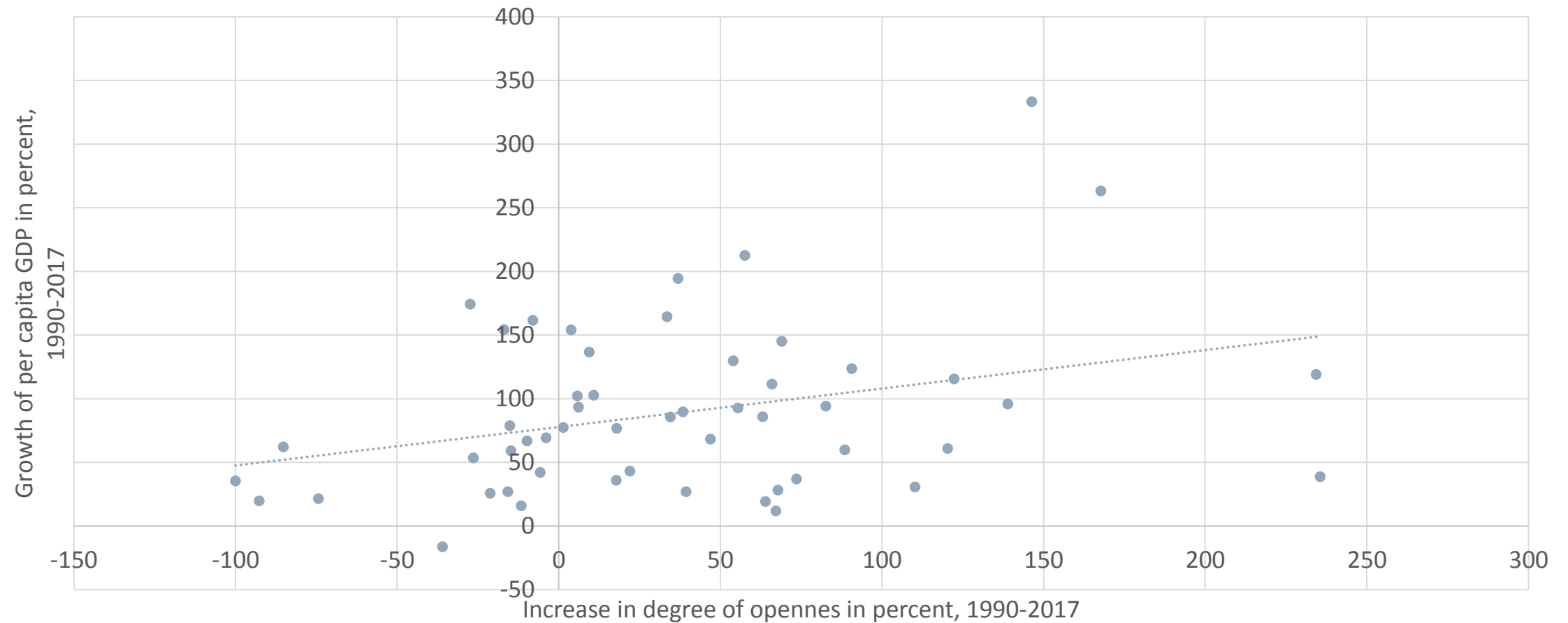
- FDI
- technological progress (triggered among others by competition from abroad)

Structural change via resource reallocation towards more productive sectors

- Trade and comparative advantage as drivers

# Some stylized facts (II)

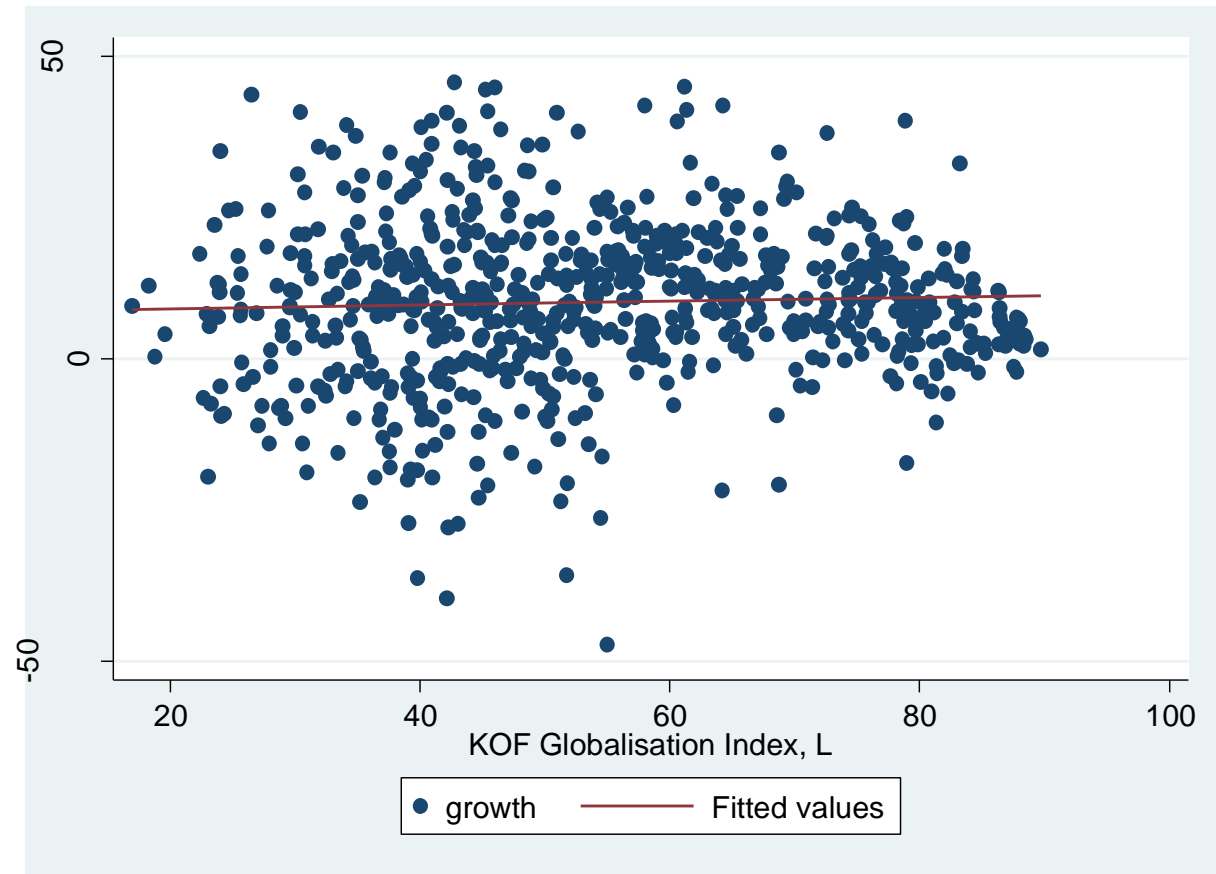
## Increasing openness and economic growth



Source: Oxford Economics / Haver Analytics

# Globalization and economic growth (I)

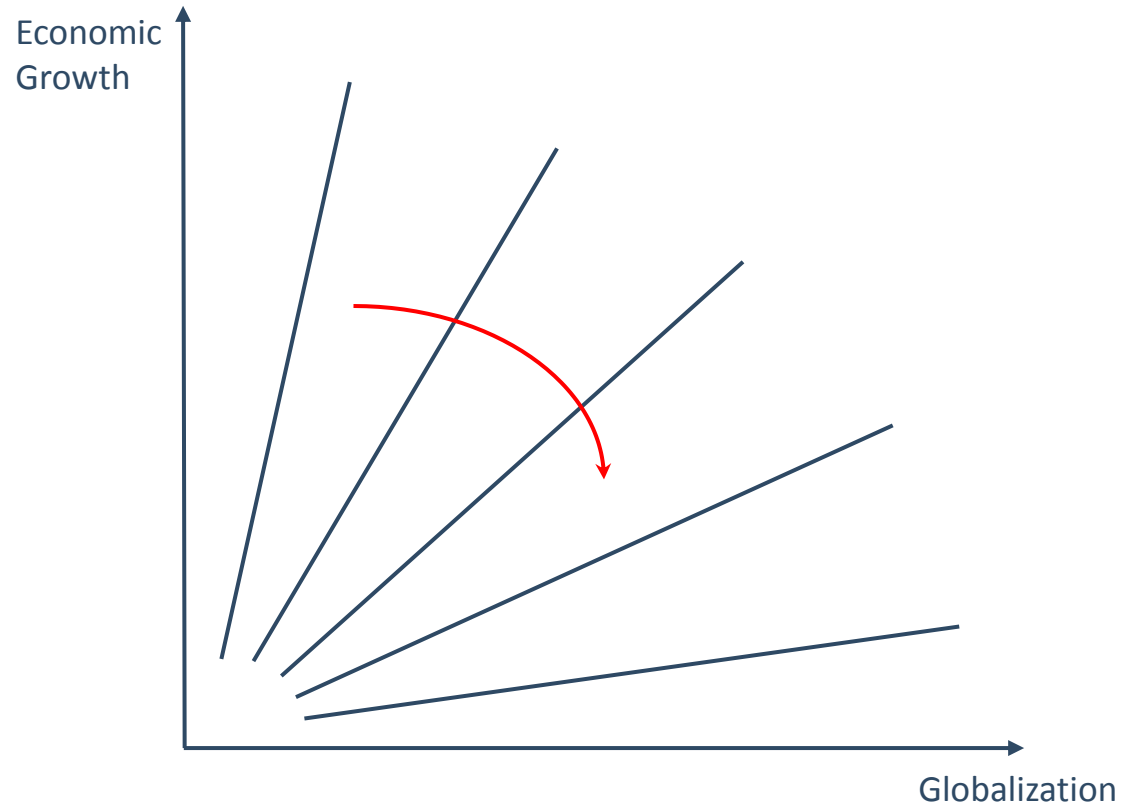
Growth of per capita GDP over five year periods in percent and KOF Globalization Index at the beginning of the growth period; 1980-2015; 160 countries



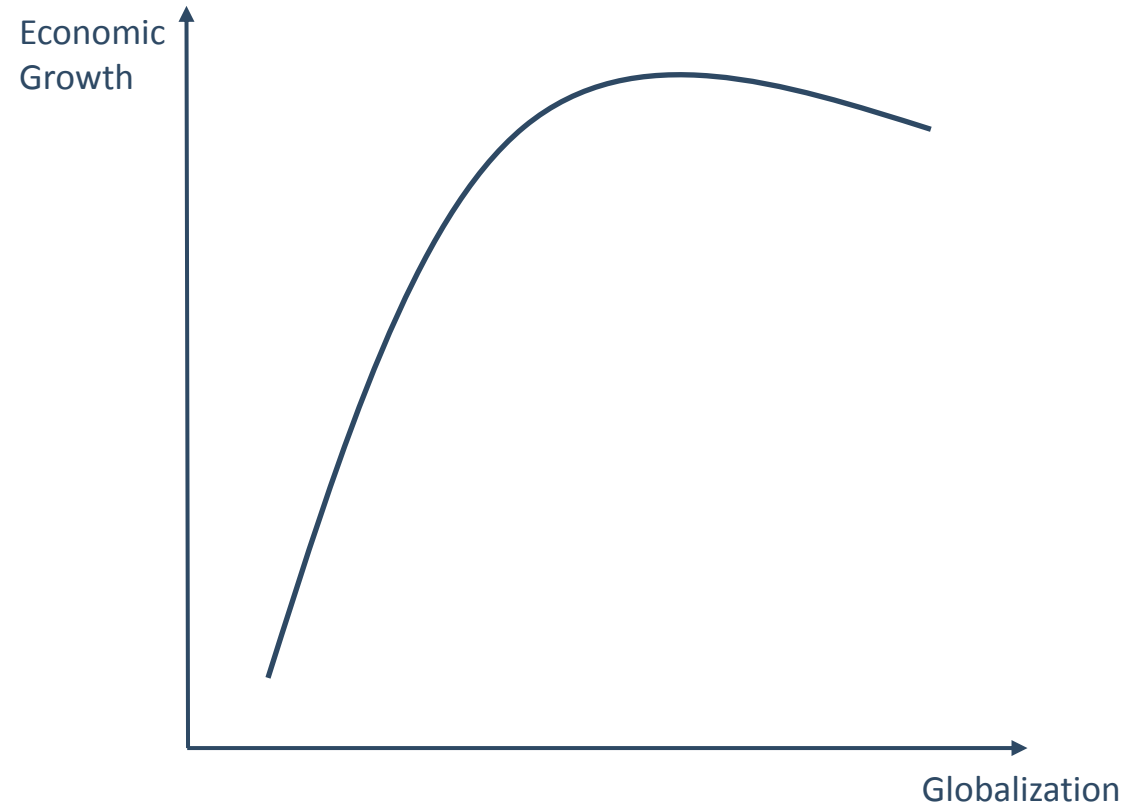
Source: World Bank, Dreher (2006)

# Accounting for non-linearities

The effect of globalization depends on the stage of development.



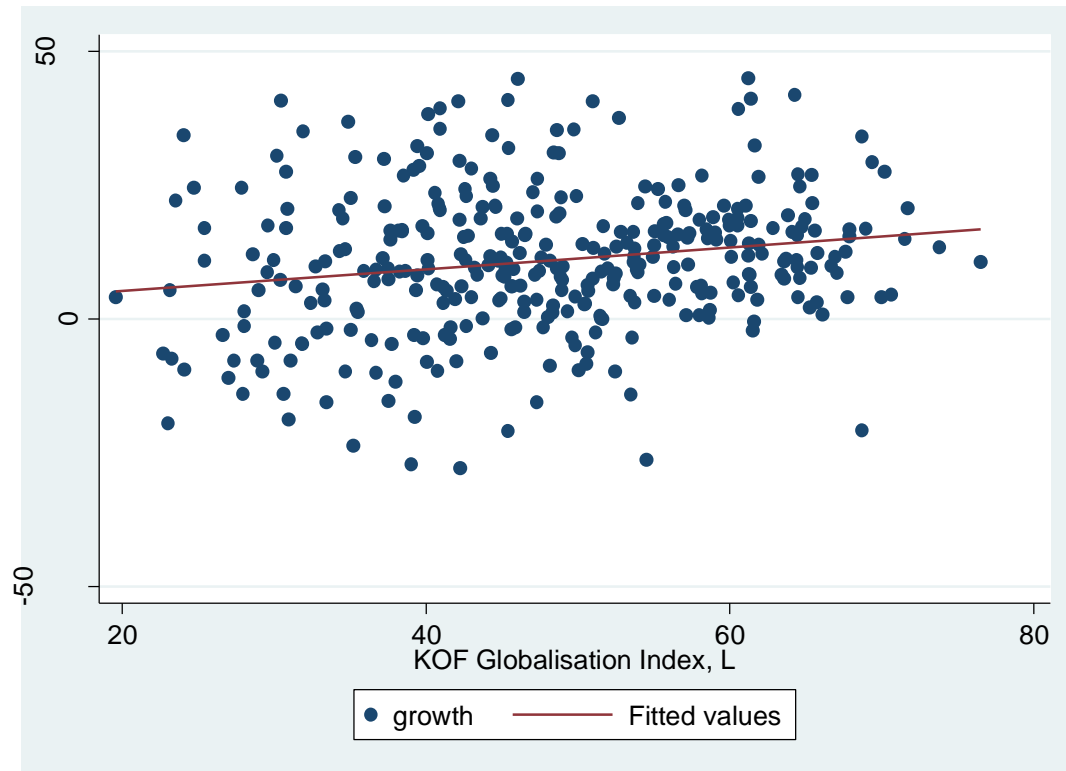
Decreasing marginal effect of globalization



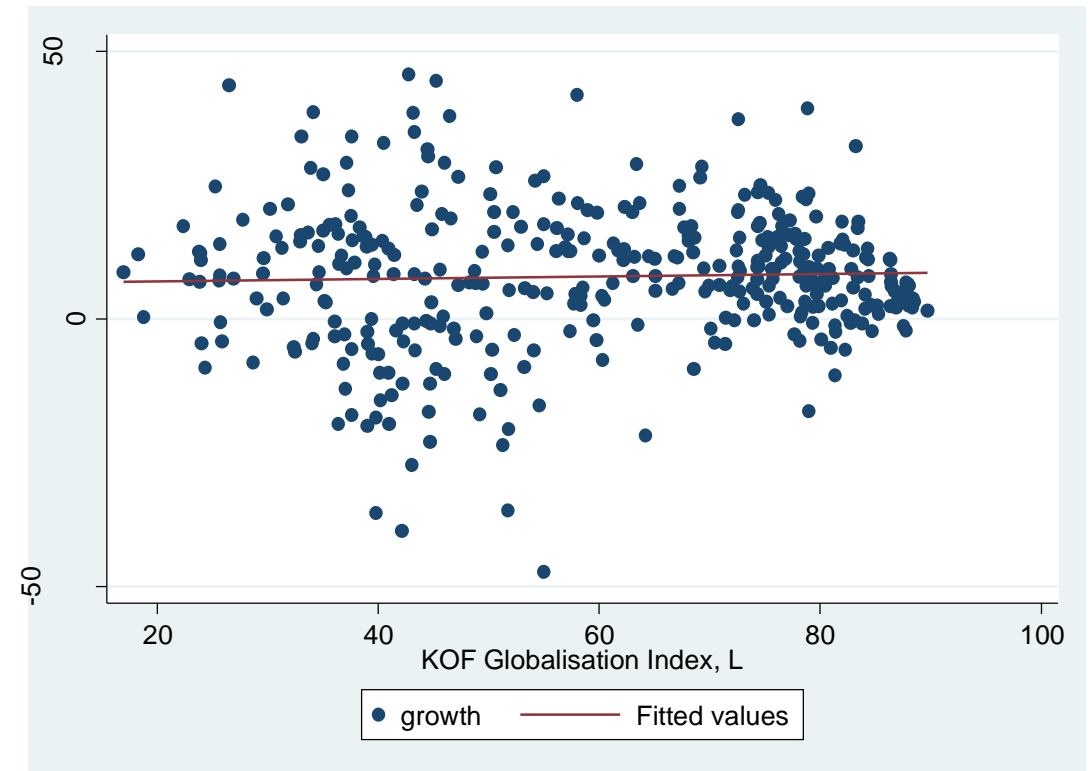
# Globalization and economic growth (II)

Growth of per capita GDP over five year periods in percent and KOF Globalization Index at the beginning of the growth period; 1980-2015; 160 countries

**GDP pc < 20,000 USD**



**GDP pc > 20,000 USD**

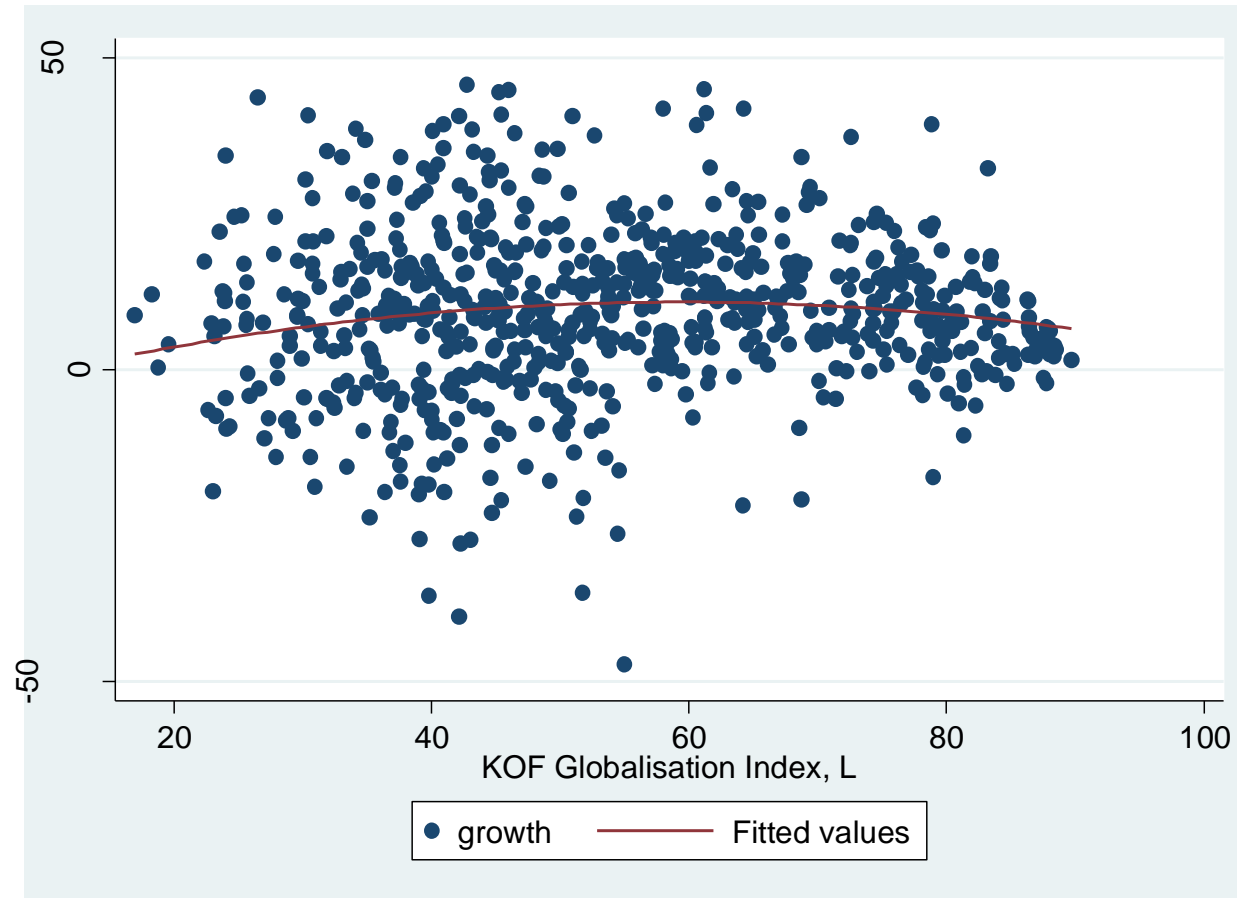


Source: World Bank, Dreher (2006)



# Globalization and economic growth (III)

Growth of per capita GDP over five year periods in percent and KOF Globalization Index at the beginning of the growth period; 1980-2015; 160 countries



Source: World Bank, Dreher (2006)

# Empirical Analysis

Panel data over 1980-2015, 160 countries

$$(1) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \omega_i + \epsilon_{it}$$

$$(2) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_5 x_{it} gdp_{it} + \omega_i + \epsilon_{it}$$

$$(3) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_6 x_{it}^2 + \omega_i + \epsilon_{it}$$

With the following standard control variables:

- Initial GDP pc.
- Human capital
- Investment to GDP ratio

# Baseline regressions

Robust standard errors in parentheses; \*/\*\*/\*\* significant at 10/5/1%;  
Country and time fixed effects included

	Baseline	Openness	Fraser	KOF
	(1)	(2)	(3)	(4)
gdppc	-47.703*** (8.215)	-48.601*** (8.167)	-43.220*** (6.227)	-46.452*** (6.899)
inv	.286* (.153)	.269* (.153)	.0823 (.132)	.163 (.138)
hc	-.0983 (.115)	-.0728 (.125)	.0738 (.0807)	.0431 (.0791)
Openness		<b>-.0562</b> <b>(.0424)</b>		
Fraser - Trade			<b>2.414***</b> <b>(.740)</b>	
KOF - Overall				<b>.757***</b> <b>(.260)</b>
Hausman test chi2	80.89***	77.85***	66.41***	49.00***
N	457	457	381	440
R2 (within)	.2968	.3023	.3174	.2518

Source: Own calculations, Gygli (2018), Dreher (2006), Fraser Institute (2018)

# Globalization and growth: non-linearities

Robust standard errors in parentheses; \*/\*\*/\*\* significant at 10/5/1%;  
Country and time fixed effects included

	openness	openness	Fraser	Fraser	KOF	KOF
	(1)	(2)	(3)	(4)	(5)	(6)
gdppc	-48.912*** (8.109)	-42.948*** (8.444)	-43.065*** (6.437)	-45.383*** (9.133)	-45.467*** (5.970)	-25.966*** (7.027)
inv	.254* (.152)	.196 (.149)	.0837 (.133)	.0828 (.131)	.0314 (.131)	.0401 (.119)
hc	-.0648 (.128)	-.0932 (.122)	.0752 (.0819)	.0772 (.0797)	-.0770 (.0856)	-.159* (.0923)
x	-.115 (.0945)	.618*** (.235)	2.810 (1.930)	-.227 (6.347)	2.615*** (.519)	4.423*** (.665)
x <sup>2</sup>	-.000209 (.000274)		-.0337 (.179)		-.0170*** (.00424)	
x*gdppc		-.0594** (.0237)		.288 (.706)		-.408*** (.0669)
Hausman test chi2	86.06***	93.17***	76.55***	67.89***	85.92***	97.37***
N	457	457	381	381	440	440
R2 (within)	.3038	.3179	.3175	.3179	.3183	.3506

Source: Own calculations, Gygli (2018), Dreher (2006), Fraser Institute (2018)

# Empirical Analysis

Panel data over 1980-2015, 160 countries

$$(1) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \omega_i + \epsilon_{it}$$

$$(2) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_5 x_{it} gdp_{it} + \omega_i + \epsilon_{it}$$

$$(3) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_6 x_{it}^2 + \omega_i + \epsilon_{it}$$

The role of institutional quality?

$$(4) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_7 inst_{it} + \beta_8 inst_{it} x_{it} + \omega_i + \epsilon_{it}$$

Institutional quality and globalization in the course of economic development

$$(5) \quad y_{it} = \alpha + \beta_1 gdp_{it} + \beta_2 hc_{it} + \beta_3 inv_{it} + \beta_4 x_{it} + \beta_7 inst_{it} + \beta_8 inst_{it} x_{it} + \beta_9 inst_{it} x_{it} gdp_{it} + \omega_i + \epsilon_{it}$$

# Globalization and growth: the role of institutions (II)

Detailed results available upon request; \*/\*\*/\*\* significant at 10/5/1%;  
Country and time fixed effects included

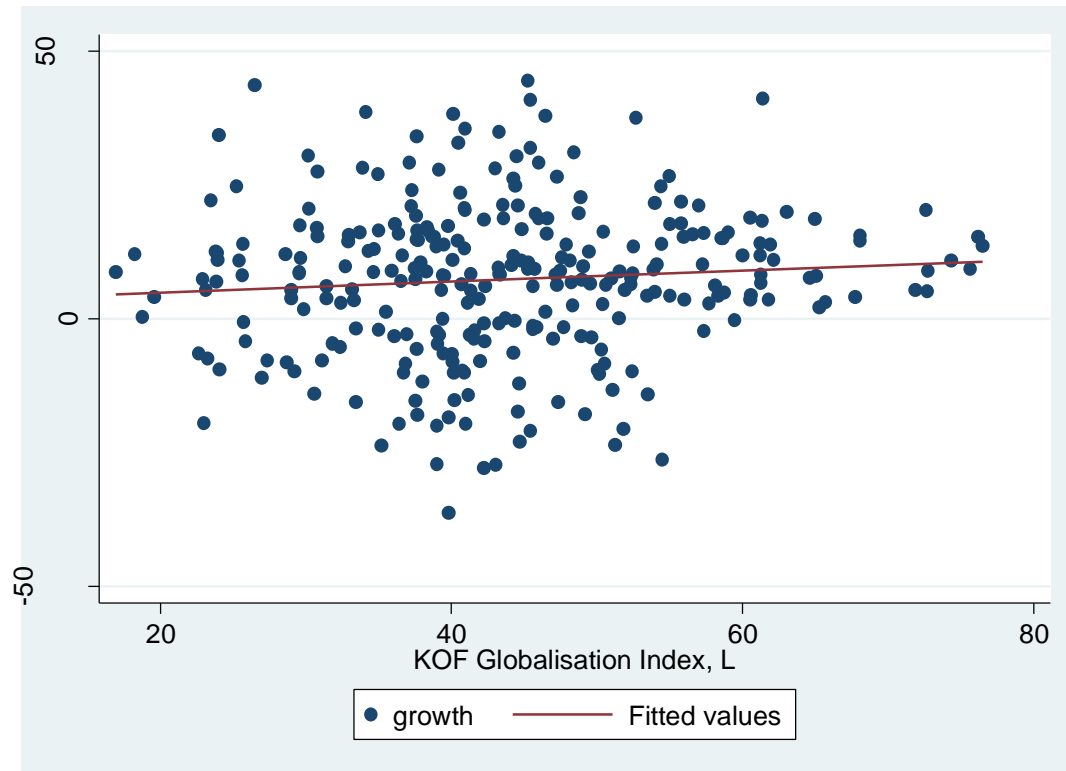
	Overall	Regulation	Sound Money	Size of Government	Legal System & Property rights
	(1)	(2)	(3)	(4)	(5)
KOF	1.610*** (.473)	1.579*** (.289)	1.244*** (.348)	1.172*** (.412)	.908*** (.310)
Fraser	11.487*** (3.895)	11.349*** (2.950)	5.878*** (1.947)	5.105 (3.222)	2.273 (2.217)
KOF*Fraser	<b>-.172***</b> <b>(-.172)</b>	<b>-.184***</b> <b>(.044)</b>	<b>-.0908***</b> <b>(.033)</b>	<b>-.0894*</b> <b>(.051)</b>	<b>-.0529</b> <b>(.042)</b>
N	378	379	379	379	375
R2 (within)	.3297	.3506	.3264	.3090	.2996

Source: Own calculations, Gygli (2018), Dreher (2006), Fraser Institute (2018)

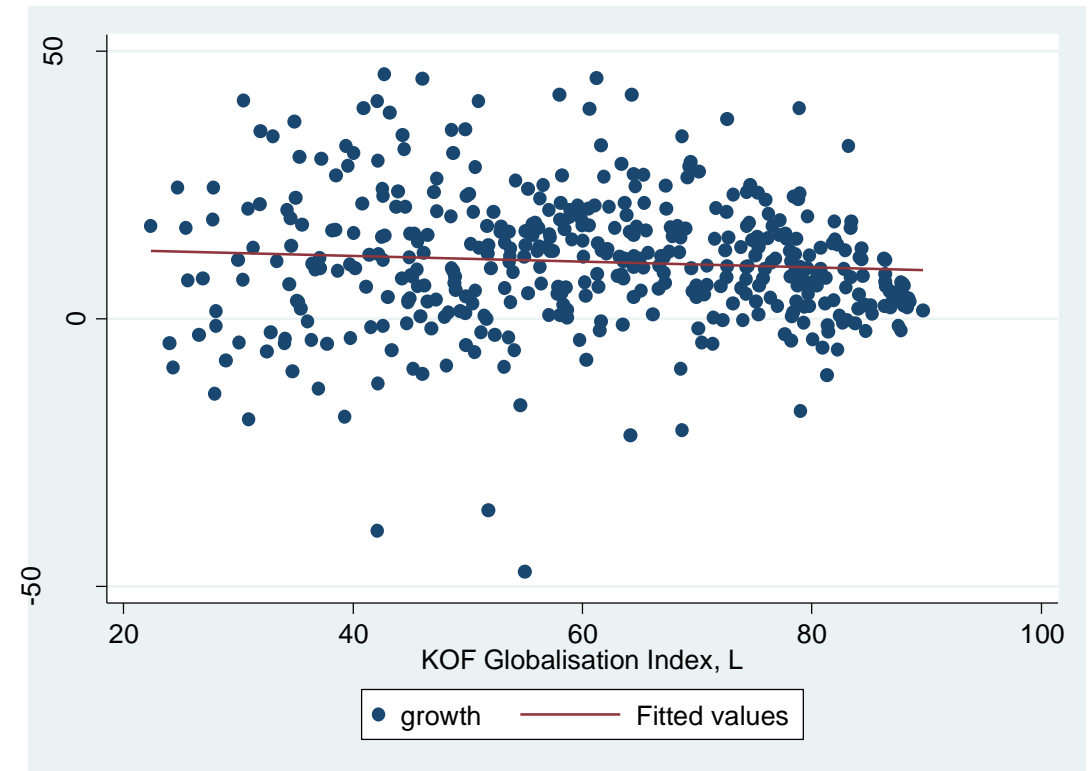
# Globalization and growth: the role of institutions (I)

Growth of per capita GDP over five year periods in percent and KOF Globalization Index at the beginning of the growth period; 1980-2015; 160 countries

Fraser EFW < 6.4



Fraser EFW > 6.4



Source: World Bank, Dreher (2006), Fraser Institute

# Globalization and growth: institutions and stage of development (II)

Detailed results available upon request; \*/\*\*/\*\* significant at 10/5/1%;  
Country and time fixed effects included

	Overall	Regulation	Sound Money	Size of Government	Legal System & Property rights
	(1)	(2)	(3)	(4)	(5)
KOF	-.196 (.579)	.569 (.526)	.385 (.362)	.402 (.415)	-.568 (.375)
Fraser	-2.876 (5.070)	2.173 (5.237)	-.470 (2.262)	-1.768 (3.379)	-10.897*** (3.284)
KOF*Fraser	<b>.553***</b> <b>(.188)</b>	<b>.301</b> <b>(.207)</b>	<b>.290***</b> <b>(.092)</b>	<b>.381***</b> <b>(.130)</b>	<b>.800***</b> <b>(.173)</b>
KOF*Fraser*gdp	<b>-.049***</b> <b>(.012)</b>	<b>-.035**</b> <b>(.014)</b>	<b>-.029***</b> <b>(.007)</b>	<b>-.038***</b> <b>(.009)</b>	<b>-.064***</b> <b>(.013)</b>
N	378	379	379	379	375
R2 (within)	.3690	.3767	.3605	.3489	.3646

Source: Own calculations, Gygli (2018), Dreher (2006), Fraser Institute (2018)



# Concluding remarks

The effect of globalization on economic growth is far from being clear-cut.

Globalization can be growth promoting, especially at earlier stage of development and in countries with low degree of openness.

The effect of globalization depends crucially on the institutional framework. Globalization and institutions can occur as substitutes in the process of development; however, it is more likely that institutional quality is inevitable for achieving growth effects of globalization.

“Globalization [...] does increase the costs of getting the policies wrong, just as it increases the benefits of getting them right.” (McMillan / Rodrik, 2011)

# Globalization and Economic Growth: Accounting for Non-linearities

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