

The Challenge of Trade Adjustment in Greece

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Abstract: Greece's trade deficit declined by 10% of GDP between 2007 and 2012, removing one of the great economic imbalances of the pre-crisis years. However, this reduction was achieved exclusively through import compression while exports fell over that period, thereby worsening the economic crisis. This chapter studies Greece's export underperformance in comparison to Ireland, Portugal and Spain as well as Greece's own pre-crisis experience.

The main findings are that (1) given past performance, Greece's exports should have increased by 25%, rather than drop by 5% between 2007 and 2012; (2) labor markets have adjusted to the new economic environment; (3) product markets did not adjust, hindering the recovery of competitiveness; (4) export underperformance is responsible for a third of the decline in GDP since 2007. We find that the business environment and firm size distribution in Greece are also hindering the necessary adjustment.

Keywords: trade adjustment; export growth; price rigidity; firm size.

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1. Introduction: the other deficit

In 2009 it became clear that the Greek economy was facing very serious challenges arising from the country's "twin deficits": both the budget of the Greek government and the current account (essentially, the trade balance) of the country were in deficit exceeding 15% of GDP. The two deficits required large amounts of financing which were not forthcoming in the aftermath of the global financial crisis of 2007-09, leading to the eruption of the Greek crisis. Since 2009, however, policymakers and the public have focused almost exclusively on the budget deficit and scant attention has been paid to the trade deficit.

Developments in the Greek economy since then suggest that this lopsided focus was misplaced. The budget deficit was rapidly reduced but the trade balance remains a problem: it has declined by less than other countries' and the pattern of improvement creates concerns about its sustainability. Specifically, the reduction of the trade deficit was driven exclusively by lower imports while exports have actually fallen since the crisis erupted which suggests that Greece is not adjusting to the post-crisis economic environment.

This chapter studies the reasons behind Greece's adjustment difficulties. We first show that the underperformance of exports is not due to the economy's inherent inability to produce exportable commodities. In particular, we use Greece's pre-crisis export performance to assess the country's export capability and calculate that exports should have increased by 25% between 2007 and 2012. Therefore, the fact that exports actually fell in that period is puzzling.

When analyzing the potential reasons for this underperformance, we find that labor markets have adjusted further than in most other countries while product markets seem to be an important impediment to adjustment. Between 2007 and 2012, wages fell by 13% relative to the Eurozone average, which is a much greater drop than in the other countries of the Eurozone periphery and would have sufficed to recover competitiveness had prices followed the same pattern. However, prices actually increased over the same period, which undermined competitiveness and hindered the adjustment. For this reason, we conclude that product market rigidities are a primary reason for the lack of adjustment. We also find

that exporting has become more difficult since the beginning of the crisis which accounts for one third of the decline in Greek GDP. This finding suggests that facilitating the process of exporting should become a top policy priority.

In section 3, we discuss possible sources of the frictions observed in our model. We focus on the business environment, both before and during the crisis, on the size distribution of firms, and on some sector-specific factors, and we draw some policy implications.

1.1 The current account: recent developments and economic impact

We begin with a brief description of what is measured by the current account balance and a presentation of recent developments.

The current account balance measures the difference between a country's export revenues and import costs (the trade balance), plus two smaller items, net income and net transfers.² Essentially, when a country imports more than it exports, it experiences a current account deficit and needs to borrow from abroad or sell assets to foreigners in order to finance the difference (the country experiences net capital inflows); when it exports more than it imports, it lends to foreign countries or buys their assets (net capital outflows). Importantly, the domestic borrower (or lender) might be either the private or the public sector.

Figure 1.1 presents the evolution of the current account balance for Greece, Ireland, Portugal, Spain and the Eurozone as a whole. It is clear that the current account deficit of every peripheral country deteriorated significantly between the late 1990s and the global financial crisis of 2007-09 and improved rapidly since then. At the same time, the current account balance of the Eurozone as a whole did not change very much.³

² Net income from abroad is the difference between the income that a country's citizens earn abroad and repatriate (as wages or profits) and the income that foreign citizens earn inside the country that is sent abroad. Net transfers is the difference between money sent abroad with no expectation of repayment or other benefit (e.g. as foreign aid) and the money that flows in for the same purpose. Typically, net income and net transfers are small and vary relatively little over time.

³ For Figure 1.1, the Eurozone consists of the 12 countries which adopted the common currency before the crisis: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands,

Current Account Balance (% of GDP)

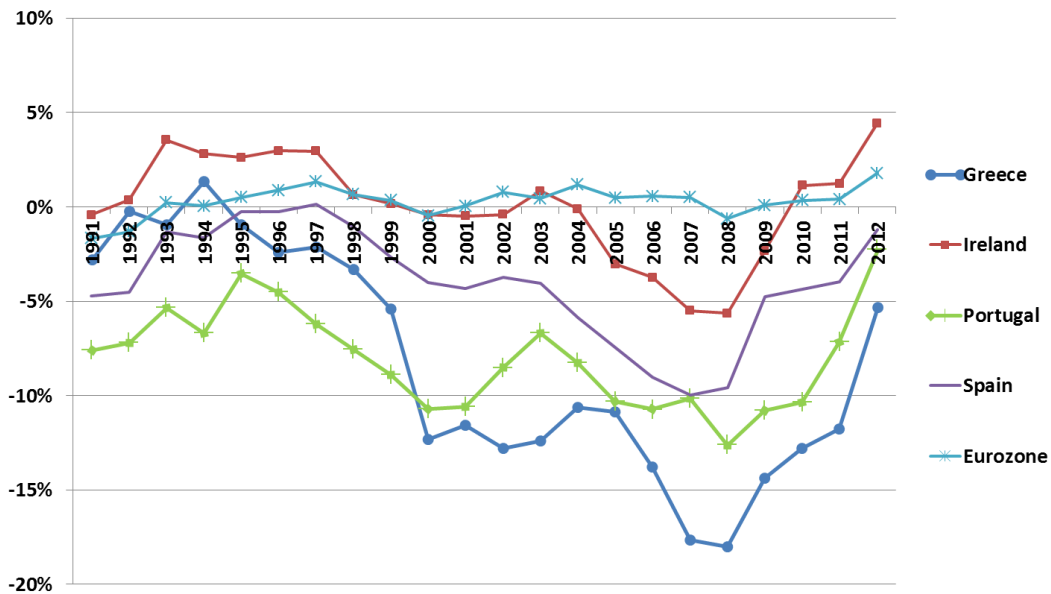


Figure 1.1

Source: AMECO

The rise and fall of peripheral countries' current account deficits can be attributed to the introduction of the euro and the aftermath of the global financial crisis, respectively.⁴ The former eliminated exchange rate risk within the Eurozone, thereby encouraging capital flows from the richer European core towards the (relatively) poorer periphery. The latter increased investors' risk aversion, leading to the stop and reversal of capital flows. In other words, the reduction of current account deficits that occurred in recent years was primarily due to a reduction in the flows of capital towards the European periphery.

In this chapter we focus on the trade balance, which is the most important component of the current account, to study how the various economies, and in particular Greece, adjusted to this reduction in net capital inflows. The most direct consequence of a drop in net capital inflows is that the trade balance must improve since a deficit can no longer be financed from abroad.

Portugal and Spain. For the years before 1999, the Eurozone current account balance is calculated by aggregating the data from the individual countries. Between 2007 and 2014, six more countries have joined the common currency but their current account balance is not included in the Figure.

⁴ See Galenianos (2014) for a detailed account of these developments and their implications.

The trade adjustment can occur in two distinct ways. First, the country's overall income falls which depresses consumption and leads to lower imports, since part of the consumption goods are imported. Second, the country's production shifts from the non-tradable to the tradable sector, leading to higher exports and to the displacement of imports from the domestic market. A prerequisite for this shift to occur is the improvement in the competitiveness of the country's tradable sector which, at least in the short run, necessitates a reduction in wages and prices vis-à-vis foreign competitors. Typically, the adjustment is achieved through a combination of these two ways. However, a more substantial shift towards tradables helps sustain production and employment and therefore leads to less economic and social hardship, for a given level of trade adjustment.

In the ensuing analysis we will compare developments in Greece with those in Ireland, Portugal and Spain. Comparing Greece to Ireland, Portugal and Spain is informative because of the shared predicament of all four countries: when the global financial crisis started, they all had very large current account deficits and were forced to quickly reduce them in the subsequent years. Furthermore, the adjustment was difficult enough that all four countries experienced economic crises and requested (and received) help from the European Union and the International Monetary Fund.⁵ Therefore, the comparative aspect of this exercise allows us to disentangle the issues that relate to the overall difficulty of adjustment, which are shared by all four countries, from those that are specific to Greece.

Figure 1.2 shows the change in the trade balance between 2007 and 2012 for the four countries in question as a proportion of the GDP level of 2007. It also shows the decomposition of this change into export expansion and import compression.⁶

⁵ Greece, Ireland and Portugal received help from the EU and the IMF to finance their governments' budgets and, in Greece's and Ireland's case, to recapitalize their banks. Spain only received funds from the EU to recapitalize its banks.

⁶ Global trade collapsed in 2008 and therefore 2007 is a convenient starting point since it is the last "normal" year. Using 2008 as the starting point does not change our results in any significant way. Using 2009 as a base year would show a different picture (i.e. a substantial increase in Greek exports 2009-2012); but the aim of the exercise is to compare the "normal" level of exports that had been achieved before the crisis, to what must be achieved to restore income and employment after the crisis; 2009 is therefore not a relevant benchmark.

Change in trade balance between 2007 and 2012 (% of 2007 GDP)

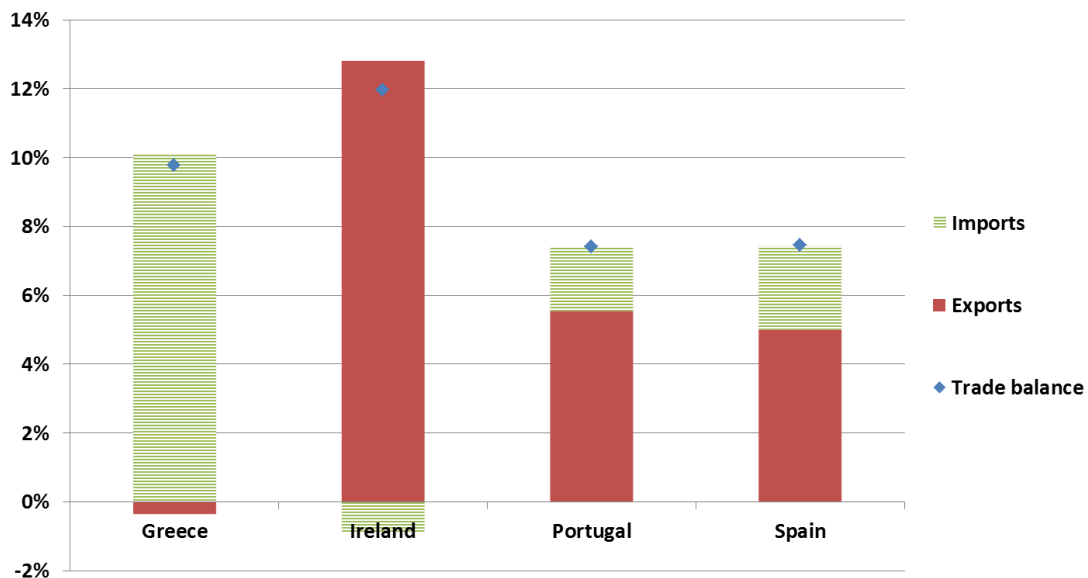


Figure 1.2

Source: Eurostat

All four countries experienced great improvements in their trade balance over these years, in Greece's case by almost 10% of pre-crisis GDP. However, the composition of this improvement varies dramatically across countries: in Greece's case it was driven exclusively by a reduction in imports, while exports actually fell over that period (a decline in imports improves the trade balance and therefore enters with a positive sign). Ireland is the mirror image of Greece, with a huge increase in exports and slight increase in imports. Portugal and Spain present a more balanced picture, with export expansion accounting for about two thirds of the improvement in the trade balance and import compression for the remainder.

The patterns in Figure 1.2 are important because they are indicative of the economic costs that each country sustained during this period: Greece experienced a catastrophic depression while the other countries had severe but relatively milder recessions. For this reason it is crucial to identify the source of the stark differences in how each country closed its trade deficit and, more importantly, to assess whether policy intervention can improve this pattern.

One difficulty in this comparison is that the countries differed significantly with respect to their trade performance even before the crisis, as depicted in Figure 1.3. For instance,

Ireland exported and imported twice as much as a share of GDP than Greece did, with Portugal and Spain in the middle.⁷ Therefore it is hard to assess whether post-crisis performance is due to each country's deep, inherent characteristics, which are reflected in pre-crisis performance and are hard to change, or are due to factors which are amenable to policy.

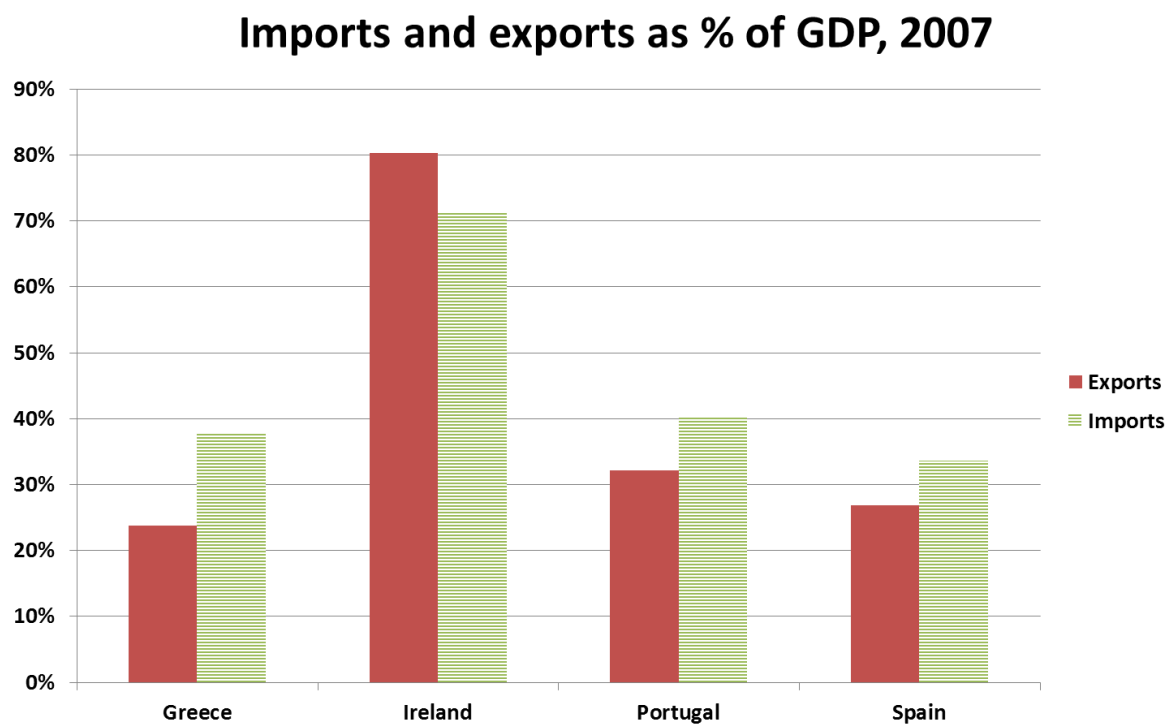


Figure 1.3

Source: Eurostat

To determine whether the difference in adjustment patterns is due to pre-existing differences in economic structure or due to more transient features, we resort to economic modelling which we detail in the next Section.

⁷ Notice that in 2007 Ireland had a trade surplus (Figure 1.3) and a current account deficit (Figure 1.1). The primary reason is that net income was strongly negative because a large number of US multinationals are operating in Ireland and repatriate their profits to the US.

2. Analysis of trade adjustment

In this section we quantitatively assess the economic performance of Greece, Ireland, Portugal and Spain in recent years and, in particular, we examine the effect of the reduction in net capital inflows (and hence the reduction in the trade deficit) on economic activity. The aim is to determine whether the severe recessions faced by these countries, and especially Greece, were the inescapable outcome of the reduction in net capital inflows or if they should be attributed to different causes.

To make this assessment, we need a benchmark of what might be expected to happen when capital flows are reduced with which to compare actual economic performance. To calculate this benchmark we first need to estimate a country's productive capacity independently of capital flows. A country's pre-crisis GDP is informative about its productive capacity because, everything else equal, a productive country has higher GDP. However, the level of GDP also depends on capital flows: when capital flows into a country domestic spending increases which leads to higher GDP, albeit without immediately affecting productivity.⁸ The fact that a high level of GDP can be either attributed to high productivity or high net capital inflows presents us with a significant difficulty since it is exactly the effect of a drop in capital flows that we want to analyze. To resolve this problem, we resort to economic modelling.

In Section 2.1 we outline the economic model that we will use to overcome the difficulties described above. In Sections 2.2 and 2.3 we use our model to create a benchmark for economic performance that corresponds to long- and short-term adjustment, respectively, and compare the benchmark's predictions with the actual data. Section 2.4 presents the implications of our analysis.

⁸ Of course, net capital inflows may be invested to create productive capacity leading to higher productivity in the future. However, productivity improvements usually take some time to be realized and the investments themselves are frequently squandered. See Galenianos (2014) for a detailed description of how the introduction of the euro led to optimistic expectations about the prospects of the Eurozone periphery which disappointed.

2.1 The model

In this Section we outline an economic model of trade, based on the work of Eaton and Kortum (2002) and Dekle, Eaton and Kortum (2007), and describe how we use data on GDP and trade to determine countries' underlying productivity levels (see the Appendix for a more detailed exposition of the model). We first illustrate the logic of the model and then describe the data that we use.

The model's key insight is that the data on the countries' pre-crisis trade performance provide useful information about countries' productive capacity. In a nutshell, a country's inherent level of productivity can be determined by adjusting its GDP with its trade performance. Specifically, a high level of exports is a sign of high productivity while a large trade deficit (i.e. high net capital inflows) means that current GDP is greater than inherent productivity would suggest.

In the model, the main determinants of a country's exports and imports are its productivity, the trade costs faced by importers and exporters (such as transportation costs, administrative costs of clearing customs and the difficulties of financing international trade) and capital flows.

In more detail, the ability of a country to export a particular good depends on how efficiently the good can be produced, the cost of trading the good (described above) and the cost of inputs, such as the prices of intermediate goods and the wages of workers. The cost of inputs, in turn, depends on the aggregate level of domestic economic activity: high domestic economic activity leads to high demand for intermediate goods and labor, resulting in high prices and wages. A country's imports depend on the ability to finance them, either through export revenue or through net capital inflows.⁹

Everything else equal, a highly productive country has high exports, because it can efficiently produce many goods, *and* high imports, because its high level of exports

⁹ As described in Section 1.1, a trade deficit corresponds to borrowing from or selling assets to other countries (experiencing net capital inflows) and a trade surplus corresponds to lending to or buying assets from other countries (experiencing net capital outflows).

generates the revenue to pay for them.¹⁰ Furthermore, a high level of productivity leads to high domestic economic activity (and high GDP) which results in high wages and high prices. In this example, however, the high level of wages and prices is the outcome of high productivity and does not reflect poor competitiveness.

Everything else equal, net capital inflows (which correspond to a trade deficit, as described in Section 1.1) increase a country's available resources and lead to high domestic economic activity and, consequently, high GDP, wages and prices. However, in this case the high level of wages and prices is not a reflection of high productivity and act as a deterrent to exports by inflating the cost of inputs. Therefore, in this case, the high levels of GDP, wages and prices is the outcome of foreigners' willingness to fund the country, rather than the country's contemporaneous productivity.

The logic outlined above gives the intuition for how we use a country's level of exports and imports, as well as its trade balance, to infer its inherent productivity level: a country's productivity is similar to its GDP, adjusted upwards in the case of high exports and downwards in the case of low exports.

For our quantitative analysis we use data on GDP, the current account and trade deficits and bilateral trade flows for 32 countries, which account for 80% of global GDP and 98% of EU GDP in 2007, as well as a residual "rest of the world" country. The World Bank provides detailed data on the trade of non-oil goods while the United Nations and the Organization of Economic Cooperation and Development provide data on the trade in services. Data on GDP and the current account comes from the Economist Intelligence Unit.

The reason why we use data from more countries than the ones we are immediately interested in (Greece, Ireland, Portugal, Spain) is that we need to account for the complicated bilateral trade patterns that we observe. For example, a country's trade balance might differ across its trading partners, e.g. in 2012 Greece had a trade surplus with Turkey and a trade deficit with Germany. Furthermore, the cost of trading differs across pairs of countries, e.g. it is easier for a Greek firm to export to the UK than to Australia.

¹⁰ The balance of trade depends on whether capital flows into or out of the country.

2.2 Long-run analysis: the frictionless model

We begin with the analysis of the economy's long-run adjustment to the reduction of capital flows and resulting reduction in the trade deficit. We first derive estimates of each country's pre-crisis productivity, using the model and 2007 data in the way described in Section 2.1. We then introduce the level of capital flows from 2012 (corresponding to lower inflows towards the Eurozone periphery) and use our estimates to make predictions about GDP, wages, prices, exports and imports. In other words, we want to isolate the economic effect of lower capital inflows from anything else that might have simultaneously affected the economy.

In the case of Greece, for instance, the fact that the trade deficit is lower in 2012 than in 2007 leads to the prediction that in 2012 the country should export more and import less than in 2007. For this to happen wages and prices are also predicted to be lower in 2012 than in 2007 so that foreign consumers purchase additional Greek products and Greek consumers purchase fewer foreign products. Finally, Greek GDP is predicted to be lower due to the drop in net capital inflows. While the direction of the predicted changes is interesting in itself, the purpose of using our model is to go a step further and make a quantitative statement about how large each of these changes should be.

In this calculation, we assume that prices and wages are fully flexible and that workers and productive assets can be seamlessly reallocated across the production of different goods and services so there is no increase in unemployment.¹¹ This delivers our "frictionless" benchmark for adjustment. Before describing the outcomes we should explain why this exercise is a useful benchmark of analysis even though it is based on a very unrealistic depiction of the economy. The frictionless model's predictions correspond to what happens to the economy over the long run, after all adjustment difficulties have been overcome. Any differences between the model's predictions and actual performance can therefore be attributed to the adjustment frictions in the economy, which allows us to identify where such frictions are present and to assess their relative importance. In other words, the point

¹¹ We consider the labor market of 2007 as being consistent with full employment for all 4 countries.

of the exercise is to disentangle the long-run adjustment that the economy needs to perform from the short-run difficulties of this adjustment. We will address the importance of these short-run frictions in Section 2.3.

We use our frictionless benchmark to calculate the effect of the reduction in the trade deficit on real GDP, the composition of trade, prices and wages. Figure 2.1 plots the predicted and actual reduction in real GDP between 2007 and 2012 for the four countries under analysis.

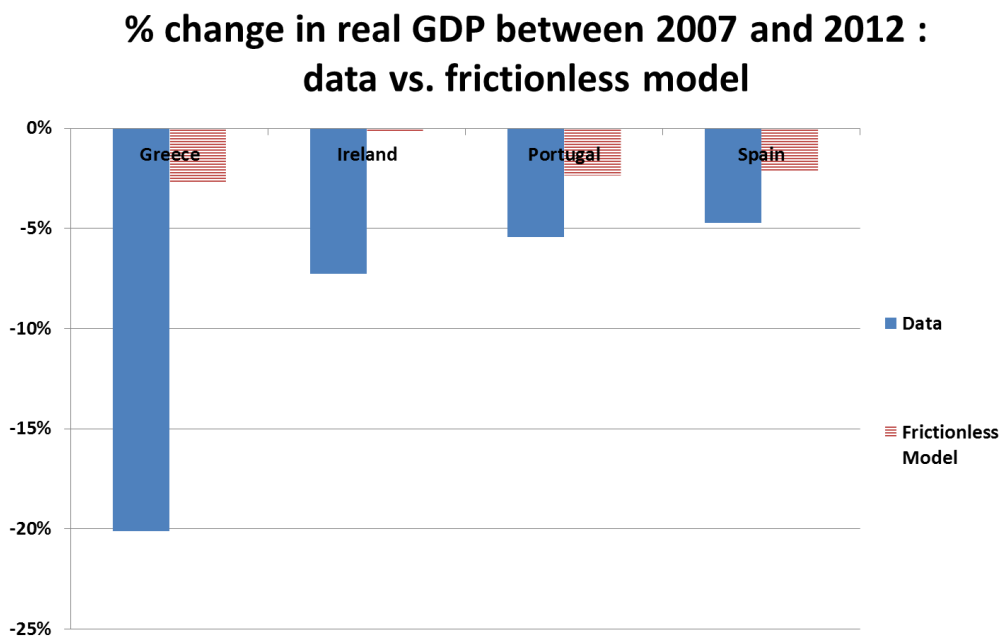


Figure 2.1

Source: Eurostat, EIU, authors' calculations

Three features stand out in this Figure. First, the predicted loss of GDP is relatively small for all countries, including Greece: no country is predicted to lose more than 3% of real GDP even though the trade adjustment is very significant (7-10% of GDP) for every country. The implication is that the long-run cost of the reduction in capital flows is small and it is the short-run adjustment costs that we should mostly worry about. This observation is consistent with international experience that significant changes in the current account do not necessarily have adverse effects on economic activity, to the extent that the change is gradual and there is time to adjust. For instance, Germany went from balanced trade in

2000 to a surplus of 7% of GDP in 2007 without experiencing a recession, albeit in a more favorable external environment.

Second, the actual decline in GDP is much larger than the predicted one for every country. This is to be expected, since our model deliberately ignores the frictions of adjustment, as well as other developments of that period such as fiscal austerity. Nevertheless, the magnitude of the difference suggests that adjustment frictions are quantitatively important, as the next Section will confirm. Third, and most relevant for our study, Greece's performance is considerably worse with respect to the predicted one than the other countries'. This suggests that adjustment frictions might be a bigger problem for Greece than for the other countries.

Figure 2.2 identifies the proximate cause of Greece's underperformance: it shows the percentage change in exports and imports between 2007 and 2012 in the data and as predicted by the model.

% change between 2007 and 2012: data vs. frictionless model

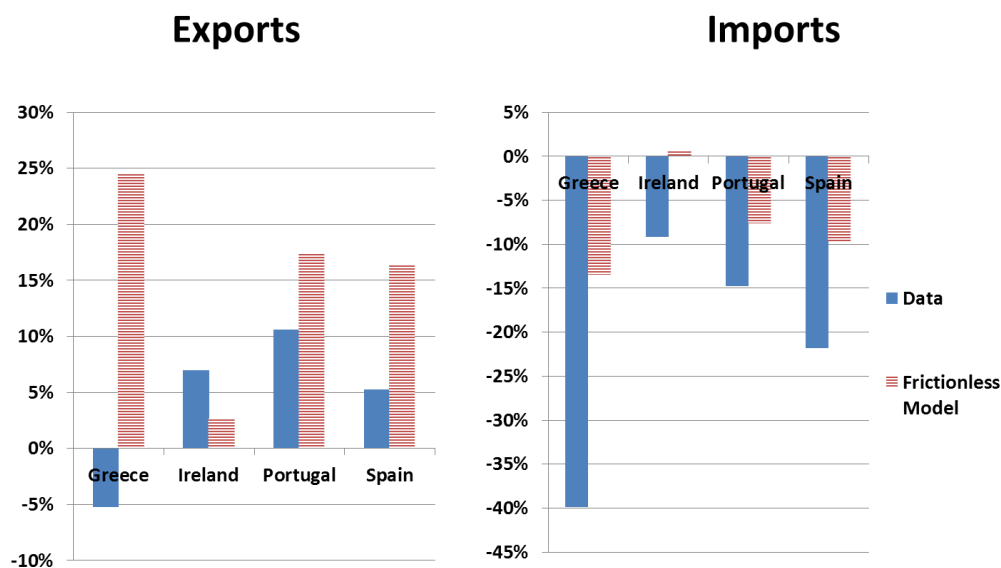


Figure 2.2

Source: Eurostat, EIU, authors' calculations

Given the large improvement in the trade balance experienced by Greece (Figure 1.2), the model predicts that, absent frictions, Greek exports would have increased by almost 25% between 2007 and 2012. Therefore, according to the model, exports should account for a

large part of the adjustment even after taking into consideration Greece's relatively low export base in the preceding years. Furthermore, this change corresponds to an increase in the exports-to-GDP ratio of 5.8 percentage points, a significant but, given time, achievable amount.¹²

Instead, Greek exports actually *fell* during that period! The other side of the coin, of course, is that all of the actual improvement in the Greek trade balance is accounted for by a huge reduction in imports, which is almost three times larger than the one predicted by the model.

By comparison, the exports of the other three countries increased by more than 5%. Even though Portugal and Spain still underperformed with respect to the frictionless benchmark, the fact that they experienced an increase in exports suggests that Greece's poor performance is due to domestic reasons rather than global factors.

To explore the reasons why exports underperformed in the Greek case, we examine the changes in labor and product markets. We compare the predicted change in wages and prices in our model and in the data since they are the main channel for recovering competitiveness, and therefore increasing exports.

Figure 2.3 plots the change of wages as predicted in the model and as they happened in reality. We use Eurostat data on the average hourly nominal wage for the whole economy, except for public administration where wages are set under different constraints than the ones under consideration in this study. Nominal wages are deflated for every country using the Eurozone GDP deflator.¹³ We do not use each country's individual GDP deflator because we want to examine the evolution of a country's wages relative to other Eurozone countries.

The model predicts that wages fall in all four countries, which is consistent with the idea that they need to become more competitive. Remarkably, Greece is the only country that comes close to achieving the level of wage reductions predicted by the model. Therefore, it

¹² For instance, if real GDP grows by 2% and real exports by 6% annually, this change can be achieved within 6 years. Greek exports grew by about 6.5% annually in real terms between 1999 and 2007.

¹³ The GDP deflator is calculated in a similar way to the inflation rate, but takes into account the prices for all goods, while the inflation rate focuses on consumption goods.

does not appear that labor markets are a big source for the difficulty of adjustment. Although this conclusion will be somewhat tempered in Section 2.3, it certainly does not appear that labor rigidities during the adjustment process were worse in Greece than in other countries.

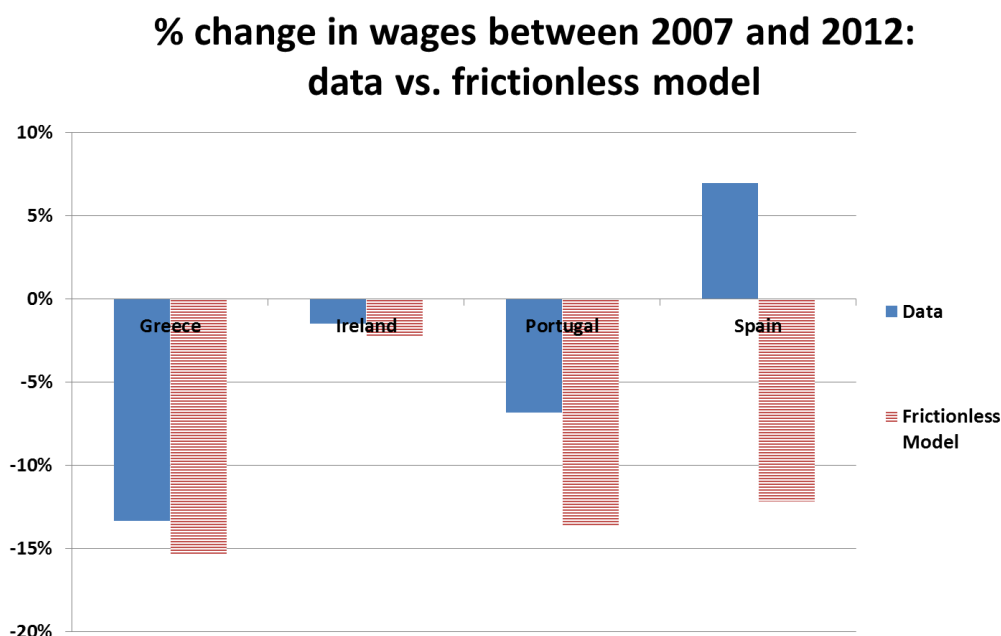


Figure 2.3

Source: Eurostat, EIU, authors' calculations

Finally, Figure 2.4 plots the predicted change in the price level and the actual change in prices between 2007 and 2012. We use data from Eurostat's harmonized index of consumer prices and we calculate the difference between the evolution of each country's price level and the Eurozone's price level. What is evident from this Figure is that Greece is an outlier in terms of price adjustment: prices increased by almost 2% relative to the Eurozone although they were predicted to fall by more than 8%, while the prices of the other three countries decreased over the same period.¹⁴ At the same time, Ireland, Portugal and Spain experienced much greater increases in their exports than Greece did. Therefore, price rigidity is a potential explanation for the underperformance of Greek exports.

¹⁴ The increase of VAT taxes is partly responsible for the observed price increases in Greece: VAT taxes are responsible for a 3.2% price increase in Eurozone counties but a 6.6% increase in Greek prices, as calculated by Eurostat. Therefore, had VAT increased in Greece at the same rate as in the rest of Europe, Greece would have experienced a 1.8% drop in relative prices instead of an increase of 1.8% – still much below the 8.6% drop predicted by the model.

% change in prices between 2007 and 2012: data vs. frictionless model

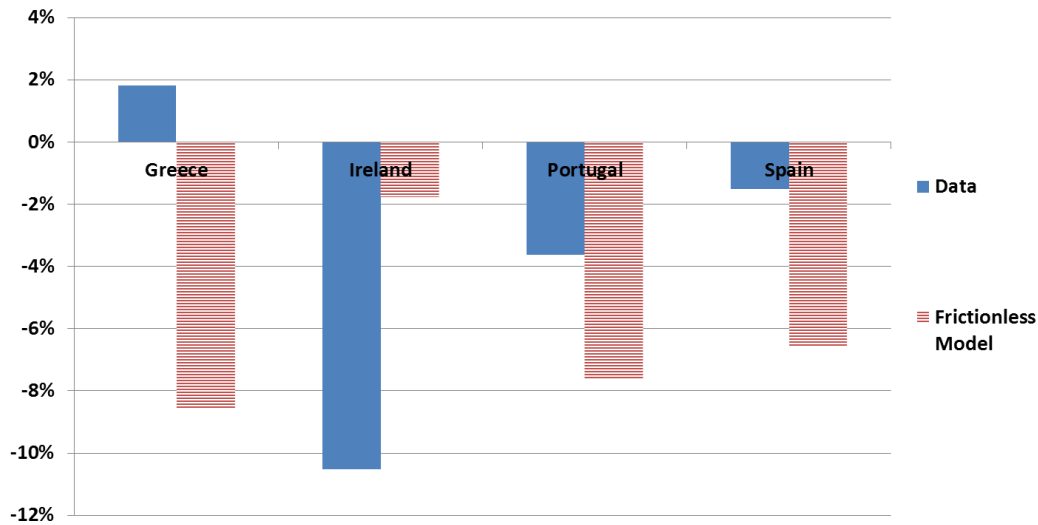


Figure 2.4

Source: Eurostat, EIU, authors' calculations

To summarize, after comparing the data with the predictions of the frictionless adjustment model we conclude that (1) Greece's economic performance was not only worse than the other peripheral countries' but also much worse than expected given the estimates of its inherent productivity level; (2) Greek exports underperformed significantly; (3) wages dropped in Greece almost as much as expected and therefore labor markets are not the prime suspects for the lack of adjustment; (4) prices *increased* in the face of the worst recession in 70 years and therefore product markets are the prime suspects for the lack of adjustment. An important question, which we address in the next Section is the extent to which the lack of exports is responsible for the underperformance in GDP.

2.3 Short-run analysis: the frictional model

We now enrich our analysis by taking into account the short-run difficulties that a country might experience in increasing exports. The purpose of this exercise is to quantify the

contribution of sluggish export adjustment in the post-2007 GDP declines of the four countries in question.

As in Section 2.2, we use our model to make a prediction about economic activity, but our prediction now takes as given each country's actual exports and imports for 2012, in addition to their trade balance. In this way, we estimate how much of the drop in output is due to the performance of exports and how much is a residual that should be attributed to other factors. On a technical level, we allow trade costs to change between 2007 and 2012 in order to capture the effect that a country's exports do not increase in reality as much as predicted by the frictionless model. For instance, Greece's export underperformance is rationalized as an increase in the trade costs faced by Greek exporters. Given the estimated change in trade costs, we have a new set of predictions regarding GDP, wages and prices.

We begin by comparing the actual developments in economic output between the data and our new model, in Figure 2.5. The main observation is that the model's predictions are closer to the data for all countries. Incorporating the slow adjustment of exports fully explains the output drops in Portugal and Spain and captures about one third of the recession's magnitude in Greece.

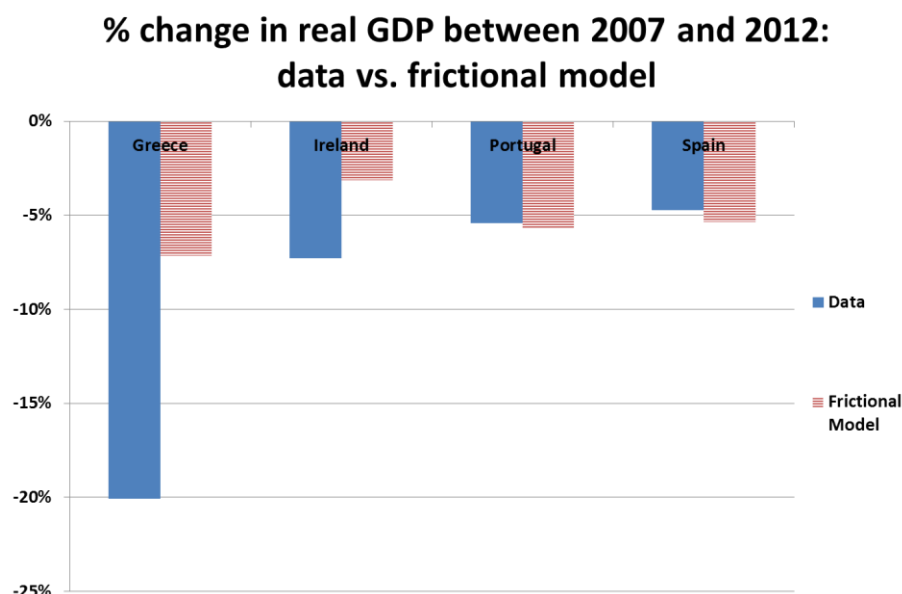


Figure 2.5

Source: Eurostat, EIU, authors' calculations

The presence of trade frictions shifts the burden of preserving full employment towards wages and prices. In particular, if the potential for export expansion is limited due to trade frictions, then import compression must take a bigger role in achieving any given improvement in the trade balance. This, in turn, requires that domestic consumption (and hence income) must be further reduced which can be achieved if wages and prices fall or, alternatively, if employment falls. In the following figures, we take the first route and assess how much wages and prices need to fall for employment to stay at its 2007 level. The difference between predicted drops in prices and wages and the actual ones is reflected in the substantial unemployment increases in all four countries.

Figure 2.6 shows the predicted change in wages according to the frictional model, which is much greater than in Figure 2.3, and the wage reductions observed in the data now fall far short from the predicted amount. Similarly to Section 2.2, however, the wage drops are closer to the predicted ones in Greece than for the other three countries.

% change in wages between 2007 and 2012: data vs. frictional model

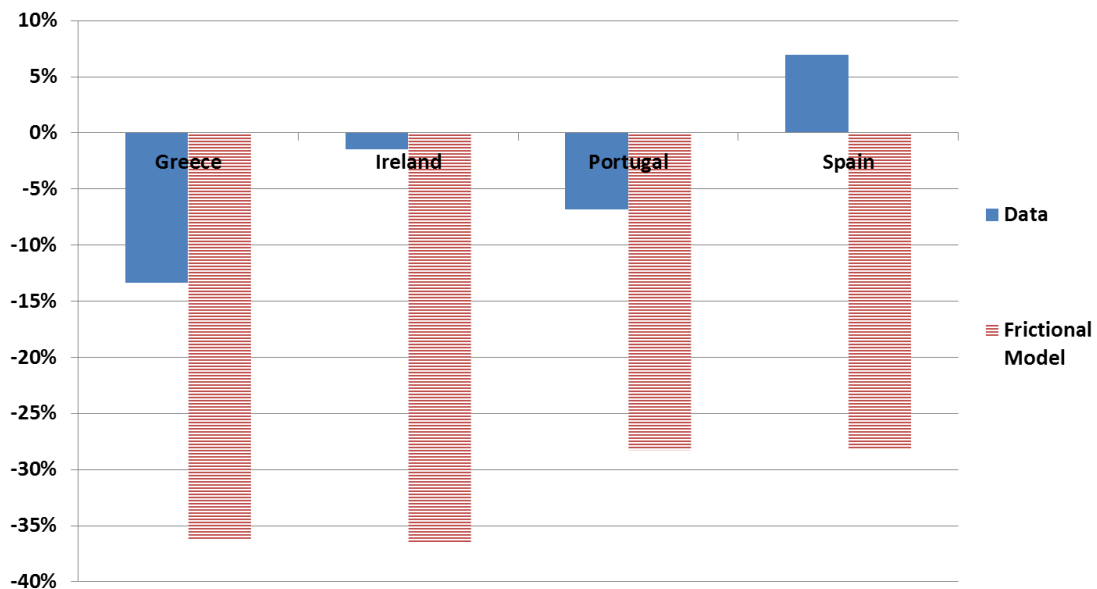


Figure 2.6

Source: Eurostat, EIU, authors' calculations

A similar picture emerges when considering the predicted change in prices. Figure 2.7 shows that prices are predicted to fall by a much larger amount and, again, Greece is further than any other country from that prediction.

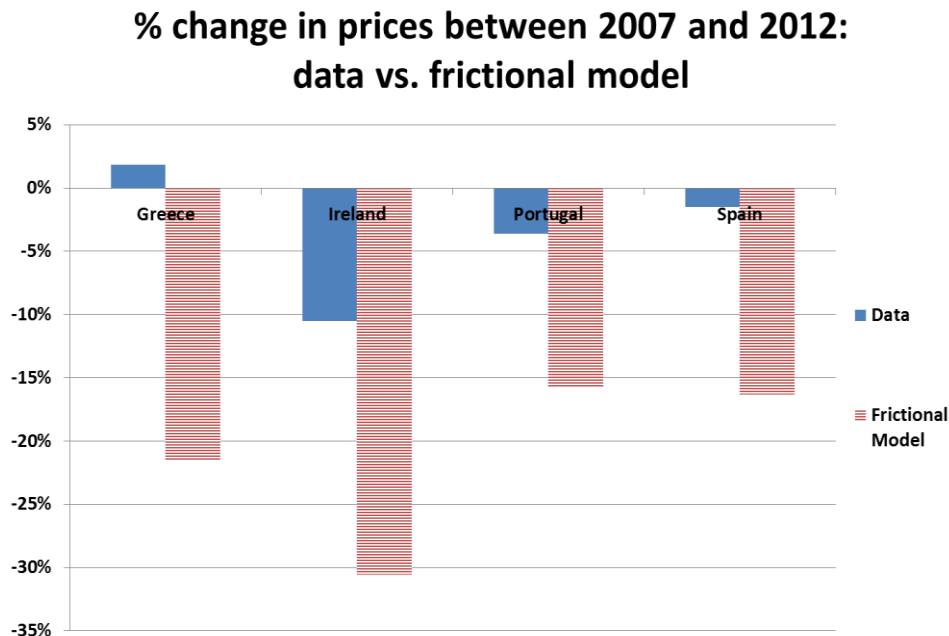


Figure 2.7

Source: Eurostat, EIU, authors' calculations

The conclusion from the second exercise is that taking trade frictions into account can explain at least one third of the drop in output in Greece. Furthermore, the presence of trade frictions magnifies the required adjustment along other margins, such as labor and product markets, for full employment to be preserved. Therefore, the gap between the predicted and actual adjustment in prices and wages is now much larger, probably accounting for a large component of the remaining drop in GDP. This point illustrates that lack of adjustment in one front (e.g. exports) leads to greater needs of adjustment in other fronts (e.g. wages).

2.4 Policy Implications

Greece's post-crisis economy will have fewer resources at its disposal since capital flows from abroad are likely to be limited. However, our calculations suggest that the output cost of this change is relatively modest, at around 3% of pre-crisis GDP, if the necessary

adjustment is successful. The most significant, albeit least successful so far, component of this adjustment is that exports should increase by 25% in comparison to 2007.

Therefore, the growth of exports should be a top policy priority. Our analysis concludes that the lackluster performance of Greek exports is responsible for one third of the drop in GDP between 2007 and 2012, which is a lower bound since the effect of incomplete price and wage adjustment has not been fully taken into account. Other factors, such as the rapid pace of fiscal contraction, the credit crunch and political uncertainty have undoubtedly also contributed in deepening the crisis. Most of what follows focuses on improving export performance, since our analysis does not address these other issues.

Our exercise suggests that the Greek labor market has adjusted to the requirement of greater competitiveness. The drop in wages between 2007 and 2012 has been almost as steep as needed for long-run adjustment (Figure 2.3) and it is also much greater than that observed in Ireland, Portugal and Spain which nevertheless exhibited better export performance. It is therefore clear that factors other than labor costs are mostly responsible for export underperformance and that further wage declines are unlikely to make a significant difference.

Prices, however, exhibited very different behavior. Despite the huge decline in domestic demand, prices were higher in 2012 than in 2007 relative to the Eurozone, which goes against both the requirements of adjustment for Greece and the experience of the other three countries. This indicates that the adjustment in the product markets of Greece is incomplete and is hindered by severe frictions, such as oligopolistic or regulated market structures. The lack of adjustment in product markets hinders exports both by directly reducing some products' price competitiveness and by increasing the cost of production, since a large share of inputs of an exportable commodity is domestically provided. The exact breakdown of how important each factor is requires a more detailed input-output analysis which is beyond the scope of the present study. One conclusion, however, that can be drawn is that increased competition in domestic markets would help exports.

Finally, a large part of the lag in export performance is attributed by our model to increased trade costs. In practice this may include various types of barrier or friction, to which we turn in the next Section.

3. Trade costs and barriers to adjustment

We now focus on three possible explanations of the frictions observed in our model: business environment, as described in international surveys, both before and during the crisis; size distribution of firms; and some sector-specific factors.

3.1 Business environment up to the crisis

For a country that was a member of the European Union since 1981, with a good record of GDP growth and with a GDP per capita in 2008 that ranked 38th in the world out of over 200 countries (between New Zealand and Israel), Greece was a (negative) outlier: in some important ways it resembled an emerging third world economy more than a western one. It ranked well below most EU and OECD countries in various ‘competitiveness’ and ‘doing business’ indicators, such as those published by the World Economic Forum (WEF) and by the World Bank (WB).

Such indicators are an ex ante evaluation of the environment in which businesses operate. Conceptually they are very different from the measures of productivity used in economic analysis, but they do correlate broadly across countries and over time with GDP per capita and with total factor productivity. Rich developed nations, members of the EU and of the OECD, cluster towards the top of the rankings, but there are notable exceptions. Greece is one of them.

In 2008 Greece ranked 67th out of 134 countries in the Global Competitiveness Index (GCI) published by WEF. It had the lowest ranking of any OECD member (34 countries), below Turkey (63rd) Hungary (62nd) and Mexico (60th). Its position was only slightly better in 2000; it ranked 34th and 38th out 58 countries in two earlier indices used by the WEF, surpassing only one or two OECD members.

The GCI is composed of 12 ‘pillars’, and each pillar of several specific indices. By comparing the country’s ranking across indices one may get a sense of the nature of the constraints competitive businesses face in each country.

	GCI 2008-2009 Rank (out of 134)	GCI 2013-2014 Rank (out of 148)
OVERALL RANKING	67	91
BASIC REQUIREMENTS	51	88
Institutions	58	103
Infrastructure	45	38
Macroeconomic environment	106	147
Health and primary education	40	35
EFFICIENCY ENCHANCERS	57	67
Higher education and training	38	41
Goods market efficiency	64	108
Labor market efficiency	116	127
Financial market development	67	138
Technological readiness	59	39
Market size	33	47
INNOVATION AND SOPHISTICATION FACTORS	68	81
Business sophistication	66	83
Innovation	63	87

Table 3.1: Ranking of Greece in the 12 pillars of the Global Competitiveness Index

The worst pillars for Greece in 2008 were “Macroeconomic stability”, due to very high government deficits and debt and a very low national savings rate; and “Labor market efficiency” due to several indices, such as inflexibility in wage determination, non-wage labor costs and rigidity of employment. The best pillars, comparable to other rich countries, were “Market size”, “Higher education and training”, “Health and primary education”, and “Infrastructure”. These all relate with the wellbeing and consumption patterns of individuals and of families; this is where Greece had fared best in recent years.

In the two pillars that relate directly to business organization and strategy, i.e. “Business sophistication” and “Innovation” Greece was the worst ranked OECD member, and in the middle of the overall global list. In the pillar “Institutions”, Greece did fairly well on some

crime-related indices, but very badly on issues related to government: burden of regulation, transparency of policy making, wastefulness of spending.

Overall, the pattern of the indices suggests a country of high individual consumption, good quality of life, reasonable levels of spending on infrastructure and public services; but with a dysfunctional state and a business sector of low sophistication. All this is compatible with macroeconomic data on savings rates and expenditure patterns. It is also compatible with data on industrial structure, as described in 3.3.

The World Bank reports on the ease of “Doing Business” monitor a narrower set of indicators, mostly on procedures and regulatory burdens. They confirm that, for a rich country, Greece was a difficult place for businesses to operate. In 2008 it was ranked 100th out of 178 countries. It was by far the worst EU (and OECD) country; second worse was Poland at 78th place.

	DB 2008 (2007 data) Rank (of 178)	DB 2013 (2012 data) Rank (of 185)	DB 2014 (2013 data) Rank (of 189)
OVERALL RANK	100	78	72
Starting a business	152	146	36
Dealing with licenses	42	n.a.	n.a.
Dealing with construction permits	n.a.	31	66
Getting electricity	n.a.	59	61
Employing workers	142	n.a.	n.a.
Registering property	93	150	161
Getting credit (<i>legal and procedural aspects only</i>)	84	83	86
Protecting investors	158	117	80
Paying taxes	86	56	53
Trading across borders	65	62	52
Enforcing contracts	87	87	98
Closing a business	38	n.a.	n.a.
Resolving insolvency	n.a.	50	87

Table 3.2: Doing business indicators (Greece)

3.2 Business environment during the crisis

We now turn to developments after 2009, looking at how these are reflected in more recent WEF and WB reports; and we refer briefly to three major areas of deterioration of the business environment, i.e. access to finance, political instability, and increases in some operating costs.

From 2010 onwards, the Greek government embarked on a program of reform, drafted to a large extent by the troika and designed, among other things, to increase competitiveness and to enable the business sector to become more export-oriented. In some important fields, such as the labor market, or in starting new businesses, regulation became much more favorable. However, these changes are not reflected in the GCI, which exhibits strong deterioration in several pillars, as indicated in Table 3.1.

The “Institutions” ranking has dropped mainly because of increased perception of corruption, of “favoritism in decisions of government officials”, of “burden of government regulation” and even of threat to “property rights”. These indicators are based on surveys of businesspeople, rather than on ‘hard’ data, in contrast to the World Bank Doing Business indices.

“Macro environment” has deteriorated, as the adjustment program has not (yet) decreased fiscal deficits and debt below 2007 levels. “Financial markets” have become very much tighter for businesses. Even the “Labor market” ranking is worse, even though flexibility in setting wages and in hiring and firing has increased substantially; to some extent this may be due to timing, since most of the effects of new legislation kicked in late in 2012 or in 2013.

The WB Doing Business indicators paint a different picture. There is a clear improvement, especially in the 2014 Report, based on 2013 data. Establishing new firms has become much easier, so have export procedures. However, the WB rankings are based on a small set of procedures, while other important aspects of regulation are not included. For example, regulations for building new plant or getting environmental permits have not changed, and they are still cumbersome and hampered by corruption. In any case, it will take some time

until the technical changes captured in the WB reports work through to business sentiment and begin affecting business practice to a substantial extent.

As Table 3.3 shows that the nature of the problems businesses face has changed in important ways. Access to finance has become the top issue, and policy instability is also a major new factor. These issues are discussed below.

GCI 2008-2009 (weighted % of responses)	GCI 2013-2014 (weighted % of responses)
Inefficient government bureaucracy (26.5)	Access to financing (22.4)
Tax regulations (15.6)	Inefficient government bureaucracy (21.2)
Restrictive labor regulations (12.6)	Tax regulations (14.5)
Corruption (12.0)	Policy Instability (12.0)
Tax rates (6.5)	Tax rates (9.8)

Table 3.3: Most problematic factors for doing business (Greece)

*Access to finance:*¹⁵ Both bank finance and internal sources of funding have dried up during the crisis. Bank loans to enterprises have contracted in Greece 18% between end-2009 and end-2012. According to the ECB, in early 2013, 38% of Small and Medium Enterprises in Greece reported “access to finance” as their most pressing problem, and this was by far the highest percentage in the euro area. 40% of Greek SMEs reported that access was deteriorating compared to the previous year. Greece was also one of the few countries where interest payments as a proportion of turnover and debt to asset ratios (leverage) were increasing. For most of Greek business deleveraging has not started. The evolution of internal sources of funding is more difficult to monitor, but it is a fair assumption that as sales and profits have plunged liquid assets have dried up as well.

Tax regulations: Dozens of tax laws and hundreds of decrees have been enacted in four years.¹⁶ Neither businesspeople, nor their accountants, not even tax officials are sure of what is in force, or what will be in force next year. Penalties for non-compliance to this ever shifting jumble have increased dramatically. In 2013 the penalty for missing any tax filing

¹⁵ See Geanakoplos, Haliastos, Hardouvelis and Vayanos (2014) in this volume for a detailed analysis.

¹⁶ At least ten major tax laws; dozens of tax-related amendments in other laws; and over 800 ministerial decrees.

deadline (not for delaying payment) was set at €1,000 for micro-business, which many cannot afford to pay.¹⁷ The cost of full compliance is also unrealistic for many small and medium sized businesses of low productivity, because of the heavy social security rates; before the crisis, a common solution was to evade payment. The rates have not been adjusted downwards in the crisis, so the "tax wedge" on labor was still the highest in Europe in 2012.¹⁸ The combination of falling revenues, stable or rising costs of compliance, increased penalties and, in some cases, better controls, has led to a huge increase in tax and social security debt. Verified tax debt increased in 2013 by 4% of GDP, while over 40% of all business owners and self-employed are now in arrears on their own personal social security payments.

Policy instability: This factor is linked to tax regulations. On the legal front, the risk of personal liability of owners and directors for unpaid debt of their companies to the government has become very high, and is in practice unpredictable and perhaps unenforceable. In addition, the fear of general political instability and of a possible exit from the Eurozone was holding back investment decisions.

High operating costs: The GCI and the Doing Business Indicators do not directly address the issue of operating costs. Though average labor cost has dropped after 2010, other costs have remained high, and some have increased. The tax wedge on labor (i.e. social security charges plus payroll tax) is still among the highest in Europe. Indirect tax rates have gone up, affecting not only consumer prices, but some intermediate goods as well. Energy intensive industries claim that they are having to pay very high rates for gas and electricity, compared to their competitors abroad.

In summary, Greece came into the crisis with an institutional environment that was not favorable to building competitive businesses. In the crisis, labor costs have decreased, but some of the costs and the uncertainties of doing business have increased. For existing exporters, shortage of finance is perhaps the most important of those, but there are many others. For factor mobility, bureaucracy, corruption and an overall perception of a

¹⁷ After great outcry, in April 2014 this was lowered to €250.

¹⁸ For "one family earner with two children" it was 42%, equal to France, and above all other OECD members. See IMF, *Country Report No. 14/151*, p. 12

deteriorating environment have been important barriers. In this context, the findings in Section 2 of an overall increase of the cost of trade, as defined in the model, are realistic.

3.3 Size distribution of firms

Apart from the institutional environment, some inherent characteristics of Greek firms are also responsible for lags in adjustment. A striking feature of the Greek economy is the size distribution of firms, and particularly the predominance of very small (“micro”) firms. In the non-financial business economy (NFBE), Greece has the lowest average size of firm in the European Union in terms of number of people employed (3.1 vs 6.4 in EU-27 in 2007), the lowest proportion of employment in ‘large’ firms of over 250 employees (13% vs 33% EU-27 average), and the third lowest proportion of value added produced in large firms (27% vs 42% EU-27).¹⁹

Looking beyond the NFBE, in the economy as a whole, self employment is very high for a European country. 36% of all civilian employment is self employment, including unpaid family members. This is the second highest rate among OECD members, after Mexico, and the highest in the EU-27. Romania is close, but then Italy is third with just 26%. The average among OECD members is 16% and of EU-27 17%.

Micro firms, i.e. those that employ up to 9 people including the owner, dominate employment in the NFBE, making up 58% of the total. This was by far the highest ratio among EU countries. The second highest was in Italy (47%), while in EU-27 as a whole it was 30%. Within the micro-firm size class, average number of people was 1.9. They accounted for 35% of all value added, again the highest proportion in the EU, versus 21% in EU-27.

¹⁹ Data on the size distribution of firms in the NFBE are from the SME Performance Review Database 2009, of the European Commission.

Employment by size class Non Financial Business Economy, 2007

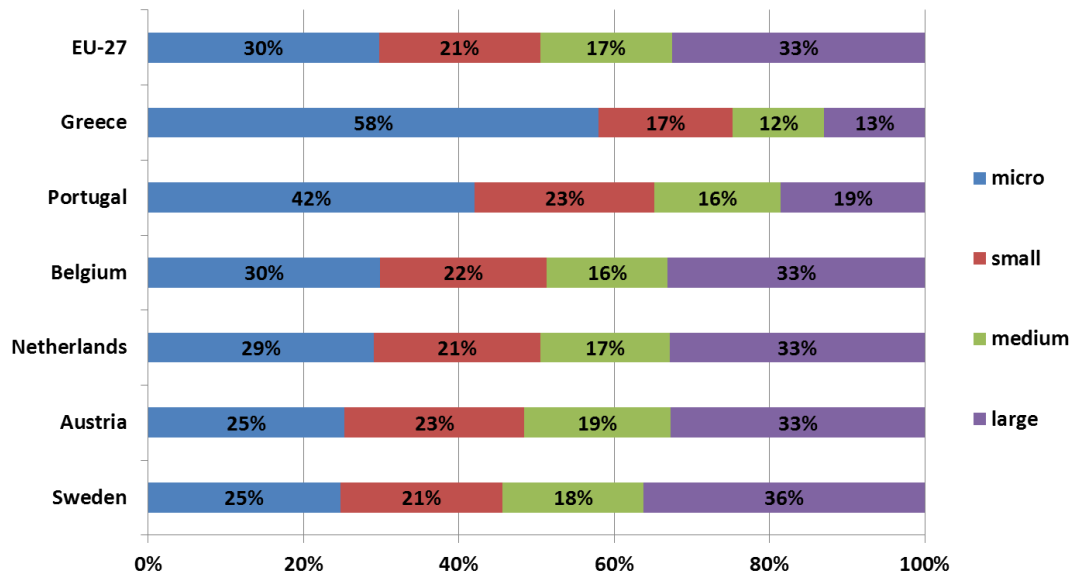


Figure 3.1 Source: European Commission, SME Performance Review Database 2009

Gross value added by size class Non Financial Business Economy, 2007

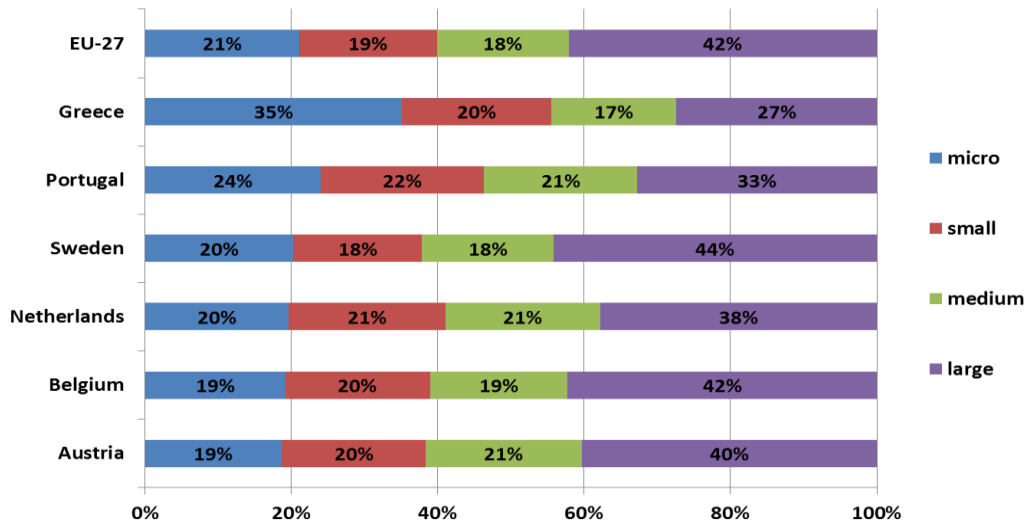


Figure 3.2 Source: European Commission, SME Performance Review Database 2009

This large divergence from EU averages is only partly due to sectoral composition effects. Within manufacturing as a whole, Greek micro firms account for 46% of employment and 32% of value added versus 14% and 7% respectively in EU-27.²⁰

Employment by size class, Manufacturing, 2007

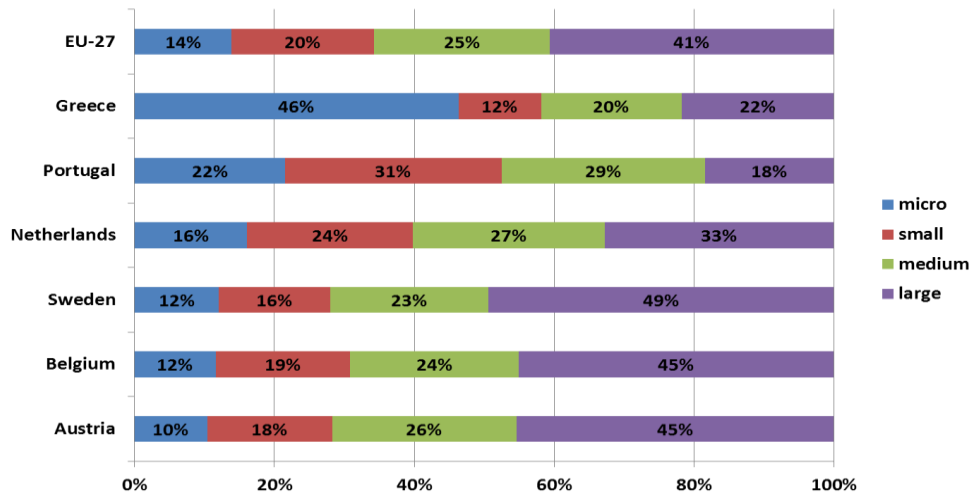


Figure 3.3 Source: European Commission, SME Performance Review Database 2009

Gross value added by size class, Manufacturing 2007

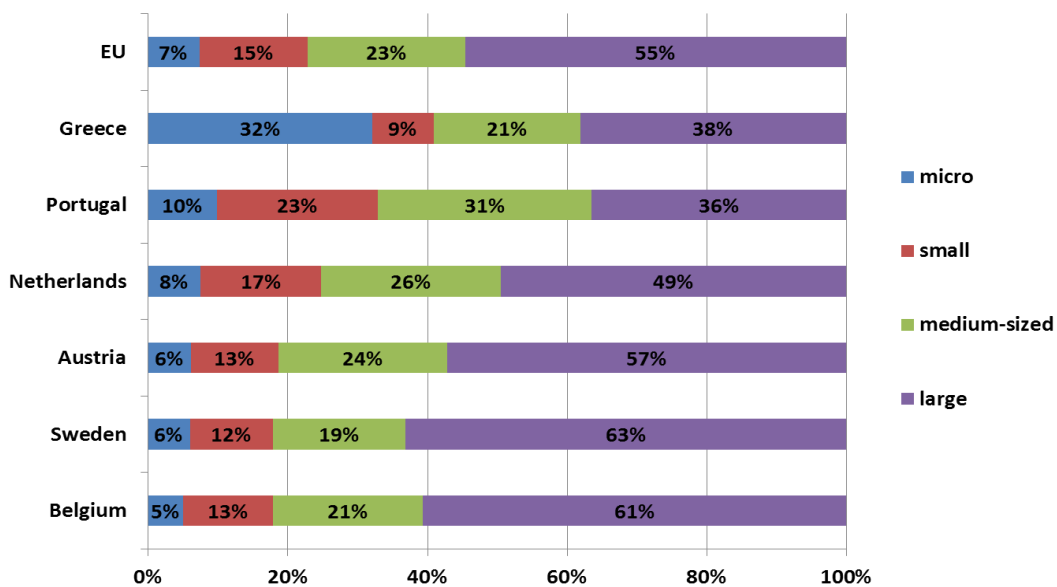


Figure 3.4 Source: European Commission, SME Performance Review Database 2009

²⁰ An analysis of distribution in selected 2nd-digit NACE sectors confirms that in most, though not all, industries, Greek firms tend to be significantly smaller than their counterparts in other EU countries.

In addition, Greek micro firms have a very low productivity per person employed compared to Greek large firms. Value added per person in micro firms is just 29% of that in large firms. The corresponding ratio in EU-27 is 55%. To a lesser degree, comparatively low productivity also applies to small and medium size Greek firms, so that the whole SME sector in Greece is the least productive of all EU countries when benchmarked against the large corporate sector within the country (39% in Greece vs 66% in EU-27). Comparative productivities of size classes vary widely across industries and across countries, and to a significant extent the aggregate Greek ratio is due to composition effects.

Labor Productivity in SMEs as % of Large Firms

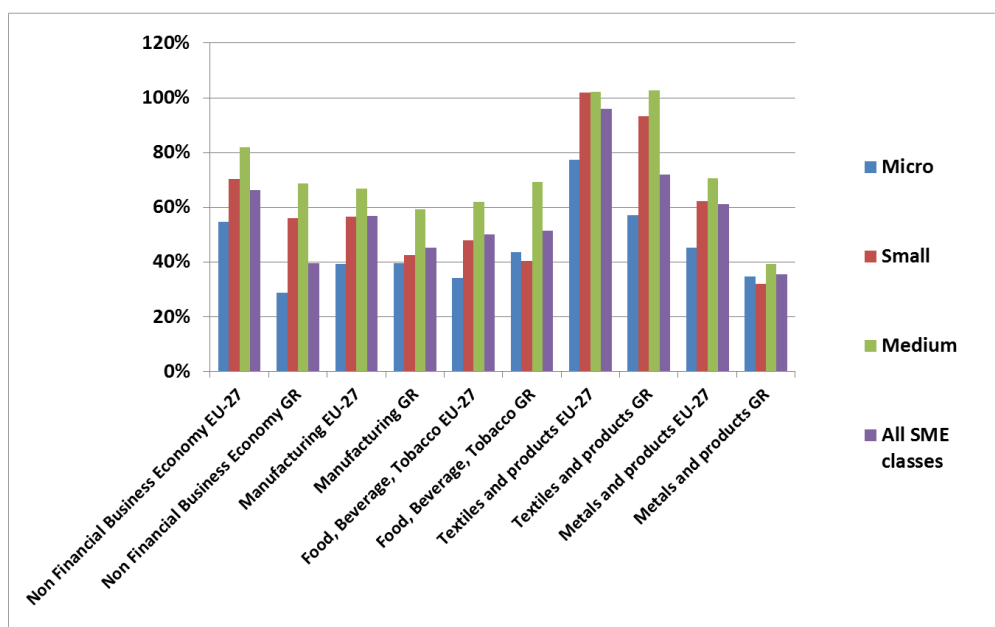


Figure 3.5 Source: European Commission, SME Performance Review Database 2009

The data presented here shows that there are comparatively very few large firms and very many micro firms in the Greek economy. Smaller firms tend to have much lower productivity almost everywhere. In the case of Greece the productivity differential among size classes is exacerbated by sectoral composition: small firms tend to be in sectors where small size is more of a disadvantage. This means that there is a very limited pool of existing businesses in Greece that can respond quickly to new costs and prices.

Below a certain size, it is hard for firms to move into new markets or to expand production quickly. Expanding to new foreign markets has substantial discovery costs; it requires a management team with sales and marketing capability beyond the existing narrow client base, and this can usually be found only in relatively large firms. Furthermore, rapid expansion requires that existing fixed assets of firms can be readily used to increase output. This implies standardized production processes that can scale up by adding labor without much in-house training; this is not usually the case in small artisanal units.

3.4 Sectors that are not sensitive to labor cost improvements

Additional reasons for the limited response of exports to the drop in wages have to do with the idiosyncrasies of Greece's two important export industries.

Tourism is the largest tradable industry in Greece, contributing 7% of GDP and 9% of employment directly, and 17% of GDP and 18% of employment including indirect and induced demand.²¹ The business is very seasonal. Even in low years most accommodation near the coasts is fully booked during peak weeks, and in better years the peak period extends a bit longer. Thus lower costs cannot do much to increase sales in the peak period, and filling up rooms off-peak requires more than low cost. It requires also adding activities that will make the destination attractive in spring or autumn, i.e. a new type of offering which takes time to devise and coordinate. This capacity constraint does not apply to city breaks, but urban hotels account for a smaller number of beds and Greek cities are not top-of-mind destinations. And again, attracting many more visitors to cities requires more than low cost offerings.

Deep sea shipping is the next most important export business, contributing between 3% and 6% of GDP (direct Gross Value Added), depending on the year. International Greek-owned shipping draws very little of its cost base from Greece. Only about 8% of its domestic Gross

²¹ World Travel and Tourism Council, *Economic Impact 2013, Greece*,

Value Added is wages and salaries, the rest being profits, depreciation and amortization.²² As for other inputs (fuel, parts, supplies) they are mostly sourced elsewhere. Therefore, lower domestic labor costs and institutional reforms can do little to increase incomes from this industry. The global shipping cycle has been unfavorable, as shipping rates (such as the Baltic Dry Index) peaked in 2007 and 2008, plunged in 2009 and have not fully recovered since.

3.5 Policy implications

The models of section 2 attribute any lag in export performance to increased trade costs. In discussing the actual economy it is useful to break down this into proper trade costs (for existing exporters) and into barriers in factor mobility towards export businesses. Lowering the first type should have an immediate positive effect on exports, while lowering the second will make an impact in the medium term.

Measures for immediate impact: The most significant trade cost that has risen dramatically during the crisis has been bank finance. Providing more and cheaper credit should be of the highest priority. Taxes and levies should also be reviewed for their impact on exports, and those that impact more directly should be lowered or removed; one example is speeding up VAT reimbursement for exporters; another is lowering energy costs for exporters.

Measures for the medium-term and long-term impact: More persistent frictions derive from the regulatory environment, or they are inherent in particular types of firm. Removing regulatory barriers is likely to have faster results; changing company structures and cultures may take longer.

Despite some reform after 2010, there remain high barriers to starting a business with substantial fixed assets, to complying to all tax and social security regulations, and to introducing new business models. For example, getting planning permits for factories should

²² Foundation of Economic and Industrial Research (IOBE), *The contribution of deep sea shipping to the Greek economy*, January 2013 (in Greek)

be streamlined, and zoning regulations for business activity should be much more transparent. The sooner such barriers are removed, the more new businesses can be established in tradable activities. This is crucial in the case of Greece, because the number of existing exporters is low, and in some important sectors such as summer tourism, they are facing capacity constraints.

Removing barriers to the growth of firms is an important long-term target; this would not only facilitate factor mobility, but probably also increase overall productivity. Barriers to growth often derive from the costs of full compliance, since bigger firms are on the radar screen of the authorities more often than small ones. In addition, attracting foreign direct investment can help to overcome both the issue of small firm size, and the scarcity of capital.

In summary, our analysis suggests a mix of policies that will lower trade costs of existing exporters in the short term, enable many more firms to become exporters in the medium term, and increase productivity in several industries in the longer term.

Appendix

The model that we use in our quantitative work is the multi-country and multi-sector model of Eaton and Kortum (2002) and Dekle, Eaton and Kortum (2007). To provide the main intuition for our results, in this appendix we describe a parametrized version of the two-country one-sector model of Dornbusch, Fischer and Samuelson (1977), on which Eaton and Kortum (2002) and Dekle, Eaton and Kortum (2007) are based.

There are two countries (A and B), each populated by a unit measure of consumers who have love of variety preferences and supply a unit of labor inelastically. There is a unit measure of goods which are produced with a linear technology so that $y_k(i) = z_k(i) * n_k(i)$ where $y_k(i)$ is country k 's output of good i , $z_k(i)$ is the productivity of country k in producing good i and $n_k(i)$ is the number of workers who produce that good. The productivity of country k for producing each good follows a distribution parametrized by T_k , where a higher value of T_k leads to higher draws, on average. In other words, T_k measures the country's absolute advantage. A good can be consumed domestically or can be exported to the other country and, in the case it is exported, it incurs "iceberg" costs C . The model is static and country A's trade balance ($TB = X_A - M_A$) is exogenously given.

Labor and product markets are perfectly competitive. To find the equilibrium, we need to determine which goods are produced in each country and which goods are exported. Perfect competition means that there is a unique wage in each country and each good has a unique price. Furthermore, trade means that the price of a good cannot differ "too much" (i.e. by more than trade costs) across countries. The identity of each good is not particularly relevant and the equilibrium is defined in relation to the aggregate price level and trade.

The exogenous variables of this model are the productivity levels for each country (T_A, T_B), the trade cost (C) and the trade balance TB . The endogenous variables are each country's aggregate production (Y_A, Y_B), which corresponds to GDP, exports and imports (X_A, M_A, X_B, M_B), wages (w_A, w_B) and price level (p_A, p_B).

We now provide a graphical characterization of the equilibrium and some simple comparative statics, to provide intuition about how the model interprets the data.

In the first example, the two countries are equally productive ($T_A=T_B$) and trade is balanced ($X_A=M_A=X_B=M_B$). In this case, trivially, output, wages and prices are also equalized across countries. Still, the set of goods that are produced in each country and the set of goods that are traded (the level of X_A and X_B) have to be determined.

Figure A.1 ranks the goods on the horizontal axis according to the relative productivity of country A (i.e. country A's comparative advantage), so that good 0 has the highest $z_A(i)/z_B(i)$ and good 1 has the lowest $z_A(i)/z_B(i)$. The line associating the good index with relative productivity (the double line) is linear to ease exposition.

In equilibrium there are three regions: the goods where the relative productivity of country A is above the endogenous threshold z_A , i.e. the goods in the range $(0, i_A)$, are only produced by country A and are also exported to country B (i.e. country B does not produce them at all and the agents of country B only consume these goods as imports). These are the goods where country A's has the comparative advantage and, moreover, the advantage is strong enough to outweigh the trade costs.

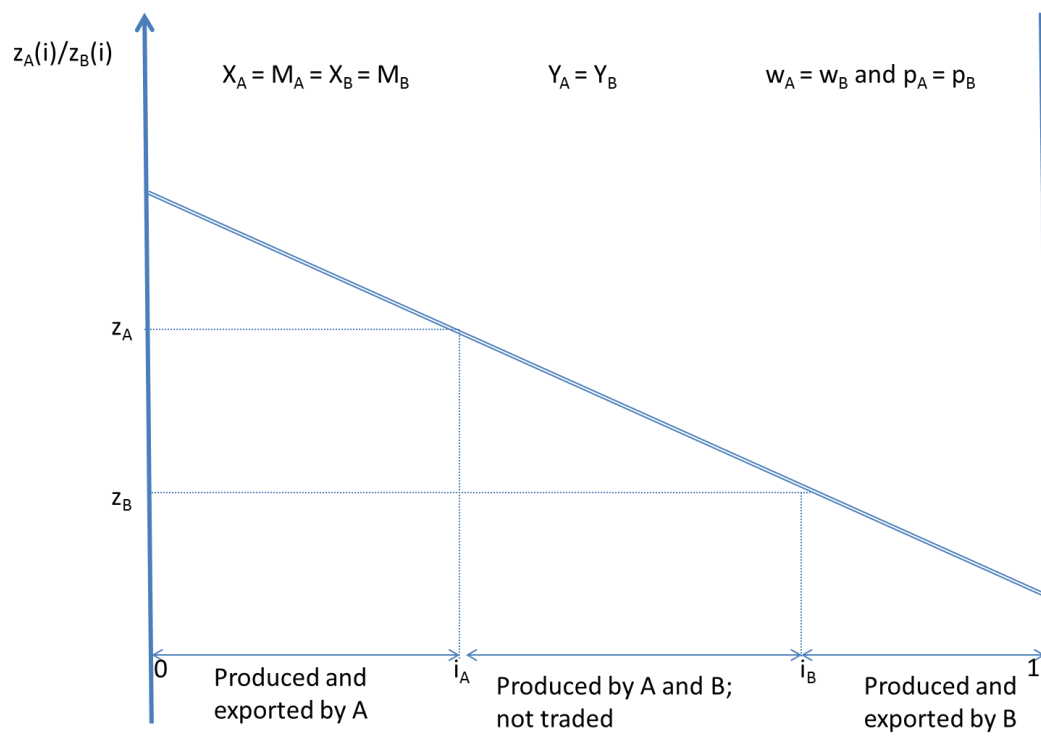


Figure A.1: Symmetric productivity, balanced trade

There is a similar region for goods whose relative productivity is below the endogenous threshold z_B , the goods in $(i_B, 1)$, which are only produced in country B and are exported to country A. Finally, the goods for which neither country has a strong comparative advantage, the goods in (i_A, i_B) , are produced in both countries and are not traded. Notice that this third region would not exist if trade costs were equal to zero ($C=0$).

In the second example, country A is more productive than country B, or has absolute advantage ($T_A' > T_B'$), and bilateral trade is balanced. In comparison to the first example, the relative productivity of goods shifts in the upper-right direction, as shown in Figure A.2.

Since the relative productivity of country A is higher, it will export more which is shown as an expansion in the range of exported goods to $(0, i_A')$.²³ Greater export revenues imply that country A can also finance additional imports which means that country B also exports a greater range of goods, $(i_B', 1)$. Therefore, higher productivity for country A means that trade expands for both countries.

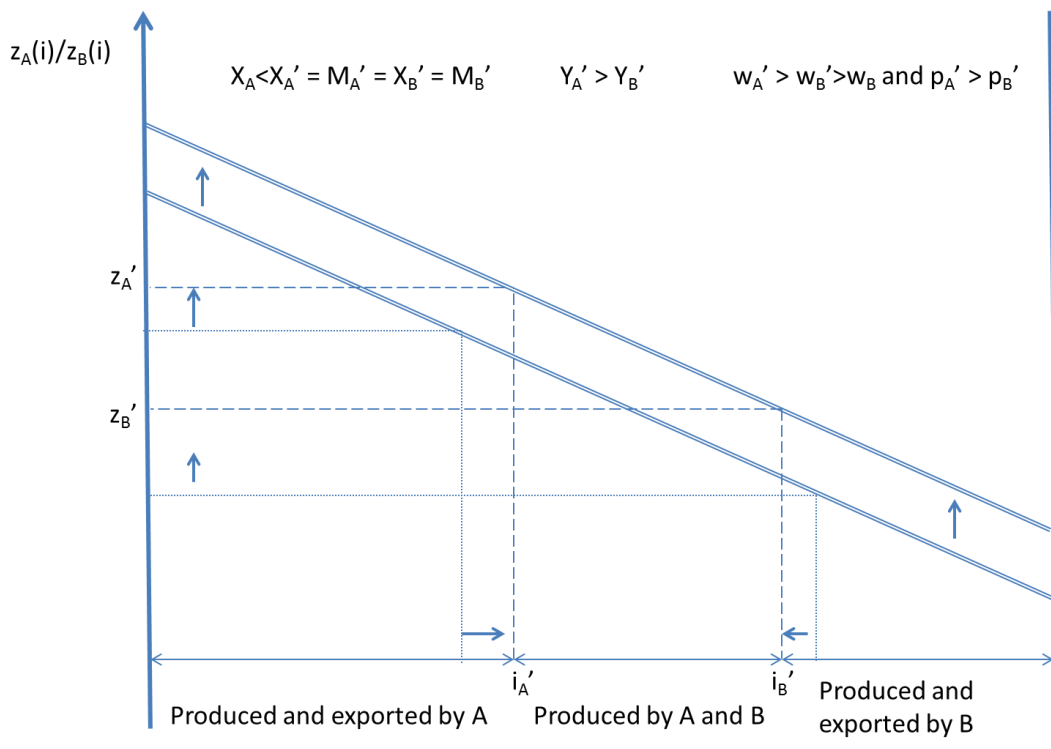


Figure A.2: Asymmetric productivity, balanced trade

²³ Depending on the elasticity of substitution in consumer preferences, the expansion of exports could also take place in the intensive margin, i.e. exporting higher quantity of each good but the same or smaller range of goods. We have chosen the case where the expansion occurs in the extensive margin as it is easier to visualize.

Higher productivity in country A means that output and wages are higher than in the first example, but so are prices since the non-traded goods are in higher demand in country A. The higher level of exports means that output, wages and prices are also higher in country B than in the first example, although they are below the level of country A.

In the third example, both countries are equally productive and country A receives a capital inflow (a transfer) from country B which, as we will see, corresponds to a trade deficit in relation to country B ($X_A'' = M_B'' < M_A'' = X_B''$). Figure A.3 compares the new equilibrium with the equilibrium from the first example.

The capital inflow increases the available resources of country A's agents which increases their consumption both of imports and of locally produced goods. The range of imported goods (B's exports) expands to $(i_B'', 1)$ while the increase in the consumption of non-traded goods leads to an increase in country A's prices and wages. In turn, this makes the export of previously marginal goods unprofitable, shrinking the range of exports to $(0, i_A'')$.

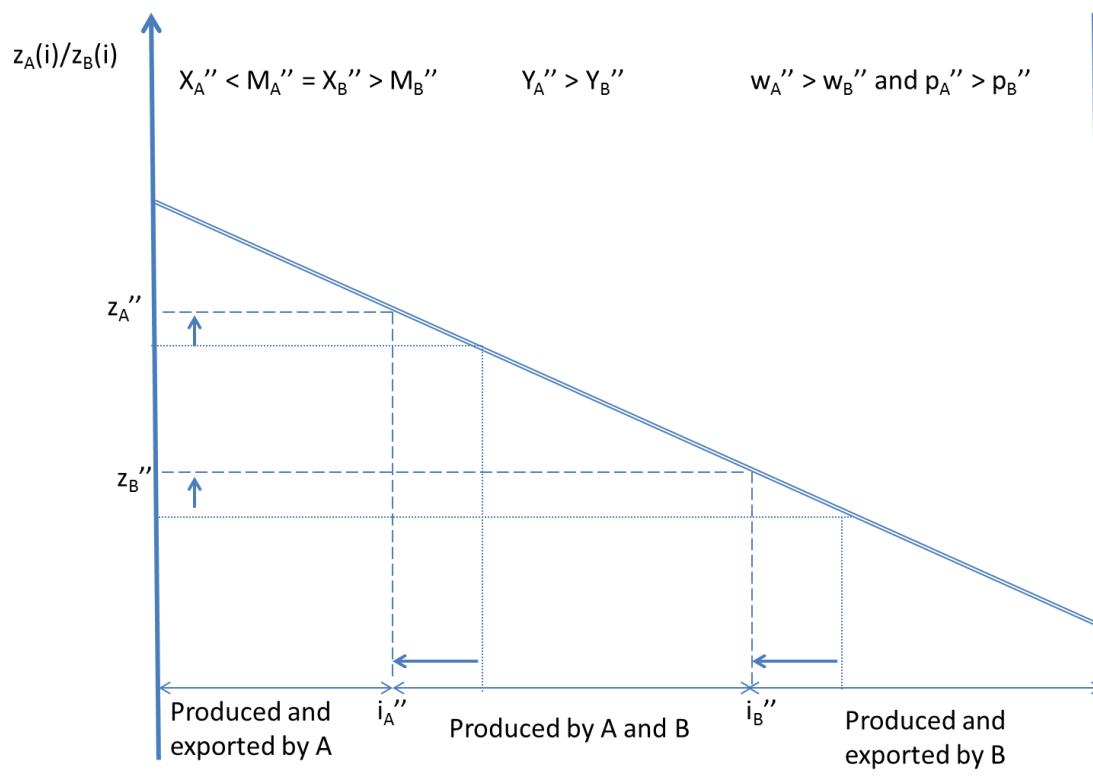


Figure A.3: Symmetric productivity and trade deficit for A

As a result, the capital inflow from country B to country A leads to an increase in A's output, wages, prices and imports and a reduction in its exports. The transfer has exactly the opposite effect on country B. Notice that in this static sense, running a trade deficit (receiving a capital inflow) increases a country's welfare. Of course, this is due to the fact that we ignore the future repayment that country A needs to make to B in exchange for the current inflow which, however, was probably not too far from Greek thinking before the crisis.

The final example also shows how the economy adjusts, according to the model, to a reduction in net capital flows, such as the one which occurred after 2008 in the four countries of the Eurozone periphery. For trade to become balanced, wages and prices need to fall so that previously non-traded goods start being exported (i_A shifts right). Furthermore, the decline in prices means that some goods which were previously imported are now produced locally reducing imports (i_B shifts right). Nominal output is necessarily reduced, but the drop in prices means that real output should fall by a lower amount.

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