Journal of Contemporary European Research

Volume 13, Issue 4 (2017)

Research Article

The Sino-European Solar Panel Dispute: China's Successful Carrot and Stick Approach Towards Europe

Astrid Pepermans, *Vrije Universiteit Brussel*

Citation

Pepermans, A. (2017). 'The Sino-European Solar Panel Dispute: China's Successful Carrot and Stick Approach Towards Europe', *Journal of Contemporary European Research* 13(4): 1394-1411.

First published at: www.jcer.net

Abstract

This article considers the Sino-European solar panel conflict, which occurred between 2012 and 2014. The article takes a particular interest in how China and Europe coped with the trade dispute, which arose after several European solar companies filed a complaint in the European Commission accusing the Chinese of unfair trade practices (i.e. dumping and illegal subsidising). An analysis of the internal and external challenges that were decisive for the outcome of the trade conflict is illustrated, after which the article makes some conclusions about the concept of economic statecraft, how it is applied and on the effectiveness of European economic diplomacy in the changing Sino-European trade relationship.

Keywords

China; Europe; Trade; Economic statecraft; Political economy

In 2007, the Chinese state designated the solar power sector a pillar industry, hoping that China would become a global leader and exporter of green technologies (Cleantech Scandinavia n.d). And it did. In less than a decade, China became a huge competitor for Europe, which witnessed a rapid increase of Chinese solar equipment imports and saw its position as solar power pioneer of the world seriously challenged. A complaint of several European solar power equipment manufacturers on Chinese unfair trade practices in the industry led the European Commission to initiate an anti-dumping and an anti-subsidy case on Chinese solar equipment, which resulted in one of the most intense trade disputes in the Sino-European economic history (Tenuta 2015: 21).

The outcome of the trade conflict – a so-called price undertaking between China and Europe – is widely regarded as a victory for China (Bollen, De Ville and Orbie 2016: 286). The influx of Chinese solar panels was reduced. However, rather than the result of the MIP (minimum import price), this reduction was a consequence of the withdrawal of the European energy certificates that had triggered European demand for solar power in the first place. The MIP did not achieve a recovery in Europe's competitiveness in the sector and turned out to be at the expense of jobs in the downstream part of the solar energy sector. Furthermore, even if the MIP was intended to confine the application of unfair trade practices, several Chinese solar panel suppliers managed to keep on exporting their equipment under the MIP by using different loopholes between 2013 and 2016. Taking these considerations into account, the question remains why the solar panel dispute resulted in such a contested and inefficient measure.

This article clarifies how both external as well as internal factors were decisive for this outcome. China used a well-thought out strategy through which it was able to play upon divisions within the EU and influence the Union's foreign policy behaviour in the solar panel case (Mastanduno 2008: 226). On the one hand, China answered the European Commission's accusations of unfair Chinese trade practices with threats and retaliation. On the other hand, Chinese officials were able to exploit the competition for Chinese investment between the European member states, facing severe monetary pressure due to the financial crisis (Hanemann & Huotari 2016: 2).

Still, China's carrot and stick strategy might have proved unsuccessful were it not for the internal fragmentation between the European member states, divisions between the member states and the European Commission and the different interests within the European solar energy sector. Due to the Union's particular nature, which diverges from that of a state and which is recognisable by a constant tug-of-war between competing priorities and interests, it turned out to be particularly challenging for the EU to cope with China's application of economic statecraft (Smith 2001: 789/800; Garcia 2014).

The article contributes to the literature in two ways. First, by analysing both the internal and the external factors (i.e. the multiple and diverging interests within the EU and the different tools of economic statecraft applied by China) that were decisive for the outcome of the trade conflict, it diverges from existing studies on trade conflicts, which often only provide a partial view (Bollen, De Ville and Orbie 2016; Plasschaert 2016; Eckhardt 2013; Evenett 2013). Second, within the study of economic statecraft, there exists a bias towards economic sanctions or negative coercion in investigating the application of economic statecraft by a nation (Morgan 1999; Pape 1997; Smith 1996). As the article will illustrate, positive coercion – or measures to attract and convince - can be equally useful to influence a foreign actor's policy behaviour (Reilly 2016: 194; Mastanduno 2008: 235-236).

This study mainly relies on qualitative research. The analysis of the interests of the Chinese government to develop a strong and internationally competitive solar energy industry are based on policy papers and scientific literature. This is complemented by data concerning economic profit, trade and employment, which illustrate the global interests of China's solar energy companies and their sudden entrance onto the European area. The Sino-European solar panel trade dispute is a recent phenomenon. Consequently, scientific literature on the issue is almost non-existent. To clarify what happened, open sources, such as articles from newspapers like *The Financial Times* and *The Guardian* are used. China's official stance in the trade dispute is assembled from various public statements by Chinese officials, such as Li Keqiang, and ministries, such as the Chinese Ministry of Commerce. These statements can be found in open sources, such as *The People's Daily*, *The Financial Times* and *The South China Morning Post* and on the websites of the institutions concerned.

Six additional in-depth interviews were conducted in order to fill possible gaps in the analysis. An interview was done with a representative of Aegis Europe, an industry alliance representing 30 key industries aiming to promote manufacturing investment, innovation, jobs and growth in Europe and which supports the application of European tariffs on the import of Chinese solar equipment sold at a price lower than the MIP. A second interview was undertaken with a representative of Solar Power Europe, a member-led association, which aims to shape the regulatory environment and enhance business opportunities for solar power in Europe. Contrary to Aegis Europe, Solar Power Europe never supported the implementation of tariffs and still advocates their removal (Smith 2016). A third interview was done with a representative of a Belgian company that engineers, installs and monitors photovoltaic installations and thus prefers the free flow of cheap Chinese equipment onto the European market.[i] An interview with a Commission official, active at the Directorate General of Trade, was performed. This interviewee can be considered a representative of the view of the Commission, which has been in favour of the Sino-European settlement. A fifth interview was conducted with a representative of Global Bod Group, a Baltic group that manages several companies of high technologies, some of which are active in the solar industry. A final interview was done with Safe (Solar Alliance for Europe), a network of companies and associations active in the solar energy sector that rejects the application of measures against the import of Chinese solar equipment (Lee 2016).

The rest of the article unfolds in three sections. The first section explores the theory on economic statecraft and European economic diplomacy. This is followed by a short description of how China was able to dethrone Europe as the major solar equipment provider of the world. An analysis of the Sino-European solar panel conflict follows, after which some concluding remarks are made, which summarise and hark back to the theoretical debate of the first section.

ECONOMIC STATECRAFT: DEFINITION AND LITERATURE REVIEW

According to Michael Mastanduno, statecraft can be described as 'the use of policy instruments to satisfy the core objectives of nation-states in the international system' (Mastanduno 1998: 826). While it has not always been the case, most scholars within the field of International Relations acknowledge the multi-dimensional nature of statecraft, stressed by writers like Staley (1935), Hirschman (1980) and Baldwin (1985). Statecraft is not confined to the application of military instruments to satisfy military objectives, but can involve different types of instruments for a range of objectives (Staley 1935; Morgenthau 1975: 56; Hirschman 1980; Baldwin 1985: 21; Mastanduno 1998: 831).

The contributions of writers like Keohane and Nye (1997) additionally affected ideas on statecraft. They questioned the wisdom of making a rigid distinction and hierarchy between low politics (economic affairs) and high politics (military affairs), arguing we had turned to an era of complex interdependence, recognisable by a high level of complexity among actors, issues and flows, in which the importance of economic policies and economic statecraft had risen, while military force, which traditional IR scholars used to perceive as the dominant source of power, often only played (and plays) a minor role (Keohane & Nye 1997: 19/22-27; Morgenthau 1975: 56).

In recent years, the literature on economic statecraft has been growing significantly. Numerous writers have explored how political leaders try to exert influence in pursuit of foreign policy objectives through the use of economic resources (Huffbauer, Schott, Elliott and Oegg 1990; Smith 1996; Pape 1997; Drury 1998; Morgan 1999; Dashti-Gibson, Davis and Radcliff 2002; Drezner 2003; Lacy & Niou 2004; Morris 2010). However, when taking a closer look at this abundance of research, it becomes apparent that positive economic statecraft has received relatively little attention in the political science literature. As Baldwin (1971: 21-22) puts it: 'In discussing the role of sanctions in power relations, the pens of political scientists often slip towards negative sanctions, and almost never slip towards positive sanctions'. This bias is mirrored in how Daniel W. Drezner defines economic statecraft (Drezner 2003: 643): 'The threat or act by a sender government or governments to disrupt economic exchange with the target state, unless the target acquiesces to an articulated demand'.

As Michael Mastanduno claims, and as will become clear throughout the case study in this article, positive coercion – or measures to attract and convince - can be an equally useful means of economic statecraft and therefore should not be neglected when analysing the outcome of a dispute or a negation procedure (Reilly 2016: 194; Mastanduno 2008: 224/227; Baldwin 1985: 42-43). This is not to say that negative coercion is irrelevant. As Mastanduno rightly stresses: 'Economic pain may force the target government directly to reconsider its behavior or may create political divisions within the government which lead to policy change' (2008: 228). Still, the art is to combine positive and negative coercion to such an extent that the coerced power has little option left than to compromise. The following case study illustrates how China was able to apply such a carrot and stick strategy.

Within the field of positive economic statecraft, a second important distinction should be made. While positive tools of economic statecraft can be applied in order to trigger an immediate change in

policy behaviour (this is referred to as tactical linkage, carrots or specific positive linkage), a second type of positive statecraft, (the so-called general positive linkage, long-term engagement or structural linkage) is another way of reconfiguring the balance of political interests within the counterpart. In this case, the sanctioning state expects that sustained, long-term economic engagement with the target state eventually achieves the desired transformations in the latter's behaviour (Mastanduno 2008: 235; Mastanduno 2000: 304). This deserves a mention as the solar panel case study demonstrates how Chinese statecraft is not confined to short term economic incentives but also involves long-term promises and projects, which steadily mould member states' positions on Europe's trade policy.

To give an example, from the start of the solar panel conflict, Germany was not prepared to start a fight with China over solar power material (Chaffin 2013a). Rather than a consequence of specific Chinese economic triggers, this reluctance is a result of what has been called Germany's 'special relationship' with China, which had emerged over the last decade. As Kundnani and Parello-Plesner mention, this kind of economic connectivity implies the risk that a country like Germany puts its bilateral relationship with China before the defense of the European Union's strategic interests, which in turn opens the door for Beijing to treat Berlin as a proxy for Brussels (Kundnani and Parello-Plesner 2012: 2).

This discussion about tactical and structural linkage suggests that there can be a fine line between 'conscious acts of coercion', or rather less conscious, even direct consequences of an increased level of economic interdependence (Smith 2014: 41; Meunier 2013). While researchers like Knorr deny that 'purely economic exchange' involves politics or power, examples in the past have shown that economic transactions can be considered attempts to influence (Knorr 1975: 311; Baldwin 1985: 44). Whether the Sino-German interdependence has been consciously created by China is beyond the scope of this article. However, that the Chinese are well aware of the vulnerability created by this interdependence and tend to use it for their 'divide and rule' policies is certain (Smith & Xie 2010: 441).

EUROPEAN ECONOMIC DIPLOMACY

There exists a range of papers, articles and books on how a lack of EU cohesiveness often comes at the expense of the EU's bargaining leverage over market access and its ability to shape international norms (Garcia 2014; Meunier 2013; Fox & Godement 2009; Kerremans 2006; Meunier & Nicolaidis 1999). This difficulty is inherently connected with the assumption that the EU has to provide some 'state functions', such as mustering coherent commercial strategies, but has to cope with an internal structure which strongly differs from that of a state (Smith 2011: 196). Consisting of 28 European member states and three different institutions (the European Parliament, the Council of Ministers and the European Commission), it hardly needs saying that finding a general consensus on trade policy within the EU is a hard endeavour.

The Lisbon Treaty was designed to tackle exactly this shortcoming as it promises to overcome the institutional divisions that have been a stumbling block when it comes to Europe's strategic diplomacy (European Union 2007; Meunier 2013: 997; Woolcock 2011: 8). However, evidence has shown that implementing the treaty has been easier said than done and the internal divisions, for example between the European Council and the Commission, continue to stand in the way of unified European external policies (Smith 2014: 39; Woolcock 2011: 4; Smith & Xie 2010: 444). Moreover, the issue is not confined to fragmentation between the different member states' interests and between the different European institutions. In the area of trade politics, the EU is confronted by the complexities of relationships between importers and exporters, producers and consumers (Smith

2011: 195). As the case study below indicates and similarly to comparable anti-dumping and anti-subsidy cases, such divisions within the European industry hence complicate Europe's economic diplomacy further (Smith 2014: 43; Eckhardt 2013; Evenett 2013). Moreover, these internal tensions are exacerbated by the 2008 financial crisis, which was not only a major economic blow for Europe but also intensified competition with the BRICS, China in particular (Smith 2013: 12-17). As Smith and Xie mention (2010: 445): 'The changing structure of the global arena, recognized by the rise of some emerging powers, can complicate the performance of unified and strong European economic diplomacy'.

The traditional definition of an 'international actor' is an entity that is able to formulate purposes and make decisions (Holslag 2011: 310). A strategic actor is assumed to be monolithic, possessing a unified set of preferences and hence capable of producing unified actions (Smith 1998: 80). Every situation in which Europe fails to act as a mature strategic actor is an opportunity for China and its companies to turn the European weakness to their advantage. In this sense, it needs to be reiterated that both internal as well as external challenges have to be taken into account in the following solar panel case's assessment. On the one hand, the Union's inability to speak with one voice provides an avenue for those who might want to play upon its internal divisions, thus weakening the EU's position in the world political economy. On the other hand, the fragmentation within the EU reflects external partner's strategies. As already mentioned by some scholars and as demonstrated by the following case study, the external and internal issue go hand in hand. Therefore, a distinction between them no longer holds in many areas of commercial policy-making (Smith 2011: 192).

CHINA'S INDUSTRIAL POLICY AND ITS IMPACT ON EUROPE

As early as 1996, China launched several electrification projects to introduce the use of solar energy in the country (Zhao, Wan and Yang 2014: 180). Nevertheless, it was only from 2007 on (when the European demand for solar energy boomed as a result of different market-stimulating measures launched by European countries from 2000 onwards) that the Chinese government included the industry in its list of strategic emerging industries (SEI) and spurred up the development of photovoltaic power (Zhang, Andrews-Speed, Zhao and He 2013: 3; MIIT 2014, 2010). China saw the growing European market as a perfect outlet for the huge amounts of solar cells and modules of which Chinese manufacturers could not dispose in China. This resulted in export-orientated government policies which made the export value of Chinese PV products increase at a tremendous speed between 2008 and 2011, when the export value peaked at 35.82 billion USD (Zhao, Wan and Yang 2014: 183).

One consequence of these export-orientated state policies, combined with stimulated western demand, was that in 2006 and 2009 respectively, China sold 97.5 and 96 per cent of its solar modules to foreign buyers. Considering its solar cell production, China was able to increase its global market share from 16 to 60 per cent between 2006 and 2012 (Yu, Popiolek and Geoffron 2014: 9-10). The number of Chinese jobs in the sector more than doubled between 2008 and 2011 and the price of solar systems took a tremendous dive of around 70 per cent. In 2015, the world's top ten solar module manufacturers still covered 52 per cent of the global market share and included seven Chinese companies, which together covered 44 per cent (Statista 2015).

As Chart 1 illustrates, Europe was barely able to profit from the world's rising demand for photovoltaic devices between 2007 and 2014. China on the other hand, climbed its way to the top in no time. The chart also shows that, even after the economic crisis and the western anti-dumping cases against China in 2013, the country was able to consolidate its global market shares with a value of more than 19 billion USD in 2014 (Clover 2014).

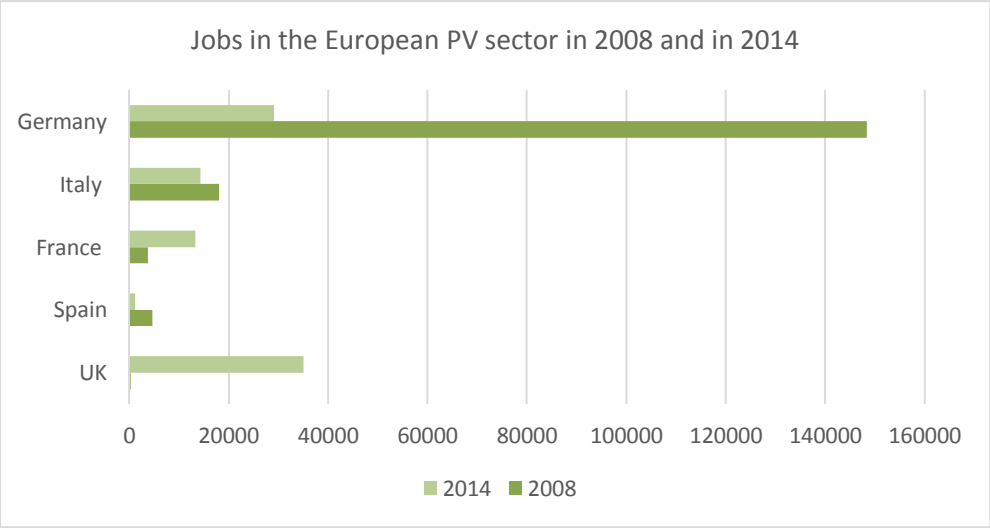
Chart 1: European and Chinese exports of photosensitive/photovoltaic/LED semiconductor devices

Source: Comtrade 2016.

The mass entry of Chinese solar products into overseas markets had consequences for Western solar producers, unable to offer the low prices that their Chinese counterparts provided. Between 2009 and 2012, forty European solar product firms became insolvent (EU Prosun 2012, 2013). Whereas in 2008, the European solar industry accounted for 179,000 jobs, only 109,000 of them were left in 2014. As demonstrated in Chart 2, in Germany especially - the country that was considered *the* solar energy pioneer of the world (Plasschaert 2016: 3) - the sector suffered a severe dent, as 80 per cent of the German jobs provided by the industry disappeared between 2008 and 2014 (Solar Power Europe 2015: 12).

The Eurocrisis forced European officials to withdraw the generous FIT policies (feed-in tariff) that had created the European demand for solar energy equipment in the first place. At the same time, China kept on speeding up its production of solar products. As a representative of Aegis mentioned (interview Aegis May 2016): 'The thing is that Chinese solar companies can almost not go bankrupt as China's state banks keep on granting them loans'. This exacerbated China's already existing problem of excess capacity. The increased pressure on the European solar panel market eventually moved some European solar energy companies to raise the alarm over the way Chinese unfair trade practices were disturbing competition conditions and upsetting the balance in the market.

Chart 2: Jobs in the European PV sector in 2008 and in 2014



Source: Solar Power Europe 2015: 12.

THE SINO-EUROPEAN SOLAR PANEL DISPUTE

On June 25 2012, several EU solar groups, led by Germany's Solar World, lodged a complaint at the European Commission against potential Chinese dumping of solar panels onto the European market (Chaffin 2012a). The argument went that China was able to capture more than 80 per cent of Europe's market in less than six years due to dumping practices and illegal subsidisation of Chinese solar panel manufacturers by the Chinese government (Bondaz 2013). Given the high amount of insolvencies suffered in Germany in 2012, the complaint was initiated mainly by German producers. Germany's Q-Cells and Conergy went bankrupt and Solar World lost around 500 million EUR in 2012 (Chaffin 2012b, 2013b).

On September 6 2012, the Commission accepted the complaint and decided to start an investigation. That the stakes were high - the value of Chinese exports of these products to the EU had reached 21 billion EUR in 2011 - became very clear when Li Keqiang, then Prime Minister of China, reacted as follows 'We don't agree with this decision and emphatically reject it' (Kirschbaum 2013). Chinese officials also anticipated the solar case by warning that they would launch their own investigation into polysilicon, an important product to manufacture photovoltaic cells. This move was especially targeted at German suppliers for whom China is an important costumer. In 2011, China imported European polysilicon worth 870 million USD (Hook 2012).

However, Karel De Gucht, former Commissioner of Trade, was convinced to maintain a firm stance in the issue. He stated: 'It's clear that the dumping of these Chinese solar panels is harming the European solar panel industry. This jeopardizes at least 25,000 current jobs'. He recommended that such products should face duties averaging 47 per cent (Peel & Chaffin 2013). Moreover, the Commissioner was not planning on giving in very easily as he said of the Chinese: 'They are not going to impress me by putting pressure on member states' (in Evenett 2013). As the price at which Chinese solar panels were sold in Europe lay 88 per cent too low, the Commission decided to impose provisional duties from June 2013 on. Initially, they would average 11.8 per cent, but after two months the duties would rise to 47.6 per cent if no compromise with China was agreed upon by then (Walker 2013). As mentioned by a Commission official (interview Commission official May 2016):

'This arrangement was necessary to give the Chinese the time to come up with a proposal for what they always want, namely a settlement'.

Nevertheless, it soon became clear that, whereas the Chinese may not have been able to impress the Commissioner, they certainly impressed several national capitals, especially when China's threatening language was followed by action. The Chinese Ministry of Commerce announced that it would launch an official trade probe into European polysilicon (Hook 2012). Wacker Chemie, Europe's biggest polysilicon supplier immediately pleaded to Brussels to hold fire. Rudolf Staudigl, Wacker's Chief Executive, stated: 'If tariffs are implemented, Europe will be damaged more than China' (Chaffin 2013c). Phillipe Rösler, Germany's Economy Minister backed this statement and urged Mr De Gucht to negotiate a solution. From the start of the solar case, Germany was not prepared to start a fight with China (Chaffin 2013a). Prior to the initial Commission investigation in 2012, Angela Merkel did not hide her reluctance to support a trade action against China. She communicated the German position during a delegation to Beijing, which was aimed at confirming the Sino-German 'special relationship' and which resulted in 18 bilateral agreements (Hille & Chaffin 2012). The Chinese announcement about the polysilicon case accelerated German opposition in the panel case.

But China did not only target the opponents of European countermeasures. China launched a well-targeted probe on the imports of European wine (FT 2013; Mofcom 2013). Moreover, an editorial in the People's Daily, the Chinese Communist party's mouthpiece, warned Europeans that China still had 'plenty of cards to play' (Phillips 2013). No sooner said than done, China threatened an official complaint over luxury cars imported from the EU, again pointing the gun at Germany. A representative of Solar Power Europe commented (interview Solar Power Europe May 2016):

> Anti-dumping is phenomenally political. If the Chinese want to get the attention of Angela Merkel, all they have to do is pull out the *car card*. While the German guys on the desk wanted a vote in favour of measures, a call came through from Merkel saying that they should vote against the measures. That is how political cases like these get.

As European carmakers (most of them German) exported almost 500,000 passenger cars to China in 2012, the European car industry association pressed the Commission to refrain from imposing tariffs: 'Clearly it is in all interests that an amicable solution to current trade tensions can be found', the industry group said in a statement (Foy & Fontanella-Khan 2013).

Besides using sticks, China also used carrots to turn different member states against the Commission. At the time, China's GDP was still growing by nine percent annually while Europe suffered from severe financial problems, giving the Chinese an additional advantage in the issue (Cleantech Scandinavia n.d). Many European governments were rather focused on attracting lucrative investments and on helping their constituents to win commercial contracts in China than on the principle of a united EU trade policy (Chaffin 2013d). The agreements that were made during the Sino-German meetings in 2012 are just one of the many examples. 2011 was the first year that Chinese outward foreign direct investment to Europe increased at a tremendous speed; whereas in 2010, China invested around 2 million EUR in the EU, by 2012, this figure rose to 1 billion EUR. The national capitals badly needed this kind of money and did not have the stomach to fight China on the solar panel issue (Hanemann & Huotari 2016: 4).

In 2011, China launched the 16+1 platform, a new forum for cooperation with Central and East European countries (CEEC), which includes eleven EU member states. In 2012, former Chinese Premier Wen Jiabao recommended twelve proposals to promote China–Central Eastern European (CEE) economic cooperation and friendship, Beijing pledged 10 billion USD to fund projects under

the China and Central and Eastern European Countries initiative. EU member states contest with one another to attract foreign investment. In pursuing this goal, they often override one of the flagship objectives of the EU, which is the development of a market-led, yet rule-based global economic governance system. Hence, the internal competition for Chinese investments creates the risk that the eleven countries in the 16+1 forum, also members of the EU, form a pro-China lobby and thus influence policymaking in Brussels (Fallon 2015: 145). A representative of Global Bod Group mentioned (interview Global Bod Group June 2016): 'We know that Chinese ambassadors went to local politicians and stake-holders to understand and influence a country's position regarding the solar case. This has been communicated to our industry association by several politicians in Central and Eastern Europe'. A Commission official confirmed (interview Commission official 2016): 'China worked on the member states and some member states had their own convictions, which influenced the Commission's decision in the solar panel case'.

Eventually, China had been able to convince 18 out of the then 27 member states to oppose the tariffs. The Commission found itself under pressure by the Council of Ministers, which was, at that time, able to reject final tariffs with a simple majority. As a Commission official confirmed (interview Commission official May 2016): 'It was a matter of political rationale to say that, in order to avoid that the Council defeats the entire case, it is better to have a price undertaking in place'. Moreover, this pressure was increased by the downstream sector, which did not welcome final duties either. As a representative of Safe mentioned (interview Safe June 2016):

> Safe is against dumping and illegal subsidisation and supports each country's right to protect itself against unlawful business conduct. In the case of solar, Safe appeals to European politicians to act upon the global, European and national renewable energy and climate protection goals and support solar energy.

A Europe Solar World member confirmed (interview Europe Solar World May 2016): 'Tariffs do not create new jobs in the upstream sector but on top of that put the jobs in the downstream part of the value-chain at risk'.

Hence, the possibility of imposing a MIP – an undertaking which was proposed by the Chinese government and the Chinese Chamber of Commerce two days before the provisional measure of 47 per cent between effective - rather than tariffs became the most probable outcome of the case. Mr De Gucht initially claimed to set this MIP at 58 cents per kwh, but the Chinese insisted on accepting no more than 50 cents (Chaffin 2013e). At the end of July 2013, an amicable solution was agreed upon. 90 Chinese solar companies agreed not to sell their products in the bloc below a price floor of 56 cents per watt. The agreement covered up to seven gigawatts of production of the EU market and the measure would remain in force until 2015. China was clearly satisfied with the agreement and immediately put its retaliatory cases on hold, which sent relief throughout Europe (Chaffin 2013f).

THE MIP, A CHINESE VICTORY

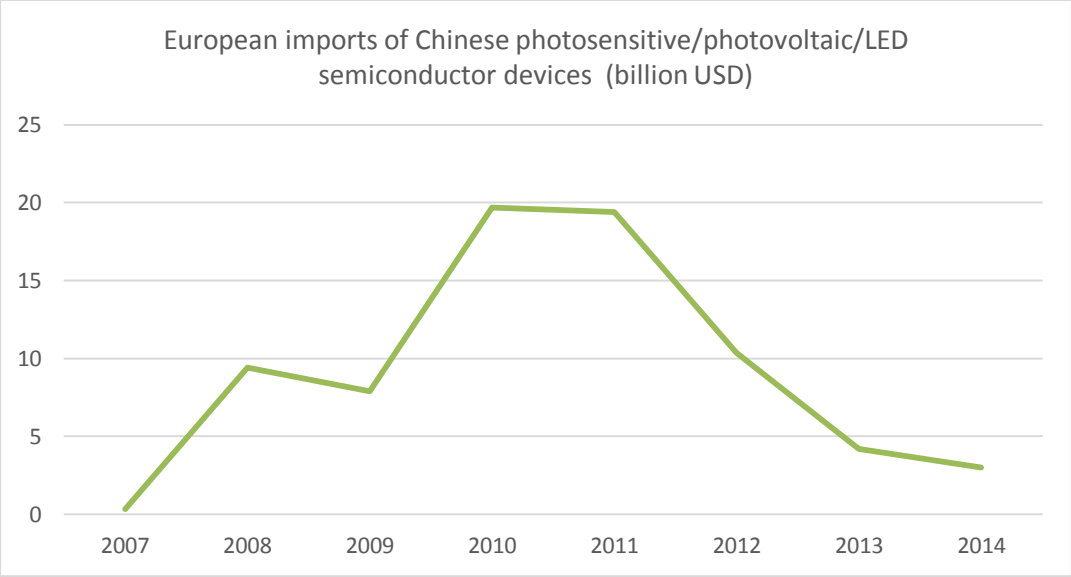
Nevertheless, the Sino-European settlement provoked outrage among several associations. Milan Nitzschke, EU ProSun's President stated: 'This agreement is not a solution but a capitulation' (Chaffin 2013g). A Commission official explained how the effects on the market of the MIP are still under investigation (interview Commission official May 2016): 'Current figures show how the negative spiral of the prices has stopped and that there are signs of consolidation on the EU Market. However, a restoration of competitiveness did not occur'. Module sales of the EU solar industry have decreased significantly (1.7 GW in 2014/15 compared to 2.4 GW in 2012) and studies have shown that European module manufacturing capacity reduced by almost 20 per cent between 2014 and

2015. Since 2013, further insolvencies of Union producers have occurred (ISE 2016; interview Safe June 2016).

But, as Karel De Gucht claimed, the case was not only about solar panels. It was considered a test of whether the EU is able to maintain a unified front behind a trade policy orchestrated by Brussels, even in the face of intense national lobbying by Beijing that heightened fears of a costly backlash. If this was indeed the case, the EU clearly failed this test. The initial idea of Europe to stamp out unfair trade practices was not carried out, as the MIP was a watered-down version of the Commission's intention to pressure Beijing to dismantle a system of dumping and illegal government subsidies. The divisions among the member states left Europe with no option than either imposing a weak measure, to which each of the member states could subscribe, or ending up with no measure at all. A Commission official confirmed (interview Commission official May 2016): 'The Commission *knew* that if it did not agree with the Chinese to have a price undertaking, there was a risk that there would be no measure at all'.

It is clear that there was one player who benefited from this case; China. First of all, it was able to maintain its market share in the EU. This is not to say China did not suffer from the shrinking European market as a consequence of the removal of European subsidies. As Chart 3 demonstrates, the withdrawal of green energy certificates in Europe in 2011 had a chilling effect on Chinese exports to the Union. Still, China was able to remain the dominant player in the European market and especially in the global market. As a representative of a European PV installation firm mentioned (interview representative May 2016): 'There are no new European entrants in the solar panel market because nobody is crazy enough to compete against these Chinese solar giants'. Internationally, it gives China the possibility to provide for the globally rising demand of solar energy without facing many competitors.

Chart 3: European imports of Chinese photosensitive/photovoltaic/LED semiconductor devices.



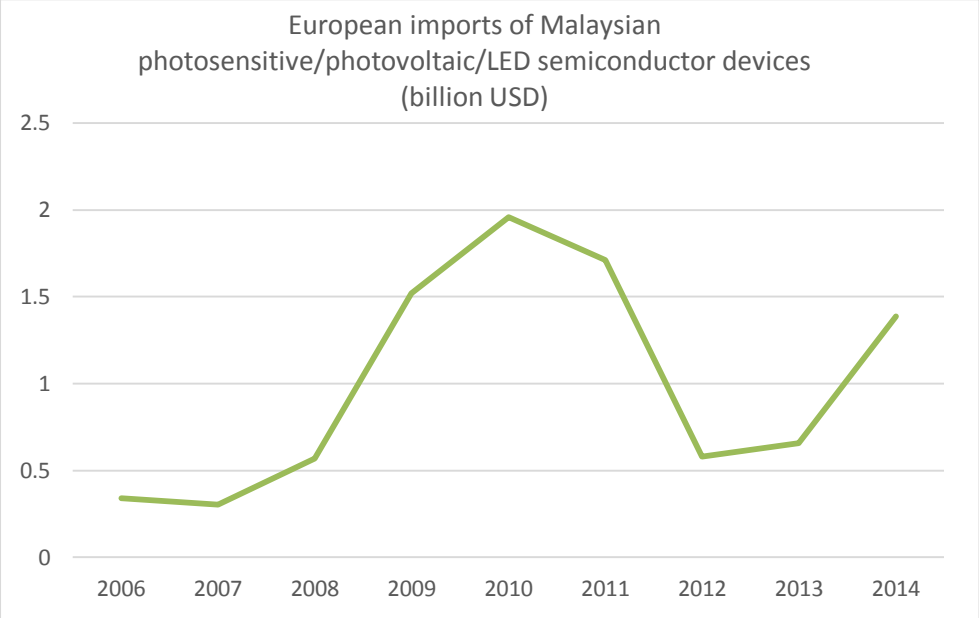
Source: Comtrade 2016.

Second, even if the MIP was imposed to stop the Chinese from selling at destructive prices, it remains an enormous challenge to enforce such a measure, a Commission official explained (interview Commission official May 2016): 'It is very difficult to control whether the material is indeed sold at the correct price or whether, in reality, a lower price, a retransfer or a reimbursement on a certain service is offered by the Chinese'. A representative of a European PV installation firm

confirmed (interview representative May 2016): 'It soon became apparent that the Chinese found ways to by-pass the MIP by offsetting the increased cost through some kind of hidden compensation'.

By exporting through third countries like Malaysia and Taiwan, Chinese firms succeeded in bringing in material without having to take into account European measures. Chart 4 shows how Malaysian and Taiwanese exports increased very quickly from the moment the MIP was imposed (Eurostat 2016). In 2015, the Commission imposed additional measures to sanction these practices (Beetz 2015). Still, this can be considered shutting the stable door after the horse has bolted. Between 2014 and 2016, several solar panel companies committed fraud, covering hundreds of millions of euros (Clerix 2016). The European firm representative explained how his company now works with material imported from Turkey, at a price far below the MIP, provided by Chinese companies (interview representative May 2016).

Chart 4: European imports of Malaysian photosensitive/photovoltaic/LED semiconductor devices.



Source: Comtrade 2016.

One of the frequent comments arguing in favour of China offering cheap solar equipment on the European market is that European employment in the sector shifted from making PV panels to installing them. Another argument for cheap Chinese solar panels is that they benefit the European population as it is good for the consumer's purchase power. However, these comments miss the point in four respects. While it is true that the influx of cheap material created a surge in the employment provided by the downstream sector, mirrored by the job creation in the British solar power sector between 2008 and 2014 (Chart 2), this can hardly be called 'a shift' as the gain of jobs in the downstream part of the industry is still small compared with the losses that the upstream part of the sector had to suffer. Second, whereas in the short term the availability of cheap Chinese solar material can be good for the European consumer, the monopolistic position of a handful of (often financially troubled) Chinese solar companies in the world is likely to increase the prices again in the long term. Moreover, the lack of competitive pressure can reduce the appetite for innovation, a factor that is crucial for the further development of an advanced technology industry like the cleantech sector. Third, the argument that cheap material is to the advantage of European consumers does not alter the fact that selling goods for a price far below the market price (i.e. dumping) is not consistent with international trade rules, created to guarantee fair competition

between nations all over the world. Last but not least, being ignorant of dumping and illegal subsidising practices and replacing the local European production base of solar power equipment for the import of Chinese products purely on the basis of price goes against the quest for a more balanced Sino-European trade relationship, which has become an increasingly pressing need within the framework of the Sino-European strategic partnership (Smith & Xie 2010: 439).

CONCLUSION

In 2007, the Chinese government included the solar energy sector in its list of SEIs with the aim of turning China into a global leader in one of the most auspicious and up-and-coming sectors of this era. On the basis of an intensive governmental policy-mix, China surpassed Europe in no time and became the largest producer and market in solar power. While it can be considered an enormous achievement, this development also had a down-side. It resulted in Chinese overreliance on exports to the West and a huge overcapacity of Chinese solar cells and modules, which was exacerbated in 2011 due to the withdrawal of European consumption-motivating subsidies. Prices of solar power equipment tumbled, which led to the disappearance of several European solar panel producers, unable to offer the prices their Chinese counterparts were selling at.

A complaint from several European solar firms against Chinese dumping and illegal subsidising moved the European Commission in 2012 to initiate an official anti-subsidy and anti-dumping case against China, which resulted in one of the most intense Sino-European confrontations so far (Tenuta 2015: 21). While the European Commission was initially convinced to tackle unfair Chinese trade practices, it soon became clear that this would be easier said than done. China used a well-targeted carrot and stick approach to persuade the member states to vote against protective trade measures. A combination of attractive Chinese investments and retaliatory threats convinced 18 out of the then 27 European member states to refrain from supporting the Commission in the solar panel case. As punitive tariffs would have been a no-go for the Council, the remaining options for the Commission were limited and in 2013, a Sino-European price undertaking – based on a proposal from the Chinese Chamber of Commerce - was agreed upon.

The way in which the solar panel case evolved might have been different had it not been for the internal European divisions when it came to coping with the Chinese pragmatism described above. Once the European Commission tried to create a level playing field for the European solar equipment firms, the great heterogeneity in the relations of EU member states with China proved very difficult to reconcile into a unified trade policy. Within the industry there was no consensus either as the upstream and downstream parts of the sector had contradictory preferences when it came to import subsidies against Chinese products. This amalgamation of different interests gave the Commission no choice but to accept China's proposal to impose an amicable price undertaking.

The article contributes to the literature in two ways. Contrary to existing studies on trade conflicts, it analyses both the internal and the external factors (i.e. the multiple and diverging interests within the EU and the different tools of economic statecraft applied by China) that were decisive for the outcome of the trade conflict (Bollen, De Ville and Orbie 2016; Plasschaert 2016; Eckhardt 2013; Evenett 2013). Second, the literature on economic statecraft often remains limited as to whether and how negative economic coercion works. Without underestimating the validity of this scientific work, this case study shows that positive attraction or carrots also play a part in how certain states successfully influence the behaviour of others to get a desired outcome. In his article, *The power of economic sanctions*, Baldwin wonders whether one can influence more flies with honey or vinegar (Baldwin 1971: 19). This case study demonstrates that both methods can be efficient. In fact, combining these strategies can enhance the chance of being able to achieve your goal.

At the pinnacle of the dispute, when the Chinese government threatened to launch retaliatory measures against German polysilicon, Mr Rudolf Staudigl, CEO of the biggest polysilicon producers in Europe said: 'In this trade war, nobody wins' (in Chaffin 2013c). However, this case study comes to a different conclusion. The minimum import price turned out to be a weak and inefficient measure. First of all, the European solar equipment industry was not able to recover, let alone to regain its level of international competitiveness. Second, even if the MIP was intended to put a damper on the Chinese equipment sales in Europe, it seemed rather difficult to enforce it, as China's solar giants soon found several back doors through which they could avoid the measure. Mr Staudigl might have a point when he says that it is difficult to appoint a true winner in the solar panel case – China lost European market share mostly due to the European withdrawal of demand-supportive green energy certificates. But identifying the true loser in the case is less difficult, and it certainly was not China.

CORRESPONDENCE ADDRESS

Astrid Pepermans, Political Science Department, Vrije Universiteit Brussel, Pleinlaan 5 1050 Elsene, Belgium [Astrid.pepermans@vub.be].

ENDNOTES

[1] This interviewee explicitly requested the name of the company concerned not be mentioned.

REFERENCES

Baldwin, D. (1985). *Economic statecraft.* Princeton: Princeton University Press.

Baldwin, D. (1971). 'The power of positive sanctions'. *World Politics,* 40(1): 19-38.

Beetz, B. (2015). EU: Anti-circumvention duties for Chinese solar products shipped via Taiwan, Malaysia. *PV Magazine.* December 22. Available online: http://www.pv-magazine.com/archive/articles/beitrag/eu--anti-circumvention-duties-for-chinese-solar-products-shipped-via-taiwan--malaysia_100022552/#axzz4CDDiMOO9 [last accessed 16 July 2017].

Bollen, Y., De Ville, F., Orbie, J. (2016). 'EU trade policy'. *Journal of European integration,* 38(3): 279-294.

Bondaz, A. (2013). 'Caution Can Avert Downward Spiral in Sino-EU Trade Ties'. Carnegie. June 13. Available online: http://carnegieendowment.org/2013/06/13/caution-can-avert-downward-spiral-in-sino-eu-trade-ties [last accessed 17 July 2017].

Chaffin, J. (2012a). 'EU solar groups seek China probe'. *The Financial Times.* July 23. Available online: https://next.ft.com/content/7c0786ca-d4e1-11e1-b476-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2012b). 'EU solar-panel makers file China lawsuit'. *The Financial Times.* September 25. Available online: https://next.ft.com/content/5e8939fc-072e-11e2-b148-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2013a). 'China's premier Li Keqiang warns Europe over trade war'. *CNN.* May 27. Available online: http://edition.cnn.com/2013/05/26/business/china-europe-trade-war/index.html [last accessed 17 July 2017].

Chaffin, J. (2013b). 'EU levy on Chinese solar panels risks stirring wider tensions'. *The Financial Times.* May 5. Available online: https://next.ft.com/content/eb452a44-b567-11e2-a51b-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2013c). 'Trade: Solar flares'. *The Financial Times.* May 9. Available online: https://next.ft.com/content/a455d13c-b3e7-11e2-ace9-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2013d). 'EU faces up to China over 'mother of all cases''. *The Financial Times.* January 31. Available online: https://next.ft.com/content/e4edbcca-6bab-11e2-8c62-00144feab49a [last accessed 17 July 2017].

Chaffin, J. (2013e). 'EU-China solar panel anti-dumping talks face fresh flare-up'. *The Financial Times.* July 12. Available online: https://next.ft.com/content/9b09120c-eb0e-11e2-bfdb-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2013f). 'EU and China settle trade fight over solar panels'. *The Financial Times.* July 27. Available online: https://next.ft.com/content/4e468c26-f6ab-11e2-8620-00144feabdc0 [last accessed 17 July 2017].

Chaffin, J. (2013g). 'China to freeze trade probes in solar deal'. *The Financial Times.* July 28. Available online: https://next.ft.com/content/dc97ec20-f798-11e2-87ec-00144feabdc0 [last accessed 17 July 2017].

Cleantech Scandinavia (n.d.). 'China Outbound Investment Strategies in the Cleantech Sector'. *Cleantech Scandinavia.* Available online: http://www.innovasjonnorge.no/globalassets/old/pagefiles/4014/china-outbound-investment-strategy_ver2.pdf [last accessed 16 July 2017].

Clerix, K. (2016). 'Miljoenenfraude met Chinese zonnepanelen'. *Knack.* June 22. Available online: http://www.knack.be/nieuws/belgie/miljoenenfraude-met-chinese-zonnepanelen/article-normal-719843.html [last accessed 16 July 2017].

Clover, I. (2014). 'Chinese PV suppliers increase global market share'. *PV Magazine.* August 28. Available online: https://www.pv-magazine.com/2014/08/28/chinese-pv-suppliers-increase-global-market-share_100016239/ [last accessed 16 July 2017].

Comtrade. 2016. UN Comtrade Database. Available online: https://comtrade.un.org/data/ [last accessed 16 July 2017].

Dashti-Gibson, J., Davis, P., Radcliff, B. (2002). 'On the Determinants of the Success of Economic Sanctions'. *American Journal of Political Science*, 41(2): 608–618.

Drezner, D. (2003). 'The Hidden Hand of Economic Coercion'. *International Organization,* 57(3): 643-659.

Drury, A. (1998). 'Revisiting Economic Sanctions Reconsidered'. *Journal of Peace Research,* 35(4): 497–509.
Eckhardt, J. (2013). 'EU Unilateral Trade Policy-Making'. *Journal of Common Market Studies,* 51(6): 989-1005.

EU Prosun (2012). *Current alarming situation.* Available online: http://www.prosun.org/en/fair-competition/alarming-situation.html [last accessed 17 July 2017].

EU Prosun (2013). *Fact Sheet.* Available online: http://www.prosun.org/en/about/fact-sheet.html [last accessed 17 July 2017].

European Union (2007). *Treaty of Lisbon: Amending the Treaty on European Union and the Treaty Establishing the European Community,* Art. 2B. Available online: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2007.306.01.0001.01.ENG&toc=OJ:C:2007:306:TOC#d1e585-1-1 [last accessed 17 July 2017].

Eurostat (2016). *Investigation of Solar Panel Circumvention Case Rumours Through Analysis of Export Data.* Available online: http://www.tcthree.com/wp-content/uploads/2015/02/two.pdf [last accessed 17 July 2017].

Evenett, S. (2013). 'China-EU solar panel trade dispute: Rhetoric versus reality'. *Vox.* Available online: http://voxeu.org/article/china-eu-solar-panel-trade-dispute-rhetoric-versus-reality [last accessed 16 July 2017].

Fallon, T. (2015). 'The New Silk Road: Xi Jinping's Grand Strategy for Eurasia'. *American Foreign Policy Interests,* 37(3): 140-147.

Fox, J. and Godement, F. (2009). *The EU needs a new China strategy.* European Council on Foreign Relations. Available online: http://www.ecfr.eu/article/commentary_fox_godement_china_power_audit_eu [last accessed 16 July 2017].

Foy, H. and Fontanella-Khan, J. (2013). 'China mulls anti-dumping probe'. *The Financial Times.* June 7. Available online: https://next.ft.com/content/8bc996e6-cf6f-11e2-be7b-00144feab7de [last accessed 16 July 2017].

FT. (2013). 'China vs European wine: aux armes!' *The Financial Times.* June 7. Available online: https://next.ft.com/content/85128a4e-cf4f-11e2-a050-00144feab7de [last accessed 16 July 2017].

Garcia, M. (2014). 'The EU, China and Trade in 'Green' Technologies: Cooperation and Conflict'. In: D. Deese (ed.) *Handbook of the International Political Economy of Trade*. Cheltenham: Edward Elgar: 322-349.

Hanemann, T. and Huotari, M. (2016). 'A New Record Year for Chinese Outbound Investment in Europe'. Mercator Institute for China Studies. Available online: https://www.merics.org/en/merics-analysis/papers-on-china/cofdi/a-new-record-year-for-chinese-outbound-investment-in-europe/ [last accessed 18 July 2017].

Hille, K. and Chaffin J. (2012). Merkel faces EU clash over China. *The Financial Times.* August 30. Available online: https://next.ft.com/content/c74f6a1c-f273-11e1-ac41-00144feabdc0 [last accessed 18 July 2017].

Hirschman, A. (1980). *National Power and the Structure of Foreign Trade.* Los Angeles, USA: California University Press.

Holslag, J. (2011). 'The Elusive Axis'. *Journal of Common Market Studies,* 49(2): 293-313.

Hook, L. (2012). 'China to probe EU solar imports'. *The Financial Times.* November 1. Available online: https://next.ft.com/content/e6eff638-23e3-11e2-94d0-00144feabdc0 [last accessed 18 July 2017].

Huffbauer, G., Schott, J., Elliott, B., Oegg, B. (1990). *Economic Sanctions Reconsidered.* Washington DC: Peterson Institute for International Economics.

ISE (2016). *Photovoltaics Report.* 12 July. Available online: https://www.ise.fraunhofer.de/de/downloads/pdf-files/aktuelles/photovoltaics-report-in-englischer-sprache.pdf [last accessed 18 July 2017].

Keohane, R. and Nye, J. jr. (1997). *Power and Interdependence.* Glenview, IL: Pearson.

Kerremans, B. (2006). 'Proactive Policy Entrepreneur or Risk Minimizer?' In: O. Elgström and M. Smith (eds) *The European Union's Roles in International Politics*. London: Routledge:172-188.

Kirschbaum, E. (2013). 'Merkel, Li call for end to EU-China solar trade row'. *The South China Morning Post.* May 27. Available online: http://www.scmp.com/business/economy/article/1247147/angela-merkel-and-li-keqiang-call-end-eu-china-solar-trade-row [last accessed 19 September 2017].

Knorr, K. (1975). *The Power of Nations.* New York: Basic Books.

Kundnani, H. and Parello-Plesner, J. (2012). *China and Germany: a new special relationship?* European Council on Foreign Relations. May 15. Available online: http://www.ecfr.eu/publications/summary/china_and_germany_a_new_special_relationship [last accessed 18 July 2017].

Lacy, D. and Niou, E. (2004). 'A Theory of Economic Sanctions and Issue Linkage'. *The Journal of Politics*, 66(1): 25–42.

Lee, A. (2016). 'European Commission plans extension of anti-China solar measures'. *Recharge.* 21 December. Available online: http://www.rechargenews.com/solar/1200995/european-commission-plans-extension-of-anti-china-solar-measures [last accessed 18 July 2017].

Mastanduno, M. (1998). 'Economics and Security in Statecraft and Scholarship'. *International Organization,* 52(4): 825-854.

Mastanduno, M. (2000). 'Economic Statecraft, Interdependence and National Security'. In: N. Ripsman and J. Blachard, *Power and the Purse.* London: Frank Cass and Company: 288-316.

Mastanduno, M. (2008). 'Economic Statecraft'. In: S. Smith, A. Hadfield and T. Dunne, *Foreign Policy: Theories, Actors, Cases.* Oxford: Oxford University Press: 222-241.

Meunier, S. (2013). 'Divide and conquer?'. *Journal of European Public Policy,* 21(7): 996-1016.

Meunier, S. and Nicolaïdis, K. (1999). 'Who speaks for Europe?'. *Journal of Common Market Studies,* 37(3): 477-501.

MIIT (2014). *Opinion of the Ministry of Industry and Information Technology on the further optimization of the merger and acquisition environment for Photovoltaic enterprises.* Available online: http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057643/n3057649/c3625657/content.html [last accessed 18 July 2017].

Mofcom (2013). *China's EU wine probe sparks worries.* Available online: http://english.mofcom.gov.cn/article/newsrelease/counselorsoffice/westernasiaandafricareport/201306/20130600170143.shtml [last accessed 19 September 2017].

Morgan, C. (1999). 'When Threats Succeed'. *Grantome.* Available online: http://grantome.com/grant/NSF/SES-0137792 [last accessed 18 July 2017].

Morgenthau, J. (1975). 'The New Diplomacy of Movement'. *Encounter,* 3(2): 52-57.

Morris, W. (2010). *Chinese Economic Statecraft*. London: Cornell University Press.

Pape, R. (1997). Why Economic Sanctions do not work'. *International Security,* 22(2): 90-136.

Peel, Q. and Chaffin, J. (2013). 'Germany warns EU solar tariffs would be 'grave mistake''. *The Financial Times.* May 19. Available online: https://next.ft.com/content/063fefec-c0a2-11e2-8c63-00144feab7de [last accessed 17 July 2017].

Phillips, T. (2013). 'China fuels trade row with attack on 'haughty' Europeans'. *The Telegraph.* June 6. Available online: http://www.telegraph.co.uk/finance/china-business/10103438/China-fuels-trade-row-with-attack-on-haughty-Europeans.html [last accessed 17 July 2017].

Plasschaert, S. (2016). *Assessing the Solar Energy Dispute.* European Centre for International Political Economy, ECIPE Working Papers. Available online: http://ecipe.org/publications/the-solar-energy-dispute-between-eu-china/ [last accessed 17 July 2017].

Reilly, J. (2016). 'China: turning money into power'. In: M. Leonard (ed.) *Connectivity Wars. Why Migration, Finance and Trade are the Geo-Economic Battlegrounds of the Future.* European Council on Foreign Relations: 189-197. Available online: http://www.ecfr.eu/page/-/Connectivity_Wars.pdf [last accessed 17 July 2017].

Smith, A. (1996). 'The Success and Use of Economic Sanctions'. *International Interactions,* 21(3): 229-245.

Smith, M. (1998). 'Does the flag follow trade?' In: J. Peterson and H. Sjursen (eds.) *A Common Foreign Policy for Europe?* London. Routledge: 77-92.

Smith, M. (2001). 'The European Union's commercial policy'. *Journal of European Public Policy,* 8(5): 787-802.

Smith, M. (2011). 'Implementation: Making the EU's International Relations Work? In: C. Hill and M. Smith (eds) *International Relations and the European Union*. Oxford. Oxford University Press: 171-197.

Smith, M. (2013). 'Beyond the comfort zone'. *International Affairs,* 89(3): 653-671.

Smith, M. (2014). 'EU-China relations and the limits of economic diplomacy'. *Asia Europe Journal,* 12: 35-48.

Smith, M. (2016).'The EU shouldn't lift trade tariffs on Chinese solar panels'. *BlogActiv eu.* July 15. Available online: https://theeuroeconomy.blogactiv.eu/2016/07/15/the-eu-shouldnt-lift-trade-tariffs-on-chinese-solar-panels/ [last accessed 17 July 2017].

Smith, M. & Xie, H. (2010). 'The European Union and China'. *Journal of Contemporary European Research,* 6(4): 432-448.

Solar Power Europe (2015). *Solar Photovoltaics Jobs and Value Added in Europe. November.* Available online: http://www.solarpowereurope.org/fileadmin/user_upload/documents/Media/Jobs___Growth.pdf [last accessed 17 July 2017].

Staley, E. (1935). *War and the Private Investor.* New York: Doubleday Doran & Company Inc.

Statista. (2015). *Global market share of solar module manufacturers based on revenue in 2015.* Available online: https://www.statista.com/statistics/269812/global-market-share-of-solar-pv-module-manufacturers/ [last accessed 19 October 2017].

Tenuta, F. (2015). 'The Motivations behind the EU-China Bilateral Investment Treaty Negotiations'. In: *EU-China Observer*, Department of EU International Relations and Diplomacy Studies:16-22. Available online: https://webcache.googleusercontent.com/search?q=cache:aFRRiq46B6oJ:https://www.coleurope.eu/system/files_force/research-paper/eu-china_observer315.pdf%3Fdownload%3D1+&cd=1&hl=nl&ct=clnk&gl=be&client=safari [last accessed 17 July 2017].

Walker, A. (2013). 'China solar panel duties imposed by EU'. *BBC News.* June 4. Available online: http://www.bbc.com/news/business-22766639 [last accessed 17 July 2017].

Woolcock, S. (2011). *European Union Trade Policy. The New Palgrave Dictionary of Economics Online.* Palgrave Macmillan. Available online: http://eprints.lse.ac.uk/33488/ [last accessed 17 July 2017].

Yu, H., Popiolek, N., Geoffron, P. (2014). 'Solar photovoltaic energy policy and globalization'. *Progress in photovoltaics,* 24(4): 458-476.

Zhang, S., Andrews-Speed, P., Zhao, X., He, Y. (2013). 'Interactions between renewable energy policy and renewable energy industrial policy'. *Energy Policy,* 62: 342–353.

Zhao X., Wan, G., Yang, Y. (2014). 'The turning point of solar photovoltaic industry in China'. *Renewable and Sustainable Energy Reviews,* 41: 178-188.