PV trade barriers: Strategies for Chinese and Taiwanese producers

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ABSTRACT

The latest rounds of formal complaints against alleged breaches of trade agreements, the initiation of circumvention investigations, and preliminary announcements and rulings in various countries and trading zones all demonstrate that the multidimensional trade conflict in global PV markets is far from being resolved and is still simmering. The trade dispute is largely focused on the import of downstream products (c-Si wafer, cell and module) in current and prospective high-volume markets, such as the EU, the USA and potentially India. These nations or trading zones have implemented, or have proposed to implement, anti-dumping and countervailing duties, predominantly targeted against Chinese downstream producers. New rounds of investigations might lead to existing tariffs being extended to Taiwanese manufacturers that directly or indirectly import into the USA, while the EU might scrap a previous quota and minimum price system and revert to tariffs. This paper gives a brief historical review of the global PV trade dispute, and analyses the formal and legal grounding of anti-circumvention actions, which in general increase the complexities of business planning. Because more than 70% of the global downstream manufacturing capacity is located in China and Taiwan, the manufacturers in these regions have no choice but to embrace an internationalization strategy that consists of production offshoring. The paper concludes with the introduction of potential strategies and recommendations which take account of increased complexities and uncertainties in business planning that arise from shifting trade barriers.

Overview of PV trade dispute

The global PV market has been troubled with trade litigations in various national jurisdictions and trading zones ever since the Coalition for American Solar Manufacturing filed a complaint in October 2011 with the U.S. Department of Commerce against unfair trade practices of China-based cell and module manufacturers.

This section gives a high-level overview of the chronology and current status of the various multinational anti-dumping (AD) and anti-subsidy (AS) investigations and rulings. Apart from the retaliatory actions taken by the Chinese Ministry of Commerce against polysilicon imports from the USA, Korea and the EU, the dispute can largely be characterized as a downstream phenomenon.

From the perspective of China- and Taiwan-based c-Si wafer, cell and module producers the downstream centricity of the trade conflict is particularly worrisome, as more than 70% of the global solar manufacturing capacity is located in these regions (estimate based on internal bottom-up capacity-tracking for estimated end-of-year capacities in 2014e). The last section of this paper will analyse strategic offshoring options for manufacturers that have so far clustered their production facilities in regions that are subject to continuous investigations by trade bodies in high-volume export markets.

The listed investigations comply with the General Agreement on Tariffs and Trade (GATT), Article 6, which allows members to investigate and take action against alleged dumping and subsidies that distort competition. (For a review of anti-dumping, subsidies and safeguard provisions set forth in World Trade Organization (WTO) agreements, see WTO [1].) Further, regular process rules grant nations or trading blocs that are subject to anti-dumping and anti-subsidy (AD/AS) tariffs the right to contest unilateral decisions through the multilateral WTO Dispute Settlement Body.

> "The trade conflict between the EU and the USA versus China is escalating."

The timeline of key events in the global PV trade dispute reveals that the trade conflict between the EU and the USA versus China is escalating, with second-round investigations and formal compliance assessments fuelling tensions between the trading blocs (Fig. 1).

While the conflict's centre stage has so far been occupied by the three aforementioned regions, the new round of investigations in the USA might lead to an extension of AD/AS tariffs to products from Taiwan. Further, other volume markets with promising growth prospects have begun investigations into PV imports and might therefore soon start contributing to global PV trade frictions. For example, in India an AD/AS ruling is pending which basically means that imports of c-Si PV products would be limited to producers based in Europe, while Australia has initiated a formal investigation into PV module imports from China.

The intensification of the PV trade dispute, with second-round proceedings and the spreading to other prospective volume and growth regions, demonstrates the necessity of incorporating in business plans some contingency plans that take into account erratic shifts in the institutional trade environment for PV components.

Drifting trade barriers: expect the unexpected

The brief chronological description of major events in the global PV trade dispute illustrates the tremendous tit-for-tat-like dynamic and ambiguity of discretionary rulings by regional trade-enforcement bodies. In particular, the new round of 'anti-circumvention' investigations in the USA and the EU leaves discretionary power to the regional trade bodies, as these proceedings are usually grounded in unilateral and local laws. A diligent and insightful comparative analysis of anti-circumvention rules in the EU and the USA, with a thorough analysis of the extent to which these regional codes might be in conflict with WTO agreements, has been provided by Ostoni [2].

It is clear that such an environment increases investment uncertainty and as a consequence suppresses offshoring

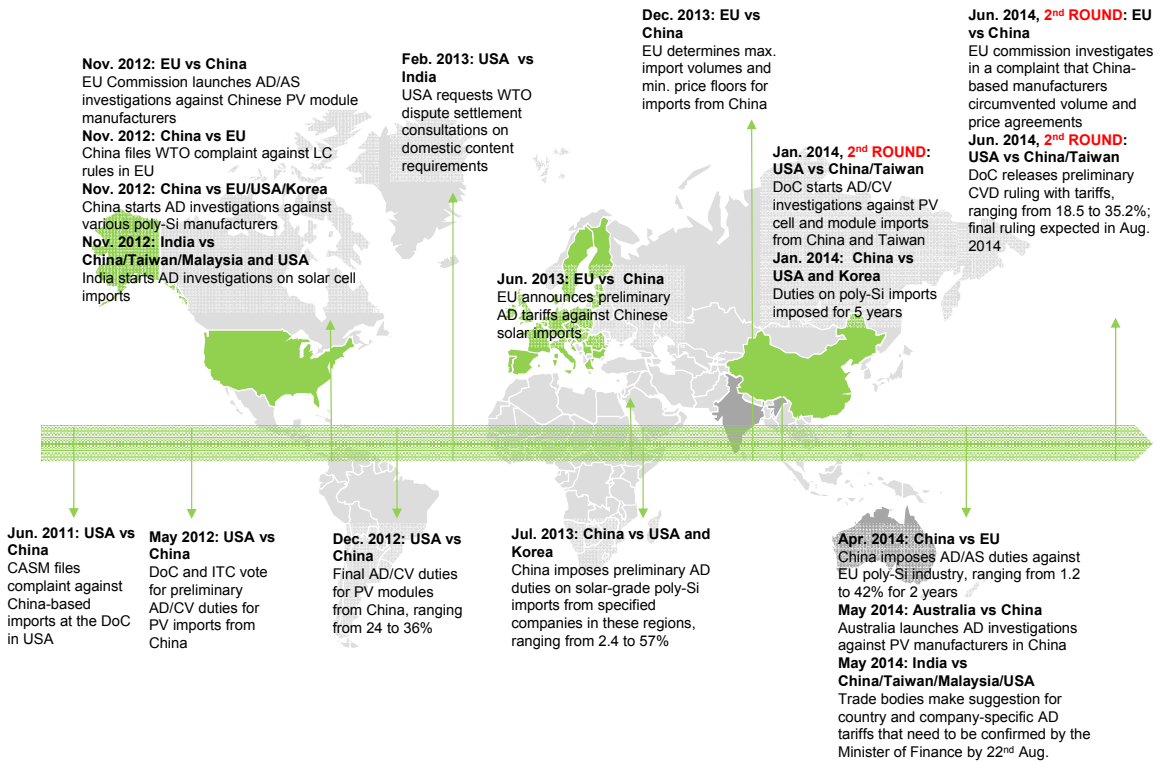

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Figure 1. Timeline of global PV trade conflict.

decisions. The regional composition of a diversified production base is no longer 'just' a function of regional market growth rates and institutional frameworks, as well as of procurement and distribution network design, but also of low predictability events, such as continued trade litigations.

Increased complexity arises from the reopening of trade cases through anti-circumvention investigations. Depending on the scope and final ruling of such renewed litigations, previous investments that were made to satisfy trade requirements in target export markets could turn out, in the worst case, to be useless and lead to extraordinary depreciation of otherwise irreversible sunk costs.

> "Increased complexity arises from the reopening of trade cases through anti-circumvention investigations."

The investigations by EU and USA trade bodies that followed formal complaints by Solar World AG are good examples of increased investment risks caused by dynamically shifting trade barriers. In order to evaluate location decisions in the light of their resilience against future changes to trade agreements and existing tariffs, a basic understanding of the premises that could trigger renewed investigations is needed.

Since the main concern of the following analysis is the risk associated with irreversible sunk costs once an investment decision has been made for an offshore location, the subsequent discussion focuses on the interpretation and implementation of international trading rules as they relate to anti-circumvention procedures by the EU and the USA. These high-volume PV markets are of particular interest to any PV manufacturer and are therefore also referred to in the last section of this paper, which covers incumbent expansion strategies. That review is based on common-sense deductions applied to existing rules and procedures as set forth in publicly available information from the WTO and the EU. Any strategic investment decision that is intended to satisfy minimum local content requirements within the international target/export market(s) should also be reviewed by a law firm specializing in international trade.

As highlighted in the previous section, various jurisdictions or trading blocs have already utilized instruments such as import volume quotas, minimum prices, and AD and AS tariffs for PV products. (AS tariffs are also commonly referred to as countervailing duties – CVDs.) In addition, follow-up investigations into the trade practices of Chinese and Taiwanese PV downstream producers (ingot to module) have been launched by local trade authorities as a result of formal complaints against alleged breaches and/or circumvention actions ('loopholes').

As the EU and the USA are dominating and influential members of the WTO, their respective interpretations of anti-dumping and anti-circumvention agreements in conjunction with Article VI of GATT are regarded as influential in international arbitration case law. Further, the two regions encompass a significant demand share of the current and future PV installation market and therefore cannot be disregarded in any Tier 1 downstream manufacturer's mid- to long-term business strategy.

The WTO members have so far not officially determined whether circumvention of anti-dumping as well as anti-subsidy tariffs constitutes an offence against GATT. In the absence of general and binding WTO rules on trade circumvention and implementation procedures for counter-protective measures, the general interpretation is that members can implement protective anti-circumvention policies independently, as long as these are not in conflict with

other WTO agreements. For the EU see Paragraph 22 of Council Regulation (EC) No. 1225/2009 [3] and p. 4 of Vermulst [4].

The absence of a multilateral legislation with coherent and generally accepted procedural rules demonstrates that countervailing anti-circumvention actions exhibit a high degree of administrative discretion within the boundaries of nations or trading zones. This leaves room for subjective and politically motivated rulings which increase the uncertainty of investment decisions that are concerned with the internationalization of the production capacity base. This statement holds true regardless of the underlying motivation, whether or not the international diversification of the production base is a consequence of trade barriers.

The definition of 'circumvention' rests on five cumulative conditions in accordance with the Directorate General for Trade in the EU Commission (Article 13, Paragraph 1 of Council Regulation (EC) No. 1225/2009 [3]). (The cumulative definition for AS countervailing measures is similar: see p. 12 of Vermulst [4].) The five conditions are:

(a) a change in trade pattern after or slightly before AD/AS tariffs have been implemented

(b) as a result of a practice, process or work,

(c) for which there is insufficient due cause or economic justification other than the tariff or duty, and

(d) with evidence of injury to domestic manufacturers as a consequence of duties being undermined, and

(e) dumping investigations have been positively concluded in an original investigation for a like product.

The widely interpretable and construable definitions of circumvention strategies as employed by trade authorities show that their application in formal investigations rulings exhibit again a relatively high degree of discretion. The following circumvention strategies are commonly cited (Ostoni [2], p. 409; Vermulst [4], p. 6):

1. Third-party circumvention: exporting individual key parts and assembly in a third country that is not subject to AD, AS or CV duties.

2. Importing country circumvention: assembly of imported key components into the country that enacted trade tariffs.

3. Part of or the entire production moves to a third country or the importing country.

4. Minor product modification circumvention: the end product is altered such that it can be distinguished from the product that is subject to the AD/AS order while not discouraging consumers from purchasing.

5. Lower duty rate country/company circumvention.

It is hardly disputable that strategies 4 and 5 constitute straightforward and blunt circumvention actions under any imaginable circumstance, as they are intended to confuse the customs service in the importing country as regards the origin or product specification. However, this is not necessarily the case for strategies 1 and 2, and certainly not for 3, as these go together with alterations to the value chain.

The U.S. Department of Commerce (DOC) applies a similar definition for anti-circumvention and also implements a similar set of indicators to determine whether a company engages in circumvention. These are set forth in the Tariff Act §781, 19 U.S.C. §1677j (Ostoni [2], pp. 422–425). In principle, the definition by the trade authorities in the USA also refers to product alteration and component assembly in a third country or the importing country. Likewise, in order to prove circumvention, changes in trade statistics of the subject product and its key components are analysed, as well as affiliations of assembling plants with companies that are subject to AD and/or AS tariffs.

Because international expansions or the relocation of existing production capacities of *selected parts* of the value chain can be challenged in formal petitions to trade authorities as circumvention actions, it is necessary to analyse the underlying formal rules that are applied in such second-round investigations and determinations. Here again, as will be shown, there is ample room for interpretation, which increases the complexities in business planning and the general investment risk associated with the establishment of offshore production bases in response to trade tariffs.

Article 13, Paragraph 2 of the EU Council Regulation No. 1225/2009 [3] gives the following definition of the circumstances under which an assembling plant based in a third country or the importing country itself will be regarded as a circumvention operation:

1. There is a chronological interdependence between the beginning of AD/AS investigations and the ramp of the assembly plant.

2. Parts used in the assembly come from the subject country.

3. Parts make up at least 60% of the total value of all utilized components/materials of the final product.

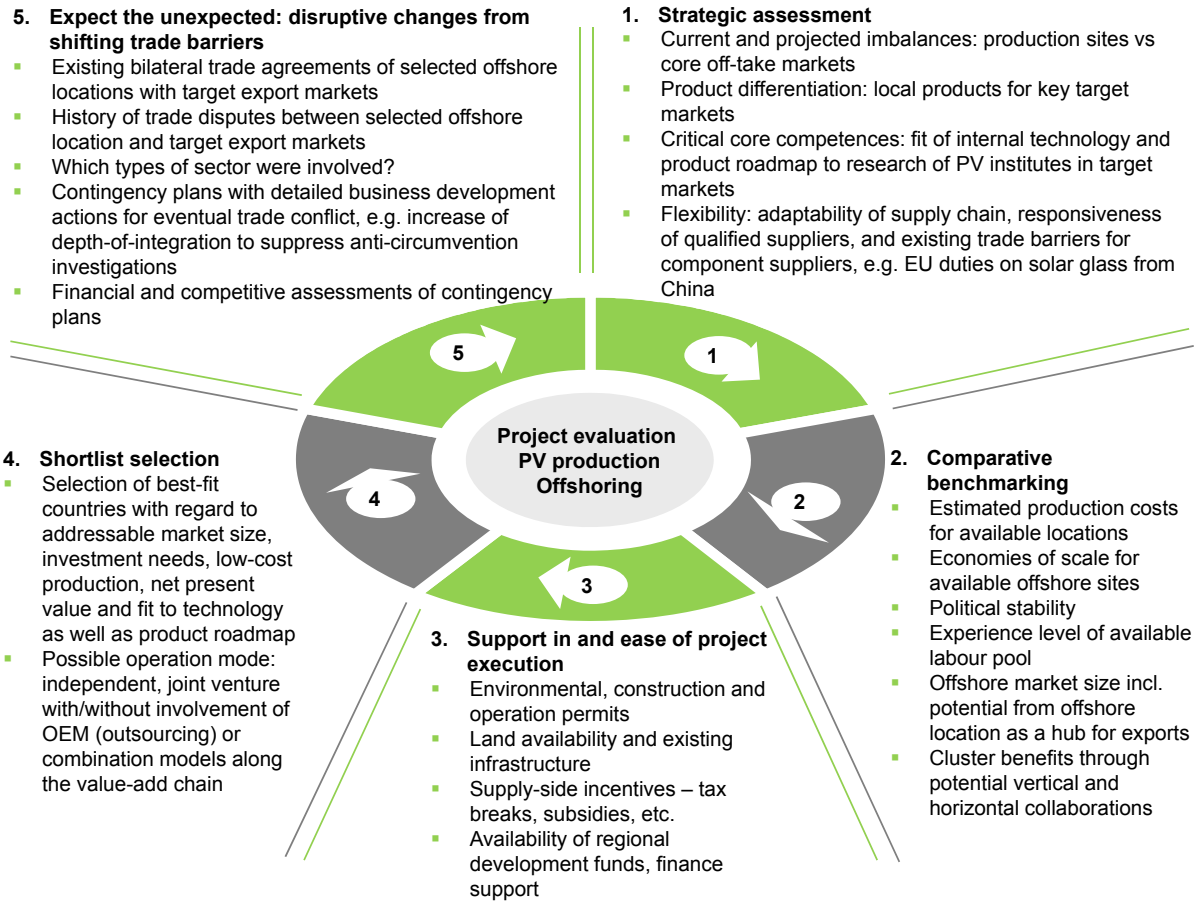
4. In cases where the local value add exceeds 25% of the manufacturing costs, circumvention will be ruled out.

5. The remedial effects from a tariff established in a previous AD investigation are being undermined by the third- or importing-country operation.

In terms of setting up an offshore manufacturing operation that is shielded against existing AD/AS duties and safeguarded against potential second-round circumvention investigations by the EU, points 2–4 of the assembly circumvention definition deserve particular attention. It is worthwhile here to analyse how the local value add is determined. If the 25% threshold is reached, the import of components from the country that is subject to AD/AS tariffs may exceed the 60% cap. In other words, as long as the value creation of the third- or import-country 'assembling' operation exceeds the 25% value creation criterion, the manufacturers have almost unlimited freedom in the design of their individual supply chain composition. This statement holds as long as the individual components are not separately subject to AD and AS (CVD) tariffs. For example, the final EU ruling that levied AD rates of 0.4 to 36.1% and AS rates ranging from 3.2 to 17.1% on solar glass imports from China impairs free component choice and thereby alters the otherwise optimal supply-chain structure under a tariff-free regime.

The commission's definition of the manufacturing costs includes the value of all parts and materials purchased at arm's length plus labour costs and factory overheads, while it excludes operating expenses such as SG&A and R&D. The interpretation of the 25% criterion is not unambiguous and different approaches have been implemented. While one strict approach just takes direct labour, depreciation and indirect fabrication overhead into consideration, a more liberal approach also takes account of the value of domestically procured parts [4, p. 29].

The criteria set forth by the U.S. Department of Commerce to determine whether merchandise assembled in



Source: Viridis iQ GmbH

Figure 2. PV offshoring evaluation.

the USA or a third country constitutes circumvention are similar, but lack commitment to definitive quantities as regards the value of imported components from the subject country and the value creation within the third-country or domestic assembly plant. An affirmative circumvention ruling can be made when the components utilized in the assembly of a product come from an AD/CVD subject country and comprise "a significant portion of the total value of merchandise" and/or the "process of assembly or completion ... is minor or insignificant" (Chapter 26, Section IV of U.S. Department of Commerce [5]). The level of discretion that results from such unspecific definitions is intended by Congress. The argument of the legislator is that the DOC needs this freedom to account for industry-specific circumstances.

While the general definition of circumvention and the interpretation of deployed strategies are similar in the EU and the USA, the rules under which an import- or third-country operation will be classified as a circumvention assembly show some divergence. The EU sets forth quantifiable thresholds with regard to the local value creation that need to be exceeded in order to be classified as a regular local operation. The USA trade legislation leaves a greater degree of freedom to trade bodies and thereby increases the uncertainty for offshoring investment decisions.

Incumbent expansion strategies

The resumption of previously concluded investigations and the possible erection of new trade barriers in attractive growth markets pose tremendous threats to existing PV cell and module manufacturers with production bases in China or Taiwan. Historically, the producers in these regions follow a domestic manufacturing approach that is predominantly oriented towards economies of scale. The obvious strategic response, to embrace internationalization and offshoring of production to markets that have enacted tariffs, needs to be reviewed in a diligent manner from various angles.

The scrutiny should involve the typical working packages – such as strategic assessment and comparative benchmarking, as well as a project execution appraisal – that help to arrive at a shortlist of preferable sites (Fig. 2). However, as the PV market is riddled by multidimensional trade differences, the analysis should also include a package that focuses on the examination of potential later-stage trade litigations against and second-round investigations into products produced from the new offshoring location.

Despite the first modest signs that a negotiated settlement might happen between major trading blocs and nations sparring over PV-related trade imbalances, Chinese and Taiwanese producers should not be distracted from investigating available options for a regional diversification of their production base. This reasoning is based on the presumption that a negotiated settlement will most likely not be reached before the end of 2015 [6], while investigations by various trade bodies are ongoing and will probably be concluded before a multinational negotiated settlement can be reached. (The extent to which a negotiated political settlement can overturn existing AD/AS rulings that are usually valid for a duration of five years is a question for the individual national legislations. However, such a process is in general believed to be complex, as it would inflict damage on the integrity of national trade bodies and also impair the predictability of legal decisions, and could therefore be appealed by local

manufacturers that benefited from trade barriers.)

> "Chinese and Taiwanese producers should not be distracted from investigating available options for a regional diversification of their production base."

In addition, many of the high-volume markets (HVMs) to which manufacturers from China or Taiwan have only limited access exhibit some favourable characteristics, such as high internal demand, decent growth rates and lower bilateral trade barriers. In the case of Europe, AD/AS-free access to the Indian market would still be possible, even if the Indian Minister of Finance decides to enact the pending AD/AS tariff scheme.

The markets that have or might implement AD/AS duties against PV imports from China or Taiwan – namely Australia, the EU, India and the USA – comprised roughly 45% of the global PV market in 2013 (Fig. 3). These markets are expected to continue to be a significant demand driver over the short to medium term, with a relative contribution to global installations in the range of 41–48% for the period running up to 2017e. The compounded average growth rate for these markets is expected to be approximately 8% for the period 2013–17e. Hence, the markets in question are simply too important for a passive business strategy to be followed that relies on an uncertain negotiated settlement by the end of 2015.

Markets with local content requirements for modules or systems have purposely been omitted in the previous analysis, as this category needs to be tackled using a slightly different go-to-market strategy.

Once the potential and attractiveness of internal demand for prospective offshore locations have been determined, a search for suitable sites needs to follow. As highlighted in Fig. 2, site selection touches the strategic, operational and project execution planning spheres as well as the later trade-barrier contingency planning stage. From a strategic standpoint the adaptability of the existing supply chain must be assessed in the light of the internal technology and product roadmap. The fit to internal development projects should ideally take into consideration possible product modifications that are tailored not only to the offshore location itself but also to possible export markets that could be served from the new site. In this context possible collaborations with local research institutes could lead to a new impetus for internal research activities. Finally, a rigorous review of existing trade restrictions for key components concludes the strategic supply-chain assessment.

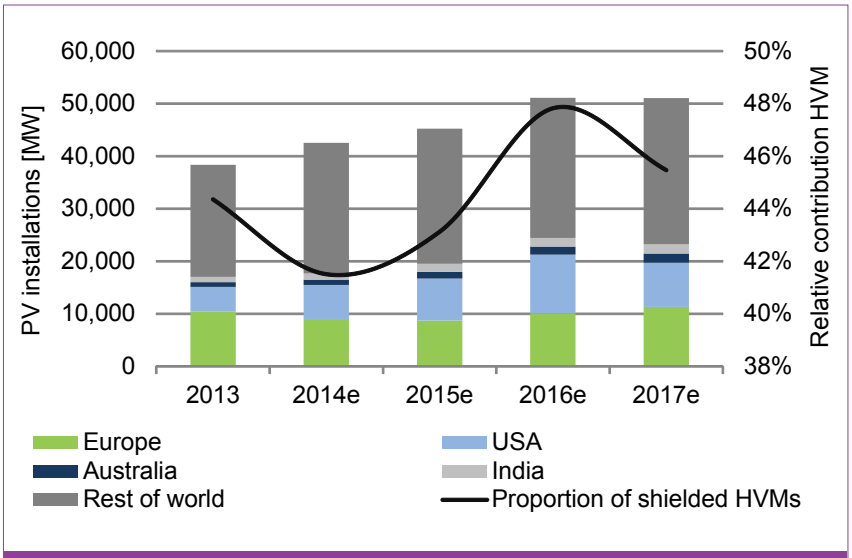
From an operational perspective the comparative benchmarking should review, among other things, potential future scaling benefits for the different offshore locations. These arise from internal demand and accessible export markets from the international production hub. Further, cluster benefits from a local PV industry and experienced personnel can have a significant positive impact on the success of the offshoring endeavour.

The familiarity with the industry of the local bureaucracy and public administration bodies usually eases project execution. If such an administrative environment is coupled with supply-side incentive packages, the project economics are likely to be influenced positively through a shorter development time, a faster time to market, and potential direct or indirect impacts on free cash-flow over the short to medium term.

In some instances the authorization of incentive packages or low-interest development funds might influence the operation mode through certain requirements – minimum job creation, stricter environmental or social controls, participation of local partners, etc.

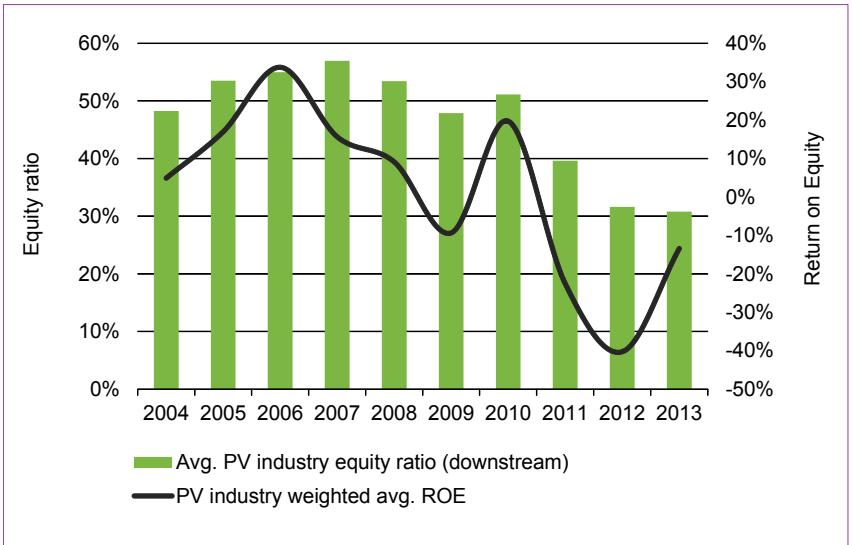
The testing for resilience of the envisioned business concept(s) to potential new or second-round trade litigations, along with the development of potential contingency plan(s), can help in the selection and determination of the optimal offshore hub and lead to further optimization rounds of the operation and business model.

The big question is: how can an



Source: Viridis.iQ GmbH

Figure 3. PV installation volumes in HVMs.



Source: Viridis.iQ GmbH

Figure 4. Equity ratio and return on equity (ROE) – PV downstream.

industry, that has been racked by havoc through overcapacity-induced marginal cost pricing for an extended period of more than three years, raise the necessary capital to adopt an expansion strategy in offshore locations, especially since this might prolong the process of market clearance in the eyes of potential capital providers? As Fig. 4 shows, the average equity ratio declined by 20% from approximately 50% in 2010 to just above 30% in 2013, while the average return on equity remained negative in 2013. Such figures hardly make for a compelling investment case.

If one looks through the aggregated figures on a company-specific level, however, there are several Tier 1 producers in Taiwan and China that have decent balance sheet ratios, good brand names and global distribution channels on which a diversification and internationalization undertaking could be successfully shouldered.

Besides, Tier 1 producers in these regions hardly have a choice if they want to avoid being trapped in a passive state in which their medium-term business prospects rely on negotiated political deals on which they have no direct influence. In addition, individual companies can still gain a first-mover advantage if they relocate production to locations that are being shielded by trade barriers.

On the basis of the general criteria listed above, Europe seems to be the ideal candidate for consideration as an offshore location for the following reasons:

- Available production sites that have been closed in the midst of the PV market crisis at which operating permissions should be readily available at short notice.
- Extensive knowledge base from a research standpoint and also from the perspective of the available human-resource pool at virtually all needed skill levels.
- Cluster benefits in the c-Si PV segment, with a diverse and industry-leading base of equipment manufacturers and access to feedstock from Tier 1 producers.
- Huge accessible market size in that all markets that have trade barriers, or are in the process to enact such, could be served from Europe. Since Europe and the USA are in negotiation of the "Transatlantic Trade and Investment Partnership" it seems unlikely that the USA would attack PV imports with the same rigour as has been the case with China- and now Taiwan-based producers.
- Even though European trade legislation leaves ample room for interpretation, this is not so much the case when it comes to the definition of circumvention, especially in comparison to trade legislation in the USA. The EU legislation is clear in that no operation shall be classified as circumvention if the local value creation exceeds 25% of the total cost. This threshold should generally be reached if the operation starts with the cell production, and definitely achieved if European-sourced feedstock is utilized.

The offshore operation could start with a large-scale cell-manufacturing nucleus from which different module production plants (satellites) could be served. The satellites could be placed in different countries within Europe and also in the target export locations that are to be served from this hub. The advantage of such a web-based strategy is that it could be utilized in a highly flexible and adaptable 'Made in xyz' marketing campaign and also support the production of specialized local modules. Eventually this leads to shorter feedback loops and faster innovation cycles for regionally specialized module concepts.

For specialized Taiwanese c-Si cell producers the move to an offshore location could also be coupled with a continuation of vertical integration efforts, which would decrease the dependence on integrated producers from China.

> "The EU offers a compelling mix of industrial and research experience in the c-Si PV segment."

Conclusion

Any China- or Taiwan-based Tier 1 producer would be ill-advised to abandon a proactive strategy in response to pending trade decisions in high-volume PV markets.

The author does not concur with the oft-repeated claim that the ideal offshore production hub is limited to locations in Malaysia, Mexico or Singapore. As demonstrated in this paper, the EU offers a compelling mix of industrial and research experience in the c-Si PV segment. This includes a highly experienced workforce, existing industrial PV sites, a long-term track record in c-Si PV manufacturing, globally renowned research institutes, industry-leading feedstock providers, accessibility to regional development funds, and, last but not least, a clear and precisely quantifiable definition of circumvention operations.

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