

# GROWTH AND INCOME INEQUALITY IN OECD COUNTRIES: Trade and Financial Integration

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## ABSTRACT

In this paper, we investigate the impact of trade and financial integration on economic growth and income inequality in 35 OECD countries over the period 1995-2016. Our contribution to the empirical literature is threefold: i) we disentangle the impact of economic integration in short and long run using an error correction model applied to panel data; ii) we differentiate estimates for low, middle and high income groups of countries and iii) we evaluate the impact on growth and inequality of global financial crisis, institutional quality and trade agreements. Our results show that trade integration was positively associated with Gdp growth per capita and negatively with inequality. The impact of financial integration was mixed. We find a positive relationship between financial integration and growth in the short run for middle income countries and a negative linkage with income inequality in the long run in low income countries.

**Keywords:** Trade integration, Income inequality, Panel data analysis

**JEL Classification:** D63, D31, O15, H23

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## INTRODUCTION

The impact of trade and financial integration on income level and distribution is core for current international economic policy debate<sup>1</sup>. Trade and financial integration for years have been considered an engine for growth by enhancing efficiency and widening the market for national products. Nevertheless, especially after the global financial crisis, economic integration (and technological progress) has been often cited as worsening income disparity.

The relationship between trade integration and income distribution has been intensively debated in economic literature in the past three decades<sup>2</sup>. Differently, the relationship among financial integration, growth and inequality

received minor attention (Naceur and Zhang 2016). Overall, empirical results are inconclusive. There are different opinions ranging from those arguing that free trade and capital movements are key to economic growth (i.e. more efficient use of resources) and reduce inequalities and others arguing that trade integration is itself a factor of inequality (i.e. it fosters progress of few high competitive firms and sectors and remuneration only of skilled jobs).

In this paper, we investigate the impact of trade and financial integration on growth and income inequality in 35 OECD countries in the period 1995-2016. Our contribution to the empirical literature is threefold: i) we disentangle the impact of economic integration in short and long run using an error correction model applied to panel data<sup>3</sup>; ii) we differentiate estimates for low, middle and high income groups of countries<sup>4</sup> and iii) we evaluate the impact on growth and inequality of global financial crisis, institutional quality and trade agreements.

The empirical evidence provided by this paper has interesting policy implication especially in the current situation characterized by retreat from globalization and rising protectionism. According to our estimates, trade integration was positively associated with per capita Gdp growth and negatively with inequality. It enhanced economic growth mostly in low and middle income countries. The impact of financial integration was mixed. We find a positive relationship between the latter and growth in the short run for middle income countries and a negative linkage with income inequality in the long run for low income countries.

The paper is organized as follows. Section 2 present a brief survey of literature, section 3 reports descriptive statistics on economic integration and income distribution in the OECD countries. Section 4 describes equations, dataset and empirical strategy. Section 5 presents the econometric results, while section 6 reports some robustness checks. Conclusions follow.

## **TRADE AND FINANCIAL INTEGRATION, INCOME LEVELS AND INEQUALITY: A SURVEY OF LITERATURE**

This paper draws specifically on empirical research analyzing the impact of international trade on between-countries income convergence and growth built on Frankel and Romer (1999) and Baldwin (2003) seminal papers. The latter suggest, under certain assumptions, that there is a positive relationship between trade integration and growth and income convergence.

Overall, literature results are still inconclusive with a bias in favor of trade's positive effects on growth. Bourguignon and Morrisson (2002) conclude that globalization has been a driving force for between-country convergence since

the 19th century. Sala-i-Martin *et al.* (2004) finds that global inequality has been falling since 1980, due to between-country convergence favored by free trade. On the contrary, Dowrick and Golley (2004) show that while trade integration promoted convergence in the 1960s and 1970s, since 1980 the benefits of trade are mostly attributed to the richer economies.

Beginning with a number of works on wage distributions in the 1990s, to more recent papers on the effects of globalization on the labor share (Elsby *et al.* 2013), wage inequality (Ebenstein *et al.* 2015), and routine middle class jobs (Autor *et al.* 2014) many studies focused on OECD countries<sup>5</sup>. Many papers provide evidence of a positive relationship between trade integration and inequality in OECD advanced and emerging countries. Lim and McNelis (2016) use a panel of annual data from 1992 for about 40 countries including OECD members and find an elasticity of the Gini index about 0.05, albeit it about doubles for low-income countries and turns to negative for upper-middle countries. Dabla-Norris *et al.* (2015) study about 100 countries, including the OECD economies, during the period 1980–2012, and estimate an elasticity of Gini index that is negligibly negative to trade integration and is 0.05 with respect to financial integration. Their reference model includes among the control variables also: education, financial depth and some indicators on the structure of population and labour market, other than public expenditure.

Bumann and Lensink (2016) report an average elasticity of the same inequality index to financial integration, measured by the Chinn and Ito (2008) index, close to 2, considering 106 countries over the period 1973 to 2008 and controlling for inflation, trade integration, financial depth, per capita GDP, education and demographic indicators. Roser and Cuaresma (2016) estimate a model on a panel of 32 countries including OECD members over the last four decades by using GMM and find an elasticity of Gini index to trade integration of about 0.01, controlling for public expenditure, GDP growth, per capita GDP and international trade structure.

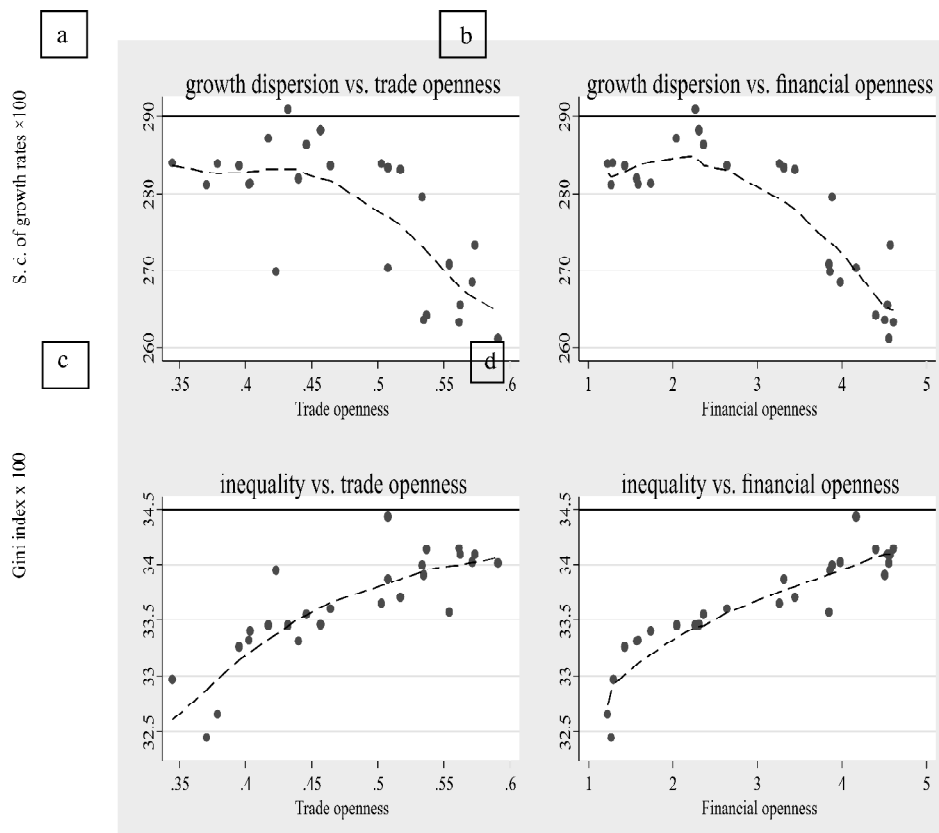
The literature on the impact of financial integration on growth and inequality provide mixed results. Greenwood and Jovanovic (1990) predict a nonlinear relationship between finance and inequality, underlining that distributional effect of financial integration depends on the level of economic development<sup>6</sup>. They suggest that financial deepening eases credit constraints, which benefits low-income groups through the channels of human capital and capital accumulation. Cross-country evidence from Beck *et al.* (2007) and Rajan and Zingales (2003) for example suggests that expanding private credit can stimulate income growth for the poorest quintiles and reduce income inequality<sup>7</sup>.

### 3. TRADE AND FINANCIAL INTEGRATION, GROWTH AND INCOME INEQUALITY IN OECD COUNTRIES: DESCRIPTIVE STATISTICS

Overall, in the OECD trade and finance integration seem to have contributed to reduce the gaps in per-capita incomes across the countries over time, as shown in panels *a* and *b* of chart 1, albeit the relationship between income dispersion and openness is strongly non-linear. Indeed, openness tends to widen or to keep almost constant income disparities before a given threshold, and to reduce it afterward. On its turn, income inequality within each country seems to increase as the economic integration proceeds, as panel *c* and *d* of chart 1 suggest<sup>8</sup>.

**Chart 1 : Trade and Financial Integration, Growth and Income Inequality in Oecd Countries\***

(1995-2016, yearly weighted averages)



\* Interpolating dashed lines are locally weighted scatterplot smoothing (LOWESS) estimates.

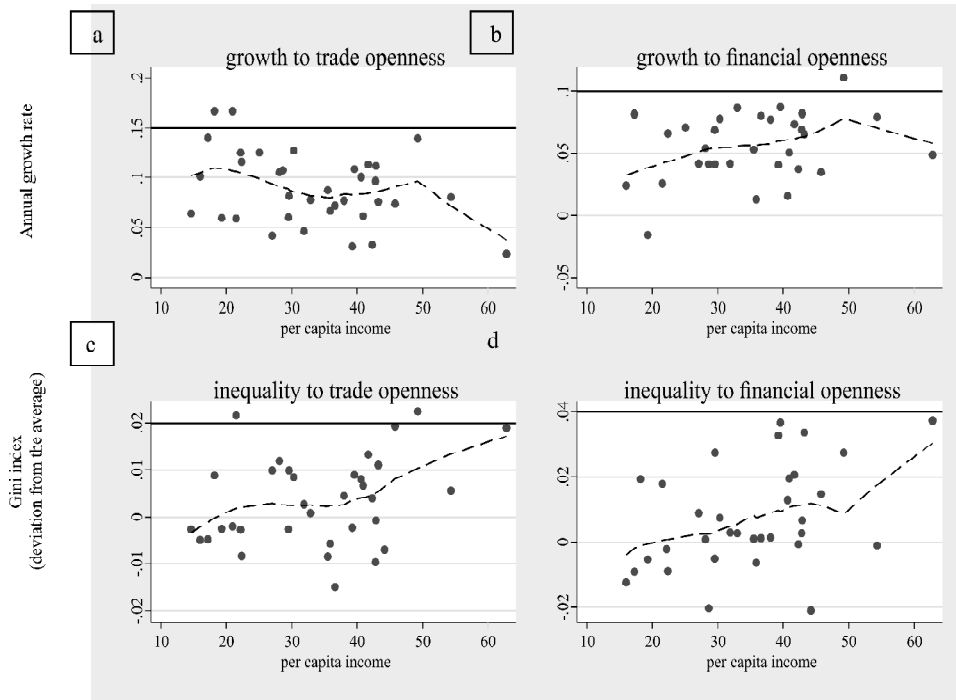
Estimating the unconditional elasticity of per capita income and inequality to trade and financial integration in each country provides some further insight on the effects of globalization.

For each OECD member the regression  $\ln(y_t) - \ln(y_{t-1}) = \eta_{yx} (\ln(x_t) - \ln(x_{t-1}))$  was estimated by non-parametric methods,<sup>9</sup> where y was in turn per capita GDP in volume in US\$ and the Gini index<sup>10</sup> computed on disposable income, and x was one of the openness indicators. The main results are summarized in chart 2, where the estimated elasticities are plotted against per capita GDP levels.

Although data variability is large, chart 2 suggests that the relationships between globalization indicators (i.e. trade and financial integration) and income vary with national development level. For instance, panel a of chart 2 shows that the growth rate of low income is more strongly related to trade integration than that of high income countries.

**Chart 2 : Elasticity of Per Capita Income and Inequality in Oecd Countries\***

*(1995-2016, yearly weighted averages)*



\*Interpolating dashed lines are locally weighted scatterplot smoothing (LOWESS) estimates.

Contrarily, the elasticity of growth to financial integration, reported in panel b, seems to be higher in the richest OECD members. When international trade intensifies, income inequality, measured by the Gini index, is lower mostly in low and middle-income countries (panel c of chart 2).

The evidence reported in chart 2 suggests that the relationships among the variables of interest might be non-linear and influenced by country-specific factors. In the empirical analysis that follows we ranked the OECD countries according to their increasing per capita GDP level and then created three groups each including one third of the countries, henceforth named “low”, “middle” and “high” income OECD countries<sup>11</sup>.

#### 4. EQUATION, DATASET AND METHODOLOGY

Our model specification takes into account both short and long run effects of per capita income and inequality explaining factors. This distinction helps in evidencing factors that might be permanent driving forces for fostering growth and/or reducing inequality.

More specifically, we estimate an Error Correction Model (ECM), in which the dynamics of growth and income inequality are driven by short run elasticity with respect to some regressors and by the deviation from a long run relationship (Pesaran *et al.* 1995 and Westerlund 2007).

The linear formulation of the model is:

$$\Delta y_{it} = \sum_j \alpha_j \Delta x_{jit} - \beta_0 (y_{it-1} - \sum_j \beta_j x_{jit-1}) + \delta_i + \theta_t + u_{it} \quad (1)$$

where the change between the periods of time  $t - 1$  and  $t$  of the endogenous variable  $y$  measured on the  $i$ -th individual of the panel is explained by the changes of a number of explanatory variables  $x_j$  whose short run impact on  $\Delta y_{it}$  is measured by the parameters  $\alpha_j$ ; the past deviation of  $y_i$  from the long run relationship  $\sum_j \beta_j x_{jit-1}$ ; a set of country dummies  $\delta_i$  representing time invariant country specific omitted variables, and time dummies  $\theta_t$  representing common time-varying factors not included in the model; the idiosyncratic term  $u_{it}$ . The convergence speed to the long run relationship (not necessarily an equilibrium condition) is measured by the *positive* parameter  $\beta_0$ .<sup>12</sup> A generalization of [1] includes a set of long run relationships, corresponding to possible multiple cointegration relationships between the variables  $y$  and  $x_j$ .

The formulation [1] holds both for stationary and non-stationary time series, but in the latter the long run relationship exists, i.e.:  $\beta_0$  is not null, only if  $y$  and

$x_j$  are cointegrated. In the absence of endogeneity problems, a standard fixed effects GLS provides robust estimates for the equation [1], as shown by Westerlund (2007). Alternatively, a two-step procedure can be adopted; similar to the one originally proposed by Engle and Granger (1987) for time series data. In the first step the static long run relationship

$$y_{it} = \sum_j \beta_j x_{jit} + \delta_i + \theta_t + v_{it} \quad (2)$$

is estimated by using GLS, since cointegration of non-stationary variables grants the “super-consistency” of estimates (but not of corresponding standard errors), as shown by Stock (1987). In both cases, the exogeneity of explanatory variables should be tested before running OLS or GLS estimates. Nevertheless, the concern for endogenous explanatory factors in an ECM model is restricted only to the differenced contemporaneous variables, ideally describing the short run adjustment process, but not the lagged level variables included in the EC term.

We test our model for the period 1995-2016 for 35 OECD countries. Coherently with the previous literature (Lim and McNelis 2016 and Roser and Cuaresma 2016) and to provide a more detailed and meaningful analysis we disentangle our regressions in three countries groups (low, middle and high) according to GDP per capita level.

Relying on previous literature (Dabla-Norris *et al.* 2015), to explain per capita GDP in volume ( $GDP\_pck$ ) we introduce in our model the following regressors in logarithmic terms:

- (i) trade integration ( $trade\_open$ ). We do not have any a priori on the sign of the coefficient of this regressor. Following (Busse Konninger, 2012) we use  $trade\_open$  calculated as exports and imports of goods and services in current US\$ divided by total GDP in current US\$ lagged by one period.
- (ii) financial integration ( $fin\_open$ ) given by the sum of financial assets plus liabilities divided by the GDP of the previous period. We do not have any a priori on the sign of the coefficient of this regressor. We selected a de facto indicator preferring it to the *de iure* Chin Ito index because the latter has a very low variability after 1995 across OECD members and available data end in 2011.<sup>13</sup>
- (iii) terms of trade ( $terms\_trade$ ) as a proxy of international competitiveness. We do not have a priori on the sign of the coefficient;

- (iv) value added per employed person with tertiary education ( $lp\_a$ ) as a proxy of human capital. We expect a positive sign of the coefficient;
- (v) public expenditure net of interest on public debt divided by previous year GDP ( $pe\_GDP$ ) as a proxy of fiscal policy. We expect a negative sign in the inequality equation due to the impact of redistributive policies;
- (vi) interests on public debt divided by previous year GDP ( $int\_GDP$ ). We expect a positive sign of the coefficient because it raises the national disposable income of households and firms.

In the income inequality equation ( $ineq$ )<sup>14</sup>, in line with the relevant literature, we included also labour share (LS) (we expect a negative sign) and we excluded from the previous regressors the terms of trade<sup>15</sup>.

It is worth noticing that other possible more structural regressors such as industrial structure, demographic indicators and market liberalization have low variability in the time span considered. Thus, we assume that their impact is captured by the combination of country and time dummies we included in our equation specification<sup>16</sup>.

## 5. ESTIMATION RESULTS

The ECM model [1] was estimated using GLS method to assess the relevance of trade and financial integration in explaining the disparities of per capita GDP growth across OECD countries and their effect on income inequality, measured by the Gini coefficient. Preliminarily, we run the Hausman-type endogeneity tests described by Baum *et al.* (2003)<sup>17</sup>, which show that, with very few exceptions, there are no endogeneity problems in our regressions (see tests results in tables A3 and A4 in the appendix).

In this paragraph, we concentrate our discussion on results concerning trade and financial integration indicators (see table 1). Table A3 and A4 in the appendix provide the entire equation GLS estimates for OECD sample and for countries divided in the three GDP per capita groups (low, middle and high income)<sup>18</sup>. It is worth noticing that all regressors in the estimates are significant and with the expected signs.

**Effect of trade integration on growth and inequality in the short and long run.** Estimates show that, in short and long run, trade integration exerted a positive impact on growth in all countries groups. The coefficients present different magnitudes, the one for low income countries being the greatest (0.27,



0.07 and 0.08 for the three groups respectively in the short run and 0.26, 0.08 and 0.02 in the long run). These results are coherent with Baldwin (2003) and Dowrick and Golley (2004).

**Table 1: Summary of Main Estimates\***

	<i>short/long</i>	<i>Low income</i>	<i>Middle income</i>	<i>High income</i>
Trade integration	growth	+/+	+/+	+/+
	inequality	-/-	-/-	+/+
Financial integration	growth	-/+	+/+	-/-
	inequality	+/-	+/-	+/+

\*signs in red are not statistically significant. The first sign refers to the short run impact and the second one to the long term effect.

We included in our regressions interaction terms between trade or financial integration and initial Gdp per capita level. With the inclusion of these terms, the estimated parameters indicate how the coefficient of the original regressor changes as the interacted variable increases. Consistently with the previous findings, the interaction terms (see second column of table A3 in the appendix) suggest that the level of lagged per capita GDP exerts a negative impact on the elasticity of growth to trade both in short and long run (-0.12 and -0.09 respectively). Thus, trade seems to enhance economic growth more in low income countries. This evidence is coherent with the neoclassical catching up theory stating that countries with lower income levels grow faster in order to converge to the income of more advanced countries.

As for the impact on income inequality, in short and long run, trade integration reduces disparities in low and middle income groups while it does not significantly affect high income group. The magnitude of coefficient is greater in the short run for low income countries (-0.05 and -0.04) while in the long run coefficients are almost equal (-0.03). These results are coherent with Dabla-Norris *et al.* (2015) and Lim and McNelis (2016) empirical evidence for OECD countries.

**Effect of financial integration on growth and inequality in the short and long run.** For what concerns financial integration the results are mixed. The financial integration indicator has a positive and significant impact on Gdp per capita growth only in the short run in middle income countries being not statistically significant for the other two groups. The interaction coefficient between financial integration and Gdp per capita is positive and significant

both in short and long run (0.05 and 0.02 respectively). According to our estimates and in line with with Dabla-Norris *et al.* (2015) findings, financial integration increases income disparities in low income countries only in the short run while reducing them in the long run. This evidence suggests that financial integration might be a driver of growth for emerging countries although the magnitude of the coefficient is very low. Differently, the coefficient for OECD high income countries is not statistically significant. This result suggests that countries richer and consequently with more developed financial market might have already exploited the benefits of financial integration.

## 6. ROBUSTNESS CHECKS: THE IMPACT OF INSTITUTIONAL QUALITY, TRADE AGREEMENTS AND GLOBAL FINANCIAL CRISIS

In this paragraph, we present the estimates of our baseline equation augmented with three regressors: i) a government effectiveness indicator taken from the World Governance Indicators (WGI) of the World Bank<sup>19</sup>, ii) a euro dummy proxying trade agreements and iii) a global financial crisis 2008 dummy.

Notably, the baseline equation estimates proved to be robust to the augmented specification (see tables A3 and A4 in the Appendix). Including government effectiveness in the baseline equation reinforced our findings of a positive association between trade integration and income disparities in low income countries. As in the previous paragraph, we concentrate our discussion on results concerning trade and financial integration indicators (see table 2).

Table 2: Summary of Main Estimates\*

	<i>short/long</i>	<i>Low income</i>	<i>Middle income</i>	<i>High income</i>
Institutional quality	growth	+/+	+/-	-/+
	inequality	-/-	+/+	-/+
Trade agreement	growth	+	-	-
	inequality	+	-	+
Financial crisis	growth	+	-	-
	inequality	-	+	-

\*signs in red are not statistically significant. The first sign refers to the short run impact and the second one to the long term effect.

Government effectiveness in low income countries, displays a positive relationship with Gdp per capita growth in the long run and a negative one

with income inequality in short and long run. The inclusion of interaction terms suggests that government effectiveness in the long run increased the positive impact of trade on (reducing) inequality. One possible explanation is that in low income countries governments implemented policies that favored equity over efficiency while the opposite occurred in middle and high income countries.

The effects of the euro dummy on growth are not statistically significant while its effect on income inequality is negative (reducing inequality) for middle income countries and positive (increasing inequality) for high income ones. The interaction of the euro dummy with trade integration suggest that stricter trade agreements reduced inequality in the short run and long run in middle income countries reinforcing the previous result (table A5 and A6).

Eventually, as expected the global financial crisis negatively affected growth in medium and high income countries but reduced inequality in low income countries. The heterogeneity of results suggest that the impact of financial integration on growth and inequality might be related to the degree of development of the financial market in the group of countries considered.

## **CONCLUSIONS**

The evidence presented in this paper indicates that in the OECD countries - once classifying countries groups in “low”, “middle” and “high” income and differentiating the analysis for short and long term – economic integration generally exerted positive impacts on per capita Gdp and reduced income inequality.

More specifically, trade integration, in the past two decades, enhanced growth in the three OECD groups both in the short and long run. It improved mostly per capita Gdp in low income countries coherently with the prescriptions of the neoclassical catching up theory. Trade integration displayed also a negative association with inequality of similar magnitude in low and middle income countries. Government effectiveness proved to be a reinforcing factor of trade integration benefits in low income countries.

The evidence for financial integration is mixed. The latter had a positive and significant impact on Gdp per capita growth in the short run for middle income countries being not statistically significant for the other two groups. It also increased income disparities for low income countries in the short run while reducing them in the long run.

Overall, the evidence provided by this paper suggests that trade is mostly a driver of sustainable and equitable growth. Indeed, from the policy point of view, it would be appropriate to foster trade integration. Implementing protectionist measures is detrimental for growth and increases inequality especially in low income countries. It is also necessary that public policies meet the challenges posed by globalization seeking to preserve the gains from globalization in terms of growth while improving the distribution of the gains among countries.

Differently, the positive impact of financial integration on growth and inequality is limited to some countries and the magnitude of its effect is marginal. Under these circumstances to make financial integration a tool to reduce inequality and foster sustainable growth requires targeted and coordinated policies at domestic and international level rather than more general policy approaches.

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The views expressed in this paper are those of the authors and do not necessarily represent the institutions with which the author is affiliated. Any error or mistake remains the author's sole responsibility. Thanks are due to anonymous referees for many helpful suggestions.

### *Notes*

1. See for example OECD (2017) and Cournède *et al.* (2015).
2. The standard trade theory, the Heckscher-Ohlin model (H-O), predicts that countries should experience after converging equal trends because of globalization. The Stolper-Samuelson theorem states that openness would benefit a country's relatively abundant factor, since trade specialization will favor sectors intensive in the abundant factor. However, if the basic framework of the model is extended for example to account for multiple skill-related categories of workers (Wood, 1994), different country groups (Davis, 1996) and traded goods (Feenstra and Hanson, 2003), the main distributive prediction of the theorem are theoretically undetermined.
3. We selected the ECM model in order to investigate both the short and long run impacts. Therefore, the related literature suggests that the impact might be substantially different. See Feridun, Olusi and Folorunso (2006), Awokuse (2008) and Chirwa and Odhiambo (2019) run ECM estimates but only for developing countries. Our analysis is extended to advanced countries.
4. Gdp per capita, despite some limits, is still extensively use as a proxy of country's degree of development. Moreover, the country classification by gdp per capita is

a very good approximation of those of main international organizations (IMF, OCSE, UN).

5. Quah (1996) argued that income convergence, if any, occurs within different “clubs” of countries such as the OECD, rather than across all the economies at the same time.
6. At early stages of development, only the rich can access financial services because of the fixed cost of joining the financial coalition, resulting in wider income inequality. As the economy develops, the financial system becomes more accessible and affordable to the poor because human capital replaces physical capital as the main driver of growth.
7. Papers that are more recent attempted to include other dimensions of financial development. For example, Jeanneney and Kpodar (2011) establish that financial instability worsens poverty and Kunieda and others (2011) find that financial integration aggravates income inequality by benefiting the most privileged. Similarly, Furceri and Loungani (2015) study the impact of capital account openness on inequality and find that liberalizing domestic financial systems can aggravate income inequality, both in the short and medium run.
8. Please take note that chart 1 provides preliminary evidence that might not be confirmed by a more robust econometric analysis
9. Local polynomials were fitted to the data by using the methodology described by Cleveland (1979).
10. The benchmark for the Gini index is the equidistribution of income among the individuals that could differ from the social preferences about income inequality.
11. Low per capita income countries include Brazil, Chile, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Mexico, Poland, Portugal, Slovak Republic and Turkey. Middle per capita income countries includes Finland, France, Greece, Iceland, Israel, Italy, Japan, Korea, New Zealand, Slovenia, Spain and United Kingdom. High per capita income countries includes Australia, Austria, Belgium, Canada, Denmark, Germany, Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland and United States.
12. A negative value of  $b_0$  would signal a permanent divergence from the supposed long run relationship that casts doubts on the existence of the latter “attractor” itself.
13. All those measures might be imperfect. One of the drawbacks connected with de facto measures is that the choice in favour of one of them leaves the information contained in all the others de facto measures aside. Thus, whatever measure of actual financial integration is chosen, it risks containing incomplete and thus distorting information on the process. On the other hand, the de jure indicators, even though in a majority of cases they are based on summary information revealed

in the IMF's AREAER reports, should in principle contain more complete information on the formal – and potentially also on actual – financial liberalization than de facto measures do. Consequently, especially in the case of more developed economies, to the extent to which de jure financial integration leads also to de facto liberalization episodes, the former could be to a certain degree treated as a proxy for the latter.

14. In our model we use the post tax Gini index since it has a wider coverage and comparability in terms of years and countries than other, possibly more accurate, inequality measures.
15. We also tested the explanatory capacity of the expenditure in R&D as percentage of GDP but this regressor was not statistically significant. Investment in R&D has very long run returns and therefore might not be captured by the lags introduced in our estimates.
16. Tables with the description, data sources and descriptive statistics of the variables are provided in the appendix (table A1 and A2).
17. The test results show that the IV estimates (the instruments are the first two lags of the differenced variables) do not differ significantly from the GLS estimates presented in the table, which are statistically more efficient than the IV estimates.
18. In the second column, there are the estimates of the baseline equation augmented with interaction terms between trade integration financial integration and GDP per capita.
19. The WGI comprises six governance indicators. Voice and Accountability, and Political Stability and Absence of Violence/ Terrorism relate to the process by which governments are selected monitored and replaced. Government Effectiveness and Regulatory Quality refer to the capacity of a government to effectively formulate and implement sound policies. Rule of Law and Control of Corruption concern the respect of citizens and the State for the institutions that govern economic and social interactions among them. They are based on over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. Estimates of governance ranges from approximately -2.5 (weak) to 2.5 (strong) performance. For a full methodological explanation, see Kaufmann, Kraay and Mastruzzi (2010).

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## APPENDIX

Table A1: Data Description

<i>Trade integration</i>	<i>(Exports + Imports)/GDP<sub>t-1</sub></i>	<i>Source: OECD</i>
GDP per capita	Levels, constat	Source: OECD and IMF
Population	Levels	Source: World Bank
Terms of trade	(export value/export volume)/ (import value /import volume)	Source: OECD
Financial integration	Net foreign assets+ liabilities (NFA+NFL)/GDP <sub>t-1</sub> .	Source: EWNII Milesi Ferretti (2017)
R&D expenditure	% of GDP	Source: OECD
Government effectiveness	Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The index is based on over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance.	Source: World Bank WGI Kaufmann, Kraay and Mastruzzi (2010).
Public expenditure	% of GDP	Source: OECD
Interests on public debt	% of GDP	Source: OECD
Gini index	The Gini index computed on disposable income (income after taxes and benefits)	Source: Standardized World Income Inequality Database, Solt (2016)
Value added per worker with tertiary education	% of VA	ILO and OECD databases
Labour share	(Compensation of employees corrected for self-employed)/ (Nominal value added at factors' cost)	Source: OECD

**Table A2: Descriptive Statistics**

<i>VARIABLES</i>	<i>N</i>	<i>mean</i>	<i>standard dev</i>	<i>min</i>	<i>max</i>
debt_GDP	845	57.63	38.29	3.664	242.1
eu	888	0.377	0.485	0	1
euro	888	0.235	0.424	0	1
fin_open	808	10.15	37.80	0.410	333.8
GDP_k	886	11.34	24.83	0.0900	187.8
GDP_pck	886	33,086	14,893	8,066	99,515
gini_disp	789	31.63	6.709	20.30	52.30
gini_mkt	789	47.41	5.358	29	62
goveff	735	1.328	0.573	-0.265	2.354
inflation	884	6.501	70.24	-1.676	2,076
Int on public debt_GDP	838	2.079	2.238	-2.965	16.38
Tertiary_edu	690	0.0285	0.0147	0.00230	0.0954
Public expend_GDP	853	41.59	9.025	14.24	65.69
ppe_GDP	838	39.55	8.821	13.79	63.73
R&D	792	9.104e+11	2.004e+13	-5.929e+07	5.510e+14
terms_trade	841	0.989	0.122	0.499	1.614
trade_open	847	0.922	0.567	0.146	4.134

**Table A3: Estimates: Trade and Financial Integration and Growth**

	<i>Oecd</i>	<i>Low Income</i>	<i>Mid Income</i>	<i>High Income</i>	
<i>Short run effects</i>					
D.trade_open	0.0888*** (0.0137)	1.352*** (0.265)	0.266*** (0.0729)	0.0664*** (0.0209)	0.0797*** (0.0216)
D.fin_open	0.0141* (0.00764)	-0.534*** (0.177)	-0.0204 (0.0524)	0.0182** (0.009219)	-0.00534 (0.0131)
D.terms_trade	-0.0551* (0.0297)	-0.0335 (0.0306)	0.0163 (0.2659)	-0.104** (0.0486)	-0.0404 (0.0386)
D.pub_exp_GDP	-0.153*** (0.0191)	-0.232*** (0.0209)	-0.229** (0.08829)	-0.137*** (0.0341)	-0.163*** (0.0218)
D.int_debt_GDP	-0.00637** (0.0028)	-0.00740** (0.00295)	-0.0223 (0.0151)	-0.00301 (0.00395)	-0.00363 (0.00445)
D.tertiary_edu	0.0273** (0.0108)	-0.0110 (0.0102)	-0.0313 (0.0492)	0.0203 (0.0184)	0.0331** (0.0148)
D.trade_gdp		-0.121*** (0.0254)			
D.fin_gdp		0.0515*** (0.0169)			

<i>Long run effects</i>					
L.GDP_pck	-0.0897*** (0.013)	-0.120*** (0.0133)	-0.102* (0.0596)	-0.0599*** (0.0225)	-0.0959*** (0.0249)
L.trade_open	0.0689*** (0.00952)	0.970*** (0.198)	0.258*** (0.0621)	0.0820*** (0.0172)	0.0239* (0.014)
L.fin_open	0.00394 (0.00421)	-0.208*** (0.0778)	0.0375 (0.0415)	0.00251 (0.00588)	-0.00169 (0.00652)
L.terms_trade	0.0288** (0.0119)	0.0231* (0.0135)	-0.0897 (0.277)	0.0352 (0.0228)	0.0157 (0.0139)
L.pub_exp_GDP	-0.0941*** (0.0138)	-0.129*** (0.0151)	-0.182 (0.109)	-0.125*** (0.0229)	-0.0974*** (0.0178)
L.int_debt_GDP	0.00224 (0.00184)	0.00325* (0.00184)	-0.0159 (0.0172)	0.00288 (0.003)	0.00914*** (0.00266)
L.tertiary_edu	0.0269*** (0.0053)	0.0164*** (0.00481)	-0.0394 (0.0479)	0.0273*** (0.00776)	0.0285*** (0.00875)
L.trade_gdp		-0.0881*** (0.0190)			
L.fin_gdp		0.0199*** (0.00732)			
Constant	1.403*** (0.158)	1.817*** (0.156)	1.537 (0.974)	1.233*** (0.269)	1.475*** (0.286)
Observations	513	495	65	222	226
R-squared	0.692	0.614	0.914	0.687	0.776
Endogeneity test (p-values)	0.062	0.0457	0.119	0.0369	0.0715
Number of cod	26	26	4	11	11
Country FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A4 Estimates: Trade and Financial Integration and Income Inequality**

	<i>OECD</i>	<i>low income*</i>	<i>middle income</i>	<i>high income</i>	
<i>Short run effects</i>					
D.trade_open	-0.0112 (0.00987)	-0.396* (0.210)	-0.0536*** (0.011)	-0.0426*** (0.0138)	0.00515 (0.015)
D.fin_open	0.0136** (0.00685)	0.0992 (0.143)	0.0207*** (0.00718)	0.0151 (0.00967)	0.0134 (0.0103)
D.public_exp_GDP	-0.0207 (0.0141)	-0.0140 (0.0126)	0.00586 (0.0185)	-0.0359 (0.026)	-0.00716 (0.0175)

*contd. table A4*

	OECD		<i>low income*</i>	<i>middle income</i>	<i>high income</i>
D.int_deb_GDP	0.00333*	0.00234	0.00372*	0.00703***	0.00229
	(0.00176)	(0.00153)	(0.00214)	(0.00213)	(0.00299)
D.tertiary_edu	-0.00394	-0.00608	0.0172*	0.0316**	-0.0193*
	(0.0074)	(0.00574)	(0.00931)	(0.0124)	(0.0105)
D.Labour_share	0.0344	0.0172		-0.142*	0.196**
	(0.0521)	(0.0438)		(0.0734)	(0.0759)
D.trade_gdp	0.0372*				
		(0.0199)			
D.fin_gdp		-0.00817			
		(0.0136)			
<i>Long term effects</i>					
L.ineq	-0.108***	-0.122***	-0.0302	-0.0711**	-0.132***
	(0.0202)	(0.0191)	(0.0225)	(0.0307)	(0.03)
L.trade_open	-0.00503	-0.237*	-0.0263***	-0.0312***	0.00995
	(0.00628)	(0.133)	(0.00756)	(0.00818)	(0.00971)
L.fin_open	0.00840**	(0.0126)	-0.00863**	-0.0074	0.0118**
	(0.00335)	0.0900	(0.00345)	(0.0063)	(0.0046)
L.public_exp_GDP	-0.0254**	-0.0137	0.0171	-0.0462**	-0.00889
	(0.0116)	(0.0105)	(0.0121)	(0.0207)	(0.0154)
L.int_debt_GDP	0.00274**	0.00127	0.00478***	0.00747***	-0.00198
	(0.00129)	(0.00110)	(0.00164)	(0.00175)	(0.00202)
L.tertiary_edu	0.00309	0.00360	-0.00215	-8.12E-05	-0.00506
	(0.00358)	(0.00297)	(0.00434)	(0.00499)	(0.00675)
L.Labour_share	0.00222	0.000736		-0.0152	0.0557
	(0.0253)	(0.0239)		(0.0375)	(0.0389)
L.trade_gdp	0.0225*				
		(0.0126)			
L.fin_gdp		-0.00754			
		(0.00535)			
Constant	0.450***	0.460***	0.0192	0.458*	0.205
	(0.157)	(0.152)	(0.099)	(0.256)	(0.218)
Observations	368	353	209	135	212
R-squared	0.163	0.180	0.345	0.48	0.263
Endogeneity test (p-values)	0.082	0.125	0.229	0.165	0.249
Number of cod	19	19	11	7	11
Country FE	YES	YES	YES	YES	YES
Year FE	YES		YES	YES	YES

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 \* The coefficients of LS are not estimated for the first group of countries because too much data are missing for this variable.

Table A5 : Institutional Quality, Trade Integration and Growth

	<i>OECD</i>	<i>low income*</i>	<i>middle income</i>	<i>high income</i>
D.trade_open	0.0976*** (0.0147)	0.258*** (0.0813)	0.0557** (0.0240)	0.0941*** (0.0300)
D.fin_open	0.0142* (0.00802)	-0.0324 (0.0505)	0.0139 (0.0103)	-0.00432 (0.0139)
D.terms_trade	-0.0418 (0.0302)	-0.419* (0.218)	-0.0858 (0.0531)	-0.0309 (0.0396)
D.public_exp_GDP	-0.153*** (0.0201)	-0.164* (0.0807)	-0.143*** (0.0378)	-0.158*** (0.0227)
D.int_deb_GDP	-0.00655** (0.00282)	-0.0234 (0.0164)	-0.00315 (0.00438)	-0.00393 (0.00456)
D.tertiary_edu	0.0251** (0.0111)	-0.0620 (0.0422)	0.0207 (0.0207)	0.0374** (0.0159)
D.gov_eff	-0.00868 (0.00889)	0.0244 (0.0273)	0.00356 (0.0142)	-0.00496 (0.0209)
d.euro	-0.00499 (0.00405)	0.0156 (0.0141)	-0.00362 (0.0145)	-0.00668 (0.00616)
D.trade_euro	-0.00829 (0.00876)	-0.0417 (0.0404)	-0.00824 (0.0224)	0.0252* (0.0131)
D.trade_gov_eff	-0.0445*** (0.0123)	-0.0320 (0.0690)	-0.0182 (0.0213)	-0.0309 (0.0365)
L.GDP_pck	-0.112*** (0.0162)	-0.262*** (0.0642)	-0.0898*** (0.0303)	-0.145*** (0.0326)
L.trade_open	0.0788*** (0.0109)	0.263*** (0.0553)	0.0722*** (0.0204)	0.0654** (0.0255)
L.fin_open	0.00624 (0.00479)	0.0172 (0.0459)	8.89e-05 (0.00659)	0.00242 (0.00780)
L.terms_trade	0.0398*** (0.0132)	-0.377 (0.271)	0.0441 (0.0296)	0.0194 (0.0154)
L.public_exp_GDP	-0.109*** (0.0162)	-0.0429 (0.0999)	-0.135*** (0.0285)	-0.125*** (0.0208)
L.int_deb_GDP	0.00272 (0.00191)	-0.0271 (0.0215)	0.00116 (0.00349)	0.00982*** (0.00288)
L.tertiary_edu	0.0217*** (0.00598)	-0.0376 (0.0402)	0.0164 (0.0105)	0.0281*** (0.00989)
L.gov_effectiveness	-0.00961 (0.00785)	0.106*** (0.0258)	-0.00694 (0.0145)	0.00228 (0.0216)

contd. table A5

	<i>OECD</i>	<i>low income*</i>	<i>middle income</i>	<i>high income</i>
L.trade_euro	0.00242 (0.00656)	-0.0160 (0.0497)	0.0165 (0.0250)	0.0194 (0.0121)
L.trade_gov_eff	-0.0536*** (0.0117)	-0.111 (0.101)	-0.0267 (0.0251)	-0.0828** (0.0379)
Crisis_2008	-0.0233*** (0.00580)	0.00809 (0.0303)	-0.0355*** (0.0101)	-0.0240*** (0.00730)
Constant	1.695*** (0.193)	2.609*** (0.858)	1.564*** (0.349)	2.125*** (0.390)
Observations	470	61	202	207
R-squared	0.730	0.971	0.721	0.803

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, the estimates controls for country and year FE

**Table A6 : Institutional Quality, Trade Integration and Income Inequality**

	<i>OECD</i>	<i>low income*</i>	<i>middle income</i>	<i>high income</i>
D.trade_open	-0.0170* (0.0100)	-0.0157 (0.0174)	-0.0268** (0.0122)	-0.0288 (0.0197)
D.fin_open	0.0102 (0.00675)	0.00805 (0.0114)	0.00493 (0.00861)	0.0109 (0.00977)
D.public_exp_GDP	-0.0220* (0.0133)	-0.0329** (0.0157)	-0.0217 (0.0221)	-0.0101 (0.0169)
D.in_debt_GDP	0.00225 (0.00162)	-0.000148 (0.00314)	0.00277 (0.00180)	0.00254 (0.00270)
D.tertiary_edu	-0.00246 (0.00705)	0.0149* (0.00777)	0.0403*** (0.0108)	-0.0256** (0.0102)
D.Labour_share	0.0287 (0.0507)		-0.159** (0.0640)	0.201*** (0.0752)
D.gov_effectiveness	0.00519 (0.00634)	-0.0160** (0.00631)	0.00204 (0.00681)	-0.000670 (0.0137)
deuro	0.00299 (0.00282)	0.000269 (0.00401)	-0.0120* (0.00715)	0.0108** (0.00445)
D.trade_euro	0.00290 (0.00513)	0.0126 (0.00827)	-0.0242** (0.0101)	-0.00261 (0.00849)
D.trade_gov	0.0215** (0.0100)	-0.0206 (0.0155)	0.0189* (0.0108)	0.0475* (0.0261)
L.ineq	-0.116*** (0.0219)	-0.250** (0.112)	-0.0719** (0.0319)	-0.179*** (0.0343)
L.trade_open	-0.00617 (0.00679)	-0.0446** (0.0210)	-0.0165* (0.00987)	-0.0271 (0.0194)

*contd. table A6*

	<i>OECD</i>	<i>low income*</i>	<i>middle income</i>	<i>high income</i>
L.fin_open	0.00265 (0.00411)	0.0127 (0.0148)	-0.0122* (0.00707)	0.00971* (0.00538)
L.public_exp_GDP	-0.00954 (0.0120)	-0.0302* (0.0150)	-0.0403** (0.0202)	0.0104 (0.0163)
L.int_deb_GDP	0.00131 (0.00122)	-0.000950 (0.00414)	0.00465*** (0.00153)	-0.00229 (0.00195)
L.tertiary_edu	0.00592 (0.00387)	0.0149** (0.00540)	0.00481 (0.00497)	-0.0153** (0.00707)
L.Labour_share	-0.0371 (0.0267)		-0.0854** (0.0350)	0.0504 (0.0425)
L.gov_effectiveness	0.0116* (0.00601)	-0.0124** (0.00567)	0.0110 (0.00787)	0.0286** (0.0144)
L.trade_euro	-0.00488 (0.00389)	0.0161 (0.0112)	-0.0314*** (0.0114)	-0.0161** (0.00778)
L.trade_gov	0.0310*** (0.00777)	-0.0479* (0.0246)	0.0194* (0.0115)	0.0581* (0.0296)
2008.year		-0.0111* (0.00812)	0.0194** (0.00673)	-0.00113 (0.00567)
Constant	0.598*** (0.165)	1.039** (0.383)	0.774*** (0.243)	0.261 (0.230)
Observations	335	58	121	195
R-squared	0.226	0.947	0.660	0.362

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, the estimates controls for country and year FE

#### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.