

# Some options for maintaining the positive effects of trade and addressing negative effects

## Abstract

The analysis looks into how trade would act as a communicating vessel which diffuses positive effects of increase in productivity. This tends to bring about also dynamics of increased inequalities. Increase in inequalities would bring to a hidden effect due to a dual economy differential inflationary dynamics between the subsistence sector and the rest of the economy. These would hide an underestimation in their visible measure and would involute into further increase in inequalities. This would eventually decrease the market size for selling more than the increase in market size thanks to improved productivity. A frame of solution proposed would be to keep the positive effects of trade and find a new deal for addressing its negative effects. This would mean decreasing inequality. One general frame for such deal would be to impose duties commensurate to the differential inequality between importer and exporter's country. In addition, to contribute reabsorbing inequality the collected duties on imports could be sent back to the exporting countries, on the condition that they be used for decreasing inequalities.

O Mary, conceived without sin, pray for us who have recourse to you  
Spirit of truth, inspire and guide our research

To my daughters, for their future and the future of their peers from any part of the world

## INTRODUCTION

The question posed is about possibilities of market size protection options that defend the positive aspects of trade, by addressing and contributing to solve negative effects.

This is considered an important issue due to today's autarky threats and with the growing concern about population negatively affected by trade and with the last decades increase in inequality.

The question is then on whether there are possibilities to keep trade positively open and safeguard the welfare state, the employment and the purchasing power of wages domestically with a system that would use market size protection measures in a regulated way in order to avoid a blind trade retaliation that would harm trade and all.

This paper endeavours to contribute to bring to light dynamics hidden behind statistical data through streamlined argumentations with few, clear arguments, and a clarification of complex interactions and proposal of a reading of causation dynamics. To propose market size protection measures for developments towards a new deal of trade.

The approach applies an interpretation key centred on an effect of inequality hidden behind visible statistical data. A dual economy based on two sectors would contribute to bring to light such dynamics. The dual aspect would be based on the part of the economy dedicated to subsistence goods and services, i.e. housing, essential health care, food, clothing, and the rest of the economy. The proposal for addressing negative effects of trade and keep the good ones would focus on a general criterion for establishing an amount of duties, based on differential in inequalities between importers' and exporters' countries.

The assumption is that trade generates communicating vessels of the aggregate distributional results of the welfare state, productivity, taxation and other distributional effects, tending to equalize the aggregate balance among trading countries.

The argument goes as follows: trade generates heterogeneity. Trade favours traders of exports, of imports and of both, with respect to the domestic producers. Trade favours productivity and productivity provides an advantage. This advantage concentrates market share in the hands of the traders. Traders force their market towards their competitive advantage for remaining in the market. This may be imperfect due to various factors in the market, which are outside the scope of this paper. Trade increases inequalities, allows fiscal regime competition, social policy regime competition, increasing inequality. Economic autarky forgoes competitive advantages useful to all parts.

Productivity may increase for two main types of factors. One is total factor productivity or multifactor productivity. The other is increased bargaining power, which allows to profit from a situation of weakness of the other part. The first is a win-win situation, the second a zero sum game, with the implied dilemma.

Other research points to two main factors driving development; multifactor productivity on one hand and decrease of excessive inequality on the other. This latter is examined as decreasing effective demand due to a different dynamic of the decreasing marginal utility of consumption in a dual economy, where the two sides of the economy are: 1) the subsistence sector where all classes have a minimum necessity and the wealthy may consume more; 2) the consumption sector, where the low middle class and poor need to decrease consumption when more inequality pushes richer classes to increase consumption. Delocation, increases trade and decreases prices of tradable goods and services and works, delaying the effect of decrease in effective demand in the markets, while making it more widespread when a critical point of an inequality trap is reached.

Market size protection measures for avoiding renouncing to trade and reversing this trend of increasing inequality adversely affecting the middle class and the economies with better standard of living may be proposed as follows.

Rather than putting antidumping measures or tariffs to trade:

A) protection measures would need to be commensurate to the difference in inequality in a broad sense, including welfare state, pensions, etc. between the importer and the exporting country

B) proceedings from market size protection measure would need to be redirected back to the exporting country to address the inequality issues, by improving the welfare state of the exporting country and all the other factors that affect inequality in the exporting country, compared to the inequality of the importing country. In this way there is an active way of communicating vessels, by which the water level is increased in both countries, rather than equally decreased in both, due to decrease in effective demand. There would be the need of a new deal through supranational and international organizations, who would need to agree on measures of inequality differences between countries and on bilateral or multilateral agreements on protection measures, and also on bilateral or multilateral agreements on options for using the proceedings from protection measures in the exporting country in order to counterbalance inequality dynamics.

ROLE OF TRADE AS A COMMUNICATING VESSEL AMONG ECONOMIES

*HETEROGENEITY*

Research has shown that there is increased divergence with which the competition winner tends to concentrate market share taking larger and larger part. Andrews and Criscuolon (2015)<sup>1</sup> analyse harmonised cross country datasets and focus on firms at the global productivity frontier. They check on the diffusion of the global productivity gains. Firms on average are more productive, large and profitable, while they are also young. Such firms are from different countries, showing the contributions of different competitive advantages and natural endowments. They operate in different countries. While there has been a slowdown in aggregate productivity in the 21<sup>st</sup> century, the productivity growth of these firms has remained robust. The age of these firms has grown older, which could signify a slowdown in radical innovation and productivity growth. It is difficult to find which countries' policies shape most those firms. Policies that lower barriers to entry are certainly desirable and positive. There is rising productivity gap between firms at the global frontier and the others. This is consistent with a model whereby new global frontier technologies are first tested by national frontier firms and then diffuse to laggards, after testing to the country specific situation.

1) Analysis shows that this heterogeneity is inversely correlated with higher quality education systems, less cumbersome product market regulations, collaboration between businesses and universities, more developed risk capital markets.

2) Patent protection may have different effects: In dynamic sectors this tends to increase productivity gaps as the patent protection may act as a barrier to entry. In R&D intensive sectors, the patent protection tends to lower the productivity gap between the national and the global frontier firms.

3) National frontier firms may often have difficulties in attracting resources and growing. For example R&D noticeable subsidies (e.g. tax subsidies) for SMEs, may allow inefficient incumbents to withhold resources from the national frontier firms, keeping them small compared to the global frontier firms.

4) Pro-competition reforms tend to be associated with MFP growth of firms either very near to the national frontier firms or the farthest away from it, for example with less stringent employment protection. The firms in the middle tend to suffer a lag and contribute to increase heterogeneity in the sector. For example, with higher R&D collaboration, far away laggard firms tend to catch-up, while the other firms tend to keep pace with the frontier firms, without catching up.

Andrews, Criscuolo and Gal (2016) find that in general industries with firms which have a larger heterogeneity in MFP are those with a significantly lower MFP. This suggests that the heterogeneity observed is also driven by other factors than a pull by the frontier firms. The heterogeneity observed remains after controlling for capital deepening and mark-ups behaviour. The MFPR gap may reflect technological differences, i.e. digitalisation and tacit knowledge within international trade. A slowdown in the technological diffusion process may be at play in such dynamics. In addition to a difficulty of laggards to move to an economy based on ideas, there could be the rising entry barriers with lower contestability of markets. Pro-competitive product market reforms were less extensive where there is more MFP divergence, suggesting this has prevented better diffusion of rise in MFP. Andrews, Criscuolo and Gal counterfactual exercise suggests that industries with best practice product market reforms would have kept MFP divergence 50% lower than observed. In addition, the opportunity cost of poorly designed product market regulations may have increased.

Concerning inequality, Song et al (2019)<sup>2</sup> they find that, for the United States:

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1 Andrews, D., C. Criscuolo and P. Gal (2015), "Frontier firms, technology diffusion and public policy: micro evidence from OECD countries", *OECD Productivity Working Papers* No. 2.

2 Andrews, Criscuolo and Gal (2016) *The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy*. 2016. OECD Publishing. *OECD Productivity Working Papers*. [https://www.oecd-ilibrary.org/economics/the-best-versus-the-rest\\_63629cc9-en](https://www.oecd-ilibrary.org/economics/the-best-versus-the-rest_63629cc9-en) (November 23, 2019).

- 1) Two thirds of the variance of the log earnings between 1981 and 2013 relates for two thirds to dispersion of average earnings among firms, and one third in dispersion among workers within firms.
- 2) For the two thirds increase in dispersion among firms, it is formed equally by employee sorting, i.e. high wage workers increasingly working in high-wage firms; and by segregation, i.e. high-wage workers clustering together in the same firms, while low-paid workers are clustering in other firms.
- 3) the rise in within firm inequality is concentrated in large 1,000+ employees firms, and even more in the mega firms. "This is driven by a fall in earnings premium in large firms for median- and lower paid employees and by rising earning for the top 10% of employees".

Their analysis of the causation factors lacks definite answers. A variety of circumstantial evidence leads them to consider that outsourcing could constrain inequality within firms, allowing frontier firms to focus on core competency activities, spinning of non essential activities such as cleaning, catering, security, accounting, IT and HR. Firms may reorganizing on a narrower set of occupations, augmenting the cross-firm segregation skill-level wise.

- 4) As firms play an important role in employees' health care and pensions, rising workers segregation could lead into rising health care and retirement inequality. Segregation also could lead to high-wage earners providing cross experience with higher-ability colleagues, dynamically increasing such segregation inequality.

Card, Heining, and Kline (2013)<sup>3</sup> find that wage inequality in West Germany has widened both for individual pay characteristics which are portable across jobs, and for increased variation in the individual pay that is premium which remains with each different employer. High-wage earners tend to cluster together with other high-wage earners in the same firms that offer above average wages. Newer firms, show greater wage dispersion. They consider this could reflect differences in technology choices or management practices of younger versus older firms, or institutional constraints of older firms, or else. Card, Heining, and Kline find that firms offering higher wage premiums show higher survival rates, thanks to profitability.

This would be near the global frontier, as analysis (Conseil national de productivité. 2019) shows that there is turnover of the firms at the technology frontier<sup>4</sup>. Andrews, D., C. Criscuolo and P. Gal (2015)<sup>5</sup> find that less than 15% of the same frontier firms remain at the frontier four year later.

#### POSSIBLE CAUSES OF HETEROGENEITY

##### COUNTRY SIZE

Data show (Giordano and Lopez-Garcia 2019)<sup>6</sup> that in the European Union countries, the top-10 firms in terms of exporting value account for about from 50 to 80% of aggregate exports, even in large countries such as France, with the exception of Italy, which has lower concentration of exports at the top. Country size seems thus unrelated to heterogeneity.

##### SIZE OF EXPORTING FIRMS

The cross-country variation seems related to the size of the exporting firms in each country (Giordano and Lopez-Garcia 2019). Exporting firms in Italy are smaller than the average in the rest of the EU countries, for each same sector of activity. For the top 10% of the export, Italian firms are half the size compared to other countries.

##### COUNTRY SPECIFIC SECTOR SPECIALISATION

3 Card, David, Jörg Heining, e Patrick Kline. 2013. «Workplace heterogeneity and the rise of West German wage inequality». *The Quarterly journal of economics* 128(3):967–1015.

4 Conseil national de productivité. 2019. 'Productivity and Competitiveness: Where Does France Stand in the Euro Zone?'

5 Andrews, D., C. Criscuolo and P. Gal (2015), "Frontier firms, technology diffusion and public policy: micro evidence from OECD countries", *OECD Productivity Working Papers* No. 2.

6 C. Giordano and P. Lopez-Garcia, 'Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis', SSRN Journal, 2019. Their analysis approximates the fixed trade costs to the productivity premium of new exporters.

Another possible explanation of disparity in export concentration across countries is country-specific sector specialization, depending on the optimal scale of operation of firms in that country sector-specific technological characteristics (Giordano and Lopez-Garcia 2019). Data show that concentration is highest in sectors such as transport equipment and pharmaceutical, while lowest in machinery and fabricated metal.

#### FIXED COSTS OF TRADE

Higher fixed costs of trade (Giordano and Lopez-Garcia 2019) may have increased the cost of acceding to exports. Export costs related to various factors, such as tariff and non-tariff trade barriers, the quality of the legal system, geographical distance and language differences, other barriers are infrastructure and logistic costs, distribution and marketing costs, availability of staff with skills to manage foreign networks, availability of credit, and the cost of obtaining information about foreign markets. Only the most productive firms achieve the higher productivity to provide the resources for covering such costs. On the other hand, firms succeeding in acceding exports, gain access to intermediate inputs at higher added value and such kind of other added value benefits. These contribute to further increasing productivity. This could be thus a factor in the increase in the heterogeneity of productivity. In addition, resources tend to move from less efficient to more efficient firms, increasing allocative efficiency across firms (Giordano and Lopez-Garcia 2019). This given, as long as less productive firms find outlet markets for their products and remain in the industry, allocative efficiency increases further heterogeneity. Literature shows that fixed trade costs decrease thanks to the soundness of the legal system, degree of financing development in the origin country, while they increase for tariff and non-tariff barriers.

#### MARKET INTEGRATION AND QUALITY OF INSTITUTIONS

Generally, lower GDP per capita countries feature lower quality institutions, which impact the market structure. Less developed countries tend to have less integrated markets. Hallward-Driemeier, Iarossi, and Sokoloff (2002)<sup>7</sup> analyse five East Asian countries. When local or regional markets have low integration, inefficient firms may survive as they remain insulated from competition with more efficient ones. In these markets, there are higher exporter's productivity premia once firms manage to access such markets. This contributes to further higher heterogeneity, i.e. productivity dispersion. Low market integration slows down productivity growth.

#### CONTESTABILITY OF TRADE MARKETS AND INEQUALITY

Benazzo (...) provides economic dynamics arguments about an inequality trap, hidden behind aggregation of statistical data, yet to be fully solvable. The reaching of the inequality trap would occur by the dynamic of appropriation of surplus derived from increase in productivity. In the years between the 1940s and the 1970s, developed countries have seen various mechanisms for the surplus of productivity increase being shared quite equally among all the production factors. In general, one option exemplified more by the United States has seen the remuneration of production factors increase quite equally, i.e. employees' wages, suppliers, top management, shareholders. Another exemplification is more relative to Europe, which a more prominent role has derived from welfare state benefits, in the form of the use of the received progressive taxes from the richest for providing redistributive services to the rest of the population. In other words, either the rules of the game for sharing productivity increases have been balanced; or when they were unbalanced in favour of the richest provided with the greatest bargaining power, social contracts would unbalance the redistributive game to rebalance the economic actors game overall. This was necessary to satisfy the Fordist idea that Fordist employee need to earn enough in order to buy Ford cars. Delocalisation has provided a medium term escape to the need of such counterbalanced game (Benazzo, ...). In the long term though, a dual economy mechanism with different inflationary trends among the two sides of the economy would bring to an inequality trap. Inflation would be higher in more necessary sectors, i.e. food, clothing, essential health care, housing. This trap would bring to light how there would be no escape from an unbalanced game without counterbalancing mechanisms, and the thinning of the middle class around the world would show this pressing problem. Inequality would thin the outlet markets of available middle class to buy production and increase availability of productivity gains for investing in further increase in productivity increase, to counteract the thinning

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<sup>7</sup> Hallward-Driemeier, Mary, Giuseppe Iarossi, e Kenneth Sokoloff. 2002. Exports and Manufacturing Productivity in East Asia: A Comparative Analysis with Firm-Level Data. w8894. Cambridge, MA: National Bureau of Economic Research.

of outlet markets. As outlet markets get thinner, the competition game gets harder and firms need to save extra productivity gains resources in order to be ready to counteract new trade players getting back to the top. This would explain the high contestability of markets at the top of the productivity frontier, while below that frontier, large companies would prepare the next competition reciprocation.

## *ROLE OF TRADE ON PRODUCTIVITY AND DYNAMICS TRANSMISSIONS*

### *FIRMS' OWN PRODUCTIVITY GROWTH: EXPORTS*

Bustos (2011)<sup>8</sup>, in analysing the effect of trade on productivity, puts particular attention at a possible role of skill-biased technological change, as a tool of studying the role of tariffs on exports. Bustos analyses the effect of tariffs either in unskilled and labour-intensive industries or in hi skilled capital intensive industries. Brazil changed the tariff structure around 1992, providing tariff protection also to skill-intensive industries like domestic appliances, office accounting and computing, and the car industry, in addition to the low-skilled industries previously protected. These were such as toys, textiles and rubber. The analysis uses this change and also considers capital and elasticity of demand of the industry, in addition to skill intensity. Trade provides skills upgrading, especially for the frontier firms. For example, the new MERCOSUR increased demand for skills.

Bloom, Draca, and Van Reenen (2016) see the impact of trade on technical change in twelve European countries, considering the lowering of tariffs on China's imports after China's accession to the WTO in 2001. 1) High-tech firms which were more exposed to Chinese imports competition, increased their patenting, TFP, IT intensity and R&D expenditure and management practices, sheltering themselves. This generally brings more skills. 2) Low-tech firms decreased survival rates and lost jobs, lowering patenting intensity. China could account for around (a likely largely underestimated) 15% of the overall technical change in Europe between 2000 and 2007<sup>9</sup>. Their empirical models are partial equilibrium and the complex welfare effects of trade with China are beyond their scope. De Loecker (2013) finds that for testing the learning by exporting (LBE), the empirical model used needs to allow productivity to depend on export participation. He finds substantial productivity gains by LBE for firms and their workers associated with access to export.<sup>10</sup> Linder (1961)<sup>11</sup> focuses on differences in the production function, including how these relate to international differences in demand for the various tradables. He investigates new ideas. Among the topics, he investigates the effects of trade on factor prices and income distribution. He considers the discussion about the assumptions necessary for factor price equalization, which are very restrictive. Such kind of discussion led to consider that how trade affects factor prices in which direction depends very much on the assumptions and it is unclear how such assumptions would relate to the probability of the event. He defends that, whether the capital-abundant country will specialize in capital-intensive exports and the labour abundant country in labour-intensive exports, would be largely affected by differences in the production functions between the two countries. This could reverse the specialization, irrespective of the abundance. The more representative is the internal demand, the more favourable its production function would be. The advantages of using a certain abundant production factor could be more than neutralized by having to use less advanced technologies, i.e. adopting an inferior production function. For whatever labour-intensive production would have done in the 1960s an Indian factory to reproduce an IBM machine, the production function would have been unsuitable to establish any comparative advantage for export. He concludes that there may not be a tendency of factor price equalization. Expansion of production depends more on the more abundant factor. A labour abundant country may expand more

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8 Bustos, Paula. 2011. «Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms». *American Economic Review* 101(1):304–40.

9 Bloom, N., Draca, M. and Van Reenen, J., (2016). "Trade induced technical change? The impact of Chinese imports on innovation, IT and productivity", *The Review of Economic Studies* 83(1), pp. 87-117.

10 De Loecker, J. (2013), "Detecting learning by exporting", *American Economic Journal: Microeconomics* 5(3), pp. 1-21.

11 Linder, S. B. (1961), *An Essay in Trade and Transformation*, Almqvist and Wiksell: Stockholm.

the production of a labour intensive primary product. A capital abundant country may expand more a capital-intensive production. These considerations by Linder need to bring to the thought that a labour-intensive country may always become a capital-intensive if the production function progresses enough, while a capital intensive country may only become more capital intensive and has thus less potential development progression in this sense. Linder argues that the per capita income gap will grow faster under trade than under autarky. Benazzo (...) argues that the question is in the communicating vessels generated by the transparency of trade. This allows fiscal, social, welfare dumping, which decreases redistribution and increases appropriation of gains from increase in productivity to a small group of the economic actors.

Brambilla, Lederman, and Porto (2012) analyse a panel of Argentine manufacturing firms between 1998 and 2000, while there has been the Brazilian devaluation in 1999. This devaluation allows identifying exogenous changes in export and in export destinations, for exploring whether the export destination countries play a role in choosing the skill composition of their workforce. The empirical model consistently suggests that exporting to countries with higher income induces firms to hire more skilled labour. Export to similar income countries leaves the dynamics on the choice of skills of labours unaffected. The competition opened by exports thus counts rather than export on itself.<sup>12</sup> Mayer, Melitz, and Ottaviano (2016) use comprehensive firm-level data on annual shipments by all French exporters to all countries worldwide (excluding French domestic market), from 1995 to 2005, for a set of more than 10'000 goods. The data shows that demand shocks through trade push multi product firms do product mix changes to skew their sales towards their better performing products, i.e. with higher productivity, increasing the firm's productivity. The elasticity of labor productivity to trade shocks is between 5 and 11%. This measure controls for short-run investment by the firm, scale effects, and import shocks that may possibly be correlated. This product mix response is concentrated within the quartile of highest export intensity exporters. Considering their weight in the economy, the average annual increase in productivity in response to the growth in world trade is just above 1% per year.<sup>13</sup> Tougher competition decreases the distribution of markups across all products and increases the relative market share of the better performing products. This occurs especially in large destination markets and markets where many exporters around the world compete.<sup>14</sup> Giordano and Lopez-Garcia (2019) use the cross-country micro-aggregated CompNet database available for 14 EU economies. They see that exporting firms for at least three years in the international market show higher productivity than new entrants. This shows firms increase further productivity in their post-entry performance. They find eight stylised facts. 1) New exporting firms, compared to domestic market firms, are larger, more productive and pay higher wages. 2) Fixed costs of exporting depend mainly on the domestic legal system, access to finance and the tariffs and non-tariffs barriers. These costs are large and only the most productive and largest firms may afford this. It is thus important to lower the fixed trade costs. 3) Few firms concentrate the exports, in different ways across countries and sectors. The behaviour of these few firms can impact significantly on a country's aggregate performance, primarily in terms of exports. As they draw the other domestic firms in certain directions, they have also an important impact on the country on the domestic market. 4) Access to trade increases the within-firm productivity growth, i.e. learning by exporting, innovation, access to improved quality of imports. This increases also indirectly the aggregate country's productivity. 5) The most productive firms draw the most productive production factors, providing a more efficient allocation of production factor, thus increasing the aggregate productivity. 6) The intensive margin of exports, i.e. the average exports of existing exporters, reacts less to the REER fluctuations the larger the exporters are and the more import-intensive are the compositions of their exports. 7) The smaller the number of firms near the "productivity threshold" above which they start to export, the lower the reactivity of the extensive margin, i.e. the number of firms who accede to exports, is to fluctuations in the REER. 8) The reactivity of exports to changes in the real effective exchange rate (REER) varies across sectors and across firms, depending on various factors, including firms characteristics, productivity distribution within sectors, composition of sectors within the overall economy, and the relative importance between the extensive and intensive margins. These facts of evidence and implication from evidence, show that the productivity gap in the domestic market tends to increase, among established exporters, new entrants, and domestic based firms.

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12 Brambilla, I., Lederman, D. and Porto, G. (2012), "Exports, Export Destinations, and Skills", *The American Economic Review* 102 (7), pp. 3406–3438.

13 Mayer, T, Melitz, M. and Ottaviano, G. (2016), "Product Mix and Firm Productivity Responses to Trade Competition", *CEP Discussion Papers* 1442. In particular, using French firm-level data, Mayer, Melitz and Ottaviano (2016) find that in response to positive demand shocks in export markets, multi-product firms skew their export sales towards their best performing products whilst dropping the least-performing products.

14 Mayer, T., Melitz, M.J., and Ottaviano, G. (2014), "Market Size, Competition, and the Product Mix of Exporters", *American Economic Review* 104(2), pp. 495-536.

*FIRMS' OWN PRODUCTIVITY GROWTH: IMPORTS* Markusen (1989) highlight two results. Firstly, on one hand, free trade in inputs/services is Pareto superior to autarky, while this is dubious when free trade is only on goods. On the other hand, the former is superior to the latter. Secondly, lowering tariffs has a positive effect on the productivity of domestic inputs<sup>15</sup>.

Halpern, Koren, and Szeidl (2015)<sup>16</sup> analyse a panel of Hungarian firms, finding that imports significantly increase firm productivity. About half of this is due to imperfect substitution between foreign and domestic goods. In addition, foreign firms (FDI) use imports effectively and pay lower fixed import costs. During 1993-2003, one third of the productivity growth was due to imported inputs. The productivity gain from a tariff cut is larger when there are many importers and many foreign firms. Topalova and Khandelwal (2011)<sup>17</sup> use data concerning the 1991 liberalization in India. India had a severe balance of payments crisis. The International Monetary Fund (IMF) provided conditional financial assistance, based on a structural adjustment program, centred mainly on liberalizing trade. India had to drastically reduce tariffs and narrow their dispersion across sectors, in a short time-frame. Due to the urgency and external imposition, the changes are assumed to be unrelated to firm- and industry-level productivity. This sidesteps the endogenous nature of trade policies. An example is when governments reduce tariffs only after firms have improved productivity, complicating the research on the relationship between tariffs and productivity, or when specific interests pressure the governments for sector specific exceptions. Trade liberalization has led firms to become more competitive. In addition to this, increased access to foreign imports has relaxed technological constraints on production bringing about a larger impact in improving productivity. This implies that governmental protection of upstream domestic producers stifles productivity growth. Kasahara and Rodrigue (2008)<sup>18</sup> analyse detailed plant-level Chilean manufacturing panel data from 1979 to 1996. They find that plants acceding to foreign intermediate imports can immediately improve productivity. Over a variety of estimators, the estimate from the within-group estimator indicates a (probably downwardly biased) 2.6 percent productivity improvement from importing. Amity and Konings (2007) analyse Indonesian manufacturing census data from 1991 to 2001, including plant-level information on imported inputs. They isolate the effect on importing firms from other firms. They find increased access to trade inputs in the economy provides at least double the productivity gain from increasing access to trade for output. A 10 percent fall in input tariffs provides a 12 percent gain in productivity, at least twice as much as for an equivalent fall in output tariffs. In addition, considering only output tariffs introduces bias of overestimation on its effect<sup>19</sup>. Feng, Li, and Swenson (2016)<sup>20</sup> analyse firm-level operating data on Chinese firms combining them with firm-level customs data on trade transactions from 2002 to 2006. This includes China's entry into WTO in December 2001. They use this entry to identify the connection between firm imports and exports. They find that firms expanding the value and variety of their intermediate input imports (i.e. a 1 percent increase) expanded the value and scope of their exports (a 1.35 percent for connected to that). Private Chinese firms obtained larger benefits from imported inputs compared to foreign invested firms. The Chinese firms began the decade at a disadvantage with their foreign competitors. The benefits from intermediate input imports relate also to the source country. Imported intermediate inputs from the more technologically advanced OECD countries provided larger benefit than those from elsewhere. This, together with other dimensions of their analysis, suggests that larger benefit occurs when the intermediate inputs are of superior quality and technology. In addition, they find that imported intermediaries are especially beneficial in expanding exports for firms within the R&D industries. Turco and Maggioni (2013)<sup>21</sup> analyse a balanced panel of Italian limited companies over five years from 2000 to 2004. The data

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15 Markusen, J. (1989), "Trade in producer services and in other specialized, intermediate inputs", *American Economic Review* 79(1), pp. 85-95.

and, Grossman, G. and Helpman, E. (1991), "Quality ladders in the theory of growth", *Review of Economic Studies* 58(1), pp. 43-61.

16 Halpern, László, Miklós Koren, e Adam Szeidl. 2015. «Imported inputs and productivity». *American Economic Review* 105(12):3660–3703.

17 Topalova, Petia, e Amit Khandelwal. 2011. «Trade liberalization and firm productivity: The case of India». *Review of economics and statistics* 93(3):995–1009.

18 Kasahara, H. and Rodrigue, J. (2008), "Does the use of imported intermediates increase productivity? Plant-level evidence", *Journal of Development Economics* 87(1), pp. 106-118.)

19 Amity, M. and Konings, J. (2007), "Trade Liberalisation, Intermediate Inputs, and Productivity: Evidence from Indonesia", *American Economic Review* 97(5), pp. 1611-1638.

20 Feng, Ling, Zhiyuan Li, e Deborah L. Swenson. 2016. «The connection between imported intermediate inputs and exports: Evidence from Chinese firms». *Journal of International Economics* 101:86–101.

21 Turco, Alessia Lo, e Daniela Maggioni. 2013. «On the Role of Imports in Enhancing Manufacturing Exports». *The World Economy* 36(1):93–120.

has been used by the National Statistical Institute (ISTAT) in the 2006 Annual Report for a descriptive analysis of offshoring practices by Italian firms. The sample represents around 40 percent of total manufacturing employment and output, providing details about sectoral distribution, outputs, inputs, labour costs, tangible and intangible fixed assets, exports, control participation and imports of intermediaries, for 40'479 firms (after pruning spurious data). After accounting for productivity and export sunk costs, they find that only imports from cheap labour countries positively and significantly improves the export perspectives of Italian manufacturing firms. They read this as the action of the cost-saving channel. The technology channel that literature identifies as imports from high income countries turns out trivial or irrelevant. The Italian traditionally vocational export concerns traditional products with low technological content, making it open to competition from emerging economies. Competitive strategies could include imports used in upgrading processes for using cheaper and quality inputs, while the data show absence of technological upgrading in these import strategies. These findings point in the direction of social dumping where either the emerging economies use high quality intermediate inputs to upgrade their products, obliging the competitors to find cheaper labour, as technological advantage decreases, or advanced economies to find cheaper labour through cheap intermediate inputs or delocalizing (FDI); or both. This also shows two strands for improving productivity: either through improved technological processes and other innovations, or without innovation, through the employment of cheaper and cheaper labour. These studies use a variety of techniques to extend the results beyond the region of the data examined. This shows that a wider range of cheaper and/or higher quality intermediate inputs can bring higher productivity, higher domestic value-added growth, and higher quality final goods. Input tariff liberalisation impacts productivity through the input variety and quality channels that it fosters (Ahn et al. 2019)<sup>22</sup>. Importing firms, compared to non-importing ones, see their productivity grow at a rate more than double of the productivity growth advantage of established exporters with respect to new exporters (Giordano and Lopez-Garcia 2019)<sup>23</sup>. This suggests that sector-level productivity benefits more from trade liberalisation in upstream sectors than in the sector itself, especially when FDI barriers are reduced concurrently. The import channel is thus important for technology diffusion.

Koren and Csillag (2011) use detailed trade statistics and occupation description of the worker for firms. They find that workers exposed to imported machines, after accounting for unobserved workers characteristics, earn about 3 percent higher wages than colleagues in the same firm operating other machines. The return to schooling is also higher on imported machines. This suggests that machines imports can be a channel for skill-biased technical change in emerging economies.<sup>24</sup> *FIRMS' OWN PRODUCTIVITY GROWTH: GLOBAL VALUE CHAINS (GVC)*

Accetturo and Giunta (2018) compare the performance of firms in the global value chains in 2008-2009. They compare data for Germany and Italy and on firm level. German and Italian firms have a number of similarities: in 2010, manufacturing was 25.3 and 23.3 respectively; manufacturing export was high at 39.9 and 23.4 respectively; family-owned firms over the total represent 90 and 86 percent respectively. Both have a great involvement in global value chains (GVC). . On the other hand they have differences: the average number of employees in the firms in 2009 was 37 and 9 employees respectively, providing an advantage for productivity, internationalization, innovation strategies. They check the country's position in the GVC, whether it is upstream or downstream. The answers tends to vary according to the data used. Both countries have great involvement of firms in GVCs. They do a firm level analysis which shows that fully intermediate (INT) firms are around 35 and 60 percent respectively. The difference is more marked in the customised intermediate goods (Customized purchases of intermediaries, CPI), where Germany is quite present, while Italy is almost absent. The same occurs for the mix of INT&CPI, where Germany is present and Italy almost absent. They check whether this difference in the GVC explains the Germany-Italy performance gap. They find that in both countries intermediate firms are smaller than final ones in terms of both sales and

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22 Ahn, J.B., Dabla-Norris, E., Duval, R., Hu, B. and Njie, L. (2016), "Reassessing the productivity gains from trade liberalization", *IMF Working Papers* 77.: based on cross-country cross-sector time series

23 Giordano, Claire, and Paloma Lopez-Garcia. 2019. 'Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis'. *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3446774> (November 27, 2019). Data confirms that importing firms grow, in terms of productivity, up to 0.4 percentage points more per year than firms sourcing from domestic providers.

24 Koren, M. and Csillag, M. (2011), "Machines and machinists: Capital-Skill Complementarity from an International Trade Perspective", *IEHAS Discussion Papers* 1114. : data from Hungary for the period 1994-2004

employment. These invest less on human capital accumulation and innovation. Intermediate firms with foreign main customers are generally much larger and more innovative than those involved mainly in national GVCs. The crisis hit intermediate firms in contraction of sales more severely than firms more downstream in the GVCs, which experienced less critical contraction. The reduction for intermediate firms was similar in magnitude for both domestic and international suppliers. This difference explains the better performance of the Germany firms, as they are more downstream in the GVCs<sup>25</sup>. This shows how GVCs are a channel of transmission of dynamics among countries. GVCs transmit shocks, both positive increasing productivity, both negatively in times of crisis on performance. This latter shows how outlet markets affect the GVCs perspectives. There is thus also the effective demand at play ... Global Value Chains, as they link together multiple firms, usually across different countries, through production arrangements, similarly to intra-group investment and trade, have a role in productivity growth.

#### *AGGREGATE PRODUCTIVITY GROWTH: REALLOCATION OF PRODUCTION FACTORS ACROSS FIRMS:*

Bernard and Jensen (2004) investigate aggregate level effects of reallocation of resources across plants or industries. They use microeconomic plant data from the Annual Survey of Manufacturers (ASM) from the Longitudinal Research Database (LRD) of the Bureau of Census, between 1983 and 1992. Before entry in export trade, future exporters show a rise in productivity level, which increases during entry. Employment and output growth rates are instead much higher for exporters and increase after access to export. Half of the reallocation of employment occurs within the same industry and half across industries. This augments aggregate productivity growth, even with stable productivity at firm level. Productivity as such allows to accede to the export trade premium: high productivity exporters grew faster than lower productivity exporters. Such shift of output shares across plants explains more than 40 percent of total factor productivity (TFP) growth in the manufacturing sector. Trade thus favours the growth of high productivity plants rather than increasing their productivity.<sup>26</sup> This may be explained by the fact that exporting allows to accede to a larger outlet market. The analysis of Benazzo (...) argues that in the long term, the play of social, fiscal and other dumping eventually restricts the outlet markets more than what the increase in productivity allows them to enlarge, bringing to a shortage in effective demand critical for the world economy in general (even if positive for those countries which allow the middle class to thrive in their domestic market ...).

Berthou et al. (2018) use new data on 14 European countries and 20 manufacturing industries during 1998-2011. They argue that empirical results are consistent with trade triggering reallocation across heterogeneous firms in the presence of resource misallocation, shaping as such aggregate productivity. The implied effects of misallocation on the gains from trade are present even if ambiguous, for example for dispersion effects of increasing returns to scale and adjustment costs. They establish empirically that exogenous shocks to both export demand and import competition generate large gains in aggregate productivity. They find that improved firm selection can explain only half of the productivity gains from trade. In the rest of productivity gains there is thus space for improved resource allocation. Reallocation of labor across firms can account for a large share of the labor productivity growth. In addition, efficient institutions, factor and product markets amplify productivity gains from import competition, while they dampen those from export expansion, by providing favourable ground for domestic firms<sup>27</sup>. The reallocative dynamics allow to improve the efficient allocation of resources increasing productivity. While this is positive for productivity, analysis would need to show how this affects inequality in the domestic market and in the trading partners countries.

Pavcnik (2002) corrects plant-level panel data on Chilean manufacturers for selection and biases (considering other measures of exposure to trade such as import to output ratios, tariffs, exchange rate) to obtain consistent estimates of the input coefficient and from there a reliable plant-level productivity measure. She examines the trade effects, the role of plant exit and the resource reallocations from less to more efficient producers within industries

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25 Accetturo, Antonio, e Anna Giunta. 2018. «Value chains and the great recession: Evidence from Italian and German firms». *International economics* 153:55–68.

26 Bernard, A.B. and Jensen, J.B. (2004), "Exporting and Productivity in the USA", *Oxford Review of Economic Policy* 20(3), pp. 343-357.

27 Berthou, Antoine, Jong Hyun Chung, Kalina Manova, e Charlotte Sandoz Dit Bragard. 2018. «Productivity, (mis) allocation and trade». August 17:2018.

over a time frame where there have been liberalization exposing to competition from abroad, during the late 1970s and late 1980s. Results suggest that liberalized trade enhances plant productivity. Productivity of import-competing goods sectors plants improved on average from 3 to 10 percent more than that of non-traded-goods sectors plants. For plants in export-oriented sectors, plants response to fluctuations in the real exchange rate makes the evidence less conclusive. Plants exiting due to liberalization are on average 8 percent less productive than surviving plants. Aggregate industry-level productivity indices suggests that the reallocation of resources to more productive producers contribute to aggregate productivity gains, especially in the export-oriented and in import-competing sectors. The aggregate productivity grew by 25.4 and 31.9 percent respectively in these sectors over seven years, while the gains for non-traded goods sectors amounted to 6 percent. After trade liberalization, the Chilean manufacturing sector overall grew at an average annual rate of 2.8 percent, mostly due to the reallocation of resources within the economy (2 percent)<sup>28</sup>. Blundell et. al. (1999) select a sample of 3551 observations from 340 manufacturing firms listed on the London International Stock Exchange, on nine continuous years between 1972 and 1982. They find that, within each industry, firms with larger market shares innovate more, depending on the level of competition. These incumbents have a strong incentive to preemptively innovate to shield their profits from new entrants and from losing market shares to smaller less productive incumbents who innovate. Firms innovate more in industries facing more import competition and lower domestic concentration ratios. Edmond, Midrigan, and Xu (2015) analyse Taiwanese producer-level data and find that opening to trade reduces considerably misallocation of factors of production, depending on the model, by about one fifth or one third to one half. They also consider what would happen closing all international trade. There is little change in markup, while there is substantially more misallocation.<sup>29</sup> Giordano and Lopez-Garcia (2019) find a significant statistical positive correlation between allocative efficiency (i.e. the inverse of misallocation) and openness to trade<sup>30</sup>. *ELASTICITY OF EXPORTS TO REAL*

#### *EFFECTIVE EXCHANGE RATES:*

Giordano and Lopez-Garcia (2019) find that changes in the real effective exchange rate, as one of the main determinants of export growth, acts differently on aggregate performance depending on different countries and sectors, due to sectoral composition and firms characteristics within the sector<sup>31</sup>.

When the real effective exchange rate (REER) depreciate, as it lowers the sunk costs (i.e. incurred) of exports, it can boost sales abroad for existing exporters and facilitate the entry of new exporters. The micro-economic structure of each sector influences the reaction of export volumes to changes in the REER<sup>32</sup>. Such reactions occur in the medium-term either through the “intensive margin” of exporters, when the existing exporters increase export sales, or through the “extensive margin” when new exporters introduce new export sales. For example, Auer and Sauré (2011) analyse data on exchange rates and trade at sectoral level. Swiss exports have risen as fast or even faster than other high-income countries, despite strong appreciation of the CHF. Swiss export are concentrated in price-insensitive sectors, such that aggregate Swiss exports react mildly to changes in the REER<sup>33</sup>. There is large heterogeneity across sectors in the reactivity to REER changes, even inside the EU<sup>34</sup>. The sectoral composition of a country’s exports affects reactivity to the REER and aggregate export performance.

#### *INTENSIVE MARGIN:*

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28 Pavcnik, Nina. 2002. «Trade liberalization, exit, and productivity improvements: Evidence from Chilean plants». *The Review of Economic Studies* 69(1):245–76.

29 Edmond, C., Midrigan, V. and Xu, D.Y. (2015), “Competition, Markups, and the Gains from International Trade”, *American Economic Review* 105(10), pp. 3183-3221. : resource misallocation is measured by the dispersion in mark-ups across firms

30 C. Giordano and P. Lopez-Garcia, ‘Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis’, SSRN Journal, 2019. : after controlling for country, sector, time and country-year fixed effects.

31 C. Giordano and P. Lopez-Garcia, ‘Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis’, SSRN Journal, 2019.

32 C. Giordano and P. Lopez-Garcia, ‘Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis’, SSRN Journal, 2019.

33 Auer, R. and Sauré, P. (2011), “Export basket and the effects of exchange rates on exports: Why Switzerland is special”, *Federal Reserve Bank of Dallas Working Papers* 77.

34 C. Giordano and P. Lopez-Garcia, ‘Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis’, SSRN Journal, 2019..

Sectors with larger, fewer and highly productive firms at the frontier show lower reactivity of exports to REER<sup>35</sup>. Berthou and Dhyne (2018) analyse firm-level exports in relation to REER variations for 11 European countries. They find that export of large and more productive firms show up to three times lower elasticities to REER changes (and up to eight times lower elasticities to unit labour cost) than the smaller and less productive exporting firms. The least productive firms tend to be much more reactive to REER variations, than the most productive firm. The country elasticity of export to REER variations depends on the relative weight of least and more productive firms, otherwise it is quite comparable across countries, for each group of similar productivity firms.<sup>36</sup> Demian and di Mauro (2015) analyse a database from the CompNet of the European Central Bank of sector productivity for a set of 10 EU countries, considering productivity distribution statistics. They find that the exchange rate elasticity of export is lower in sectors with higher dispersion of firm productivity. Exports appear to react mostly to appreciations rather than depreciations. In their analysis elasticity is around unity for appreciation and hardly significant in case of depreciation. Exchange rate movements matter more when they are relatively sizable. When depreciation is between 9 and 12 percent, the movements are smaller than for higher depreciation<sup>37</sup>. Berman, Martin, and Mayer (2012) analyse French firm level data with destination-specific export values and volumes from 1995 to 2005. They find that, in presence of depreciation, high productivity firms tend to raise their markup rather than volume (they raise price to market), while low productivity firms choose to raise their volume rather than markup. Fixed costs to export, including the large contribution of distribution costs, mean only high productivity firms may access export, those that react by raising the margin, rather than sales. This explains the weak effect of exchange rate fluctuations on aggregate export volumes. This is in part allowed by larger margins available to these firms, which vary their mark-up to absorb changes, stabilizing volumes. Firms have thus heterogeneous pricing-to-market behaviours<sup>38</sup>. Kiyotaki, Jeong, and Dekle (2013) chose data of firms from Japan, listed on the stock exchange of Japan, from 1985 to 1999. Among these, they choose those that produce multiple products and are heterogeneous in terms of the number of products as well as productivity distribution. They consider firms face recurrent idiosyncratic productivity shocks to each product, deciding to keep producing products even if with negative profit, considering the continuing production optimal value. Multi-product firms decrease the sensitivity to changes in REER by withdrawing their least productive products from export and concentrating on their more productive ones. The former are those for which the productivity of the product becomes lower than the new boundary set by the REER appreciation<sup>39</sup>. The more the exporters are also import-intensive, the more the prices they face offset each other between imports and exports (Giordano and Lopez-Garcia 2019). In addition, normally these exporters have large export market shares and related large mark-ups which allow to decrease sensitivity to the REER changes. In Belgium, small exporters almost fully pass on the exchange rate fluctuations, larger exporters offset nearly half of REER changes<sup>40</sup>. Dekle and Ryoo (2007) analyse firm level data of 14 separate Japanese 4 digit level industries. These cover 90 percent of Japanese manufacturing export in terms of value. They calculate the elasticity of exports related to exchange rates fluctuations. They find elasticities generally higher than in previous work: export volumes are noticeably affected by changes in exchange rates. Hedging helps offset the financial constraints, decreasing fluctuations in the cash flow and the impact of the REER shocks. Large firms may access the exchange rate hedging financial instruments, which are unavailable or too costly for small firms. As large exporters account for a considerable share of exports, they neutralise largely the aggregate exchange rate pass-through. In industries with exchange rate depreciation correlated with loosening financing constraints, firms hedge less. They hedge more in industries with exchange rate depreciation correlated with tightening financing constraints, to insulate their cash flows from exchange rate shocks<sup>41</sup>.

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35 C. Giordano and P. Lopez-Garcia, 'Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis', SSRN Journal, 2019.

36 Berthou, A. and Dhyne, E. (2018), "Exchange rate movements, firm-level exports and heterogeneity", *Banque de France Working Papers* 660. They use CPI-deflated REER. This result is based on the estimation of export elasticities to REERs by firm-level productivity quartile on CompNet data for 11 EU countries in the period 2001-11.

37 Demian, C.V. and di Mauro, F. (2015), "The exchange rate, asymmetric shocks and asymmetric distributions", *ECB Working Papers* 1801.

38 Berman, N., Martin, P. and Mayer, T. (2012), "How do different exporters react to exchange rate changes?", *The Quarterly Journal of Economics* 127(1), pp. 437-492. Provides strong evidence for France, for example.

39 Dekle, R., Jeong, H. and Kiyotaki, N. (2015), "Dynamics of Firms and Trade in General Equilibrium", *USC Dornsife Institute for New Economic Thinking Working Papers* 15-12.

and Mayer, T, Melitz, M. and Ottaviano, G. (2016), "Product Mix and Firm Productivity Responses to Trade Competition", *CEP Discussion Papers* 1442.

40 C. Giordano and P. Lopez-Garcia, 'Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis', SSRN Journal, 2019.

**EXTENSIVE MARGIN:** A “productivity threshold” characterises the boundary for the decision of the firm whether to export. Only when the firm’s productivity is above this threshold, the firm will have resources and advantage in entering the export market. A depreciation of the REER will improve competitiveness and increase demand in exports and thus lower the productivity threshold (Giordano and Lopez-Garcia 2019). Given the productivity threshold is difficult to measure. They approximate the productivity threshold to start exporting with the average TFP of new exporters, in a given country-sector-year. The higher the number of firms just below the productivity threshold, i.e. the closer the average productivity of non-exporters is in a given sector to the respective threshold, the larger the effect has a depreciation of the REER<sup>42</sup>.

**EXTENSIVE AND INTENSIVE MARGIN:** The overall sensitivity to REER fluctuations will depend on the relative importance between the extensive and intensive margins. This varies across sectors, the time-span and the data granularity, impeding a definite result<sup>43</sup>. Generally, the intensive margin matters more than the extensive one in advanced economies<sup>44</sup>.

#### TRADE AND INEQUALITY

Pavcnik (2017) in section II documents the diffusion of international integration of developing countries over the past four decades, in a variety of forms. Some targeted mainly reduction of import barriers, other lowered the access costs to export markets; recent studies put attention at importing shocks. Section III focuses on perceptions about international trade across countries. Pavcnik focuses on the perception about earnings and employment opportunities considering a survey of more than 40 countries with incomes per capita between 1’000 and 50’000 USD (PPP constant 2011 USD) with more detailed questions for 2002 and 2014. Irrespective of the country’s income level, the perception is that trade does benefit overall the economy. More than half gave a “good” judgement. Between 2002 and 2014, this share has dropped: fewer lower-income countries were trade was favourably viewed by more than 90 percent of individuals. In the USA there had been a drop from 80 to 70 percent. Some countries had an opposite trend, such as Argentina. Individuals in low income countries tend to view international trade as more beneficial for job creation and wages while higher income countries are more varied; they are either more on the undecided part or tend to say they diminish job creation and wages. Overall perceptions are heterogeneous. Section IV uses data from formal manufacturing. Attention has been put about lifting poor from poverty as a primary attention. There is more information about impact on inequality through the relative prices of goods with respect to the employment and earnings of workers, and on their consumption patterns. This approach intrinsic in the data available and used, shows that Pavcnik is understandably here leaving out data on the welfare state such as pensions, public health insurance, public infrastructure such as harbours, roads and bridges. Also as Benazzo points out the importance (...) data and economic theory overlooks to subdivide inflationary dynamics about essential parts of the markets, i.e. prices on food, clothing, housing, essential health care, from the rest of the economy. Pavcnik analyses the data that shows earnings of better educated workers increased relative to less educated workers in several developing countries that implemented large-scale trade liberalizations during the late 1980s and early 1990s. Evidence points to lack of mobility of workers across industries, at least in the short and medium run after trade reforms which brought trade shocks. This contributes to trade’s unequal impact. Pavcnik data and analysis shows nuanced and context specific answers to the question whether trade is good for the poor or/and decreases inequality. Interplaying factors entangling the analysis are the trade patterns (i.e. policy changes), the mechanisms involved, the mobility of workers and capital across firms, industries and geographical locations; which individuals

41 Dekle, R. and Ryoo, H.H. (2007), “Exchange rate fluctuations, financing constraints, hedging, and exports: Evidence from firm level data”, *Journal of International Financial Markets, Institutions and Money* 17, pp. 437-451.

42 C. Giordano and P. Lopez-Garcia, ‘Firm Heterogeneity and Trade in EU Countries: A Cross-Country Analysis’, SSRN Journal, 2019. : they approximate the productivity threshold to start exporting with the average TFP of new exporters, in a given country-sector-year.

43 Helpman, E., Melitz, M and Rubinstein, Y. (2008), “Estimating trade flows: Trading partners and trading volumes”, *The Quarterly Journal of Economics* 73(2), pp. 441-487.

and Crozet, M. and Koenig, P. (2008), “Structural gravity equations with intensive and extensive margins”, *CEPII Working Papers* 30.

and Fernandes, A.M., Klenow, P.J., Meleshchuk, S., Pierola, D. and Rodríguez-Clare, A. (2018), “The Intensive Margin in Trade”, NBER Working Papers 25195.

44 Campa, J.M. (2004), “Exchange rates and trade: How important is hysteresis in trade?”, *European Economic Review* 48, pp. 527-548.

and Besedeš, T. and Prusa, T.J. (2011), “The role of extensive and intensive margins and export growth”, *Journal of Development Economics* 96, pp. 371-379.

and Bugamelli, M., Linarello, A. and Serafini, R. (2018), “The Margin Call: firm-level export dynamics in Italy”, mimeo.

within the income distribution trade changes affects. Industry specific skills or rigid labour markets pose barriers to reallocation of workers in the short or medium term from one industry to another. In some cases, lower tariffs have brought to relative wages adjustments. Loss of earnings could be attributed to loss of rents from imperfect competition. In Colombia for example, tariff cuts were larger in more unskilled-labor intensive industries and earning losses, "lower industry wage premiums" (Pavcnik, 2017), affected less skilled workers in particular. Overall import liberalization affected little the wage inequality between less and more educated workers. To remember that the data covers formal firms. Developed countries give different findings. Trade shocks in the U.S.A. affected more employment (reducing it) in the 1970s and 1980s than wages. Similarly, U.S.A. manufacturing employment decreased during the 1990s for increased low-wage import competition. Similar effects occurred in Canada after increased competition from the U.S.A. firms after Canada-U.S.A. Free Trade Agreement.

As better performing firm tend to pay higher wages and trade increases wages in better performing firms, inequality increases among workers across firms. Evidence from Indonesia suggests that tariff liberalization, through the channel of import competition, reduces wages of workers in firms selling only domestically, in comparison to more productive, exporting firms. In addition, importing intermediate firms tend to pay higher wages than those that only source inputs domestically (Amiti and Davis, 2012 as reported in Pavcnik 2017). Studies from developing and developed countries, including Brazil, U.S.A. and Canada provide support to larger employment declines in less productive firms following increased import competition or bilateral trade liberalization. Concerning exporting, high performing firms have more resources for taking advantage of new exporting activities. New exports allow larger market access for achieving more important gains for innovating in technology or quality or else. They tend to share part of their revenue with workers increasing it compared to workers in less performing firms. These firms need higher-skilled workers. The firm-level data available on one hand shows how firms are adjusting production and how this affects production and workers. On the other hand the future of the laid off workers remains unknown from these data. This information in addition is only from the formal sector. This represent a portion of manufacturing of 20 percent in India, 42 percent in Vietnam, 70 percent in Brazil (14 percent of workers economy-wide in 1999). 70 to 80 percent of employment in many low-income countries is in the informal sector. Evidence from developing countries suggests the formal sector involves more educated workers. International trade provides opportunities of reallocation of employment to more performing firms which are enlarging their operations and provide opportunities to move to the formal sector. Before the U.S.A.-Vietnam Bilateral Trade Agreement, the informal sector in Vietnam was 85 percent, and 66 percent in the manufacturing sector. In Vietnam, workers in the formal sector tend to work more hours and less likely in more than one job, and earn higher wages and more likely receive other benefits connected to the work.

Regionally in each country, some regions are more subject to import competition and experience reduced earnings, other are more export-oriented or are enlarging their market access abroad and experience higher earnings. Inter regional-workers mobility is often very low. This induces earning inequalities. Regional mobility is low also in developed countries and low wage workers are less likely to move. Developed countries in general lack enough large shocks beyond what firm absorb fairly well to provide information about geographic concentration of the effects of exporting.

Data on local labor market relies on household data, regardless of the employment status. This provides more information beyond the formal market and employment. In the case of India, the average tariff drop from more than 80 percent to about 30 percent by the late 1990s slowed down the poverty reduction initiated in the 1980s, in the more exposed rural districts. Consumption per capital fell for families in such regions, in the bottom 10th and 20th percentile of the consumption distribution compared to less hard-hit regions. Consumption per capita of rich families in the same district remained unaffected, thus increasing inequality in those regions. In Vietnam, families living in the provinces exposed to export benefited more of the bilateral trade agreement with the U.S.A. in 2001, which started lowering U.S.A. import taxes. These provinces were better off to start with and this new dynamic increased inequality with other provinces. China's entry into the WTO has contributed to the structural change favouring the counties more exposed to policy change and more prepared, expanding employment and output in manufacturing. Per capital and total GDP increased in these counties, relative to less exposed counties.

There are thus export opportunities on one hand and import competition on the other. These go in different directions and each region is affected in particular ways. What these data show is tendency to high concentration of the benefits and costs of trade.

Low mobilities may have different reasons. In lower income countries there are imperfect insurance markets and low-levels of public social safety nets. Individuals rely on their families and communities in times of crises. In India, the caste based informal insurance provides disincentives to move. Differences in wages may reflect differences in skills required in rural areas compared to urban areas with manufacturing (labor sorting). Another cause may be the

difficulty to know about different opportunities in different regions. Housing cost might also play a role, as seen in the U.S.A. for less educated workers, who spend a large part of the budget on housing, which decreases its cost where there are negative demand shocks.

About the long terms effects of trade, from the trade reform in Brazil in 1991, the adverse effects fo lower import tariffs on formal earnings and formal employment magnified over time. Policy changes ended in 1995. The gap in earnings due to trade widened to almost 16 percentage points by 2010, 20 years after. No significant change in the working-age population occurred in this time among regions. The U.S.A. observed a similar dynamic voer 10 years. There is persistence and geographic concentration of adverse effects.

Trade may improve schooling by increasing the returns to education and by providing more earinings in the areas benefiting from exports. This is an important contribution to choices about schooling/working for youngs<sup>45</sup>.

### *DISCUSSION*

These research contributions show how trade becomes a communicating vessel for the contagion of the positive aspects of the total factor productivity improvements. Total factor productivity increases outputs for given inputs, bring about productivity gains that are available for decreasing prices and improving the standards of living.

Of course trade generates difficulties to the companies which are laggards on one hand, which may have to ask their workers to adapt to lower wages for the company to keep producing and avoid exit.

On another hand the firms target higher profits, and these may come at the expense of other factors different from total factor productivity. In the example of the firm that asks the workers to accept lower wages, the labour productivity of the firm improves in terms of cost of production for a given output, while total factor productivity has remained the same. The firm continues to use the same inputs for the same outpus in terms of quantity.

Another way a multinational-firm has available for improving profits is to redirect profits in the country where it has operations where taxes are the lowest. This interprets in a very large and liberal way the usual principle that production added value needs to be taxed where it occurs geographically.

As trade is a communicating vessel, it then also becomes a communicating vessel for competition among hosting countries for decreasing taxes to draw more FDI and at least receive more companies, even if they pay less taxes, rather than losing them to another country of operations of the multinational. This generates a fiscal regime competigion for lowering them.

Social contributions are another costs for firms. Again, firms operating through many channels of trade, those which have an advantage in terms of chosing the best mix of imported inputs and export opportunities, and thus have bargaining power thanks to beeing at the productivity frontier and the productivity threshold for entering trade.

They will compare the social contribution costs and move production in a way as to optimise their cost, which may force the domestic laggard competitors and push them for diminishing wages or contributions to government where possible, for remaining in the market. This generates social regimes competition, for lowering the costs for firms and competing with other regions where there are competing low wages.

Government spending may be financed by progressive taxation. The public services and infrastructure then provide use to the public, who may do without using their private income. As income goes to the government in the form of taxation, the public services, gods and infrastructures, are paid more by the richer and less than the low middle class and the poor. These latter receive then more in terms of services than what they pay them. This works as a redistribution, and the low middle class and the poor, and the part of the middle class who receives more from the government than what they pay in taxes, will have less income in their pochets, however more purchasing power available for buying additional goods and services to those that they received financed in part by the rich, through the government. Benazzo (2016, 2013, 2010a, 2010b, 2009) disusses a frame which clarifies that this is beneficial also to the rich who pay progressive taxes, in the sense that there will be larger market size for the sale of the production in which the would have shares or other interest in the profits or relates. This is thus presented as a win-win dynamics. Benazzo (2016, 2013, 2010a, 2010b, 2009) discusses how such positive effects would remain hidden behind aggregated variables in statistics, due to a dual economy differential inflationary dynamic of the sector where industries sell subsistence goods and services, i.e. essential health care, housing, food and clothing primarily, and the rest on the other hand. Education could need to be added to subsistence as necessary for the future of the families. The main question about trade, rather than restraining to the exchange rate and the local cost of living, consists rather in including also all those benefits which add to the simple net income of the workers. It consists in the

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45 Pavcnik, Nina. 2017. The Impact of Trade on Inequality in Developing Countries. w23878. Cambridge, MA: National Bureau of Economic Research.

entitlements, e.g. in terms of public goods and services received and the purchasing power of the income (Sen, Amartya K. 1981)<sup>46</sup>.

#### *INEQUALITY AND EFFECTIVE DEMAND*

Alvaredo et al. (2018)<sup>47</sup> analyse the recent, homogeneous inequality statistics produced for a number of countries in the World Inequality Database (WID.world). Between the 1980 and 2016. Throughout the time span, the top 1 percent earns twice as much income as the whole bottom 50 percent, i.e. 50 times more numerous. The inequality has increased continuously. Growth rates are quite high in percentiles around 20 to 60 thanks to fast growth in large emerging countries such as China and India. They are low around percentile 70 to 90 due to modest growth of the incomes of the poor and middle classes in advanced economies. They are extremely high among top earners.

Alvaredo et al. (2017) use the same data source, the World Inequality Database. In recent decades, top income and wealth shares rise in nearly all countries. Their magnitude varies across countries suggesting country-specific policies and institutions play an important role in this differences. High growth rates experienced in emerging countries reduce the among-countries inequalities, while the within countries inequalities increase to levels that are difficult to ensure social sustainability.

Benazzo (2016, 2013, 2010a, 2010b, 2009)<sup>48</sup> provide arguments for hidden dynamics which would mean such measures would underestimate actual inequality at broader level, beyond the visible data. These arguments defend that there are hidden dynamics by which when inequality increases over a normal level. A normal level for developed countries could be comparable to that of the years between 1940 and 1970, when the middle class thrived (and the rich could bring about their business). With excessive inequality there is a differential inflationary/deflationary dynamics in the economy considered in two parts. These two parts are the one where all, rich, middle class, and poor need to buy food, housing, clothing and essential health care. The other is the rest of the economy, where the dwindling middle class and the poor may decrease their expenditure on durable goods. This may work for a long time while multinationals and smaller companies delocalise their production. Eventually the subsistence sector becomes so expensive, i.e. for ballooning housing and estate market values, that the leftover income of big part of the middle class is too short of buying sufficient replacement goods in the long term, and eventually for buying the monthly necessary consumption. The improvement in total factor productivity becomes insufficient to overcome this decrease of leftover beyond the subsistence level. The deflation of prices thanks to productivity improvements becomes insufficient to overcome the decrease in leftover beyond the subsistence sector inflated by dynamics of excessive inequality. Effective aggregate demand then diminishes and the economy suffers.

Companies have less opportunities to invest as the outlet markets shrink. A self feeding mechanism tends to set in by which the firm has profits for the market opportunities present, while there are little additional market opportunities, compared with what there would be with a wealthier middle class. Those who have taken stakes in the gains from productivity increase have more savings, while investment opportunities in shareholding are decreasing as with less developed markets for selling production, the future cash flows have decreasing perspectives. When growing savings are forcibly invested in sharemarkets with decreasing future perspectives stockmarket bubbles generate. When these crash, investors realize that ventures in the subsistence sector such as housing and real estate market suffer less, because the middle class and the poor cannot afford to do without them.

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46 Sen, Amartya K., 1981. "Poverty and Famines: An Essay on Entitlement and Deprivation" Oxford: Clarendon Press

47 Alvaredo, Facundo, Lucas Chancel, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman. 2018. 'The Elephant Curve of Global Inequality and Growth'. AEA Papers and Proceedings 108:103–8.

48 Benazzo, Piero. 2013. An Alternative Economic Paradigm: How Redistribution would Drive the Economy, TidningenKulturen / Benazzo, Piero. 2016. Innovation and Distribution in Modelling an Inequality Trap: Availability of Data / Benazzo, Piero, 2009. "Confounding in the Interaction of the Global Financial Crisis with the Real Sector," in Günaydin, İhsan and Hilmi Erdoğan Yayla, 2010, "What Others Manifest? The World Economy in the Theoretical Turbulence of Global Financial Crisis," Gümüşhane University Press, Gümüşhane, Turkey, <http://icibe.gumushane.edu.tr/belgeler/papers.pdf> / Benazzo, Piero, 2010a. "Unravelling the World Crisis: Redistribution versus Public Expenditure", Working paper, [www.ssrn.com/abstract=1519811](http://www.ssrn.com/abstract=1519811). / Benazzo, Piero, 2010b. "Equity Criteria as Instrument to Ensure Sustainability of Pareto or Kaldor-Hicks Efficiency: A correlation hidden by confounding as key for sorting out the Global Economic Crisis", in "Economics and Management", Faculty of Economics and Management, Kaunas University of Technology, 2010, <http://internet.ktu.lt/en/science/journals/journals.html>

Investments go more and more into this market and housing prices soar, decreasing the available leftover income of the middle class and poor for buying products from other industries. This effect as discussed would be generated by increased inequality which provides additional savings with decreasing perspectives of the markets where to sell production (Benazzo (2016, 2013, 2010a, 2010b, 2009).

All the discussion made here is considering that there would be diminishing returns to consumption, utility of consumption. This means that effective demand would be larger if the income would be more distributed rather than concentrated in less hands.

Trade as communicating vessel expands the diffusion of increase in productivity, and even more so the total factor productivity, which is the one from innovation thanks to technological advances, organizational advances, ITC increased use and usefulness. This is positive as it decreases prices and thus purchasing power of consumers. At the same time, the communicating vessels, allow social and fiscal regimes competition towards less redistributionary intervention by the government, less safety nets, less welfare state. This decreases the funds for preparedness of the health system, the hospitals, the doctors, the quality of the roads, the public monuments, as the public administrations lack sufficient tax receipt to fund their maintenance, and similar situations.

There seem to be two choices: on one side trade increases productivity increasing consumption power and generates worldwide contagion also about decreasing the fiscal and social regimes and wages, decreasing consumption.

On the other side, autarky, which is being experienced with the contagion of the SARS-CoV-2, closing transport, while keeping somehow trade, would renounce at all the positive productivity growth which decreases prices, thus decreasing consumption (effective demand). On the other side it could allow increasing the social and fiscal regimes contributions thus increasing consumption (effective demand). Countries could increase wages, however this is far from the solution in the studies by Benazzo (2016, 2013, 2010a, 2010b, 2009). Benazzo (2016, 2013, 2010a, 2010b, 2009) defends that there needs to be a decrease in inequality for enlarging the markets for selling production, which could be brought by redistributive taxes or decreasing the wages differentials among different levels of employees. Another way is to return to the decades when the yearly increase in the price of the production factors would increase at the rate of yearly productivity gain. This meant that the wage of the workers of the middle class and the poor would grow at the same rate of the wages of the top management and other levels of employee. Paolo Sylos Labini (1981)<sup>49</sup> was arguing in favour of such option for sustaining effective demand in the long term.

The question is thus if there could be more than the two choices between: 1) having good private effects of trade, while losing on the public regimes contributions to market size for production; 2) the opposite side renouncing to maximise the positive private effects of trade for investing more in the public regimes contributing to enlarging the market size for sales of production.

A third way could be to keep trade open while finding mechanisms for defending governments from fiscal and social regimes competitive dismantlements. In such a way the best of the private and public sides would be achieved.

#### *ANTI-DUMPING, TARIFFS AND MARKET SIZE PROTECTION*

Dinlersoz and Dogan (2010) investigate some differences between anti-dumping and tariffs<sup>50</sup>. Anti-dumping measures are in general duties for specific firms to countermeasure their reducing the prices of certain goods on the export markets without respecting certain criteria, i.e. fair market value (in terms of the home market price or on the cost of production and profit). Tariffs are imposed on all imports in a domestic market for a given good, whatever the firm and country where it is imported from. Anti-dumping measures have been increasingly used in the last decade (Felbermayr and Sandkamp 2020)<sup>51</sup>.

Pavcnik (2017) examines a system of compensation between winners and losers from trade. In response to the China shock in the U.S.A., transfer payments, including unemployment and trade adjustment assistance, and medical

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49 Sylos Labini, P. (1981). On the concept of the optimum rate of profit. In N. Assorodobraj-Kula, C. Borrowski, H. Hagemeyer, W. Kula and J. Los (Eds.), *Studies in economic theory and practices. Essays in honour of Edward Lipinski*. Amsterdam: North Holland

50 Dinlersoz, Emin, and Can Dogan. 2010. 'Tariffs versus Anti-Dumping Duties'. *International Review of Economics & Finance* 19(3):436–51.

51 Felbermayr, Gabriel, and Alexander Sandkamp. 2020. 'The Trade Effects of Anti-Dumping Duties: Firm-Level Evidence from China'. *European Economic Review* 122:103367.

benefits offset only about 10 percent of the income loss for a household without children. Several European countries have more generous social safety net.

Another consists in retraining and other forms of active labor market programs. What has been done appears to be ineffective.

Governments could improve local infrastructure and the provision of public goods. Schooling for example, publicly financed for helping exit a circle of poverty. In the case of the U.S.A., there are local sales and property taxes. In hard hit areas from increased import competition, there is the addition of the eroding tax base. Government budgets in developing countries may have insufficient resources to assist. For some developing countries, large-scale trade reforms meant large losses in government revenues<sup>52</sup>.

Market size protection means to integrate private market productivity increases dynamics with social and fiscal regimes protection to avoid their competitive dismantling. These latter need to be developed and fostered for contributing to the size of markets where to sell products. Instruments of market size protection could take various forms from the anti-dumping to tariff or other potential measures. In order to maintain the sovereign countries choices, to protect them from social and fiscal regimes competitive dismantling in the importing countries, then there could be a measure of overall inequality of the entitlements (Sen, Amartya K., 1981) and a calculation of difference in inequality between the two countries. The exporter which would have higher inequality would have to pay duties to the importer with lower inequality to compensate for the loss of market size due to inequality. This would provide a signal that the importing country is contributing more than the exporting country to the amplitude of the size of the market where products may be sold. In addition, to contribute to reabsorb inequality, such duties would in principle be better spent in the exporting countries for measures taken to decrease inequality, such as hospitals for public health for example, or public schooling, or pensions other measures decreasing inequality. This would be the main principle, while there could be many ways in which international organizations such as the United Nations could establish with political processes some practical options for contributing to restate less unequal dynamics of the economies, for the safeguard of the investments of the rich and the well-being of the middle class and the poor.

#### *CONCLUDING REMARKS*

The analysis has reviewed evidence about the positive dynamics of diffusion of productivity improvements through trade, for the benefit of the purchasing power of consumer and the improvement of their standard of living. Trade acts as a communicating vessels which diffuses these positive aspects. This tends to bring about also dynamics of increased inequalities, which have shown also to persist in the long run. Increase in inequalities would bring to a hidden effect due to a dual economy differential inflationary dynamics between the subsistence sector and the rest of the economy. These dynamics would hide an underestimation effect of the visible data of the level of increase in inequalities and would bring to a dynamic of further increase in inequalities. Such dynamic would eventually bring to a situation where the negative effects of inequality decrease the market size for selling production more than the increase in market size due to decrease of prices thanks to improved productivity. There are thus positive and negative effects of trade. Rather than inverting these effects with autarky, losing the positive to address the negative, the solution proposed would rather be to keep the positive effects of trade and find a new deal among countries for addressing its negative effects. This would mean finding measure to decrease inequality. One general frame for such deal would be to agree on relevant measures of countries inequalities and to impose duties commensurate to the higher inequality in the exporter's country. This would contribute to recognize that the importing country is contributing more than the exporting country to the size of the market where products may be sold. In addition, to contribute to reabsorb inequality decreasing them would be to send back the collected duties on imports to the exporting countries, on the condition that they be used for decreasing inequalities, e.g. through public and fiscal regimes which contribute to that.

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<sup>52</sup> Pavcnik, Nina. 2017. *The Impact of Trade on Inequality in Developing Countries*. w23878. Cambridge, MA: National Bureau of Economic Research.

## REFERENCES

see at the page footnotes