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Globalisation and the  
efficiency-equity trade-off

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## Abstract

We revisit the effects of globalisation over the past 50 years in a large sample of advanced and emerging countries. We use accessions to “Globalisation Clubs” (WTO, OECD, EU), financial liberalisation and an instrument for trade openness to study the trade-off between efficiency (proxied by real GDP per capita and TFP) and equity (proxied by the labour share of income and the Gini index of inequality). We find that (i) most of our episodes lead to an increase in trade openness (ii) effects on GDP per capita are mostly positive with some interesting exceptions and (iii) there is little evidence that globalisation shocks lead to more inequality.

**Keywords:** globalisation, efficiency, equity, WTO, OECD, EU, financial liberalization, trade integration.

**JEL-Classification:** F13, F36.

## Non-Technical Summary

The mounting criticisms against globalisation and European integration have sparked a lively debate about whether the narrative of the benefits of free trade and capital flows is still intact. Against this backdrop, populist parties have scored well in recent elections, in particular in regions which are heavily exposed to global competition and where income inequality has risen over the past decades. The programs of such parties often include a protectionist agenda which entails the questioning of or even withdrawal from supranational organisations which are perceived as “Globalisation Clubs” which allegedly contribute to rising domestic inequality.

In a context of a broad re-visiting of the benefits and costs of trade and financial integration, such criticism has often been coined in terms of a trade-off under which “globalisation” tends to raise incomes of a few while leaving parts of the society behind, in violation of fairness principles in a Rawlsian spirit.

Against this backdrop, recent empirical contributions have investigated the distributional effects of trade globalisation, in particular on unskilled labour in the advanced economies, and suggest that free trade may indeed raise income inequality within countries. Other studies on the benefits and costs of financial integration also emphasise the need to qualify the case for free capital flows which can also contribute to inequality if not properly managed. For instance, financial globalisation can amplify the likelihood of financial crises which tend to disproportionately hurt the poor, thus raising inequality.

In this paper, we reconsider the effects of globalisation on income and inequality studying the consequences of quasi-natural experiments like accessions to “Globalisation Clubs”. As we shall argue, this allows us to not only address endogeneity concerns to a large extent but also to speak directly to the policy debate surrounding membership in these organisations. Our list of Globalisation Clubs includes the World Trade Organisation (WTO), the European Union (EU) and the Organisation for Economic Co-operation and Development (OECD), which all require their members to pursue some form of either liberal trade or investment policies or a combination of both. In order to isolate the effects of financial openness shocks from membership in our Globalisation Clubs, and in view of a long-standing debate about the respective merits of trade versus financial liberalisation as well as their sequencing, we also look at pure financial openness shocks based on large changes in a widely used *de jure* index of financial openness. Compared to *de facto* measures, *de jure* proxies of financial openness are less likely to suffer

from endogeneity concerns.

As robustness check, we also use a Bartik-type instrument aimed at capturing “trade openness shocks” that are exogenous for individual countries because pre-determined exposures to international trade are interacted with the global rise in trade which is an exogenous change for most countries.

In all specifications, we control for past growth of total factor productivity (TFP) in order to disentangle trade integration from skill-biased technological change, which is otherwise difficult to separate from globalisation. In addition, we control for a number of political and economic factors so that our episodes can be largely considered as globalisation shocks. Finally, we split our sample in all specifications into advanced and emerging economies in order to allow for eventually heterogeneous effects depending on the level of economic development.

The analysis leads to three main findings. First, with the exception of financial liberalisation we find that all our “globalisation shocks” lead to a significant increase in trade openness - a prerequisite for considering them globalisation shocks in the first place. Second, the effects on per capita income are mixed; positive for WTO accessions and trade openness shocks, insignificant for OECD accessions and even negative for EU accessions and financial liberalisations. In the case of the EU, this seems stem from the fact that accession countries underwent a convergence process in anticipation of a more stable and market-friendly institutional framework already before joining the EU, whereas in the case of financial liberalisation it could confirm the notion of illusive gains from financial integration stating that its benefits mainly materialise through TFP growth which we control for. Finally, we find little evidence that globalisation shocks lead to more inequality. The Gini coefficients (market and net) tend not to change or even to fall, and the labour share of income to be unchanged or even rise, in the wake of a globalisation shock. Taken together, our results point to mostly positive effects for countries following globalisation shocks and challenge the view that globalisation is necessarily an efficiency-equity trade-off.

# 1 Introduction

The mounting criticisms against globalisation and European integration have sparked a lively debate about whether the narrative of the benefits of free trade and capital flows is still intact. Against this backdrop, populist parties have scored well in recent elections, in particular in regions which are heavily exposed to global competition and where income inequality has risen over the past decades (Colantone and Stanig, 2018). The programs of such parties often include a protectionist agenda which can be associated with the questioning of or even withdrawal from supranational organisations such as the European Union (EU) and the World Trade Organisation (WTO) which are perceived as “Globalisation Clubs” which allegedly tend to contribute to rising domestic inequality.

In a context of a wider re-visiting of the benefits and costs of trade and financial integration, such criticism has often been coined in terms of a trade-off under which globalisation tends to raise incomes of a few and in aggregate terms while leaving parts of the society behind, in violation of fairness principles in a Rawlsian spirit.

In this paper, we re-visit the effects of globalisation on income and inequality by identifying exogenous changes in countries’ globalisation, namely accessions to “Globalisation Clubs”, financial liberalisation and instrumented changes in trade openness. This allows us to not only address endogeneity concerns to a large extent, but more importantly to speak directly to the policy debate surrounding membership in these organisations.

The main purpose of our study is to shed light on the hypothesis that globalisation leads to an efficiency-equity trade-off which is a fundamental concern in economics dating at least back to Okun (1975). In other words, is the hypothesis that globalisation increases economic efficiency to the detriment of cohesion and equality supported by the data?

We will argue that accessions to Globalisation Clubs are likely to be largely exogenous events for three reasons. First, the episodes have historically been clustered over time and, in the case of the EU, also geographically. In fact, there have been “waves” of accession like the Eastern Enlargement of the EU in 2004, and the expansion of the Organisation for Economic Co-operation and Development (OECD) in 1994-1996 and in 2010 which make it unlikely that these episodes have been driven by economic conditions in the respective countries. Second, while the entry formally depends explicitly or implicitly on economic accession criteria (e.g. a threshold for GDP per capita or covariates of the level of economic development), the decision

for actual accession is often political. Thirdly, the accession process takes several years ranging from three (OECD) to almost ten years (EU), on average; by the time countries are actually members of a Globalisation Club their economic conditions are not affected by those at the beginning of the process.

Our list of Globalisation Clubs includes the WTO, the EU and the OECD, which all require their members to pursue some form of either liberal trade or investment policies or a combination of both. In addition, these Globalisation Clubs ask members, to varying degrees, to commit to market-oriented reforms and a predictable business environment as well as a more open financial account. For example, the free movement of capital within the EU and also largely vis-à-vis third countries is a key element of the EU single market, and is enshrined in the Treaty of Maastricht. Likewise, OECD members commit to respect the OECD Code of Liberalisation of Capital Movements under which adhering countries have accepted legally binding obligations in the area of capital movements. Finally, WTO membership also often includes commitments to policy changes which go beyond a reduction in tariff rates, and can encompass the termination of state monopolies, a greater transparency in government procurement practices, a better protection of intellectual property rights as well as a reduction in restrictions on payments in foreign exchange, facilitating capital inflows.

In order to isolate the effects of financial openness shocks from membership in our Globalisation Clubs, and in view of a long-standing debate about the respective merits of trade versus financial liberalisation as well as their sequencing, we also look at pure financial openness shocks based on large changes in a widely used *de jure* index of financial openness. Compared to *de facto* measures, *de jure* proxies of financial openness are less likely to suffer from endogeneity concerns (Furceri et al., 2019). We therefore treat our pure financial openness shocks also as largely exogenous.

As robustness check, we also use a Bartik-type instrument aimed at capturing “trade openness shocks” that are exogenous for individual countries because pre-determined exposures to international trade are interacted with the global rise in trade which is an exogenous change for most countries.

In all specifications, we include a rich set of controls in order to take past growth of total factor productivity (TFP) into account, with the objective to disentangle trade integration from skill-biased technological change, which is otherwise difficult to separate from globalisation (Acemoglu, 2002; Moore and Ranjan, 2005). In addition, we control for a number of political

and economic factors so that our episodes can be largely considered as globalisation shocks. Finally, we split our sample in all specifications into advanced and emerging economies in order to allow for eventually heterogeneous effects depending on the level of economic development.

The analysis leads to three main findings. First, with the exception of financial liberalisation we find that all our “globalisation shocks” lead to a significant increase in trade openness - a prerequisite for considering them globalisation shocks in the first place. Second, the effects on per capita income are mixed; positive for WTO accessions and trade openness shocks, insignificant for OECD accessions and even negative for EU accessions and financial liberalisations. In the case of the EU, this seems to stem from the fact that accession countries underwent a convergence process in anticipation of a more stable and market-friendly institutional framework already before joining the EU, whereas in the case of financial liberalisation it could confirm the notion of illusive gains from financial integration stating that its benefits mainly materialise through TFP growth which we control for. Our globalisation shocks do not appear to be technology shocks, as TFP is either unchanged or falls in all cases with the exception of WTO accession, and even there with a lag. Third, we find little evidence that globalisation shocks lead to more inequality. The Gini coefficients (market and net) tend not to change or even to fall, and the labour share of income to be unchanged or even rise, in the wake of a globalisation shock. Taken together, our results point to mostly positive effects for countries following globalisation shocks.

The remainder of this paper is organised as follows: In Section 2 we describe how our paper relates to a growing body of literature which revisits the benefits and costs of trade and financial integration, in particular as regards their eventual effects on inequality. Section 3 describes our data set and the construction of our exogenous shifts in globalisation. Section 4 includes our baseline empirical model. In section 5, we report baseline results for all countries and broken down into advanced and emerging economies. Section 6 concludes.

## **2 Relation with previous literature**

Against the backdrop of a backlash against “globalisation”, assessing its combined effect has remained difficult since it is a multi-dimensional concept and because its effects are not easily separated from those of technological progress. On the empirical side, indicators aimed at combining the different dimensions of globalisation have been developed, but endogeneity com-

plicates the measuring of their effect on the economy (Potrafke, 2015). One exception is the paper by Lang and Tavares (2018) who apply an instrumental variable approach based on the geography of globalisation. They find that income gains are substantial for countries at early and medium stages of the globalisation process, but the marginal returns diminish as globalisation rises, eventually becoming insignificant. Moreover, they find that gains are concentrated at the top of national income distributions within countries.

Such findings are related to another strand of literature which looks at the efficiency-equity trade-off in terms of the reduced-form relationship between income and inequality in cross-country samples (Andersen and Maibom, 2016). In these settings a trade-off between efficiency and equity can arise from standard considerations, namely that domestic redistribution is costly as already stressed by Okun (1975).

Around a narrower concept of globalisation where it is defined as a rise in trade and financial openness a rich body of literature studies the adverse distributional effects of international trade, in particular on unskilled labour in the advanced economies, which naturally arise in simple settings à la Stolper and Samuelson (Ebenstein et al., 2014; Goldberg and Pavcnik, 2007). The findings from these studies suggest that free trade may indeed raise income inequality *within* countries and favour income redistribution *between* sectors. In addition, more recent theories of firm heterogeneity point to the impact of trade on wage dispersion *within* occupations and sectors (Helpman et al., 2016). In this light the gains from free trade have been re-examined in settings which include distributional effects that have to be addressed with distortionary taxes (Antràs et al., 2016). Such findings somewhat qualify the notion that the gains from trade could be large, e.g. when derived from quasi-natural experiments (Feyrer, 2009) or when using synthetic control group approaches (Billmeier and Nannicini, 2013).

Recent empirical studies on the benefits and costs of financial integration also emphasise the need to qualify the case for free capital flows (Henry, 2007), stressing for example the importance of sound institutional frameworks and the composition of capital flows while also leaving a role for temporary capital flow management measures (Kose et al., 2009).<sup>1</sup> More recent empirical contributions also tend to find that financial globalisation can amplify the risk of domestic

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<sup>1</sup>Similar qualifications have also been made on the theoretical side where the textbook case for financial globalisation has recently been made in more nuanced ways. For example, Broner and Ventura (2016) stress the importance of imperfect enforcement of domestic debts and the interactions between domestic and foreign debts. In such a setting, financial globalisation can lead to a variety of adverse outcomes. In addition, a growing body of literature is looking at frictions arising from the activities of multi-national companies and global value chains. See, for example, Antràs et al. (2009) and Manova (2015).



financial crises. For example, [Cesa-Bianchi et al. \(2019\)](#) find that global credit growth tends to amplify the risk of a domestic systemic crisis in particular in more financially open economies.

These qualifications are also relevant for the eventual effects of financial integration on inequality which has so far received less attention in the literature. As argued by [Furceri and Loungani \(2015\)](#), inequality could be affected by financial integration via several channels (see also additional references provided there): First, where financial institutions are weak and access to credit is not inclusive, liberalisation may bias financial access in favour of those well-off and therefore increase inequality. Second, financial crises associated with long-lasting recessions may disproportionately hurt the poor. Third, since capital and skilled labour tend to be complements, opening the capital account can increase the demand for skilled labour compared to unskilled labour, leading to higher wage inequality. Finally, if capital account liberalisation represents a credible threat to reallocate production abroad, it may lead to an increase in the profit-wage ratio and to a decrease in the labour share of income. In fact, [Harrison \(2002\)](#) finds that capital controls are associated with an increase in labour's share and that this effect is not driven by government spending. [Furceri et al. \(2019\)](#) using a difference-in-difference strategy find that liberalisation episodes reduce the share of labour income, particularly for industries with higher external financial dependence, higher natural propensity to use layoffs to adjust to idiosyncratic shocks, and higher elasticity of substitution between capital and labour.

Finally, there is a strand of literature on the effect of joining “Globalisation Clubs” but it mainly focuses on the trade effect of WTO accessions. For example, in an update of earlier work ([Rose, 2004](#)), [Rose \(2005\)](#) estimates a gravity model to tease out the effects of joining diverse institutions, namely GATT/WTO, IMF and the OECD on trade. He finds that WTO and especially OECD accessions boost trade in a statistically and economically significant way, while this evidence is weaker for the IMF. [Subramanian and Wei \(2007\)](#) also use a gravity model to unravel the trade effects of WTO accession and find that bilateral trade increased more in country pairs that both liberalised and confirm this result at the sectoral level. [Tang and Wei \(2009\)](#) look at the growth and investment consequences of joining WTO and GATT between 1990 and 2001 using a difference-in-difference approach. They find that income increased but only for those countries that were subject to rigorous accession procedures.

Existing work on EU accessions is largely focused on trade and income convergence through the EU’s Eastern Enlargement using calibrated general equilibrium models ([Baldwin et al., 1997](#)), economic geography models ([Marius Bruelhart and Koenig, 2004](#)) and synthetic control

groups which allow a counterfactual analysis ([Campos et al., 2014](#)).

The question whether the accession into “Globalisation Clubs” has an effect on inequality is still underdeveloped in the literature. One exception is the paper by [Ma and Ruzic \(2020\)](#) who show that access to global markets (proxied by the Chinese accession to the WTO in 2001) is associated with a rise in executive to worker pay gap. They also show model simulations where trade liberalisation can lead to a substantial rise in US top income shares.

With our paper, we therefore address a gap in the literature and estimate the effect of largely exogenous accessions to a number of Globalisation Clubs (WTO, EU, OECD) on income and inequality. In addition, we ensure that these effects are not driven by technological change and compare our results to other globalisation shocks, namely large changes in (de jure) financial openness and trade openness by using a Bartik instrument.

## 3 Empirical framework

### 3.1 Data

We employ annual data for 68 countries over the period 1970-2019 but subject to important limitations in terms of data availability for specific variables. Our data set is assembled from standard sources, i.e. the IMF’s World Economic Outlook database, the World Bank’s World Development and World Governance Indicators, the Penn World Tables, the Standardized World Income Inequality database (SWIID), the Database of Political Institutions of the Inter-American Development Bank (IDB), the EBRD’s Transition Report, the International Country Risk Guide as well as several additional sources including [Dreher \(2006\)](#) and [Chinn and Ito \(2006\)](#) (see [Appendix B.6](#) for more details).

As regards inequality, we look at two common measures of within-country inequality as reported in [Solt \(2016\)](#), namely the Gini index for market income (Gini market) and for disposable income (Gini net), i.e. pre- and post redistribution.<sup>2</sup> Hence, we can also evaluate to what extent eventual effects on inequality are mitigated by the welfare state which is often larger in more open countries ([Rodrik, 1998](#)). In addition, we look at the labour share of income in order to

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<sup>2</sup>Market income is defined as the amount of money coming into the household, excluding any government cash or near-cash benefits as well as private transfers such as gifts, alimony, or assistance from non-profit organisations; it constitutes the so-called pre-tax, pre-transfer income. As stressed in [Solt \(2016\)](#) it should not be thought of “pre-government” as it does not take into account minimum wage regulation and other labour market policies. Disposable income refers to post-tax, post-transfer income, not adjusting for indirect taxes such as sales or value-added taxes, or public services and indirect government transfers such as price subsidies.

study whether our globalisation episodes lead to an increase in the profit-wage ratio and thus to a decrease in the labour share of income as described in [Harrison \(2002\)](#).

## 3.2 Identifying exogenous shifts in globalisation

We are primarily interested in the effects of accessions to Globalisation Clubs because they allow us to address endogeneity concerns prevalent in the globalisation literature and because they allow us to speak directly to pertinent policy choices (section 3.2.1). We compare the effect of these episodes, which are combination of trade and financial openness shocks, to pure financial openness shocks (section 3.2.2) and to trade openness shocks which are identified with an instrumental variable approach (section 3.2.3).

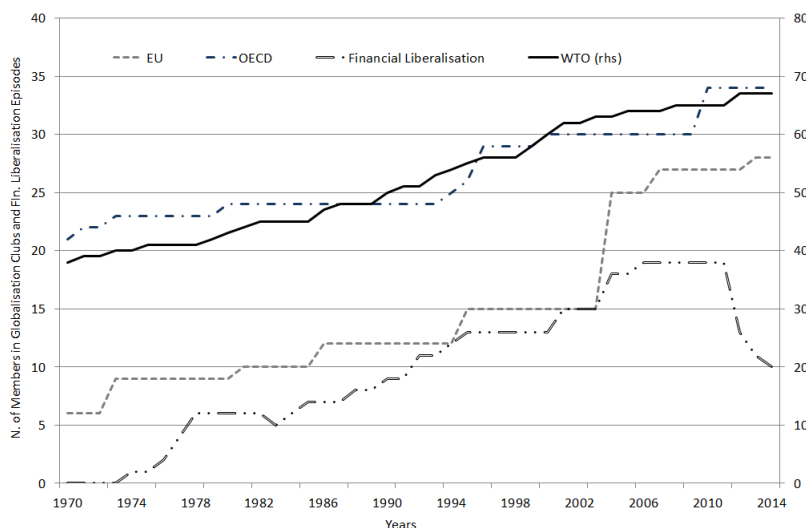
### 3.2.1 Countries joining Globalisation Clubs

We define the accession to Globalisation Clubs including the WTO, the OECD and the EU as globalisation events and consider their effects on income per capita and inequality over time. As already indicated all three organisations require their members to pursue some form of either liberal trade or investment policies or a combination of both. In addition, membership in our Globalisation Clubs implies, to varying degrees, a commitment to market-oriented reforms and a predictable business environment (see Appendix A for details).

As shown in Figure 1, we have in our sample 29 episodes of WTO accession, 22 episodes of EU accession, 13 episodes of OECD accession, and 22 main financial liberalisation episodes (see below).

Ideally, our accessions to Globalisation Clubs should be purely exogenous events, which would mean that in a difference-in-difference estimation “treated” and “non-treated” countries should differ only with regard to their membership and be otherwise equal in terms of their economic and political conditions before the treatment. In reality, it is possible, however, that political and sometimes economic conditions determine who joins a club or liberalises its financial system. For example, the government’s bargaining power vis-à-vis protected industries might affect the probability of joining the GATT and later on the WTO ([Maggi and Rodriguez-Clare, 2007](#)). In addition, the government could anticipate negative terms-of-trade effects as in [Broda et al. \(2008\)](#). There is also a strand of literature on the drivers of EU and OECD membership. For example, [Gray](#) finds that cultural factors drive EU membership. This is not necessarily a problem since such factors are unlikely to influence income and inequality, at least

Figure 1: Number of episodes per year of accession



*Notes:* The chart plots the evolution of the number of members and the episodes of financial liberalisation for the EU, the WTO and the OECD over time.

when controlling for country fixed effects. However, [Davis \(2016\)](#) finds that income, democracy, and geopolitics correlate with entry into the OECD.

The problem of endogenous selection into a Globalisation Club only leads to spurious positive effects when the underlying factors correlate with income and inequality. This is more likely for economic than for political variables, but cannot be ruled out for either type of variables. For example, a pro-reform government could influence both the probability of joining a Globalisation Club as well as post-accession income and its distribution. We therefore perform careful mean difference tests between members and non-members and control in our estimates for a broad set of economic and political variables (see below).

The second challenge for the econometric analysis is the potential attenuation bias as the time span between a country’s application and the effective membership provides an opportunity for economic agents to anticipate the country’s accession, so that some of the effects materialise ahead of the official membership. For the WTO, for example, the most demanding stage of the accession phase is the bargaining process between current and prospect members over policies and liberalisation measures that the acceding countries must implement to be accepted in the club. Prospective members are required to reduce monopoly power on public companies, facilitate the free movement of capital, refrain from exchange rate manipulation and liberalise foreign trade. Likewise, the accession criteria to the EU (the Copenhagen criteria) include political, institutional and economic requirements for the prospect member.<sup>3</sup> As a results of these long

<sup>3</sup>With respect to the political requirements, the Copenhagen criteria ask for “stability of institutions guaran-

pre-accession processes, in our sample, countries took on average more than 5 years to become a member of the WTO (see Figure 2).<sup>4</sup> Accessing the EU can prove even more involving, with

Figure 2: The length of accession processes



Notes: The charts show the accession length for each new member expressed in years, red histograms are the sample average.

Sources: WTO, EU, OECD websites; Phedon and Boean (1997); WTO (2008); national sources and press reports.

an average time from application to membership of almost 10 years. OECD membership is the shortest process, requiring on average only 3 years (see Figure 2 and Tables B.1–B.3 in Appendix A). In our analysis we therefore need to carefully control for possible anticipation effects.

The third challenge arises from periodically and geographically clustered globalisation episodes which run somewhat against the notion of random shocks. For example, economies became EU members at the same time, suggesting that the choice made by one country would influence the neighbour’s incentives to become a member itself. In fact, Ireland and UK both joined in 1973, teeing democracy, the rule of law, human rights and respect for and protection of minorities”. In economic terms, prospective members must have a “functioning market economy and the capacity to cope with competition and market forces.” On the institutional side, prospective members need to prove to have “the administrative and institutional capacity to effectively implement the *Acquis Communautaire*” and the ability to comply with all legal obligations of membership.

<sup>4</sup>While the WTO accession process starts with the submission of a formal written request by the government, in practice, the process begins with the submission of a memorandum on the foreign trade regime by the acceding country, in which all aspects of its trade and legal regime are presented. For this reason, we compute accession time starting from the submission of the memorandum instead of the application date. The average length from the date of application to accession is above 7 years. Among the most involving processes are the China and Saudi Arabia accession processes, which took almost 15 and above 11 years respectively. We excluded them from the sample when computing the average accession time as their economies were not market-oriented and extra efforts were made to bring their institutional standards in line with the one’s of other WTO members.

Spain and Portugal in 1986, Finland and Sweden in 1995, the EU Eastern enlargement occurred in 2004 for 6 countries, and Bulgaria and Romania joined in 2007 (see Figure 1). A similar argument can be made about new WTO memberships. Many emerging countries applied to join the WTO in 1994 at the conclusion of the Uruguay Round.<sup>5</sup> But spatial proximity is not necessarily a problem if we interpret the post-treatment effects as cumulative effects including international spill-overs rather than domestic effects only.<sup>6</sup>

Overall, the relevant question therefore is whether there are any macroeconomic or political developments that are specific to countries that joined a given Globalisation Club and that can influence subsequent developments. To test whether this is the case, we verify that the episodes can be considered quasi-randomised experiments by measuring mean differences pre-treatment between treated and control groups (see Appendix C). In addition, for the considered episodes we include a rich set of controls that cover a wide range of differential macroeconomic and political factors.

### 3.2.2 Large financial liberalisation events

We also consider significant financial liberalisation events, identified as major changes in the Chinn-Ito index of *de jure* financial openness.<sup>7</sup> While some degree of endogeneity is likely to be present also for financial liberalisation episodes (Hauner and Prati, 2008), compared to *de facto* measures, *de jure* proxies of financial openness are less likely to suffer from such concerns (Furceri et al., 2019). We therefore treat our pure financial openness shocks also as largely exogenous.

Specifically, our binary indicator for financial opening events turns one during changes in the top 15<sup>th</sup> percentile of the distribution of the Chinn-Ito index. Such a high threshold is instrumental to focus on episodes of financial openings which eventually lead to structural changes in the economy.<sup>8</sup> The same indicator reverts back to zero, following a subsequent,

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<sup>5</sup>In this context, more favourable conditions in general may have triggered the globalisation event rather than geographic considerations or specific economic conditions.

<sup>6</sup>For example, country A could join a Globalisation Club because its neighbouring country B is also joining. If we do not control for that and joining the club leads, say, to a boost in economic activity, there may be a positive spill-over from country B to country A which adds to the domestic positive effect in country A. We also considered including interaction terms between time dummies and regional dummies to control for macroeconomic developments in neighbours, but this would severely curtail degrees of freedom and we do not pursue this avenue here.

<sup>7</sup>See Chinn and Ito (2006) for a description of the KAPOPEN index

<sup>8</sup>We carried out robustness exercises employing alternative thresholds to identify large financial liberalisation events. The percentile for the threshold was first lowered to the 75<sup>th</sup> percentile and then increased to the 90<sup>th</sup> percentile. While some episodes are added or dropped from the list of cases we consider, these do not lead to different empirical results or conclusions.

equally sizeable episode of financial closure (i.e. closure identified by major negative changes in the Chinn-Ito indicator).<sup>9</sup>

### 3.2.3 Trade openness shocks: A Bartik instrument

For robustness, we also use a measure of trade openness shocks obtained via a Bartik-type instrumentation.<sup>10</sup> The intuition behind this identification is simple. Trade openness at the global level follows its own dynamics, possibly driven by technological, economic and political factors that are independent of each individual country's choices (with the possible exception of very large powers such as the US and China). At the same time, some countries may be readier than others to benefit from international trade, for example due to their geographical position (say, near seaways). Therefore, the interaction between global trade openness trends and *pre-determined* country-specific characteristics is a valid instrument for trade openness at the country level.

We make this concept operational by creating an instrument defined, for each country  $i$ , as the yearly change in trade openness in countries other than  $i$  multiplied by lag 4 of country  $i$ 's trade openness. The next question then becomes if, besides being a valid instrument, our measure is also a strong one. This is shown in Table 1 where we regress the yearly change in trade openness on the Bartik instrument in two samples, from 1970-2019 and from 1995-2019 (column 1 and 2). In both samples we show that the F statistic is high, well above the standard value of 10, confirming that the Bartik instrument for trade openness is strong. The instrument continues to be relevant and strong also for advanced and emerging countries separately although we do not have a sufficient number of observations to perform the F-test in these sub-samples, as also shown in Table 1 (column 3 and 4).

## 3.3 Empirical model

As mentioned above, our estimations are based on a rich dataset of annual observations, for 68 countries covering the period from 1970 to 2019. The large  $T$  (time) and large  $N$  (country) dimension of the panel allows the analysis of several globalisation episodes controlling at the same time for unobserved country and time heterogeneity which could potentially be correlated

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<sup>9</sup>Symmetrically, negative big changes are those larger than the top 15<sup>th</sup> percentile of all negative changes in absolute terms.

<sup>10</sup>For details with respect to the methodology, see the recent contributions in [Borusyak and Hull \(2020\)](#) and [Goldsmith-Pinkham et al. \(2020\)](#).

	(1) 1970-2015 All countries	(2) 1995-2015 All countries	(3) 1970-2015 Advanced	(4) 1970-2015 Emerging
Bartik instrument: d(global trade openness(t))*trade openness(t-4)	0.949***  (0.110)	0.411*  (0.223)	0.951***  (0.128)	1.081***  (0.213)
Observations	2,643	1,615	1,409	1,217
R-squared	0.523	0.583	0.492	0.651
Number of reportercode	71	71	35	35
F stat	258.9	40.69		

Table 1: OLS regressions; the dependent variable is the yearly change in countries' trade openness. \*\*\*, \*\* and \* denote 1, 5 and 10 percent levels of significance.

with the globalisation episodes under investigation and influence the outcome variables, as shown in Appendix C.

### 3.3.1 Baseline model

Our baseline is a linear panel model specified as follows for each outcome variable  $x$ ,

$$x_{i,t+h} - x_{i,t-1} = \alpha_i + \lambda_t + \beta_h D_{it} + \rho_{1h} x_{i,t-1} + \rho_{2h} x_{i,t-2} + \gamma_h Z_{i,t-1} + \delta(x_{i,t-1} - x_{i,t-4}) + \epsilon_{i,t+h} \quad (3.1)$$

where  $h = 0, \dots, 4$ ;  $D$  is the binary indicator for the 4 variants of globalisation episodes - (i)WTO; (ii) EU; (iii) OECD and (iv) financial liberalisation episodes;  $Z$  is a rich set of control variables including lags 1 and 2 of TFP growth, real GDP growth and per capita level, trade openness, CPI inflation, as well as political variables including the presence of checks and balances, the political orientation of the largest government party, and the ICRG composite risk rating. Note that the model also includes time ( $\lambda_t$ ) and country ( $\alpha_i$ ) fixed effects. The term  $x_{i,t-1} - x_{i,t-4}$  captures possible *pre-trends*, when, say, real GDP (as an outcome variable) is on a higher or lower growth trend in the pre-application period, which can continue to some extent post-accession. China, for example, was already on a high real GDP growth trajectory before WTO accession, and attributing all of its post-WTO growth acceleration to joining this Globalisation Club may be misleading. Finally, note that we include two annual lags of the dependent variables, in the direction of a lag-augmented local projections model as described in [Olea and Plagborg-Moller \(2020\)](#).

One important question is whether our measure captures globalisation as opposed to technological change. In part, this is central to our identification scheme that is tailored to trade



openness shocks. While technological change certainly plays an important, possibly key role in facilitating trade and new technologies are adopted more easily with greater economic integration, there is no reason to believe that countries joining Globalisation Clubs underwent sudden and country-specific technological developments; indeed, joining Globalisation Clubs is much more likely to result from broader institutional and political factors. Nevertheless, we still want to control for technological change as much as possible in our regressions and we therefore add lags of TFP growth and at the same time also consider the effects of globalisation on TFP growth among the outcome variables.<sup>11</sup>

Finally, also for the estimation of the effects of trade openness shocks we follow the specification as in (3.1) where we replace the dummy variable  $D_{it}$  with the Bartik instrument specified above.<sup>12</sup>

## 4 Results

Before describing the results in detail, it is useful to give a summary of the main findings. First, with the exception of financial liberalisation we find that all our “globalisation shocks” lead to a significant increase in trade openness. Second, the effects on per capita income are mixed; positive for WTO accessions and trade openness shocks, insignificant for the OECD accessions and even negative for the EU accession and financial liberalisation. Our globalisation shocks do not appear to be technology shocks, as TFP is either unchanged or falls in all cases with the exception of WTO accession, and even there with a lag. Finally, we find little evidence that globalisation shocks lead to more inequality. The Gini coefficients (market and net) tend not to change or even to fall, and the labour share of income is unchanged or even rises, in the wake of a globalisation shock. Taken together, our results point to mostly positive effects of globalisation shocks.

Coming to the more detailed description of the results, we summarise the evidence with the impulse responses derived from the parameters  $\beta_h$  in equation (3.1). They are shown with confidence bands at 90 per cent levels, based on robust standard errors and depict the effect of our episodes on the variable of interest over time. For example, when the outcome variable

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<sup>11</sup>We also add ICT investment as a possible control, but the data availability is relatively scant in our sample and it would severely reduce the sample size. For further details as regards using ICT investment as a measure of technological change see [Dorn et al. \(2018\)](#)

<sup>12</sup>Using the Bartik instrument as an *external* instrument for the change in trade openness leads to very similar results.

is inequality and the event is joining the WTO, then  $\beta_h$  will report the average difference in inequality pre- and post-accession of new members with respect to the average difference in inequality, pre- and post-accession, for countries that did not access the WTO.

#### 4.1 Baseline results for all countries

The results from countries joining the WTO suggest that trade openness increases persistently after countries join this organisation, consistent with the idea that we have indeed captured a "globalisation shock" (Figure 3). Income per capita also rises over time, by around 2%, which is statistically significant after 2 years from accession. There is no significant rise in TFP on impact, which is consistent with the view that WTO accession does not capture technology shocks, but may favour technological progress in the medium term as the effect on TFP rises over time. Turning to distributional variables, we find little evidence that WTO accession increases inequality. On the contrary, the labour share of income rises over time, between 1 and 2%, and the Gini coefficient falls, both in its market and the net definitions, i.e. pre and post redistribution.

Turning to our results for trade openness shocks identified with our Bartik instrument which are reported in Figure 4, we find again that the effect on trade openness is positive and statistically significant, as well as persistent. The impact on income per capita is mostly positive and significant over the horizon, but the effect on TFP is mostly on the negative side. The impact on the distributional variables (labour share of income, Gini market, Gini net) is statistically insignificant and without a clear direction.

In Figures 5 and 6 we report the effects of joining the OECD and the EU. In both cases, joining these organisations results in persistently higher trade openness for the countries affected. In the case of the OECD, the effects on income per capita and TFP are statistically insignificant, whereas the effects on inequality variables are mixed: the labour share of income falls by around 2%, but the Gini coefficients also fall, signalling less inequality. In the case of the EU, we find that the effect on trade openness is less persistent, and (perhaps puzzling) we find a *negative* effect on income per capita and TFP over time. For example, income per capita is found to fall by around 1.5% at the end of the horizon. This result may reflect the fact that countries undergo a convergence process *before* joining the EU and may therefore experience faster growth before the actual accession in anticipation of a more stable and market-friendly institutional

framework.<sup>13</sup> Moreover, they may be subject to more stringent regulation after joining, which is also reflected in lower inequality as we estimate a rise in the labour share of income and a fall in the Gini coefficient, at least in the market definition (the fall is statistically insignificant in the net definition).

Finally, Figure 7 reports the effects of financial liberalisation episodes. The results show that financial openings are not always associated with increased trade openness and therefore it is not obvious that they should be labelled “globalisation shocks” but rather as financial openness shocks. Interestingly, we also find that these episodes tend to be associated with falling income per capita and TFP, whereas the effects on inequality-related variables are statistically insignificant. This may reflect the elusive gains from financial liberalisation via the accumulating of capital that have been emphasised in previous literature (Gourinchas and Jeanne, 2006). An alternative reading of this finding is that very large changes in *de jure* financial openness were often introduced in response to economic turmoils and did not lead to a rise in *de facto* financial openness. As a result, we may largely capture the effect of periods of economic stress which led to reforms whose effects materialise later in the future.

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<sup>13</sup>In order to check whether our results on the EU are driven by the fact that we control for pre-trends, we also run the same regression in equation 3.1 without the pre-trend variable. In this case, the negative effect on income per capita turns insignificant, confirming that our EU findings are consistent with the notion of a pre-accession boom in acceding countries. The latter is then not significantly accelerated once countries actually join the Union, according to our estimates.

## What happens after countries join the World Trade Organization (WTO)?

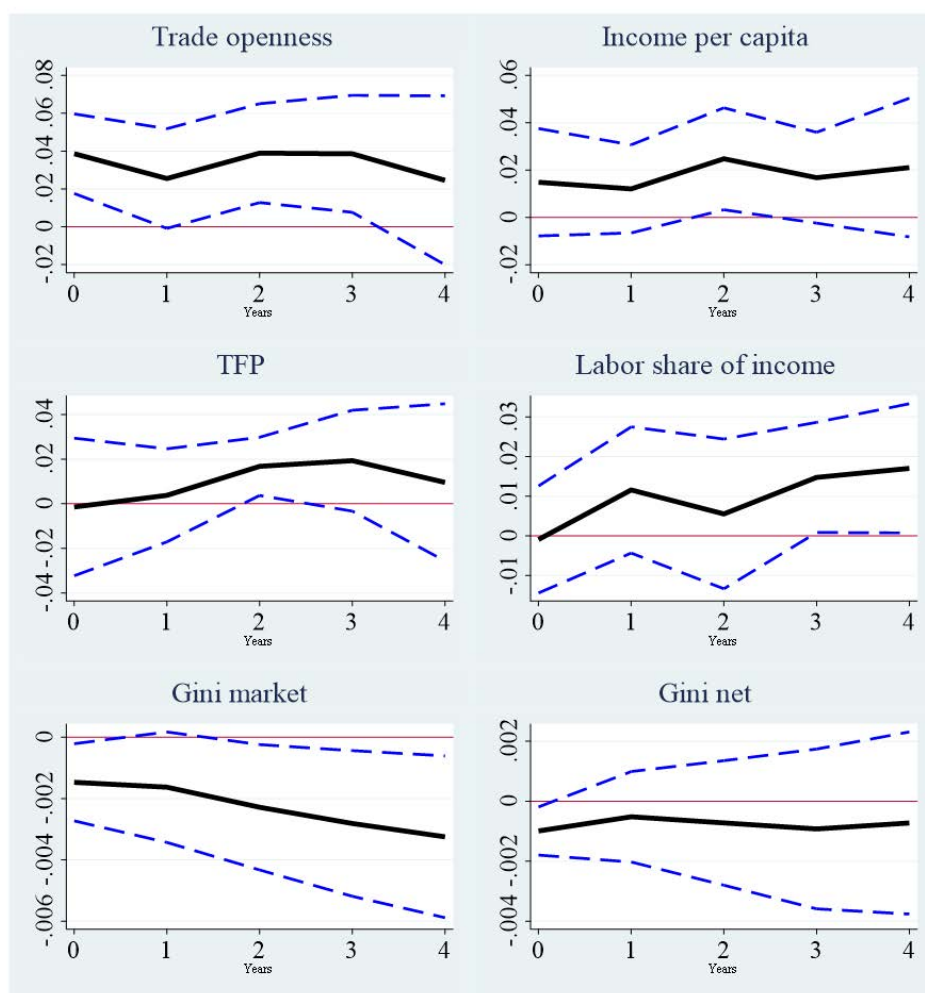


Figure 3: Estimated impulse responses from countries joining the WTO at time 0, obtained with local projections as shown in equation (3.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

### Effect of trade openness shocks: Bartik instrument.

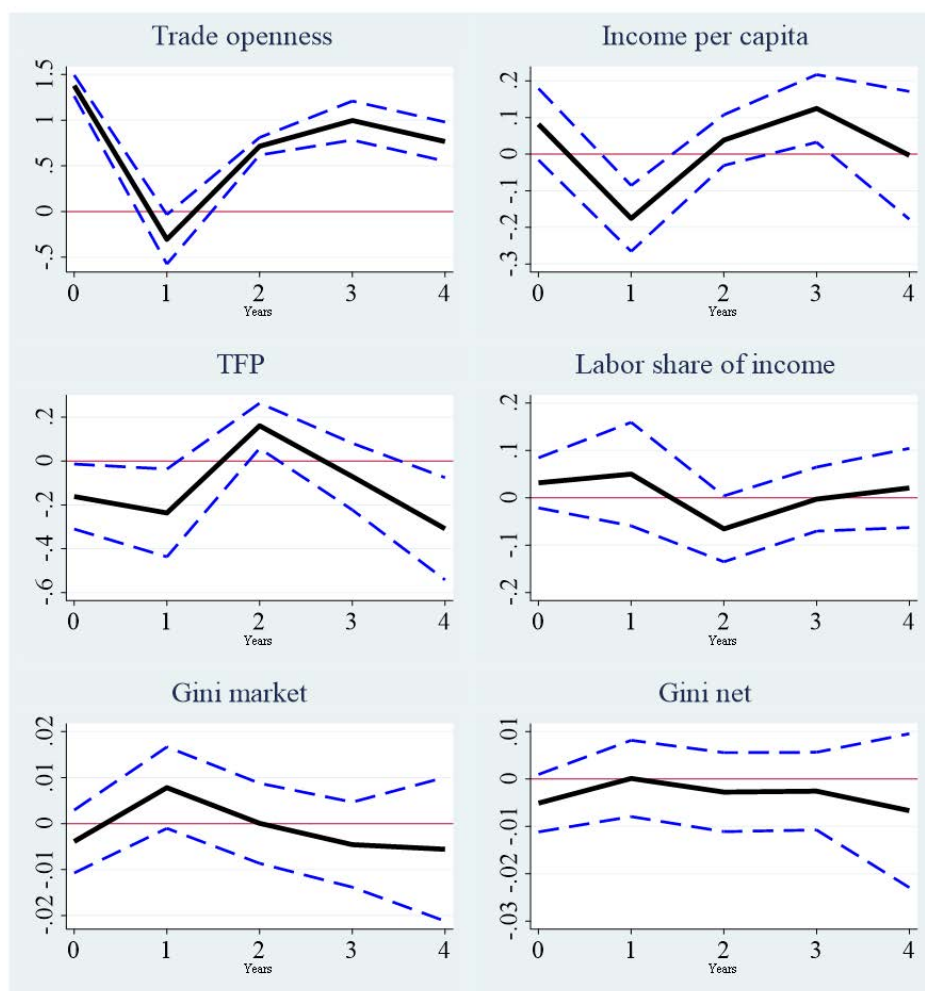


Figure 4: Estimated impulse responses from countries experiencing a trade openness shock at time 0, obtained with local projections as shown in equation (3.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after countries join the OECD?

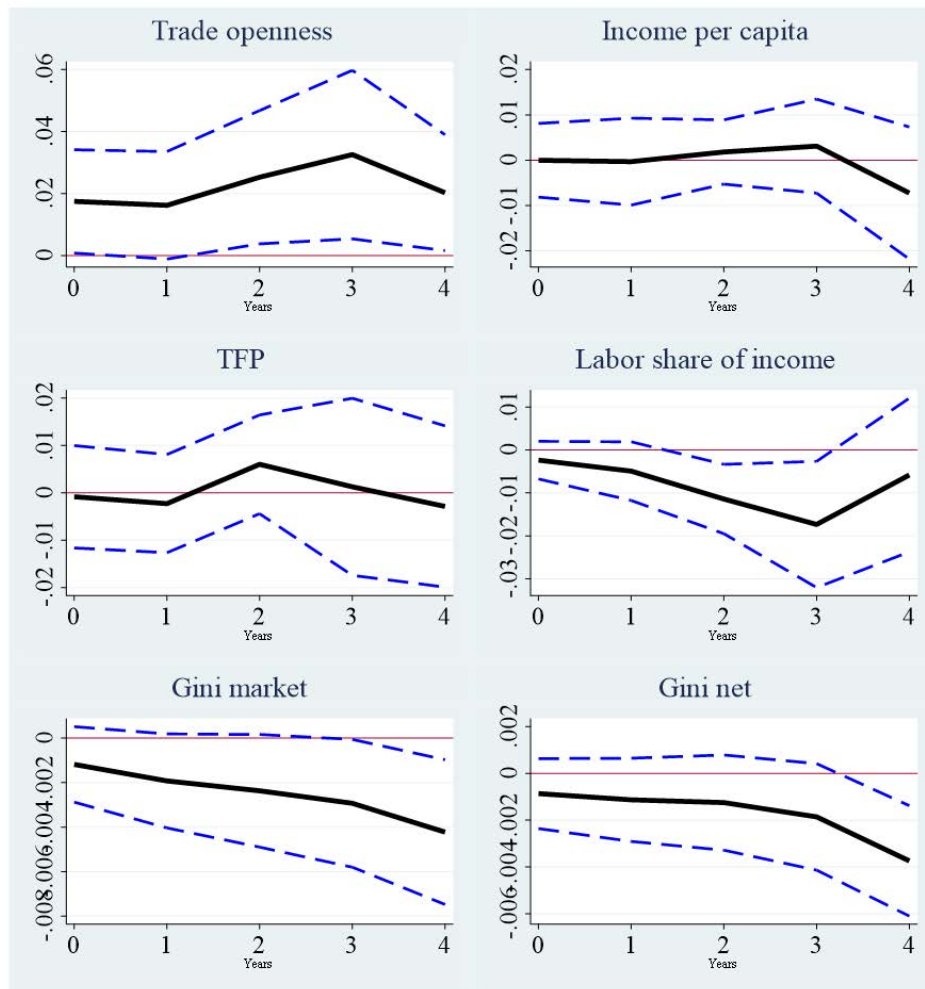


Figure 5: Estimated impulse responses from countries joining the OECD at time 0, obtained with local projections as shown in equation (3.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after countries join the EU?

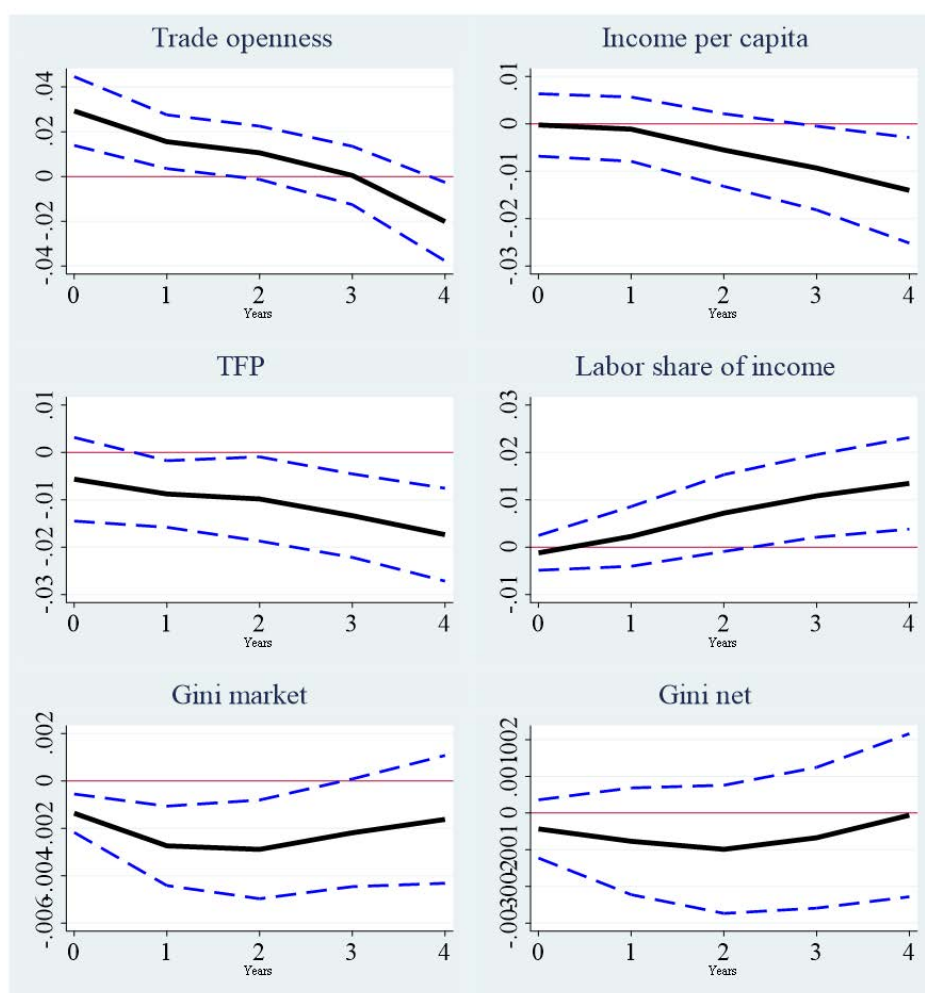


Figure 6: Estimated impulse responses from countries joining the EU at time 0, obtained with local projections as shown in equation (3.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after financial liberalisations?

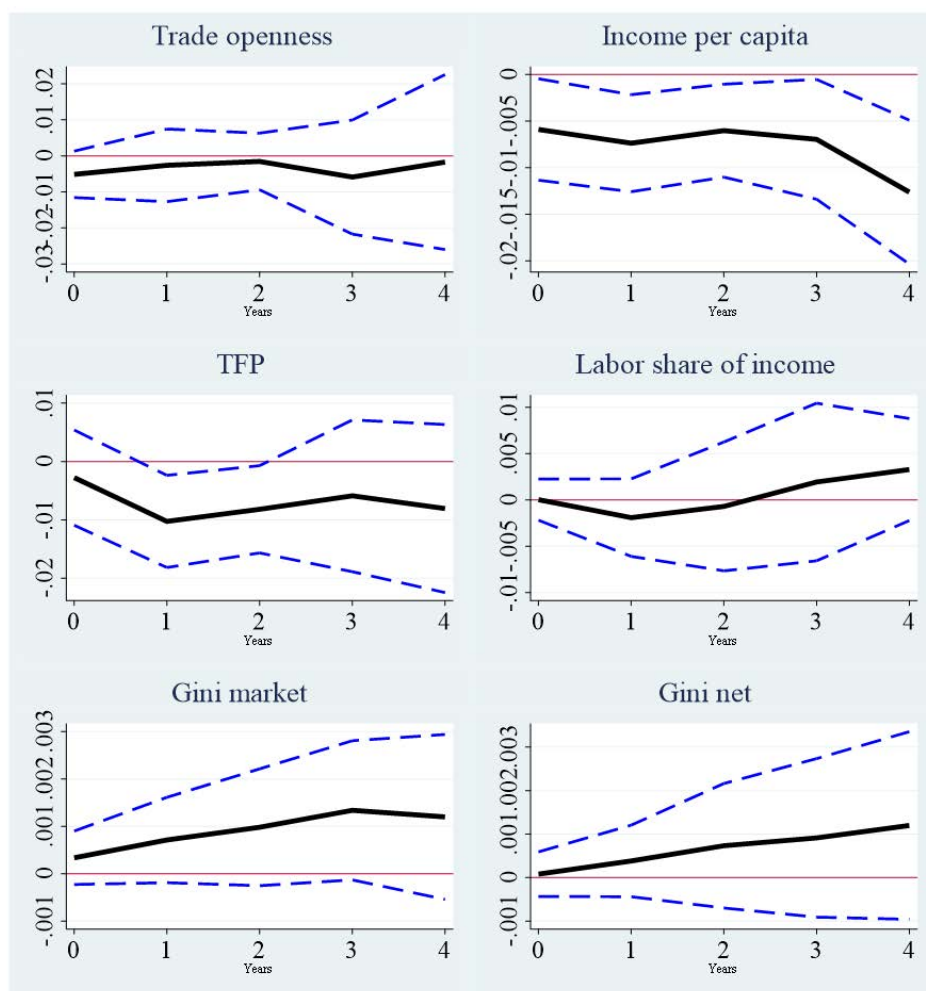


Figure 7: Estimated impulse responses from countries carrying out a financial liberalisation at time 0, obtained with local projections as shown in equation (3.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.



## 4.2 Robustness

In our Online Appendix which is available upon request, we report a number of additional results from different country and time sub-samples. Here we report some main messages arising from this robustness analysis.

**Advanced vs. emerging countries.** We find that advanced countries experience a larger increase in trade openness when joining the WTO, and also a larger rise in the labour share of income (for which anyway the results for emerging markets are not reliable, since there are severe data limitations for this variable). The positive effect on income per capita is, however, stronger and more persistent in emerging countries. We also look at the result of joining the OECD and the EU for advanced countries, which tend to dominate membership in these two organisations. We find that in this restricted sample the effects of joining the OECD is more positive on income and TFP than in the baseline, whereas results for EU accession are largely the same. Turning to financial liberalization, results for advanced countries are all statistically insignificant, but - strikingly - we find significantly more *negative* effects on emerging markets, which experience lower income per capita and also a less equal income distribution as well as a lower labour share of income following these episodes. It is likely that this reflects the fact that many financial liberalization episodes in our sample were carried out in countries that were not well prepared for them, as previous literature has amply described.

**Sample period starting from 1995.** We also look at the effects of trade openness shocks and joining the WTO on the sample period since 1995, which may be thought as marking the beginning of the "hyper-globalisation" phase.<sup>14</sup> We find that the results for WTO accession are qualitatively similar to the baseline ones, but somewhat less statistically significant, whereas results for the trade openness shocks are largely the same.

## 5 Conclusions

In this paper we investigate the effect of "globalisation shocks" on income and inequality. Our episodes are defined as country accessions to Globalisation Clubs (WTO, OECD and the EU) and important financial liberalisation episodes. The definition of these episodes allows us to study the impact of actual policy choices, namely to join or exit Globalisation Clubs. Hence,

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<sup>14</sup>It is useful to clarify that the WTO started existing in 1995, so there is by definition no episode of any country joining before 1995.

our approach directly speaks to current public debates challenging the legitimacy of multilateral trade bodies such as the WTO. As a robustness checks, we also look at the effects of trade openness which we instrument with a “Bartik-style” shift-share measure.

Our empirical work leads to three important findings. First, with the exception of financial liberalisation we find that all our “globalisation shocks” lead to a significant increase in trade openness. Second, the effects on per capita income are mixed; positive for WTO accessions and trade openness shocks, insignificant for the OECD accessions and even negative for the EU accession and financial liberalisation. In the case of the EU, this could stem from the fact that accession countries underwent a convergence process already before joining the EU whereas in the case of financial liberalisation it could confirm the notion of illusive gains from financial integration stating that its benefits mainly materialise through TFP growth which we control for. In fact, our globalisation shocks do not appear to be technology shocks, as TFP is either unchanged or falls in all cases with the exception of WTO accession, and even there with a lag. Third, we find little evidence that globalisation shocks lead to more inequality. The Gini coefficients (market and net) tend not to change or even to fall, and the labor share of income to be unchanged or even rise, in the wake of a globalisation shock. Taken together, our results point to mostly positive effects of globalisation shocks, and challenge the view that globalisation is necessarily an efficiency-equity trade-off.

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# Appendices

## A Implications of WTO, OECD and EU accessions

The WTO and the OECD have the promotion of global integration in their mandate. The WTO sets the global rules of trade between nations and its main function is ensuring that trade flows as “*smoothly, predictably and freely as possible*”. It is the forum for negotiating trade deals and it rules over global trade conflicts through the dispute settlement mechanism. Members are expected to abide to WTO regulations, which include the compliance with MFN rule, and the to accept a periodic scrutiny of their trade policies by the organisation.

The OECD Convention states in Article 1 that “the aims of the OECD shall be to promote policies designed: (a) to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy; (b) to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and (c) to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.” Hence, OECD membership comes perhaps the closest to the concept of a Globalisation Club which entails a commitment to trade and financial openness.

The episodes of new EU memberships, on the other hand, should be considered as largely regional integration events with global repercussions; the accession process requires prospective members to open up their economy to the rest of the Union and adopt the wide-ranging EU legislation. At the same time, new members accept regular policy reviews by European Institutions, verifying that membership conditions continue to be met. The accession process therefore entails wide-ranging socio-economic and institutional reforms necessary to adopt the *Acquis Communautaire*.<sup>15</sup> Members need to ensure “*stable democratic institutions, a functioning market economy and the capacity to cope with competition and market forces in the EU and*

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<sup>15</sup>The *Acquis Communautaire* covers 35 different policy fields ranging from the well-known free movement of goods, capital, workers as well as freedom to provide services and legislation governing the customs union to regulations about public procurement, company law, intellectual property law, competition policy, financial services, information society and media, agriculture and rural development, food safety, veterinary and phytosanitary policy, fisheries, transport policy, energy, taxation, economic and monetary policy, statistics, social policy and employment (including anti-discrimination and equal opportunities for women and men). There are common regulations also for industrial policy, trans-European networks, regional policy and co-ordination of structural instruments judiciary and fundamental rights, science and research, education and culture, environment, consumer and health protection, external relations, foreign, security and defence policy, financial control, financial and budgetary provisions, institutions.

*to implement obligations of membership”.*

## B Globalisation episodes and data sources

Table B.1: WTO accessions (new memberships)

<b>Country</b>	<b>WTO accession</b>	<b>Country</b>	<b>WTO accession</b>
Singapore	1973	Estonia	1999
Philippines	1979	Latvia	1999
Colombia	1981	Albania	2000
Thailand	1982	Croatia	2000
Hong Kong	1986	China	2001
Mexico	1986	Lithuania	2001
Venezuela	1990	Russia	2002
Czech Republic	1993	Macedonia	2003
Slovakia	1993	Saudi Arabia	2005
UAE	1994	Ukraine	2008
Bulgaria	1996	Montenegro	2012

Table B.2: OECD accessions (new members)

<b>Country</b>	<b>OECD accession</b>
Australia	1971
New Zealand	1973
Mexico	1994
Czech Rep.	1995
Hungary	1996
Poland	1996
South Korea	1996
Slovakia	2000
Chile	2010
Estonia	2010
Israel	2010
Slovenia	2010



Table B.3: EU accession: from application to membership

Country	Associate Membership	Application	Opinion	Start of negotiations	Treaty of Accession	Accession	Time to treaty of accession	Total time to membership
Denmark		May-67	Sep-67	Jun-70	Jan-72	Jan-73	4 years 8 months	5 years 8 months
Ireland		May-67	Sep-67	Jun-70	Jan-72	Jan-73	4 years 8 months	5 years 8 months
UK		May-67	Sep-67	Dec-69	Jan-72	Jan-73	4 years 8 months	5 years 8 months
Greece	1962	Jun-75	Jan-76	Jul-76	May-79	Jan-81	3 years 11 months	5 years 7 months
Portugal	**	Mar-77	Apr-78	Oct-78	Jun-85	Jan-86	8 years 3 months	8 years 10 months
Spain	**	Jul-77	Apr-78	Feb-79	Jun-85	Jan-86	7 years 11 months	8 years 6 months
Turkey	1964	Apr-87	Dec-89					
Austria	1994*	Jul-89	Aug-91	Feb-93	Jun-94	Jan-95	4 years 11 months	5 years 6 months
Cyprus	1973	Jul-90	Jun-93			May-04		13 years 10 months
Malta	1972	Jul-90	Jun-93			May-04		13 years 10 months
Sweden	1994*	Jul-91	Aug-92	Feb-93	Jun-94	Jan-95	2 years 11 months	3 years 6 months
Finland	1994*	Mar-92	Nov-92	Feb-93	Jun-94	Jan-95	2 years 3 months	2 years 10 months
Norway	1994*	Nov-92	Mar-93	Apr-93	Jun-94	Jan-95		
Hungary	1992	Apr-94				May-04		10 years 1 months
Poland	1992	Apr-94				May-04		10 years 1 months
Latvia	***	Oct-94				May-04		9 years 7 months
Romania	1993	Jun-95				May-07		11 years 11 months
Slovakia	1992	Jun-95				Jan-04		8 years 7 months
Estonia	***	Nov-95				May-04		8 years 6 months
Lithuania	***	Dec-95				Mar-13		17 years 3 months
Bulgaria	1993	Dec-95				Jan-07		11 years 1 months
Czech Republic	1992	Jan-96				May-04		8 years 4 months
Slovenia		Jun-96				May-04		7 years 11 months
Average across members							4 years 10 months	9 years 7 months

Table B.4: Episodes of financial liberalisation

<b>Country</b>	<b>Years</b>		<b>Country</b>	<b>Years</b>	
Argentina	1977	1993	Ireland	1993	
Australia	1985		Israel	1977	1999
Belgium	1982		Italy	1982	1993
Bulgaria	2006		Malta	2004	
Chile	1995	2001	New Zealand	1984	
Cyprus	2004		Peru	1978	1992
Czech Rep.	2001		Portugal	1993	
Denmark	1988		Romania	1992	2004
Egypt	1994		Russia	2002	
France	1993		Singapore	1978	
Hungary	2001		UK	1979	
Iran	1974		Venezuela	1979	1997

Table B.5: OECD accessions: From start of negotiations to full membership

Country	Start of informal accession discussions	Start of formal accession discussions	OECD accession	Average length of process (years)
Japan	1960	1963	1964	2.5
Finland	1957	1968	1969	6.5
Australia	1963	1970	1971	4.5
New Zealand	n.a.	n.a.	1973	n.a.
Mexico	1991	1994	1994	1.5
Poland	1991	1994	1996	3.5
Hungary	1991	1994	1996	3.5
Czech Republic	1991	1994	1995	2.5
Korea	1990	1994	1996	4
Chile	n.a.	2007	2010	3
Estonia	1996	2007	2010	3
Israel	n.a.	2007	2010	3
Russian Federation	1996	2007	-	-
Slovenia	1996	2007	2010	3
Colombia	2011	2013	-	-
Latvia	n.a.	2013	2016	3
Costa Rica	2013	2015	-	-
Lithuania	2002	2015	-	-
<b>Average</b>				<b>3.3</b>

Table B.6: Data Sources

Variable	Source	Description
Globalisation episodes		
WTO membership	Website of the WTO, WTO (2008)	
OECD membership	Website of the OECD	
EU membership	Website of the European Commission, Phedon and Boean (1997)	
De jure financial openness	Chinn and Ito (2006)	
Trade openness	IMF DOTS	
Outcome variables		
Trade Openness	IMF DOTS	Exports plus imports of goods over GDP
GDP per capita	World Bank (World Development Indicators)	Measured in real terms.
Total factor productivity (TFP)	Penn World Table 9.1	at current national prices
Gini coefficient (market)	SWIID dataset	Market income
Gini coefficient (net)	SWIID dataset	Disposable income
Labour share of income	Penn World Table 9.1	Share of labour compensation in GDP
Economic control variables		
Trade openness	IMF DOTS	
International Country Risk Guide rating	PRS - ICRG	
Consumer Price Inflation	World Bank (World Development Indicators)	Consumer Price Index (2010=100).
Political control variables		
Checks and balances	Inter-American Development Bank (IDB)	
Political orientation of the largest Government party	Inter-American Development Bank (IDB)	

## C Mean difference test

For a quasi-experiment to be correctly randomised the probability density distribution must be the same across sub-populations. Following [Jordà and Taylor](#), we verify that the groups of treated and untreated are balanced, testing for mean equality across subgroups in the pre-treatment period (see Equation [C.1](#)). We repeat the test for every macro variables of interest in this paper, namely GDP growth, trade, total factor productivity, inequality, labour share of income <sup>16</sup>.

The tests are performed with and without controlling for unobserved time heterogeneity  $\alpha_t$ , estimating Equation [\(C.1\)](#).

$$x_{it} = \alpha_t + \gamma_z D_{i,t} + \epsilon_{i,t} \quad (\text{C.1})$$

where  $x$  is a political or economic variable of interest. The estimation is carried out on the restricted sample of non-treated (non-member) or pre-treatment observations (become member of a club or liberalise later on). Specifically, the indicator  $D_{i,t}$  takes a value one for treated countries before the treatment and zero for the control group; post-treatment observations are dropped. Therefore, the coefficient  $\gamma_z$  measures the pre-treatment mean difference between treated and non-treated (see [Table C.1](#)).

According to the results of our mean equality test, GDP per-capita and political integration was higher for the treated group (countries joining the WTO, the OECD and the EU) in the pre-globalisation period. This group also featured somewhat lower levels of inequality and higher human capital. Conversely, the mean equality tests return the same degree of trade openness across sub-populations. Prospective members of Globalisation Clubs also tend to have a more stable political majority (share of votes for majority parties) and the likelihood of becoming a WTO member is enhanced by having centre or left parties in power.

As an additional check, for countries who joined the WTO and OECD, we also identify the years of application measure differences in sub-populations around their application time, pre-membership and post-accession controlling for country and time unobservables according

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<sup>16</sup> Besides, mean equality tests were also performed on public debt to GDP, public expenditure, tax revenues, current account, population, human capital, unemployment, and political/institutional determinants, the degree of political globalisation, the type of government in power, the share of parliament votes in the hands of majority, existence of balances and check on powers

Table C.1: The balance of treated and control subgroups - before treatment mean difference

VARIABLES	Pre-treatment mean-difference (Treated - Non Treated)					
	coef.	WTO		coef.	OECD	
		coef. [including Year FE]	Observations		coef. [including Year FE]	Observations
Trade Openness	0.104	0.188	330	-0.101	-0.0206	1499
Imports	-0.694	0.411	340	-0.417	0.365	1512
Exports	-0.0860	1.101	331	-0.388	0.465	1500
GDP	0.676	1.089	398	0.136	0.412	1564
Population	0.309	0.532	400	-0.584	-0.448	1590
Total Factor Productivity	-0.374***	-0.484***	277	-0.118*	-0.120	1298
Political Globalization	-3.706	14.54**	342	4.051	11.11**	1401
GDP per capita	0.363	0.515*	398	0.613**	0.783***	1561
Government public expenditure	0.0499	-0.0114	176	0.150	0.179	882
Public Debt	-0.0125	-0.307	134	-0.305	-0.471	781
Current account	-0.630	-0.123	95	-1.136**	-1.017*	495
Unemployment rate	-6.761	-6.029	189	-2.168	-2.008	931
Gini net	-0.0229	-0.0281	229	-0.0558	-0.0499	987
Gini market	-0.0541**	-0.0528*	229	0.00395	0.0157	987
Human capital index	0.790***	0.947***	312	0.626***	0.778***	1414
Labor share	0.0678	0.0596	315	0.0883***	0.0790**	1348
Tax Revenues	-0.0377	-0.0496	123	-0.0722	-0.0860	1009
Political System (presidential=0, elected presidential=1, parliamentary=2)	-0.408	-0.404	269	0.250	0.244	1302
Political system= Elected Presidential	0.181**	0.182**	400	0.0660	0.0724	1593
Political system= Parliamentary	-0.0266	0.0822	400	0.0541	0.0977	1593
Large Government Party orientation= right	0.171**	0.140	400	0.127	0.112	1593
Large Government Party orientation= left	0.0842**	0.177*	400	0.0429	0.0408	1593
Large Government Party orientation= centre	0.148	0.155*	400	0.0861	0.122	1593
Total vote share of all government parties	17.98*	24.34**	288	10.49*	9.136	1321
Checks and Balances	-0.592	0.509	259	0.616	0.638*	1259

VARIABLES	Pre-treatment mean-difference (Treated - Non Treated)					
	coef.	EU		coef.	Financial Liberalisation	
		coef. [including Year FE]	Observations		coef. [including Year FE]	Observations
Trade Openness	0.0452	0.102	2030	-0.0519	0.0353	2154
Imports	-1.028***	-0.326	2043	-1.129***	-0.179	2162
Exports	-1.289***	-0.549	2031	-1.217***	-0.250	2155
GDP	-0.857**	-0.580	2091	-0.386	-0.0137	2257
Population	-1.311***	-1.204***	2121	-0.362	-0.215	2287
Total Factor Productivity	-0.136***	-0.132***	1822	-0.0192	-0.0182	1990
Political Globalization	3.955	8.410	1918	1.743	9.607*	2071
GDP per capita	0.474**	0.641**	2088	-0.00779	0.220	2254
Government public expenditure	0.355***	0.391***	1197	0.142	0.155	1331
Public Debt	-0.160	-0.206	1078	0.194	0.209	1203
Current account	-2.234***	-1.229**	670	-1.457***	-0.370	769
Unemployment rate	1.182	1.049	1165	1.396	1.542	1219
Gini net	-0.105***	-0.102***	1354	-0.00865	0.00279	1447
Gini market	-0.0314**	-0.0246	1354	-0.0235	-0.00243	1447
Human capital index	0.333**	0.439***	1938	-0.117	0.102	2106
Labor share	0.0625***	0.0532**	1872	-0.00889	-0.0240	2029
Tax Revenues	0.131	0.120	1440	0.470***	0.494***	1593
Political System (presidential=0, elected presidential=1, parliamentary=2)	0.428*	0.423*	1758	0.0880	0.0892	1891
Political system= Elected Presidential	0.0365	0.0429	2124	-0.0199	-0.0274	2290
Political system= Parliamentary	0.139	0.198**	2124	-0.0315	0.0540	2290
Large Government Party orientation= right	0.0275	0.0259	2124	0.0272	0.0701	2290
Large Government Party orientation= left	0.0229	0.0304	2124	-0.0286	-0.00559	2290
Large Government Party orientation= centre	0.180**	0.217***	2124	-0.0261	-0.00644	2290
Total vote share of all government parties	13.70***	12.55***	1777	0.880	1.505	1908
Checks and Balances	0.660**	0.691**	1709	0.442	0.731*	1843

Notes: The coefficients measure the difference in means between treated and control subgroups. The first and second column of each table report the difference without controlling for time heterogeneity, the third and the fourth control for time unobserved heterogeneity including in the equation specification year dummies. \*\*\* 1% significance, \*\* 5% significance, \* 10% significance

to the following equation:

$$x_{it} = \alpha_i + \alpha_t + \delta_1 D_{it}^{application} + \delta_2 D_{it}^{access} + \delta_3 D_{it}^{globalisation} + \epsilon_{it} \quad (C.2)$$

where  $D_{it}^{application}$  is equal to 1 in the year before and in the year of application for membership in a Globalisation Club,  $D_{it}^{access}$  takes the value 1 during the access process (from the application to the year preceding the accession) and 0 otherwise,  $D_{it}^{globalisation}$  is 1 from the year of accession onward and 0 in any other period. The key parameter, from our point of view, is  $\delta_1$ , which captures whether countries that eventually join the Globalisation Club experience exceptional macroeconomic or political conditions in correspondence to the application.<sup>17</sup>  $\delta_2$  is also important as it measures the possible presence of anticipation effects.

These preliminary estimations are meant to verify potentially problematic macroeconomic variables that (i) influence both the probability of application/accession and post-accession outcomes and (ii) exhibit different patterns in perspective members of Globalisation Clubs. Any macroeconomic variable found to have statistically different mean from the no-treatment average, would be included among controls in the local projection regressions of the Average Treatment effect of joining Globalisation Club. Notice that country and time dummies are included, hence  $\delta_1$  and  $\delta_2$  are interpreted as difference-in-difference.

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<sup>17</sup>Note that the application year is only available for the WTO and the OECD.

Table C.2: Differences in mean between treated and control populations around application date, pre-accession and after the globalisation episode

VARIABLES	WTO			Observations	R-squared
	Application (δ1)	Access (δ2)	Globalisation (δ3)		
Trade Openness	0.0312	0.132	0.253**	2,678	0.299
Imports	0.00543	0.102	0.487**	2,691	0.920
Exports	-0.0852	0.119	0.409*	2,679	0.884
GDP	0.0742	0.0355	0.170	2,793	0.797
Population	0.195***	0.225***	0.201*	2,823	0.612
Total Factor Productivity	-0.107	-0.247**	-0.161	2,497	0.087
Political Globalization	-1.910	3.107	7.655**	2,566	0.623
GDP per capita	-0.119	-0.195	-0.0371	2,790	0.604
Government public expenditure	-0.129***	-0.231***	-0.180***	1,769	0.117
Public Debt	-0.0147	-0.308***	-0.612*	1,634	0.131
Current account	0.181	-1.661***	-0.628**	958	0.477
Unemployment rate	-0.469	0.675*	-0.000721	1,640	0.072
Gini net	-0.00839	0.0118	0.0356	1,936	0.232
Gini market	-0.0266**	-0.00675	0.0277	1,936	0.329
Human capital index	0.0572*	0.114***	0.140***	2,613	0.890
Labor share	0.00274	0.0185*	-0.00620	2,547	0.254
Tax Revenues	0.0369	0.130	0.0853	2,066	0.020
Political System (presidential=0, elected presidential=1, parliamentary=2)	2.563	104.4	92.37*	2,435	0.112
Large Government Party orientation= right	-0.132***	0.0408	-0.0372	2,826	0.074
Large Government Party orientation= left	0.0416	0.0415	0.0940	2,826	0.039
Large Government Party orientation= centre	-0.00715	-0.0766	-0.182**	2,826	0.063
Total vote share of all government parties	-8.214**	-4.263	-1.458	2,443	0.076
Checks and Balances	-0.727	99.32	87.32	2,382	0.092

VARIABLES	OECD			Observations	R-squared
	Application (δ1)	Access (δ2)	Globalisation (δ3)		
Trade Openness	-0.0187	-0.0408	0.116	2,678	0.254
Imports	0.291**	0.321**	0.560***	2,691	0.918
Exports	0.392***	0.368***	0.644***	2,679	0.885
GDP	0.145*	0.143*	0.208	2,793	0.797
Population	0.0178	-0.0287	-0.0247	2,823	0.581
Total Factor Productivity	0.0185	0.0554	0.0485	2,497	0.054
Political Globalization	3.690*	4.262	6.258	2,566	0.612
GDP per capita	0.127	0.169**	0.227	2,790	0.605
Government public expenditure	-0.0134	0.0135	-0.00738	1,769	0.098
Public Debt	-0.0749	-0.206	0.199	1,634	0.127
Current account	0.412	0.386	0.365	958	0.461
Unemployment rate	-0.403	-1.137*	-0.0203	1,640	0.072
Gini net	-0.00380	-0.00919	0.000881	1,936	0.189
Gini market	0.00311	0.00737	-0.00316	1,936	0.301
Human capital index	0.0462	0.0289	0.0791	2,613	0.884
Labor share	-0.0104	0.00212	-0.0221	2,547	0.251
Tax Revenues	-0.196	-0.0822	0.0200	2,066	0.023
Political System (presidential=0, elected presidential=1, parliamentary=2)	19.54	6.812	25.74	2,435	0.040
Large Government Party orientation= right	-0.0151	-0.0983	-0.0432	2,826	0.072
Large Government Party orientation= left	0.114	0.165	0.168	2,826	0.045
Large Government Party orientation= centre	-0.0988	0.0136	-0.112	2,826	0.057
Total vote share of all government parties	2.100	11.12	5.501	2,443	0.078
Checks and Balances	19.07	5.559	25.83	2,382	0.046

Notes: The coefficients measure, for each sub period, the difference in means between treated and control groups, compared to the same difference in earlier pre-accession years. The specification control also for time and country unobserved heterogeneity through fixed effects. \*\*\* 1% significance, \*\* 5% significance, \* 10% significance.



Table C.3: Differences in mean between treated and control populations in the 5 years preceding and after the globalisation event

VARIABLES	EU		Observations	R-squared
	Access (δ2)	Globalisation (δ3)		
<i>Trade Openness</i>	0.0490	0.00880	2,678	0.248
<i>Imports</i>	-0.0276	0.0607	2,691	0.913
<i>Exports</i>	0.0767	0.0162	2,679	0.879
<i>GDP</i>	-0.106**	-0.0388	2,793	0.797
<i>Population</i>	-0.140***	-0.0945***	2,823	0.624
<i>Total Factor Productivity</i>	0.0795***	0.0660*	2,497	0.077
<i>Political Globalization</i>	-0.277	0.260	2,566	0.608
<i>GDP per capita</i>	0.0318	0.0552	2,790	0.599
<i>Government public expenditure</i>	-0.0177	-0.0236	1,769	0.101
<i>Public Debt</i>	0.273***	0.0886	1,634	0.140
<i>Current account</i>	0.377	-0.246	958	0.460
<i>Unemployment rate</i>	-0.819	0.388	1,640	0.071
<i>Gini net</i>	0.0118**	0.0120	1,936	0.210
<i>Gini market</i>	0.0197*	0.0302***	1,936	0.348
<i>Human capital index</i>	-0.0275	-0.00311	2,613	0.883
<i>Labor share</i>	0.0107	-0.00180	2,547	0.247
<i>Tax Revenues</i>	0.0424	0.141	2,066	0.030
<i>Political System (presidential=0, elected presidential=1, parliamentary=2)</i>	-5.666	14.87	2,435	0.038
<i>Large Government Party orientation= right</i>	0.0628	0.00696	2,826	0.073
<i>Large Government Party orientation= left</i>	-0.0503	0.0276	2,826	0.035
<i>Large Government Party orientation= centre</i>	0.0291	-0.101	2,826	0.057
<i>Total vote share of all government parties</i>	4.044	2.759	2,443	0.078
<i>Checks and Balances</i>	-7.205	23.02	2,382	0.046

VARIABLES	Financial Liberalisation		Observations	R-squared
	Access (δ2)	Globalisation (δ3)		
<i>Trade Openness</i>	-0.0471	0.0337	2,678	0.247
<i>Imports</i>	0.0232	-0.00827	2,691	0.913
<i>Exports</i>	0.0533	-0.0187	2,679	0.879
<i>GDP</i>	-0.00688	-0.00949	2,793	0.793
<i>Population</i>	-0.0654**	-0.0892***	2,823	0.606
<i>Total Factor Productivity</i>	0.0552	0.0961**	2,497	0.088
<i>Political Globalization</i>	-2.620	-0.807	2,566	0.612
<i>GDP per capita</i>	0.0547	0.0793*	2,790	0.604
<i>Government public expenditure</i>	-0.0427*	-0.00853	1,769	0.103
<i>Public Debt</i>	-0.162	-0.0926	1,634	0.127
<i>Current account</i>	-0.101	-0.156	958	0.460
<i>Unemployment rate</i>	-0.0680	-0.923*	1,640	0.074
<i>Gini net</i>	0.000177	0.00477	1,936	0.189
<i>Gini market</i>	0.00536	0.0180*	1,936	0.314
<i>Human capital index</i>	-0.0146	-0.0209	2,613	0.884
<i>Labor share</i>	0.00519	-0.000660	2,547	0.245
<i>Tax Revenues</i>	0.0375	0.0701	2,066	0.023
<i>Political System (presidential=0, elected presidential=1, parliamentary=2)</i>	-4.633	1.812	2,435	0.037
<i>Large Government Party orientation= right</i>	0.0168	0.0143	2,826	0.072
<i>Large Government Party orientation= left</i>	-0.00255	0.0335	2,826	0.035
<i>Large Government Party orientation= centre</i>	-0.00993	-0.00116	2,826	0.055
<i>Total vote share of all government parties</i>	3.178	3.165	2,443	0.079
<i>Checks and Balances</i>	9.496	-13.15	2,382	0.045

Notes: The coefficients measure, for each sub-period, the difference in means between treated and control groups, compared to the same difference in earlier pre-accession years. The specification control also for time and country unobserved heterogeneity through fixed effects. \*\*\* 1% significance, \*\* 5% significance, \* 10% significance.

This online Appendix reports figures for different sample periods. For details on the estimation, please refer to the main text and to the explanatory notes to each figure.

List of figures:

- Figure 1: WTO accession, advanced countries only
- Figure 2: WTO accession, emerging countries only
- Figure 3: WTO accession, all countries, post 1995
- Figure 4: Trade openness shocks, all countries, post 1995
- Figure 5: OECD accession, advanced countries only
- Figure 6: EU accession, advanced countries only
- Figure 7: Financial liberalization, advanced countries
- Figure 8: Financial liberalization, emerging countries
- Figure 9: Trade openness shocks, advanced countries only
- Figure 10: Trade openness shocks, emerging countries only

## What happens after countries join the World Trade Organization (WTO)? Advanced countries

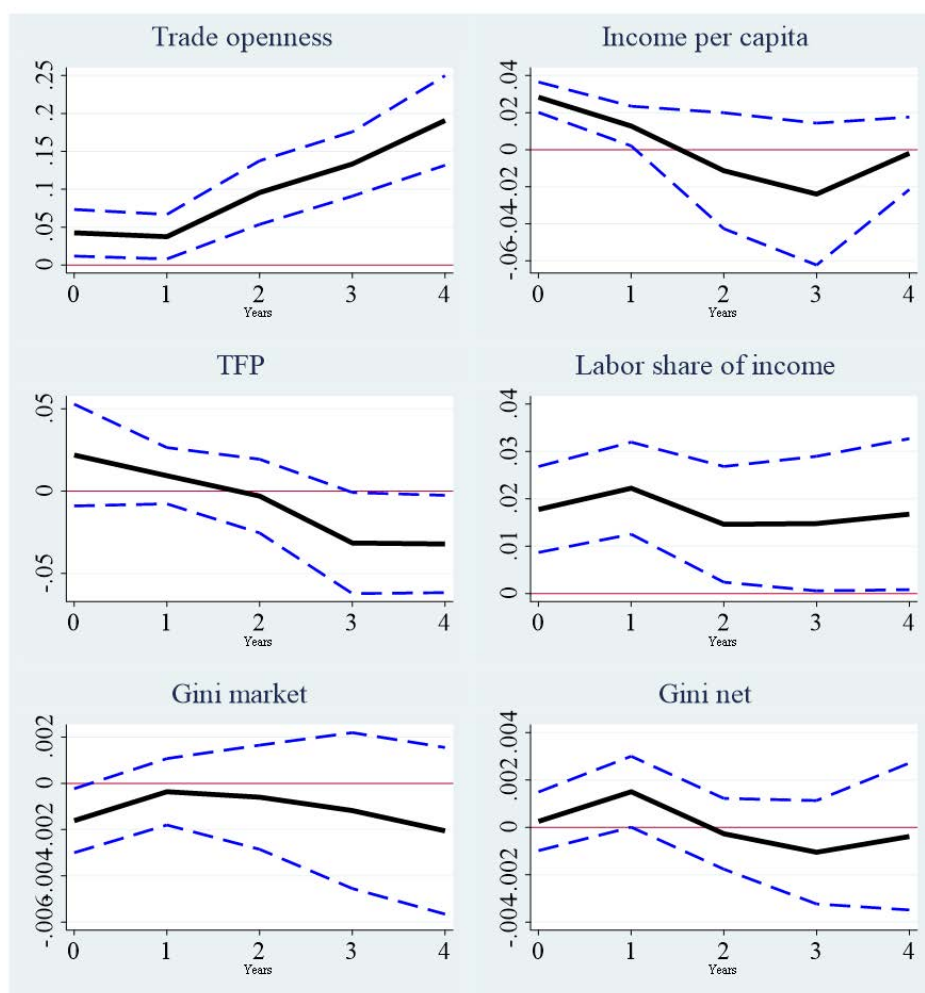


Figure 1: Estimated impulse responses from advanced countries joining the WTO at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after countries join the World Trade Organization (WTO)? Emerging countries

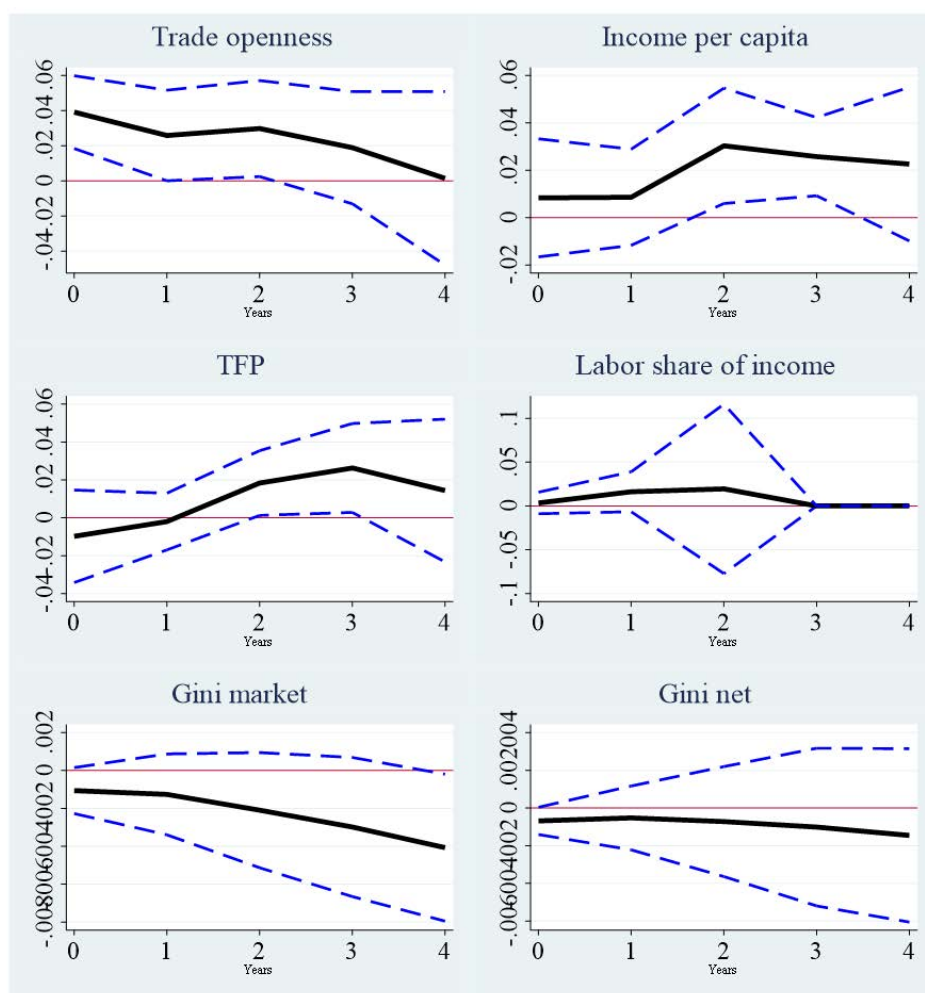


Figure 2: Estimated impulse responses from emerging countries joining the WTO at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after countries join the World Trade Organization (WTO)? Post 1995 sample

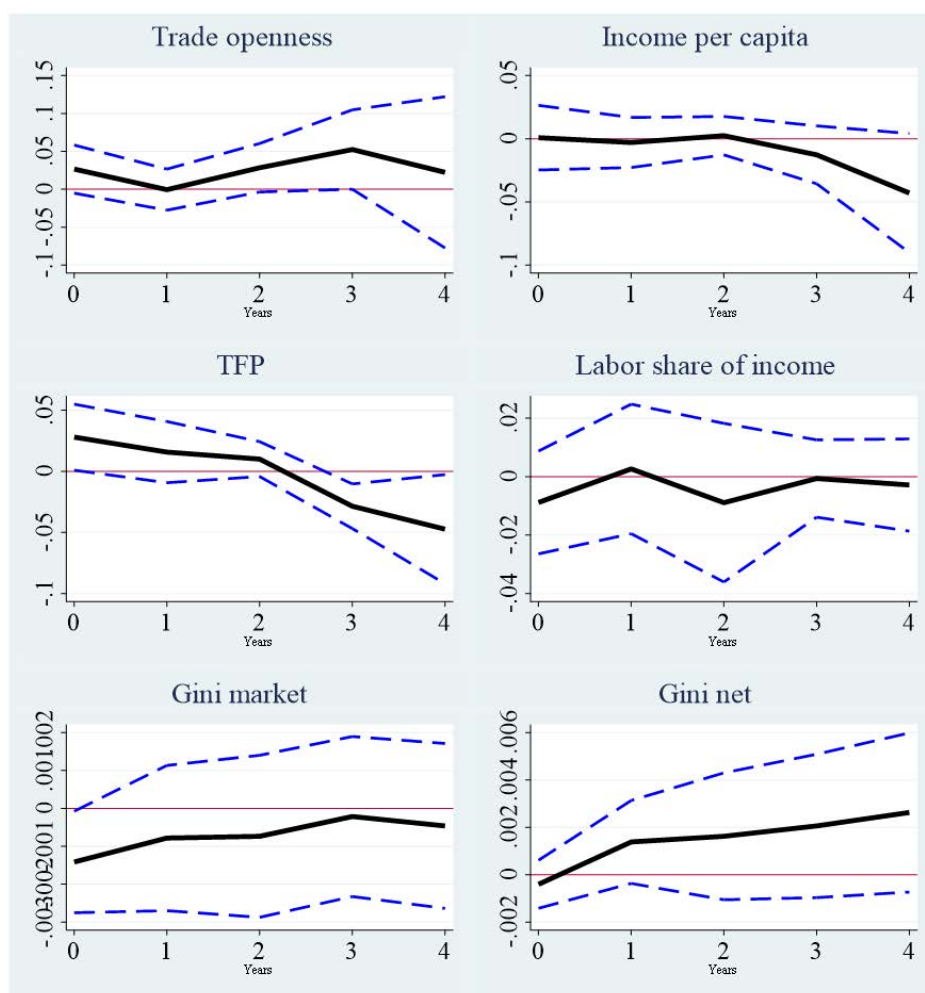


Figure 3: Estimated impulse responses from countries joining the WTO at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## Effect of trade openness shocks: Bartik instrument; Post 1995 sample

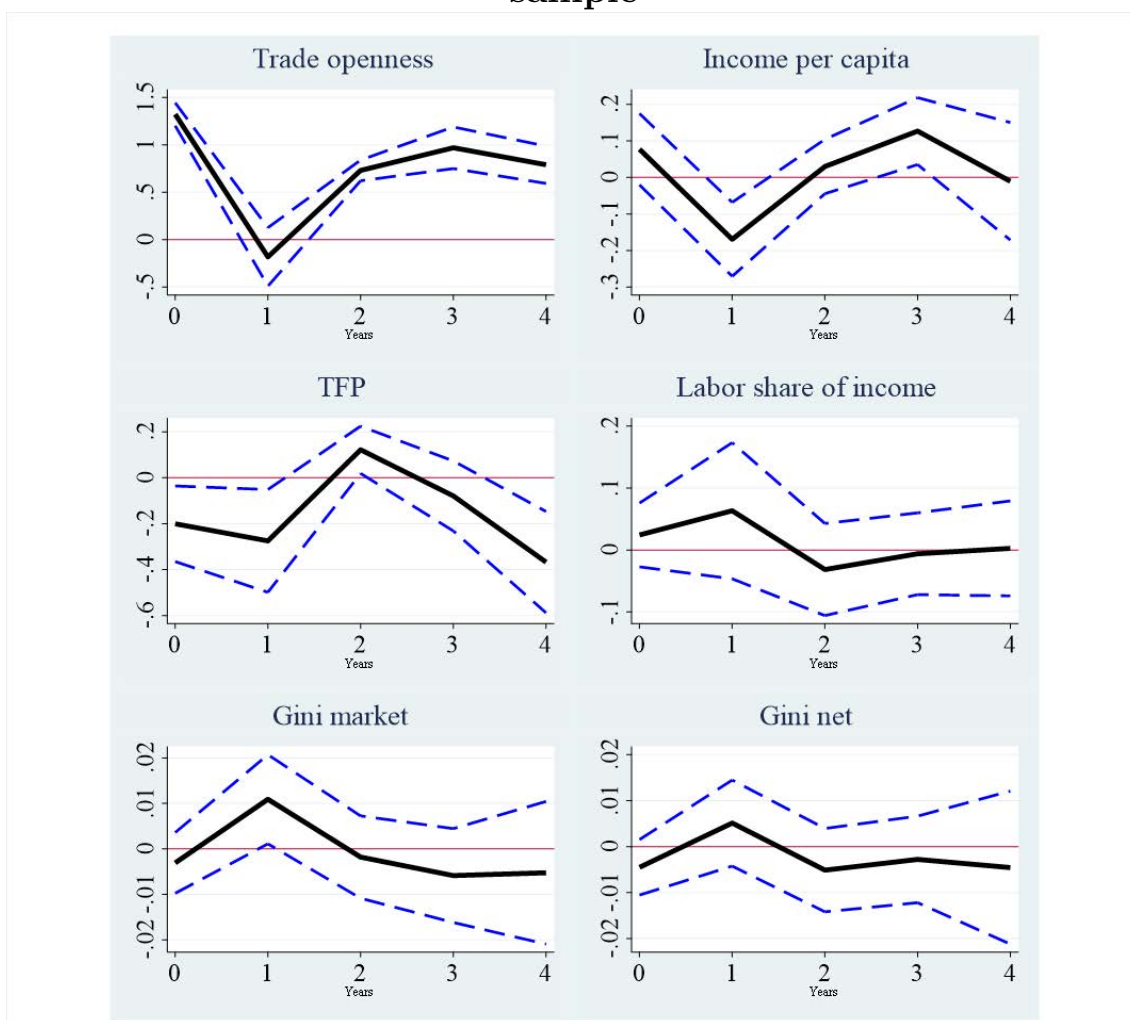


Figure 4: Estimated impulse responses from countries experiencing trade openness shocks at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after countries join the OECD: Advanced countries

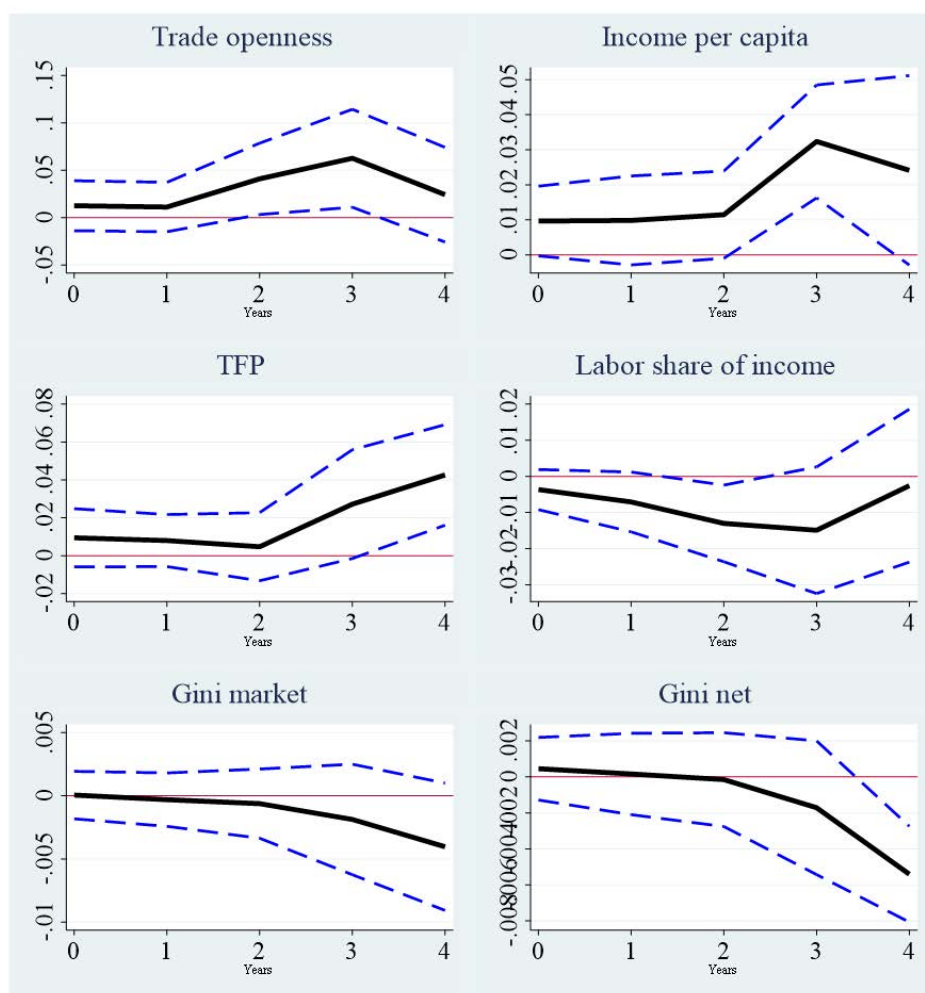


Figure 5: Estimated impulse responses from countries joining the OECD at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.



## What happens after countries join the EU? Advanced countries

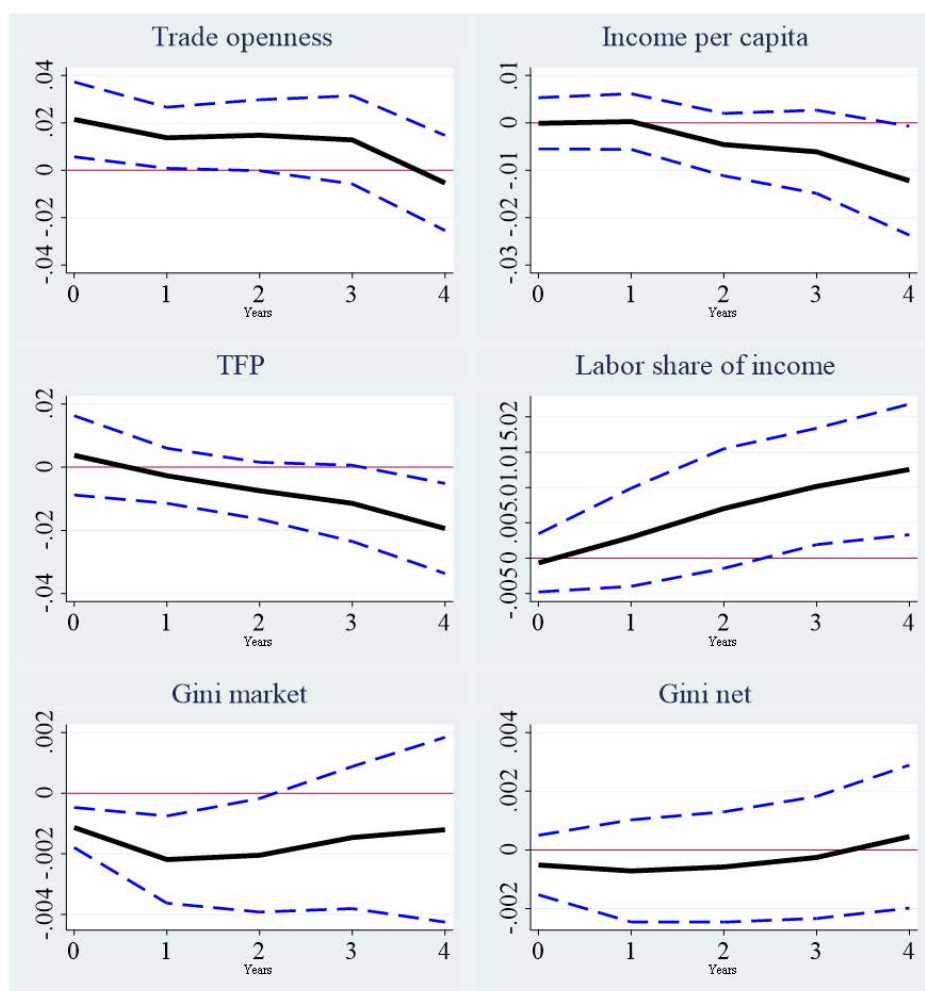


Figure 6: Estimated impulse responses from advanced countries joining the EU at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.



## What happens after financial liberalizations; Advanced countries

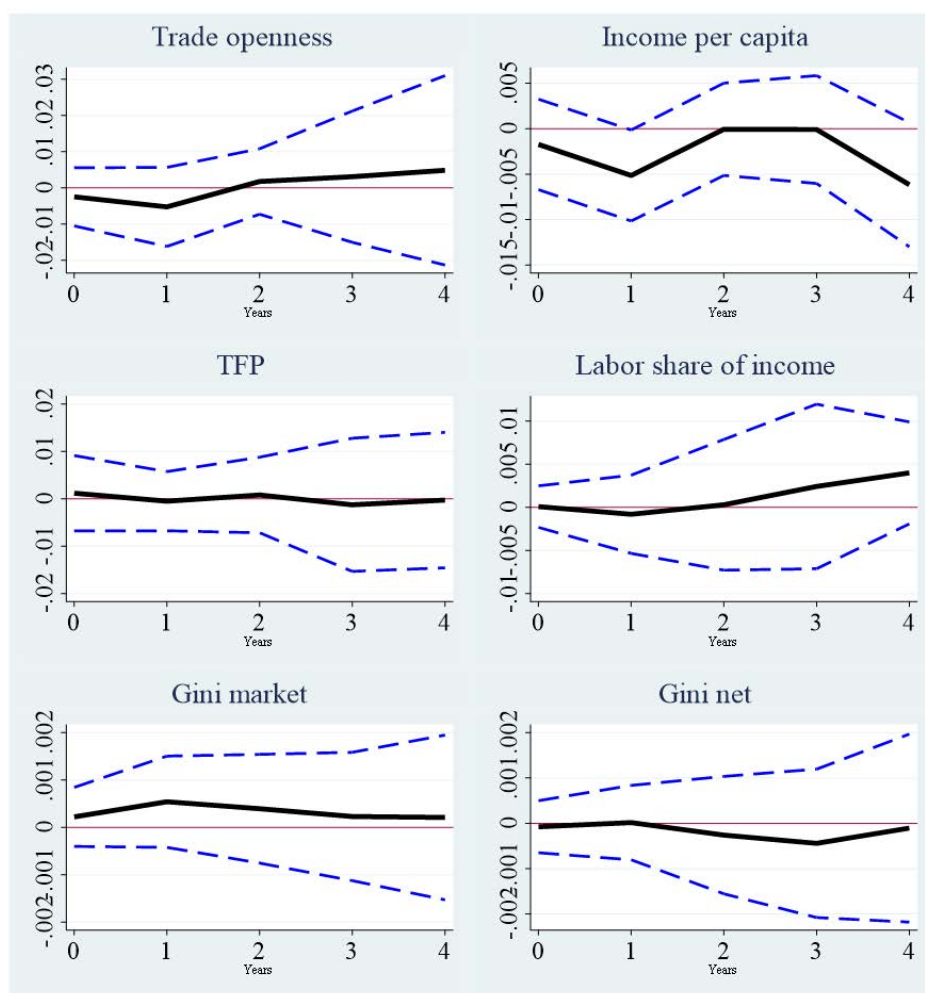


Figure 7: Estimated impulse responses from countries carrying out financial liberalizations at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## What happens after financial liberalizations; Emerging countries

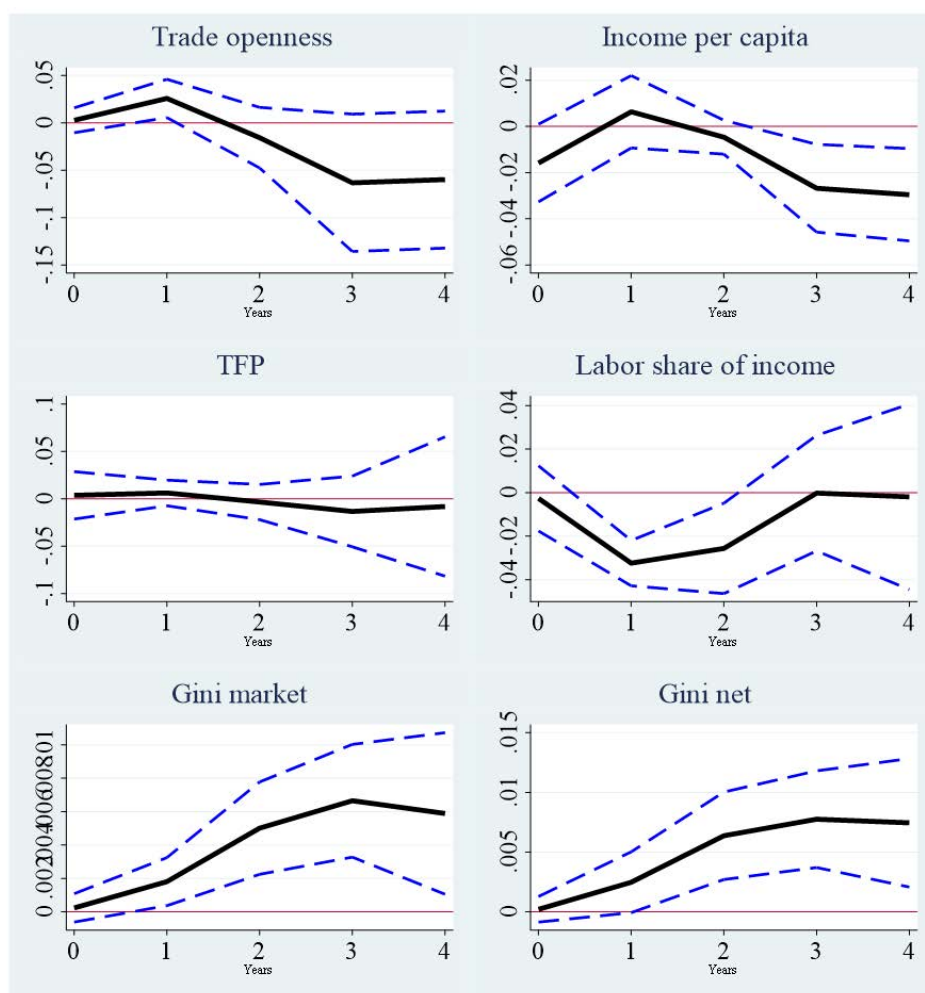


Figure 8: Estimated impulse responses from countries carrying out financial liberalizations at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## Effect of trade openness shocks: Bartik instrument; Advanced countries.

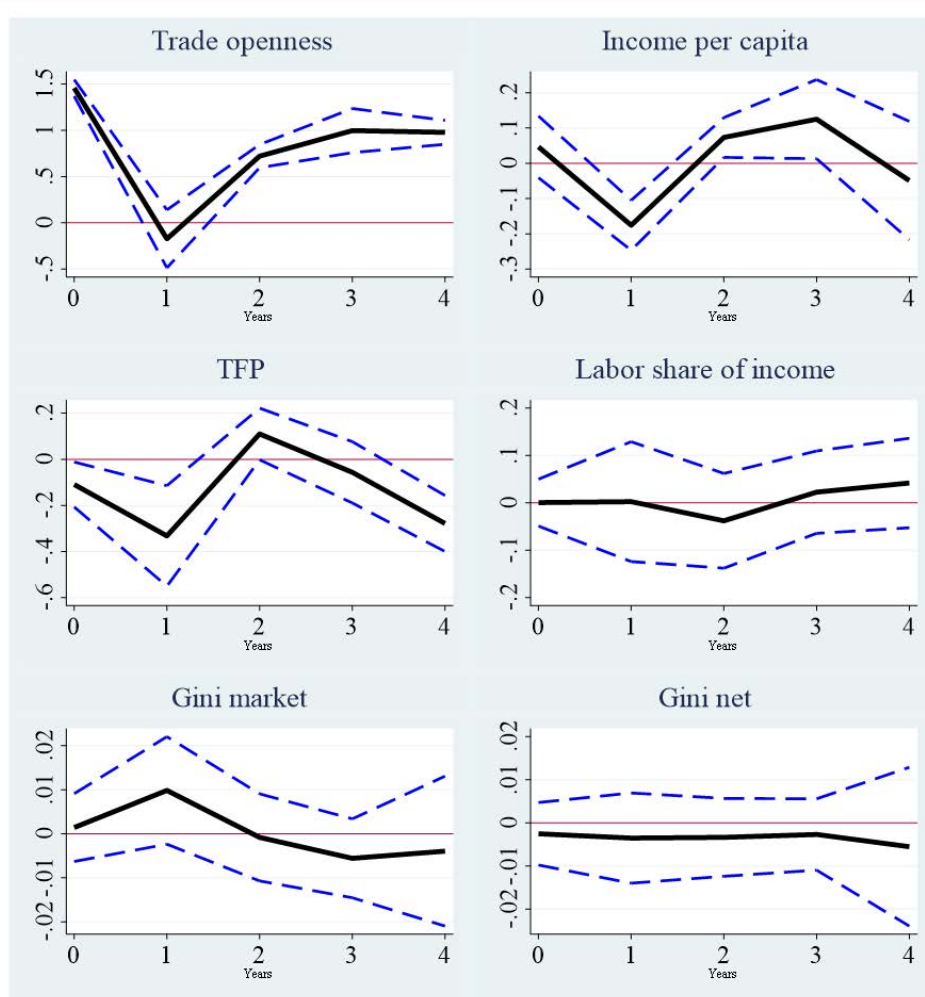


Figure 9: Estimated impulse responses from countries experiencing a trade openness shock at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

## Effect of trade openness shocks: Bartik instrument; Emerging countries.



Figure 10: Estimated impulse responses from countries experiencing a trade openness shock at time 0, obtained with local projections as shown in equation (5.1). The panel regressions include time and country dummies, two lags of TFP growth, real GDP growth, GDP per capita level, trade openness, checks and balances, the main government party orientation, the ICRG composite risk rating, and CPI inflation. In addition, we include a "pre-trend" indicator defined as the difference in the dependent variable between  $t - 1$  and  $t - 4$ . The confidence bands are at 90% confidence level based on robust standard errors. Sample period 1970 to 2019, subject to data availability.

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