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La Grande Recessione e le imprese manifatturiere

The Impact of the Great Recession on Manufacturing Firms

Proceedings

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UNDERSTANDING STRUCTURAL DIVERGENCE IN EUROPEAN MANUFACTURING

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Understanding structural divergence in European Manufacturing

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Abstract

The heterogeneity among European manufacturing systems has widened in the last fifteen years under the competitive pressure of new industrial powers within and outside the EU boundaries, and as a result of the 2008 global recession. This paper describes such transformation, in terms of the sectoral composition and the geographical concentration of industrial activities. It also analyzes how cross-country differences in the export performance, in the levels of domestic demand and in the exposure to low-cost import competition have contributed to the divergence in European manufacturing.

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1. Introduction

The European manufacturing system has experienced deep transformations in the last fifteen years, in terms of sectoral composition and of the geographical dispersion of its industrial activities across countries. Such changes reflect the combined effects of three forces.

First, the increased economic integration within the EU, as a result of the single currency adoption in 1999 and of the Eastern enlargement in 2004, which has brought within the common market countries with solid manufacturing bases (in particular, Czech Republic and Poland).

Second, the increased integration with China, started in 2001 with the adhesion to the WTO of the second most populated country in the world. The Chinese shock has had a tremendous impact on the geography of global manufacturing: between 2000 and 2014, the share of world manufacturing output referred to China has grown from an initial 8.3% to 32,8%, while the share of the advanced economies shrunk from 72,4% to 43,7% in the same years[2].

These two discontinuities have affected the competitive landscape of European firms, by reinforcing existing sectoral competitive advantages/disadvantages of each country vis-à-vis its European and international partners, and by increasing the opportunities to offshore domestic production to exploit global value chain efficiency gains.

The third factor shaping European manufacturing has been the economic and financial crisis started in 2008. On the one hand, exports have become not only a mean by which increasing volumes but, often, also the only way to survive for many firms, given the stagnation, when not the fall, in domestic demand. On the other hand, financial markets have tightened their criteria to grant liquidity to the economy, thus increasing the demand for efficiency and transparency in firms' managerial practices. As a result, the competitive threshold under which firms can no longer survive has risen, inducing a reallocation of resources within and across industries.

Understanding how the national manufacturing systems have been affected by these macroeconomic shocks is fundamental to predict the long-run growth potential of EU countries and to design effective policies, because, as rediscovered in recent years, manufacturing remains the backbone of the European economy[3].

To do so, this work builds on the analyses of Palan and Schmiedeberg (2010) and of ECB (2004), extending both the time coverage of the empirical investigation so as to include the years preceding and following the 2008 shock, and the set of indicators used to characterize the ongoing structural transformations.

The rest of the paper is organized as follow: section 2 describes the nature of the structural transformation in the European productive system; section 3 discusses the forces driving cross-country divergence in the performance of national manufacturing systems; section 4 resumes and concludes.

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[2] CSC (2015), Scenari Industriali n. 6, chapter 1.

[3] This opinion has been shared also by the European Commission, which has launched the plan "For a European Industrial Renaissance" in 2014. For a comprehensive discussion and analysis of the role played by the European manufacturing sector in sustaining economic growth, see Lichtblau et al. (2015), CSC (2014) and Romano (2016).

2. How has European manufacturing changed

2.1 A three-speed manufacturing system

By looking at the change of the national shares of manufacturing value added between 2000 and 2013 a significant cross-country reshuffling is observed (Table 1). Data show in particular the raising importance of East European countries as manufacturing producers, the strengthening of German and Swiss positions as industrial poles, and the loss of weight of the other traditional manufacturing powers, UK and Italy *in primis*. A three-speed manufacturing system has thus emerged in Europe.

Table 1

Manufacturing in Europe:
Who goes up and who goes down
(current prices, value added)

Country	% share of European total			Change in share	
	2000	2007	2013	2000-13	2007-13
Germany	26.5	26.9	29.3	2.8	2.4
Italy	13.2	13.1	11.3	-1.9	-1.8
France	12.8	11.3	11.2	-1.5	-0.1
UK	14.4	10.7	9.1	-5.3	-1.6
Spain	6.4	7.4	6.6	0.2	-0.8
Switzerland	3.2	3.5	4.9	1.8	1.5
Netherlands	3.7	3.8	3.6	-0.1	-0.2
Poland	1.9	2.6	3.5	1.6	0.8
Sweden	3.5	3.3	3.4	-0.1	0.1
Austria	2.4	2.6	2.8	0.4	0.1
Belgium	2.7	2.7	2.6	-0.1	-0.1
Czech Rep.	1.0	1.7	1.8	0.9	0.2
Irland	1.5	1.8	1.7	0.2	-0.1
Denmark	1.5	1.5	1.6	0.0	0.1
Finland	2.0	2.1	1.5	-0.5	-0.6
Romania	0.5	1.3	1.4	0.9	0.2
Portugal	1.2	1.1	1.0	-0.1	-0.1
Hungary	0.6	1.0	1.0	0.4	0.0
Greece	0.8	1.0	0.7	-0.1	-0.3
Slovakia	0.3	0.6	0.7	0.4	0.1

Countries ranked according to 2013 figure.
Source: own calculations based on Eurostat data.

Such change is only partially related to the recent economic and financial crisis that, as is well known, has hit asymmetrically the different regions of Europe, for intensity and length of the recessions.

Germany and Switzerland have gained shares of European manufacturing output along the entire period, even if in strong acceleration after 2007; also Eastern EU economies have experienced an overall increase in the output weight but the growth has lost momentum in more recent years; UK, on the opposite, has seen its share declining both before and after 2007.

However, for some countries, the crisis has represented a structural break. This is the case for Italy, where 95% of the loss in output share along the entire period is concentrated in the 2007-2013 time window, and for Spain, which has almost entirely dissipated in the same six years the spectacular growth accumulated in the previous seven (the highest increase registered in Europe). For French manufacturing, instead, the loss of European manufacturing output share is largely concentrated in the pre-crisis period.

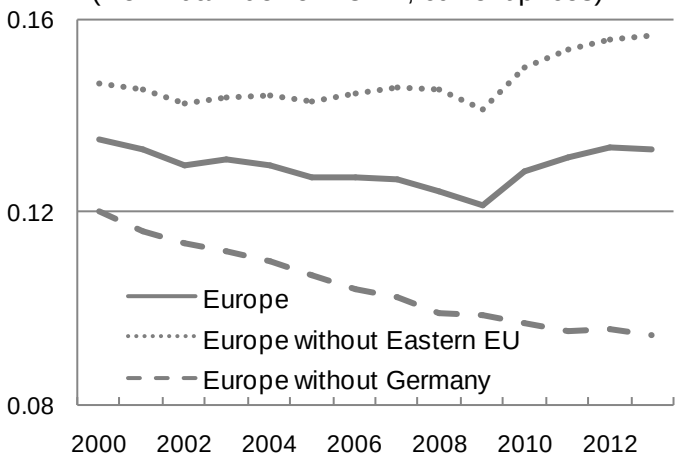
The raising importance of Eastern Europe within the continental manufacturing landscape is confirmed by the change in the Gini index of geographical concentration of value added during the years under investigation. In fact, without the positive contribution of Eastern manufacturing powers, concentration would have remained almost constant before the crisis, instead of constantly declining, and in 2013 it would have been significantly higher as compared to 2000, as a result of the strengthening of the German leadership in manufacturing (Graph 1).

The concurrent development of Eastern Europe and Germany is by no means accidental. It reflects the increasing integration of the German manufacturing system with those of its Eastern neighbors, which has given birth to the so-called "*Bazaar economy*" model (Sinn, 2005). In fact, starting from mid-'90s a significant number of German multinationals, often middle-sized firms, has opened plants across the Eastern border, to exploit the manufacturing know-how embedded in these countries and their significantly lower costs of production[4]. In such a way, a new generation of intermediate goods producers born to serve primarily the German assemblers could develop and flourish in the last fifteen years, also benefiting from the European common market after the mid-2000.

Graph 1

Concentration of European manufacturing pushed down by Eastern EU, up by Germany

(Herfindal index of EU VA, current prices)



Source: own calculations based on Eurostat data.

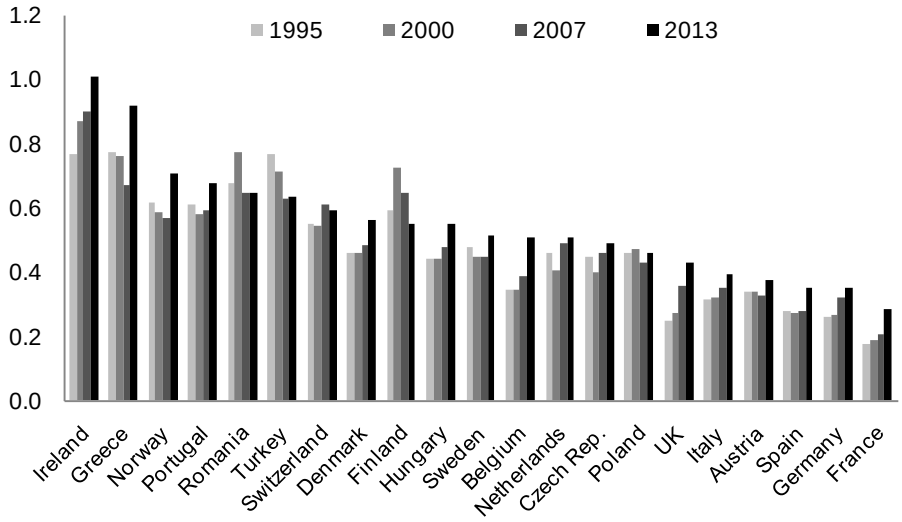
2.2 Sectoral specialization has increased

The Krugman index of sectoral specialization shows instead how, along the same period (2000-2013), the degree of differentiation *among* European manufacturing systems has increased everywhere (Graph 2). Such differentiation process in the structure of the national supply matrixes has accelerated, for most countries, after the burst of the crisis.

[4] For a recent historical overview of the manufacturing development of East Europe in comparative perspective, see Romano and Traù (2014) .

Graph 2

Increased differentiation among European manufacturing systems
(Krugman index of VA, benchmark: Europe average, current prices)

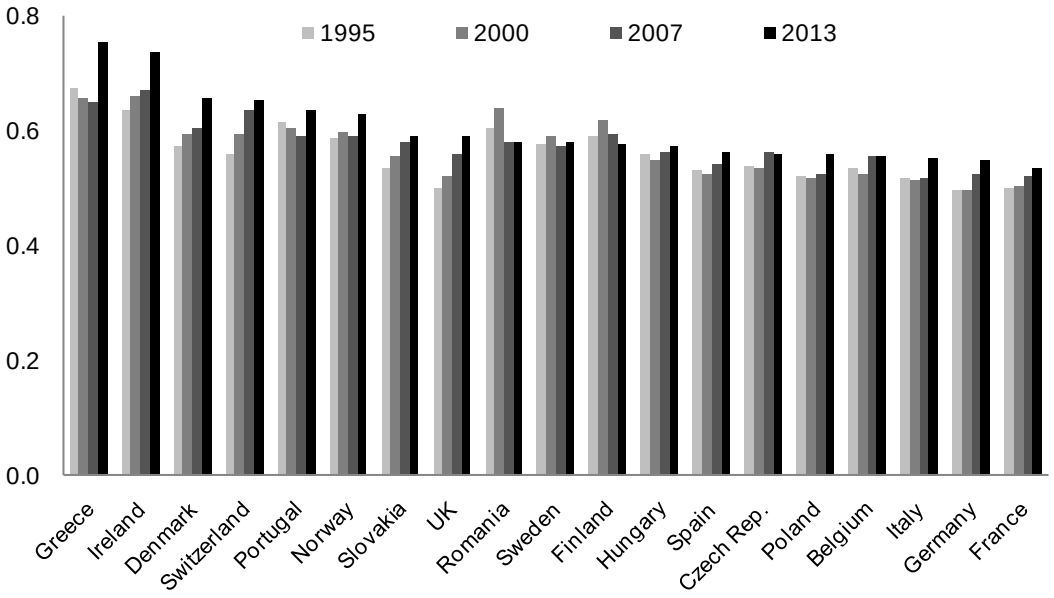


Countries ranked according to 2013 figure. Index varies between 0 and 2.
Source: own calculations based on IHS data.

The increase in the degree of sectoral differentiation among manufacturing systems is often associated with an increase in the degree of sectoral concentration *within* them (Graph 3). This is true, in particular, for the six largest industrial power even if, in the case of Italy, the increase between 2000 and 2007 is negligible and the adjustment is almost entirely concentrated in the years of the crisis.

Graph 3

Increased concentration within European manufacturing systems
(Gini index of domestic value added, current prices)



Countries ranked according to 2013 figure. Index varies between 0 and 1.
Source: own calculations based on IHS data.

This finding is by no means trivial, because the two measures are conceptually different - the former capturing specialization of a system relative to the European benchmark, the latter capturing the absolute level of specialization of such a system - and could, in principle, move in opposite directions, as discussed by Palan (2010).

However, the concurrence between the two dimensions of specialization is consistent with deeper economic integration shaping the whole process, through higher competitive pressure from abroad and bigger opportunities to exploit scale and agglomeration economies in a given location thanks to lower trade barriers. In particular, in each country the forces of comparative advantages have pushed the concentration of value added (thus increasing specialization in absolute terms) towards those industries that were relatively more competitive in international markets (thus also increasing specialization in relative terms).

In this respect, the crisis, through its cleansing effect (Caballero and Hammour, 1994), can be seen as an additional force destabilizing the pre-existing geography of production (Krugman and Venables, 1996) especially in those countries/ industries that were relatively less open to international competition before the negative economic shock occurred.

3. Shedding light on the forces shaping structural divergence in Europe

In what follows the attention is focused on the divergent paths of structural change observed in the six largest European manufacturing systems. In particular, for Germany, Italy, France, UK, Spain and Switzerland the impact of international competition and of the change in domestic demand is discussed in detail.

3.1 Export performance

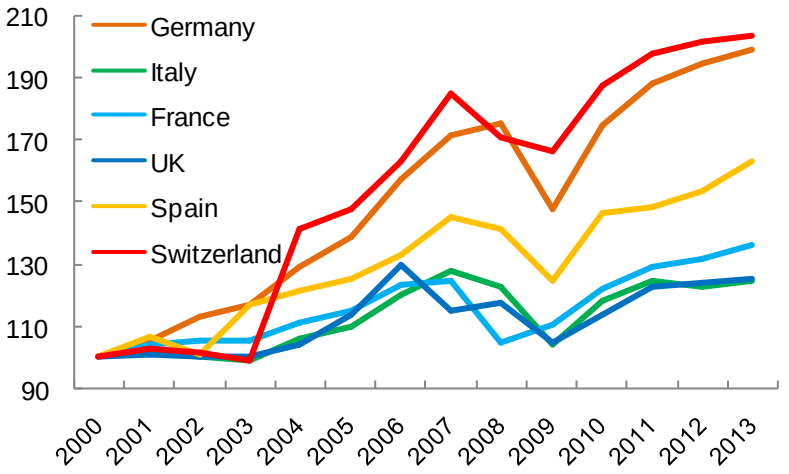
The first explanation for the observed cross-country heterogeneity in the process of industrial development has to do with the ability of domestic manufacturing firms in each economy to exploit the growth potential offered by lower trade barriers, that is foreign markets penetration via exports. At the beginning of the period, the export share on total manufacturing output was already significant in all six countries under scrutiny, even if large differences existed: in a small open economy like Switzerland it was around 56%, 9 percentage points higher than the German and British figures and 16 points higher than the French one. The export propensity registered in Italy and Spain was much lower, around 32% and 30% respectively (source: own calculations based on IHS data).

Manufacturing export data reveal that between 2000 and 2013 volumes doubled in Germany (+98.9%) and Switzerland (+103.95), while they grew by around 25% in Italy and UK, by 35.9% in France, and by 63.3% in Spain (Graph 4). The divergent trends are largely observed already before 2008, even if the crisis has often amplified the cross-country differences. To a lesser extent such differences are observed also when exports are measured at current prices, thus capturing not only the "quantity effect" but also the "quality upgrading effect" incorporated in the change in value.

Graph 4

Outperforming manufacturing exports for Germany and Switzerland

(index 2000=100, constant prices)



Source: own calculations based on IHS data.

Thus, data unambiguously show that the ability of German and Swiss manufacturing systems to successfully cope with the huge transformations in the European competitive landscape, compared to the difficulties encountered by the other European manufacturing powers is, at least partially, the result of their outperformance in foreign markets.

On the reasons why export performance differs so widely across European countries, there is no consensus in the literature. Different constant market shares analyses attribute varying importance to product specialization, geographical distribution of export markets and overall competitiveness, depending on the benchmark, on the level sectoral disaggregation, and on the measure itself of export performance (absolute levels vs market shares, intensive margin vs intensive and extensive margin of trade)[5].

3.2 Change in domestic demand

Despite the growth potential offered by global markets, fixed costs to export create entry barriers that restrict trading opportunities, forcing some firms (especially smaller and less productive ones)

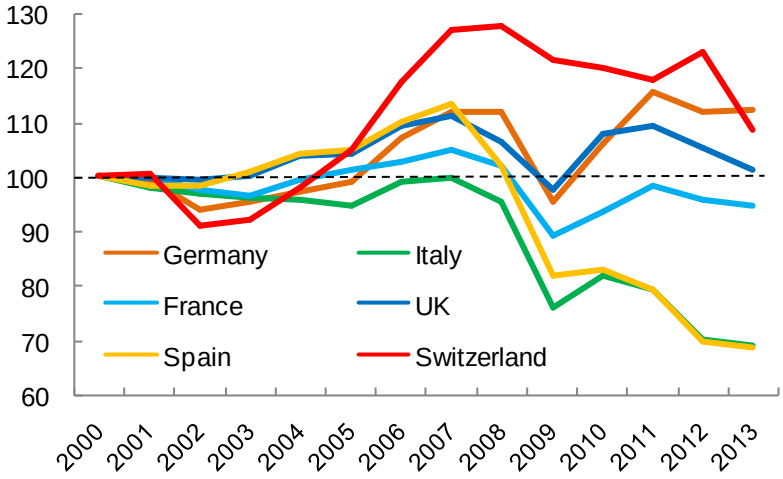
[5] Some recent examples include Proietti and Repole (2015), Dyadkova and Momchilov (2014), EC (2012), and, specifically for Italy, CSC (2015).

to serve only domestic customers (Roberts and Tybout, 1997; Bernard and Jensen, 1999). Moreover, even firms that enter foreign markets typically continue to rely on domestic sales for a large share of their total turnover: according to EFIGE data, in 2008 it was equal on average to around 35% in Italy, 30% in Germany and UK and 26% in Spain (CSC calculations).

This implies that a second explanation for the observed heterogeneity in the performance of national manufacturing systems has to be found in the simultaneous heterogeneity in the evolution of the domestic demand in the different countries.

Graph 5

In Italy and Spain domestic demand hit hard by the crisis
(apparent consumption of manufacturing goods, index 2000=100, constant prices)



Source: own calculations based on IHS data.

Data show that even before the burst of the global recession, there was a significant cross-country difference in the dynamics of apparent consumption of manufacturing goods (Graph 5). Double-digit growth in Switzerland (+27.1% between 2000 and 2007), Spain (+13.2%) Germany (+12.0%) and UK (+11.2%), moderate expansion in France (+5.0%) and even a slightly negative variation in Italy (-0.2%), between 2000 and 2007. Later, years of debt consolidation and fiscal austerity in some EU countries have exacerbated the divergence: at one extreme, Spain and Italy have lost respectively around 39% and 31% of (apparent) domestic demand between 2007 and 2013; at the other extreme, in the same period Germany has even registered a positive variation.

3.3 Import competition

Finally, the observed cross-country heterogeneity in the performance of national manufacturing systems can be driven by increased import competition that resulted in a substitution of domestic with foreign production. Indeed, the disaggregation by country of origin shows that import has risen substantially in each of the six largest European manufacturing producers. This is true, in particular, for productions made in China and in Eastern EU while the share of imports referred to other OECD countries has declined remarkably (Table 2).

Table 2

Deeper import penetration from China and Estern EU

(Manufacturing imports, current prices)

	% growth 2000-2013	Import share of: China		Eastern EU		Other OECDs	
		2000	2013	2000	2013	2000	2013
Germany	145.1	4.2	10.3	9.3	13.8	83.8	76.6
Italy	82.3	3.1	8.3	3.8	7.0	83.5	74.6
France	113.5	3.6	9.5	2.2	5.2	85.5	77.5
UK	68.8	5.0	10.7	1.4	5.3	79.7	76.4
Spain	92.3	3.3	9.2	1.4	5.1	86.7	74.2
Switzerlan	297.8	1.8	4.0	1.5	2.3	90.0	74.3

Source : own calculations based on ComTrade data.

Higher imports are not necessarily associated with lower domestic production in the same industries though. When costumers are segmented and served by different firms, importers and domestic producers could complement each other to supply the entire market. Intra-industry differentiation can be horizontal (similar products with differentiated varieties), typically involving exchanges among countries with similar factor endowments to benefit from economies of scale by specializing in “niche” products; or vertical (products distinguished by quality and price), typically involving exchanges among countries with different factor endowments, particular skills of the workforce or fixed R&D costs[6].

A way to test for the existence of a crowding out effect of imports on domestic production is to estimate the elasticity of manufacturing domestic value added to changes in import exploiting cross-sectoral variations in import. To account for the fact that competitive pressure might have affected industries asymmetrically depending on their technology intensity, the effect for low and medium-low tech can be estimated separately (Table 2)[7].

The hypothesis of a substitution of domestic production with (cheaper) imports find some support in the data, but evidence is scattered both is space and time. The Italian manufacturing system appears to be the one which has suffered the most from low-cost import competition. In particular, before the crisis, higher imports from China in low and medium-low tech industries were associated with lower domestic value added in the same industries; during the crisis, the negative correlation is found for imports from both China and Eastern EU, without significant differences based on the technology intensity of the industries.

During the crisis, the negative sign between domestic production and imports from China is found also in France, although restricted to low- and medium-low tech industries. Finally, for Germany there is some evidence of a substitution between domestic production and imports from Eastern EU in the years before the crisis, again restricted to low- and medium-low tech industries. No evidence of systematic crowding-out effect is found for UK, Spain, Switzerland.

[6] See Fontagné et al. (2005) for more on this conceptual difference.

[7] Desaggregation according to ISIC rev. 3 classification at 4-digit level.

Table 3

Scattered evidence of low-cost imports crowding-out domestic production
(manufacturing, regression estimates at the sectoral level)

Dependent variable: *% change in manufacturing value added*	Germany	Italy	France	UK	Spain	Switzerl.
2000-2007						
% change in import from China	0.027		0.027			
% change in import from China*Low-Tech (dummy)		**-0.206**				
% change in import from Eastern EU	0.054		0.051			0.057
% change in import from Eastern EU*Low-Tech (dummy)	**-0.091**					
2007-2013						
% change in import from China	0.260	**-0.270**			0.205	
% change in import from China*Low-Tech (dummy)	**-0.251**		**-0.283**			
% change in import from Eastern EU	0.133	**-0.471**				0.233
% change in import from Eastern EU*Low-Tech (dummy)						

Note: Regressions control for the log import and for the share of import of total domestic output at the beginning of each period. Only statistically significant estimates are reported (with p-value <10%). Only imports which account for at least 0.5% of total domestic output at the beginning of each period are considered in the analysis. Sectoral disaggregation according to Isic Rev. 3 at 4 digit level.

Source : own calculations based on IHS and ComTrade data.

When regressing the change in domestic value added on the change in imports from the other Western EU countries, the sign of the relation is estimated either positive or non statistically significant (estimates not reported, but available upon request). This is consistent with the hypothesis of complementarity among producers of the most advanced economies of Europe.

4. To sum up

The heterogeneity among the European manufacturing systems has widened in the last fifteen years under the competitive pressure of new industrial powers within and outside the EU boundaries and as a consequence of the "new normal" competitive landscape induced by the global recession. Germany and Switzerland have shown strong resilience in the face of these shocks, while the other traditional manufacturing powers have lost ground.

Such divergence in performance among countries is the combined result of: *i*) the different capacity of domestic firms to take advantage of lower trade barriers by increasing exports; *ii*) the different capacity of domestic firms to escape the increased (low-cost) import competition through investments in innovation; *iii*) the different trends in domestic demand for manufacturing products that have affected the growth potential of producers serving primarily (or exclusively) the domestic market.

The analysis, focused on the largest six manufacturing producers in Europe, has revealed that:

1) The export channel has fueled manufacturing activity everywhere, but with varying intensity, especially before the crisis: at the highest level in Germany and Switzerland, at the lowest in Italy, France and UK.

2) The Italian and Spanish manufacturing systems have suffered the most the adverse consequences of the crisis on the domestic demand for manufacturing products, followed at a distance by France and UK. Germany, on the contrary, has rapidly recovered the 2008-2009 drop. Moreover, before the crisis, growth in domestic demand was very weak in Italy and, to a lesser extent, in France, while it was particularly high in Switzerland.

3) Evidence of a crowding-out effect induced by imports is scattered in space and time. Italy appears to be the country with the highest exposure to low-cost import competition, both before and during the crisis. In Germany and France the effect is more limited, while no systematic negative correlation is found for UK, Spain and Switzerland.

From a policy perspective, such heterogeneity in the observed dynamics and in the underlying causes calls for responses at the national and EU level that are tailor-made to the specific challenges faced by each manufacturing system. No "one-size-fits-all" plan to re-launch manufacturing in Europe can be effective in such a scenario.

The most worrisome case in the European panorama is the Italian one, because the historical manufacturing vocation of the country has been seriously undermined by the effects of an unprecedented economic crisis, which has exacerbated its pre-existing structural weaknesses (low export propensity and higher exposure to import competition from low-cost producers) and hampered its process of modernization[8]. Indeed, after 2008, a significant share of its industrial base has even fallen in a vicious circle: low domestic demand and credit rationing have lowered investments in innovation and made internationalization strategies more difficult to attain; as a result, firms' competitive position has been weakened, causing a further drop in demand and a credit rating reduction.

[8] The modest performance of the Italian manufacturing system at the aggregate level sheds a significant heterogeneity across firms and sectors. As extensively discussed in the volume edited by Arrighetti and Ninni (2014), a dual system has emerged already before the crisis: a non-negligible (but minority) of Italian firms has changed business model to successfully compete in the new context of international hyper-competition, while the majority of them has opted for more conservative and wait-and-see strategies.

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