DISCUSSION PAPER SERIES

No. 9391

WHAT'S HOLDING BACK EU EXPORTS TO CHINA?

Simon J Evenett, Johannes Fritz and Martin Wermelinger

INTERNATIONAL TRADE AND REGIONAL ECONOMICS

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP9391.asp**

ISSN 0265-8003

WHAT'S HOLDING BACK EU EXPORTS TO CHINA?

Simon J Evenett, University of St Gallen and CEPR
Johannes Fritz, University of St Gallen
Martin Wermelinger, University of St Gallen

Discussion Paper No. 9391
March 2013

Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 9391

March 2013

ABSTRACT

What's Holding Back EU Exports to China?*

Access to the fast-growing Chinese economy is prized by policymakers and business people. Concerns that European firms are missing out on the Chinese boom have caused soul-searching in Europe about "competitiveness" and led to accusations of Chinese protectionism. For the first 15 members to join the European Union this paper estimates the factors affecting the share of each country's exports going to China from 2000 to 2010. China's growing share of world spending is found to be the most important factor but labour cost differentials within Europe, two forms of commercial diplomacy, and crisis-era murky protectionism by China contributed too.

JEL Classification: F14
Keywords: China, commercial diplomacy, competitiveness, European Union, exports and protectionism

Simon J Evenett
University of St. Gallen
Bodanstrasse 8
9000 St Gallen
SWITZERLAND

Email: simon.evenett@unisg.ch

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=144850

Johannes Fritz
University of St Gallen
Bodanstrasse 8
9000 St Gallen
SWITZERLAND

Email: johannes.fritz@unisg.ch

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=176928

Martin Wermelinger
University of St. Gallen
Bodanstrasse 8
CH-9000 St.Gallen
SWITZERLAND

Email: martin.wermelinger@unisg.ch

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=170881

*Comments on this paper are welcome. Wermelinger worked on this paper just before taking up a post at the OECD. The usual disclaimer, therefore, applies concerning the OECD, its management, and member governments.

Submitted 10 March 2013

1. Introduction.

The acceleration of economic growth in the emerging markets has resulted in a growing share of global spending taking place in those nations. On most forecasts that share will continue to rise in the decades ahead. Firms in industrialised economies with an eye to new commercial opportunities have sought to expand their sales in, including their exports to, these fast growing markets. As the second largest economy in the world, these considerations apply with particular force to China. While Chinese growth holds out the prospect for greater cross-border trade, there is dissatisfaction with the rate at which Western firms have been able to penetrate markets in the Middle Kingdom. Some point to supply side weaknesses at home and others to Chinese protectionism, which critics claim has widened in scope since the global economic crisis began.

The purpose of this paper is to estimate the relative importance of the different supply side, demand side, and policy-related factors responsible for the share of exports that each of the first 15 members of the European Union (EU) shipped to China during the years 2000 to 2010. The inclusion of the latter years was deliberate since it is of interest whether--and by which means--the recent global economic crisis affected EU exports to China. The range of policy instruments considered in this paper goes beyond those found in most studies of crisis-era trade response. In addition to using traditional data on the resort to trade defence measures, information from the Global Trade Alert database on other crisis-era beggar-thy-neighbour policies implemented by Chinese government is employed here. Plus, information on the number of times each member state government has complained about Chinese dumping on European markets was assembled to see whether the exports from frequent complainers were treated more leniently by the Chinese or whether they became the target of Chinese retaliation. The impact of European commercial missions to China and state aid to European firms were also estimated.

While this study is likely to be of interest to policymakers and government officials—not least given growing number of trade disputes between China and the EU in 2012—the analysis undertaken here may be of interest to academic researchers as well. That emerging markets have grown faster than the world average for some time effectively constitutes a major shift in global expenditures, providing an opportunity to study how demand side factors influence trade flows. The frictionless gravity equation implies that the share of a country's exports to a foreign nation should equal the latter's share of world GDP (Anderson 1979). This observation provides an important benchmark and begs the question: how much of the observed changes in EU exports to China reflect "mundane" demand shifts rather than more controversial policy-related factors, such as Chinese protectionism or fungible European state aids? Moreover, our analysis of export response will add to the growing literature on the impact of the global economic crisis on trade flows (see, for example, the contributions in Baldwin 2009).[3]

The remainder of this paper is organised as follows. So as to provide a factual grounding for the subsequent econometric analysis, the next section includes a discussion of two stylised facts involving EU exports to China since 2000. Potential hypotheses to account for these facts are also spelt out. In the third section the econometric approach taken and data used are described. The econometric results and the decomposition of EU export growth that they imply are reported in section four. Concluding remarks are found in section five.

[3] Other notable recent contributions on the effects of various forms of crisis-era protectionism include Kee, Neagu, and Nicita (2010) and Eaton, Kortum, Neiman, and Romalis (2011). Such studies are to be distinguished from the larger number of studies documenting the resort to protectionism and other beggar-thy-neighbour activities since the global economic crisis began.

2. Stylised facts and ten hypotheses that might account for them.

For each of the first 15 nations to join the European Union (the "EU15" from here on) an exploratory data analysis of the share of their exports to China and to the Rest of the World (ROW) was conducted for the years 2000 to 2010. For our purposes the data for the years 2009 and 2010 relate to the crisis era, allowing for comparisons before and after the onset of the global economic crisis. The principal stylised facts can be seen in the plots presented in Figures 1 and 2.[4]

Before and after the global economic crisis, export growth by the EU15 to China was positively correlated to export growth to the ROW (Figure 1). Before the crisis in only two EU member states (Sweden and Finland) was export growth to the ROW faster than that to China. For the most part, then, the share of exports destined for China rose before the crisis. Indeed, Portugal, Spain and Ireland, three of the countries that would find themselves in dire financial straits during the crisis, actually saw their exports to China grow much faster than to the ROW before the crisis struck. Moreover, whatever deep-seated "competitiveness" problems may have been building up in these countries before the crisis, it is not obvious that they harmed these countries' export performance to China, relative to their EU15 peers.

The crisis era does see some changes in EU15 export behaviour, however. Differences across the EU15 in export growth rates to China widened, as can be seen from the varying fortunes of Luxembourg, Portugal, and Greece (Luxembourg sees an overall reduction in its exports to China from 2008 to 2010 whereas Portugal and Greece experience sharp increases.) Moreover, apart from Luxembourg, every other EU15 country saw their exports rise to China from 2008 to 2010 while their exports to the ROW fall over the same time horizon (on Figure 1 the plot for 2008-10 lies to the left of the vertical axis, whereas the plot for 2000-2008 lies to the right.) None of the EU15 members that received international

[4] Summary statistics on the EU 15's exports to China are reported later in the paper in Table 1.

bailouts during the crisis underperformed their peers (compare, for example, Greece and Portugal's above-the-line performance between 2008 and 2010 with that of Denmark's and the Netherlands'.)

There is also some evidence of convergence across the EU15 in the share of exports destined for China during the crisis era (Figure 2). The share of national exports going to China in 2008 is negatively correlated with the average growth rate of exports to China in the two years that followed. Germany appears to be a clear exception, combining a high initial export share (in 2008) and average levels of subsequent export growth. In this regard Finland too is probably an outlier, a point taken up during the econometric analysis.

What hypotheses might account for the variation in export performance across the EU15? First, there could be member state-specific factors that influence exports. Increased government consumption spending by EU15 member states could induce home market effects, improved export competitiveness in sectors where firms have economies of scale. Alternatively, production could be diverted to government contracts, crowding out exports. Denote this first hypothesis H1.

Member states that grant larger amounts of state aid may enable their exporters to undercut foreign rivals more often and win larger numbers of export contracts, denote this hypothesis H2.[5] Member states that have lower hourly compensation levels may enjoy faster export growth, the third hypothesis H3.

It should be noted that these three hypotheses refer to the level of overall exports. Of course, what is of interest here is whether the associated factors account for higher export shares to China, so the hypotheses have to interpreted as asking whether the factors concerned give rise to any particular edge in competing in the Chinese market. Moreover,

[5] Alternatively, the granting of state aid may reflect an inability to compete unhindered on world markets, in which case more state aid may well be correlated with fewer exports.

should any of these hypotheses be rejected by the data, it does not mean that the factors concerned have no impact on exports, period, just the shares of exports to China.

A fourth hypothesis (H4) is that there are differences across EU15 in the composition of their exports to China, with some member states exporting a mix of products that—on the basis of China's purchases worldwide--are closer to the mix of products that China tends to import. A fifth, related hypothesis (H5) is that EU15 member states may vary in the extent to which they ship the types of products that China imports for its export industries. Given the extensive attempts to influence Chinese export levels through its VAT rebate scheme on imported inputs (see Evenett, Fritz, and Yang 2012 for details), it will be interesting to see if the extent of such rebating interacted with an index of the similarity between a EU15 nation's exports and China's import mix accounts for some of the variation in export behaviour.

A sixth hypothesis arises from China's growing share of world GDP. As the share of the world's spending undertaken by a country increases then it will tend to import a greater proportion of each trading partner's exports. Denote this hypothesis H6. Differences across the EU15 in the movements of their currencies against the Chinese renminbi are another potential explanation, a seventh hypothesis H7. It is worth bearing in mind in this regard that not every EU15 nation is a member of the Eurozone (allowing for intra-EU15 exchange rate variation) and that accusations of Chinese currency manipulation were made during the decade studied here.

Turning to other policy-related hypotheses, one source of variation across the EU15 is the extent to which pro-export commercial diplomacy is undertaken by the member states. An eighth hypothesis (H8) is that exports are higher for those EU15 nations that send government ministers more often on official visits to China. The remaining two hypotheses concern protectionism. The ninth hypothesis (H9) is that the frequency with which a member state has encouraged the European Commission to take action against dumped Chinese

exports in the past affects how China treats that member states' exports now. The effect could be positive or negative: EU15 member states with a reputation for complaining may discourage Chinese targeting of their exports or complainers may become the focus of Chinese retaliation. The tenth hypothesis (H10) is that more frequent Chinese resort to trade barriers against a EU15 member state reduces the latter's exports more.

Overall, then, these ten hypotheses relate to two demand-side[6], three supply side (competitiveness)[7], and five policy-induced[8] determinants of export performance. The purpose of the following econometric analysis is to facilitate an assessment of the relative importance of these factors.

3. Econometric approach and data used.

While the overall goal of the empirical strategy employed here is to ascertain the relative importance of the factors that determined the share of EU15 exports sent to China between 2000 and 2010, the design of that strategy took into account a number of factors. First, given the strong preference among researchers in international trade for some link to underlying economic theory, recall the prediction of the frictionless gravity equation that the share of a nation's exports shipped to a trading partner equals the latter's share of world GDP. We used this prediction as a benchmark for export shares. Essentially, our econometric strategy amounts to examining the extent to which actual EU15 export shares to China from 2000 to 2010 departed from that benchmark in ways that are correlated with other plausible determinants of export performance (see the hypotheses described in the previous section.)

[6] Hypotheses H4 and H6.

[7] Hypotheses H1, H3, and H7. To the extent that the "crowding out" explanation applies in H1 there is a clear demand side component to this hypothesis as well.

[8] Hypotheses H2, H5, H8, H9, and H10.

Our approach, then, was not theory-free although it would be wrong to give our findings a structural interpretation.

Given the substantial interest in the effects of the global economic crisis on policy choice and on trade flows, the second feature of our econometric strategy is to explore whether export behaviour differed during 2009 and 2010. Aggregate exports of many nations fell sharply in 2009 and recovered afterwards. As the stylised facts presented earlier showed, pre-crisis export growth seems to be different in some respects from the crisis era.

Third, our econometric strategy also had to accommodate the fact that more detailed data on beggar-thy-neighbour policies is only available for the crisis era. To address the last two considerations, we examine whether different measures of policy stance correlate with the residuals for the years 2009 and 2010 obtained from a base regression on a sample of export share data from 2000 to 2010. The econometric strategy, then, has two steps: the first to estimate a base regression for all the years in the sample; the second to examine the correlates of the residuals for the years when international trade was known to be most affected by the recent global economic crisis, namely, 2009 and 2010.

Denoting $S_{j,t}$ as the share of country j's exports shipped to China in year t, $CGDP_t$ as China's share of world GDP in year t; $I_{j,t}$ as a vector of independent variables that are hypothesised to determine $S_{j,t}$ other than $CGDP_t$; α is a constant; and $\varepsilon_{j,t}$ is a well behaved error term, then the first step is to estimate the following regression equation:

$$S_{j,t} = \alpha + \beta\, CGDP_t + \gamma\, I_{j,t} + \varepsilon_{j,t} \qquad j \varepsilon EU15,\ t=2000,\ldots.,2010 \qquad (1)$$

Concerns about outliers led to the first stage regression to be estimated with and without Germany and Finland. Concerns about heteroskedacity and a relatively small sample size (a cross-sectional dimension of 15 and a time series dimension of 11) led to the use of HC3 standard errors (see Davidson and Mackinnon 2003). Ordinary Least Squares with exporter-specific fixed effects were used to recover the parameter estimates, from which the residuals

for the observations relating to years 2009 and 2010 were computed, the latter denoted $\bar{e}_{j,t}$. In addition to recovering the residuals, the parameter estimates were also used to decompose the change in the dependent variable between 2008 and 2010 into changes attributable to each of the independent variables, $CGDP_t$ and $I_{j,t}$. In this manner, then, the economic (specifically, quantitative) as well as the statistical significance of each determinant of EU15 export shares could be assessed, shedding light on which factors—if any—are really holding back EU exports to China.

A second stage regression was conducted on the residuals $\bar{e}_{j,t}$ for 2009 and 2010. Various measures of Chinese policy stance affecting EU15 member state j in year t, denoted $CPS_{j,t}$, were used as independent variables in this second regression, along with a constant. Ordinary Least Squares were used to estimate the following second stage regression, whose purpose is to explore whether unexplained crisis-era export deviations are correlated with different measures of Chinese policy stance:

$$\bar{e}_{j,t} = \alpha + \delta\, CPS_{j,t} + \varepsilon_{j,t} \qquad j \varepsilon EU15,\ t=2009, 2010 \qquad (2)$$

It is worth noting that the above approach stacks the odds against finding any impact of Chinese crisis-era policy changes since the first stage regressors may well absorb some of the variation accounted for by Chinese government measures in recent years.

The following data was collected for this study. In some cases, new measures have been specially constructed so as to better identify the potential effects of the variables of interest. Data from UN COMTRADE was used to calculate the share of each EU15 member's total exports that was shipped to China in a given year, this being the dependent variable in the first stage regression of this study. The World Databank/World Development Indicators database of the World Bank was used to calculate the share of each EU15 nation's GDP that is accounted for by government consumption expenditure, providing the independent variable to analyse the impact of home market and crowding out effects mentioned in hypothesis H1.

Data from Directorate-General of Competition of the European Commission was used to compute on an annual basis the total value of state aid offered by a EU member state as a share of its GDP. This variable is relevant for assessing hypothesis H2. Given the substantial resort to subsidies during the crisis era, the inclusion of this independent variable may be of considerable interest, although concerns about under-reporting or misclassification of such subsidies should be borne in mind.

Indexing hourly compensation costs in German manufacturing in 1997 at 100 and then computing the relative nominal hourly labour costs of Germany and every other EU15 member for the years 2000 to 2010 resulted in an independent variable to assess hypothesis H3. The latter independent variable was constructed using data from the US Department of Labor's Bureau of Labor Statistics and was lagged three years to limit concerns about simultaneity.

So as to compare the overlap between the types of goods a EU15 nation exports to China and the types of goods that China imports, each product line in the UN COMTRADE database were first categorised as either raw materials, intermediate goods, consumer goods, or capital goods. For each EU15 member state in each year of the sample, the shares of their total exports to the rest of the world (the world excluding China) that fell into the above four categories was then calculated. Likewise, for China in each year of the sample, the share of their total imports from the rest of the world (the world excluding the EU15) that fell into the same four categories was calculated. If a EU15 country exports the types of goods that China wants to buy, then looking across these four categories, the respective shares of the former and the latter should be similar. A natural index of dissimilarity is the sum across the four categories of the square of the differences in the member state's and China's share. That index was computed for each EU15 member and for every year and is referred to here as the Differences in Composition index. This index was used to evaluate hypothesis H4.

Demand for European goods may also rise because of attempts to bolster Chinese exports. One means that China uses to promote exports for which there is product-level and intertemporal variation is through rebates on Value Added Tax payments by Chinese firms on the inputs that they import from abroad and then use in the production of exports. Data on the share of Chinese exports covered by VAT rebates in a given year[9] was interacted with the Differences in Composition index to examine whether Chinese export drives account for some of the differences in EU15 exports to China, along the lines of hypothesis H5.

The share of China's GDP in world GDP in a given year is computed from the World Bank data source mentioned above. This generates the independent variable $CGDP_t$, which corresponds to the prediction for export shares generated by a frictionless gravity equation model (hypothesis H6). Data on annual nominal exchange rates from the European Central Bank was used to create an index, normalised to the year 2000, to capture the annual changes in the bilateral exchange rate between a EU15 member state and China, as per hypothesis H7.

Using the FACTIVA database of news stories, which includes media sources in English, German, and French, a count was made for each EU15 member state of the number of times its government ministers visited China. Business people frequently accompany such visits and the associated commercial diplomacy can lead to contracts being awarded by Chinese government ministries or by Chinese firms with strong ties to Beijing. The total number of such visits in a given year and the year before is used to evaluate whether this form of commercial diplomacy mattered, as per hypothesis H8.

The ninth hypothesis amounts to examining whether complaining about Chinese trade and trade practices pays for EU member states. Antidumping investigations are a common form of collective European action against Chinese exports. Such investigations are almost always

[9] This data was first reported in Evenett, Fritz, and Yang (2012), that documents the large scale of this export management practice. During the crisis era the Chinese government has changed its VAT rebate policies for exporters over a dozen times.

initiated in response to a complaint from one or more EU member states and often the publicly available case file states which governments sought the inquiry. We found such information all the way back to 1981, starting initially from the Temporary Trade Barriers Database (TTBD) assembled by Chad Bown. For each EU15 member in every year between 2000 and 2010 we calculated the total number of antidumping investigations undertaken by the European Commission since 1981 that the member state in question had supported initiating. We lagged this stock variable by a year to avoid potential simultaneity problems and used it to check whether member states that complain obtain more lenient treatment from China for their exporters or face more retaliation by China against their exporters. We are not aware of another study that has examined this matter in a similar fashion.

Consistent data on only a subset of Chinese trade policies are available over time, so it is not possible to assemble a comprehensive measure of Chinese policy stance towards European exporters. Instead, we calculated for each EU15 member state in a given year t the total stock of Chinese antidumping actions taken against the exporters of a member state from 1999 until year (t-1). This measures, then, the cumulative propensity of China to target the exports of a EU member state using one particularly high profile trade policy instrument. At best, this serves as a proxy for broader Chinese trade policy stance but there are no guarantees that it does so. Data on Chinese antidumping actions were taken from the TTBD as well and is used to evaluate hypothesis H10.

The Global Trade Alert (GTA) database[10] was employed to construct all of the independent variables used in the second stage regression. Recall, this regression only applies to the residuals for the crisis years 2009 and 2010, a choice determined in large part because the GTA database only covers government measures undertaken since the first G20 crisis-era summit meeting in November 2008. The GTA database, which we have all contributed to,

[10] This database can be accessed at www.globaltradealert.org

classifies government measures as to whether they increase or decrease the degree of discrimination against foreign commercial interests, including not just traders, but also foreign investors, foreign workers, and foreign owners of intellectual property. All of the policy instruments covered by the TTBD are also covered in the GTA database but the latter covers more policy measures, predicated on the view that beggar-thy-neighbour policies in the 21st century can take many different forms.

In what follows, discriminatory measures are those whose implementation almost certainly harms a foreign commercial interest.[11] A beneficial measure is a state measure whose implementation improves the treatment of a foreign commercial interest or improves transparency about the state measure in question. A murky measure refers to a discriminatory state measure that is not a tariff or a trade defence instrument. For each EU15 nation in a given year, we calculated the following:

1. The total number of crisis-era Chinese measures implemented by the end of the year in question that almost certainly discriminated against the commercial interests of the EU member state.
2. The total number of crisis-era Chinese measures implemented by the end of the year in question that benefited the commercial interests of the EU member state.
3. The total number of two-digit sectors of the Chinese economy affected by crisis-era Chinese measures implemented by the end of the year in question that almost certainly discriminated against the commercial interests of the EU member state.
4. The total number of two-digit sectors of the Chinese economy affected by crisis-era Chinese measures implemented by the end of the year in question that benefited the commercial interests of the EU member state.

[11] State measures of this particular type are colour coded red in the Global Trade Alert database, a fact that will help interpret some of the entries in Table 4 of this paper.

5. The total number of crisis-era discriminatory Chinese tariff and trade defence measures implemented by the end of the year in question that harmed the commercial interests of the EU member state.
6. The total number of crisis-era murky Chinese measures implemented by the end of the year in question that harmed the commercial interests of the EU member state.

The first and second measures listed directly above, then, proxy for overall, crisis-era Chinese policy stance as seen by a EU member state. The fifth and sixth measures listed above break out the totals into murky and relatively more transparent policy instruments. All four measures suffer from being merely counts of policy intervention. The third and fourth measures listed directly above use information on the total number of sectors affected by Chinese crisis-era measures to present alternative indicators of policy stance. Analysis of the GTA database elsewhere has shown that rankings of countries based on counts, sectors affected, tariff lines affected, and trading partners harmed are highly correlated with one another.

Table 1 presents the summary statistics for the independent variables used in the first stage and second stage regressions and lists the data sources used. As measured by the ratio of the respective standard deviations to means, there is considerable variation across the EU 15 member states and over time in the share of their exports sold to China, in the total amounts of state aid awarded, in the match between their export composition and Chinese measures to bolster exports, in the number of high level visits to China, and in the frequency of complaints since 1981 against dumped Chinese imports into Europe.[12] There is much less variation in hourly compensation costs, nominal exchange rates, and in government consumption expenditures by the EU15 member states.

[12] The coefficient of variation for all of these variables exceeded 0.5.

4. Estimation results.

Table 2 reports the fixed effects regression results, which are the most conservative of the various specifications that we estimated. The parameter estimates for the full sample of 15 EU member states is presented as well as the sample without Finland and Germany. Removal of these countries markedly alters the magnitude and, in some cases, the signs of the estimated parameters. Our focus, then, will be on the tendencies revealed in the data for the remaining 13 EU member states in the sample. Analysis of the apparently unusual circumstances of Finland and Germany will have to wait until a later date.

The theory-motivated, demand-side determinant of European export shares to China is not rejected by the data. In fact, in unreported results the combined explanatory power of the fixed effects and this benchmark independent variable is only a few percentage points lower than the total explained variation of the more elaborate specifications reported in Table 2. This finding implies that enduring time-invariant determinants of EU15 export behaviour (such as language differences, distance, differences in legal and other institutions, etc) plus China's growing share of the world GDP go a long way to explain export performance differences across the EU15 member states and over time.

Higher labour costs, traditionally a concern expressed about the European business environment, are found to dampen export sales to China. The coefficient on this term is negative and statistically significant implying, given the construction of this independent variable, that the inability to match German wage moderation over the past decade has limited the export growth of other EU15 member states to China.

Of the remaining seven hypotheses, the only one that is not rejected by the full sample relates to the impact of making complaints about Chinese dumped exports. The positive and statistically significant estimate of the relevant parameter suggests that EU member states that acquire a reputation for criticising Chinese trade practices—here by encouraging the

European Commission to launch investigations into dumped Chinese products—actually experience greater export growth into the Chinese market. Cowering, it seems, does not pay—if reorienting exports towards China is the policy objective.

Once Germany and Finland are dropped from the sample, the number of trade missions and visits by government ministers to China is found to be a positive and statistically significant determinant of export shares. Dropping these two countries nearly doubles the implied impact of such commercial diplomacy. Combining the last two findings suggests that, since 2000, a strategy of complaint at home and engagement in Beijing increases the share of exports shipped to China.

So much for statistical significance, what of quantitative or economic significance? Using the parameter estimates from the fixed effects regressions in the sample without Germany and Finland, Table 3 reports the relative importance of the factors responsible for the changed shares of EU15 exports shipped to China between 2008 to 2010, the crisis era. This table will help us to understand how much of the observed changes in exports are due to, say, less controversial factors—such as shifting global spending patterns---among other factors.

The numbers in Table 3 report, on the basis of the estimated coefficients and the change in an independent variable for a given EU15 country between 2008 and 2010, the percentage of the total change in that country's export share to China over the same time frame that is due to the independent variable's change. What is striking is the large percentages of the observed export share changes that are due to China's growing share of world GDP. China's economy grew faster than the world economy during the years 2008 and 2010 and the implied increase in China's share of world demand alone accounted--on average--for 68.8 per cent of the increase in the EU15 export shares to China. Moreover, had relative labour compensation costs in 2010 been at their 2008 levels, then average shares of EU15 exports to China would have been 14.2 per cent higher. Had government consumption spending not risen from 2008

to 2010 then the average share of the EU's exports to China would have been approximately 5 per cent lower, a finding which suggests that exporters benefited from national stimulus packages. Finally, had China not decided to expand its use of VAT rebates, then its demand for imports would not have been skewed further away from those that the EU15 tends to supply. But for these Chinese export promotion policies, the average share of EU15 exports to China would have been just under 9 per cent higher.

While the average impact of filing complaints about Chinese exports is relatively small, this masks important variation across the EU15. France, the Netherlands, and Spain would have seen their export shares reduced by more than a tenth had they not so frequently complained about Chinese dumping. Chinese antidumping actions against France reduced the latter's export share to China by one-fourteenth or 7 per cent. On the other hand, frequent visits by French and Luxembourg ministers to Beijing have raised those countries' share of exports sent to China by a tenth and a sixth respectively, suggesting that commercial diplomacy still had leverage in the crisis era. With decompositions reported in Table 3, it is possible to assess on an exporter-by-exporter basis the relative importance of the different factors that were responsible changing export shares to China during the first years of the global economic crisis.

As was noted earlier, there is no guarantee that counts of the number of antidumping measures provide an accurate assessment of a nation's overall resort to beggar-thy-neighbour policies. The latter may be used more often in times of economic crisis and the purpose of the second stage regression was to examine whether the unexplained variation in export shares in the crisis years of 2009 and 2010 correlated with indicators of Chinese discrimination and liberalisation constructed from the GTA database. Table 4 provides parameter estimates from the second stage regression, which speak to the partial correlations involved.

Once the Finnish and German outliers are removed, patterns do emerge in the analysis of the residuals. Neither the counts of, or the number of sectors affected by, Chinese measures that reduced discrimination against EU15 commercial interests or that improved the transparency of Chinese regulations, expanded the shares of exports shipped by EU15 countries to China during the crisis era. In contrast, counts of discriminatory measures against a EU15 member as well as counts of the number of sectors of affected by Chinese beggar-thy-neighbour measures do correlate with lower export shares to China during the early crisis years.

Moreover, when more transparent tariff and trade defence measures are separated from the more murky forms of protectionism, only more of the latter are found to depress EU15 export shares to China.[13] On the basis of the second stage regression estimates, it would be premature to dismiss claims that murkier forms of Chinese beggar-thy-neighbour have not held back EU15 exports during the crisis era. One implication of this finding is that it calls into question those assessments of crisis era protectionism based solely on the resort to more transparent forms of protectionism. The fact that the latter are easier to document does not imply that they are the only important forms of beggar-thy-neighbour policies undertaken during the recent global economic crisis.

5. Concluding remarks.

During 2012 trade relations between the European Union and China deteriorated. Moreover, concerns continued to be expressed that EU countries needed to undertake more supply side reforms if exports were to make a greater contribution to national economic recoveries. Both of these observations beg the question: what factors are holding back EU

[13] The typically small amounts of trade subject to trade defence measures—compared at least to total bilateral exports—may go a long way for finding little impact of the number of transparent but discriminatory Chinese measures on the share of EU15 exports shipped to China.

exports to fast-growing emerging markets, such as China? The goal of this paper was to shed light on this question and ten competing hypotheses were formulated to structure to the empirical analysis.

Perhaps the most important finding is that, while there is much talk of commercial policies and competitiveness affecting European export performance, by far the most important factor increasing the share of EU exports shipped to China was the fact that the latter's economy continued to grow faster than the world average. China's spending clout is rising and not surprisingly more European exports are shipped to meet growing Chinese needs. To researchers of international trade patterns this is confirmation of the importance of a factor that is embedded in many models of international trade, including many variants of the gravity equation of bilateral trade flows, but which is not often analysed independently.

That global shifts in demand are important, however, does not imply that other considerations were inconsequential, in particular during the crisis era. Relatively high levels of labour compensation retarded EU exports to China. Policy mattered too. Murky Chinese protectionism and Chinese export management measures both reduced the shares of exports that the EU15 shipped to China during the early years of the crisis. Our results imply that only monitoring and analysing traditional forms of protectionism misses potentially important elements of the policy landscape in the 21st century. In a few years time the data should be available to revisit these matters with greater confidence. Still, on the basis of the results presented here it is easier to understand the European Commission's current approach of challenging more Chinese crisis-era policy choices. This is not an endorsement of the European Commission's tactics in any particular case, rather an acknowledgment that maybe Brussels has correctly assessed one of factors holding back EU exports to China.

One of the most intriguing findings in this study is that EU member states that have over the years called for more antidumping investigations of Chinese exports appear to have their

own exports to China treated more leniently by Beijing. Complaining pays, it seems. So do ministerial visits to Beijing. Should other analyses bear out these findings no doubt some analysts and policymakers will draw the conclusion that a Jekyll and Hyde approach to managing commercial relations with China delivers export sales. If that is so, then the prospects for harmonious EU and Chinese trade relations look slim.

6. References.

Anderson (1979). James E. Anderson. "A Theoretical Foundation for the Gravity Equation." *American Economic Review* 69 (March): 106-16.

Baldwin (2009). Richard E. Baldwin (ed.) The *Great Trade Collapse: Causes, Consequences and Prospects.* CEPR. 27 November.

Davidson and Mackinnon (2003). Russell Davidson and James G. Mackinnon. *Econometric Theory and Practice.* Oxford University Press.

Eaton, Kortum, Neiman, and Romalis (2011). Jonathan Eaton, Samuel Kortum, Brent Neiman, and John Romalis. "Trade and the Global Recession." NBER Working Paper No. 16666. January 2011.

Evenett, Fritz, and Yang (2012). Evenett, Simon J, Johannes Fritz, and Yang Chun Jing, "Beyond Dollar Exchange Rate Targeting: China's Crisis-Era Export Management Regime," *Oxford Review of Economic Policy*. Volume 28(2): 284-300.

Kee, Neagu, and Nicita (2010). Kee, Hiau Looi, Criistina Neagu, and Alessandro Nicita. "Is protectionism on the rise? Assessing national trade policies during the crisis of 2008," *Review of Economics and Statistics.*

Figure 1: The growth of EU 15 exports to China and the Rest of the World (ROW), 2000-2008 and 2008-2010.

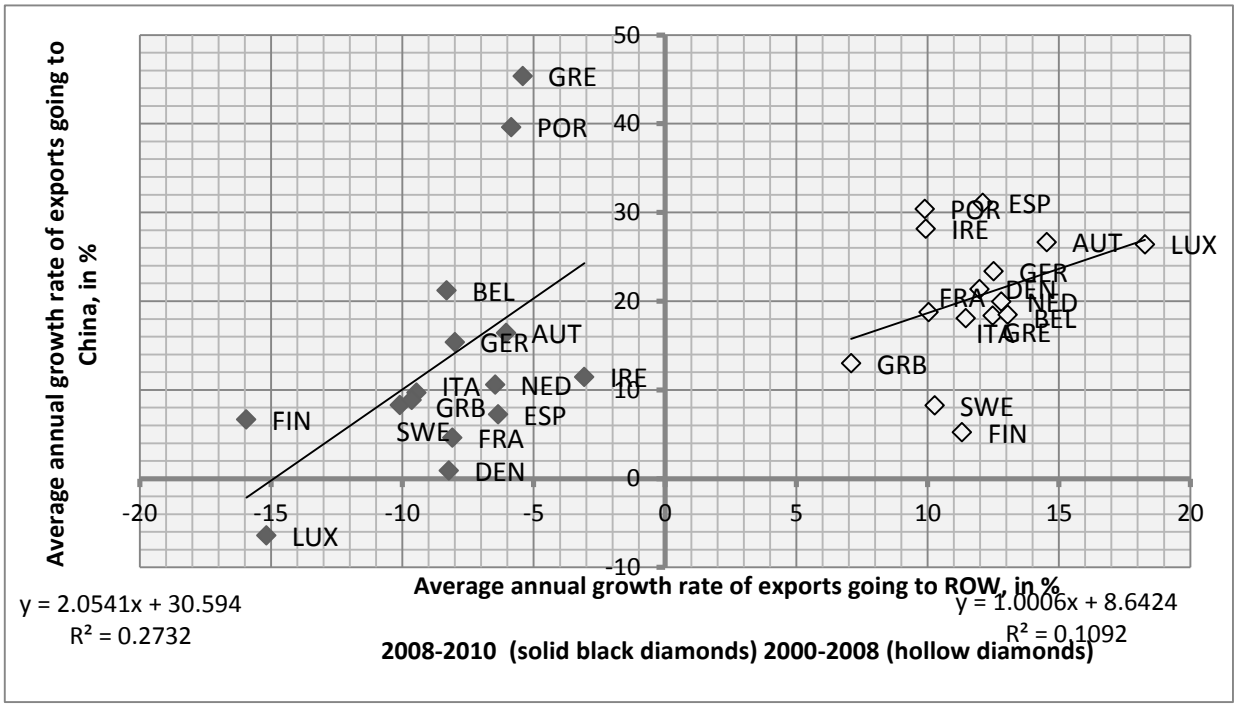

Figure 2: With the exception of Germany and possibly Finland, there appears to be some convergence in EU 15 export shares to China during 2008-2010.

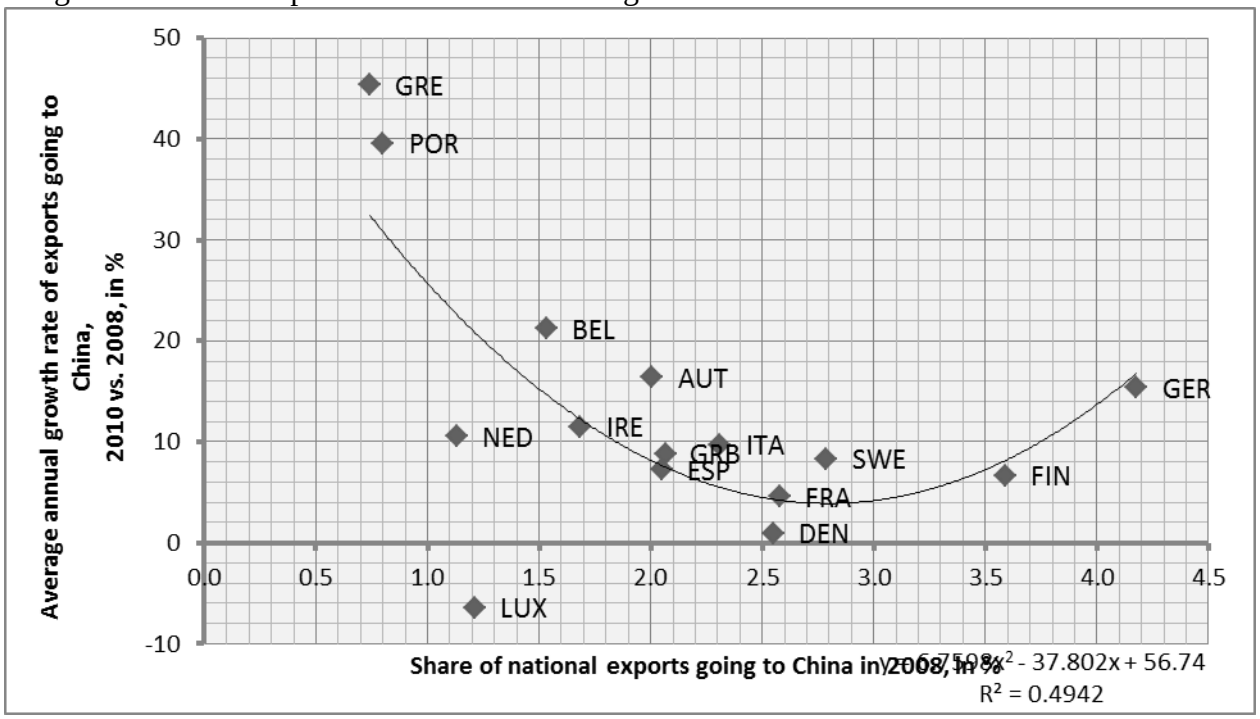

Table 1: Descriptive statistics and data sources used.

Variable	Number of observations	Mean	Std. Dev.	Min	Max	Source
Share of national exports going to China, in %	165	1.93	1.21	0.20	6.42	WITS, Comtrade
Government consumption expenditure, normalised by GDP	165	0.21	0.03	0.14	0.30	World Bank
Total non-crisis state-aid (excl. agriculture, fishery and transport), normalised by GDP	165	0.45	0.24	0.10	1.30	European Commission, DG Competition
Hourly compensation costs in manufacturing, 3 lags, indexed (100=Germany in 1997)	165	86.71	32.17	20.09	163.88	United States Bureau of Labor Statistics
Difference in composition index	165	0.15	0.07	0.02	0.35	WITS, Comtrade
Share of VAT export rebates of total exports, in %	165	2.91	0.66	1.87	4.31	State Administration of Taxation of China; National Bureau of Statistics of China
Interaction term of share of VAT export rebates and difference in composition index	165	0.45	0.23	0.05	1.15	See above
China's share of world GDP, in %	165	5.75	1.85	3.71	9.39	World Bank
Nominal exchange rate, indexed (2000=100)	165	121.74	15.67	85.10	140.73	European Central Bank (ECB)
No of high level visits to China, current and 1 year lag	165	1.59	1.79	0	9	Factiva
No of initiations of AD investigations against China (by nationality of complaining firms), ever initiated, 1 year lag	165	12.10	14.09	0	51	Temporary Trade Barriers Database (Chad Bown)

No of initiations of AD investigations of China, ever initiated, 1 lag	165	0.99	1.81	0	8	Temporary Trade Barriers Database (Chad Bown)
No of discriminatory measures implemented by China	30	11.43	2.71	7	16	Global Trade Alert (data available for 2009 and 2010)
No of beneficial measures implemented by China	30	2.53	1.25	1	5	Global Trade Alert (data available for 2009 and 2010)
No of sectors affected by discriminatory measures of China	30	39.13	0.35	39	40	Global Trade Alert (data available for 2009 and 2010)
No of sectors affected by beneficial measures of China	30	6.17	3.47	2	13	Global Trade Alert (data available for 2009 and 2010)
No of red and murky measures implemented by China	30	6.20	0.41	6	7	Global Trade Alert (data available for 2009 and 2010)
No of red tariff or trade defence measures implemented by China	30	3.43	2.37	0	8	Global Trade Alert (data available for 2009 and 2010)

Table 2: Parameter estimates for the first stage regression (using data from years 2000 to 2010).

Dependent variable: Share of national exports going to China, in %.

Hypothesis	Parameter	Full	w/o Germany and Finland
H1	Government consumption expenditure, normalised by GDP	-1.047	4.944
		(4.234)	(3.437)
H2	Total non-crisis state-aid (excl. agriculture, fishery and transport), normalised by GDP	-0.410*	-0.269
		(0.243)	(0.227)
H3	Hourly compensation costs in manufacturing, 3 lags, indexed (100=Germany in 1997)	-0.0101***	-0.00680**
		(0.00348)	(0.00265)
H4	Difference in composition index	0.973	2.084
		(2.048)	(1.283)
H5	Interaction term of share of VAT export rebates and difference in composition index	-0.357	-0.687*
		(0.598)	(0.412)
H6	China's share of world GDP, in %	0.326***	0.310***
		(0.0629)	(0.0509)
H7	Nominal exchange rate, indexed (2000=100)	-0.00357	0.000420
		(0.00270)	(0.00152)
H8	No of high level visits to China, current and 1 lag	0.0213	0.0385*
		(0.0225)	(0.0200)
H9	No of initiations of AD investigations against China (by nationality of complaining firms), ever initiated, 1 lag	0.0398***	0.0163**
		(0.0142)	(0.00763)
H10	No of initiations of AD investigations of China, ever initiated, 1 lag	0.0348	-0.0530
		(0.0545)	(0.0456)
	Constant	1.412	-0.354
		(1.000)	(0.700)
	Observations	165	143
	R-squared	0.925	0.929

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Contribution of each independent variable to change in share of national exports going to China during the crisis era (2008-2010), %.

Hypothesis	Variable	Median	Austria	Belgium	Denmark	France	Greece	Ireland
(Dependent variable)	Change in share of national exports going to China between 2008-2010, in percentage points	0.90	1.04	1.12	0.52	0.74	0.99	0.53
	Change in share of national exports going to China between 2008-2010, in %	43.27	51.92	72.78	20.28	28.56	133.80	31.53
H1	Government consumption expenditure, normalized by GDP	5.69	3.38	4.75	24.20	10.73	0.28	2.77
H2	Total non-crisis state-aid (excl. agriculture, fishery and transport), normalized by GDP	-2.59	-2.59	-4.82	-5.20	-7.31	-8.13	-5.07
H3	Hourly compensation costs in manufacturing, 3 lags, indexed (100=Germany in 1997)	-14.21	-13.49	-13.58	-31.64	-18.45	-10.50	-24.83
H4	Difference in composition index	2.39	-0.01	1.30	6.12	0.28	5.21	16.01
H5	Interaction term of share of VAT export rebates and difference in composition index	-8.70	-3.07	-6.76	-12.96	-5.13	-12.94	-29.19
H6	China's share of world GDP, in %	68.79	59.77	55.71	120.34	84.48	62.68	117.15
H7	Nominal exchange rate, indexed (2000=100)	-0.92	-0.68	-0.63	-1.35	-0.96	-0.71	-1.33
H8	No of high level visits to China, current and 1 lag	0.00	3.70	-3.45	0.00	10.46	-3.88	0.00
H9	No of initiations of AD investigations against China (by nationality of complaining firms), ever initiated, 1 lag	3.47	3.13	5.84	0.00	15.50	1.64	0.00
H10	No of initiations of AD investigations of China, ever initiated, 1 lag	0.00	0.00	0.00	0.00	-7.20	0.00	0.00

Table 3 (continued).

Hypothesis	Variable	Median	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom
(Dependent variable)	Change in share of national exports going to China between 2008-2010, **in percentage points**	0.90	1.05	0.26	0.44	0.94	0.62	1.21	0.90
	Change in share of national exports going to China between 2008-2010, **in %**	43.27	45.24	21.43	39.11	117.75	30.26	43.27	43.76
H1	Government consumption expenditure, normalized by GDP	5.69	5.00	34.94	31.01	8.00	12.73	2.86	5.69
H2	Total non-crisis state-aid (excl. agriculture, fishery and transport), normalized by GDP	-2.59	2.57	-10.34	0.00	0.00	0.00	0.00	0.00
H3	Hourly compensation costs in manufacturing, 3 lags, indexed (100=Germany in 1997)	-14.21	-9.03	-58.30	-22.96	-4.11	-15.21	-13.84	-14.21
H4	Difference in composition index	2.39	3.71	2.31	5.36	1.70	2.39	1.00	3.85
H5	Interaction term of share of VAT export rebates and difference in composition index	-8.70	-8.70	-17.67	-13.67	-8.42	-10.22	-3.71	-8.16
H6	China's share of world GDP, in %	68.79	59.47	239.11	140.56	66.27	100.17	51.54	68.79
H7	Nominal exchange rate, indexed (2000=100)	-0.92	-0.67	-2.71	-1.59	-0.75	-1.14	-0.45	-0.92
H8	No of high level visits to China, current and 1 lag	0.00	-3.68	14.80	8.70	0.00	0.00	-3.19	8.52
H9	No of initiations of AD investigations against China (by nationality of complaining firms), ever initiated, 1 lag	3.47	9.35	6.27	11.05	3.47	13.13	1.35	0.00
H10	No of initiations of AD investigations of China, ever initiated, 1 lag	0.00	-5.07	0.00	0.00	0.00	0.00	0.00	-5.86

Table 4: Second stage regression results to examine crisis-era export responses.

Dependent variable: Residual of first stage regression; observations before the crisis (years 2000-2008) dropped.

Variable	Full sample			Full sample without Germany and Finland		
No of discriminatory measures implemented by China	0.0696			0.0241		
	(0.0482)			(0.0359)		
No of beneficial measures implemented by China	-0.129			-0.0362		
	(0.0902)			(0.0904)		
No of sectors affected by discriminatory measures of China		0.160			-0.567***	
		(0.446)			(0.192)	
No of sectors affected by beneficial measures of China		0.00740			0.0134	
		(0.0294)			(0.0172)	
No of red and murky measures implemented by China			0.146			-0.584***
			(0.281)			(0.178)
No of red tariff or trade defence measures implemented by China			0.0144			0.0265
			(0.0366)			(0.0202)
Constant	-0.396	-6.245	-0.881	-0.133	22.11***	3.503***
	(0.408)	(17.46)	(1.766)	(0.302)	(7.480)	(1.081)
Observations	30	30	30	26	26	26