

Industrial Policy, Technical Barriers to Trade and Preferential Trade Agreements

Salam Alshareef¹

Abstract

The debate on the role of Industrial policy in the development process has experienced a revival in recent years. Nevertheless, the term of the debate had been changed, especially by focusing on the questions of “how” to implement industrial policy, rather than “why”. Taking in account the increased liberalization of international trade regime, many concerns have been raised, notably about the availability of policy space for the application of selective industrial policy. After making the case for the integration of standards’ design into a framework of selective industrial policy, the paper investigates the availability of the necessary policy space for such a design in the context of preferential trade agreements signed by developing countries with, on the one hand, the United States of America and the European Union (Or North-South agreements), and in the other hand with China and India (Or South-South Agreements). While the former systematically includes *WTO plus* commitments, the later shows varied pattern ranging from only affirming engagements under WTO Agreement on Technical Barrier to Trade to include *WTO plus* provisions.

Résumé

Le débat sur le rôle de la politique industrielle a resurgi ces dernières années. Cependant, les termes de ce débat ont évolué, se focalisant sur les aspects liés à la question de savoir « comment » la politique industrielle sera mise en place, plutôt que « pourquoi ». Prenant en considération la libéralisation accrue du régime commercial international, de nombreuses questions sont mises en avant concernant l’existence de l’espace de la politique économique afin de mettre en place une politique industrielle sélective. Après avoir développé une justification théorique concernant la conception des standards en tant qu’élément intégré au sein du cadre de la politique industrielle, ce papier examine la marge de manœuvre existante pour mener une politique se conformant à une telle conception. Cela se fait dans le contexte des accords de commerce préférentiels, dont les pays en développement sont signataires. Deux cas seront étudiés dans le présent papier. D’un côté, les accords Nord-Sud impliquant les États-Unis et l’Union Européenne, et de l’autre côté les accords Sud-Sud impliquant Chine et Inde. Dans le premier cas il est introduit, de manière systématique des engagements de nature *OMC Plus*. Dans le second cas, les accords sont caractérisés par une palette variée : inscrivant la possibilité d’aller jusqu’à l’inclusion des engagements de nature *OMC Plus*, les accords Sud-Sud peuvent se contenter d’affirmer les engagements contenus dans l’Accord sur les Obstacles Techniques au Commerce au sein de l’OMC.

Keywords: Industrial Policy, Policy Space, Technical Barriers to Trade, Agreements on Technical Barrier to Trade, North-South, South-South.

JEL classification codes: F13, F25, O57

1- Introduction

¹ A Ph.D. student in Grenoble Center for Economic Research.

Industrial policy has experienced a revival in recent years, both in terms of government's practice and academic debate. The argument of Dosi et al (1990) on the necessity to distinguish between the allocative, the innovative and the growth efficiency is getting rehabilitated. Stiglitz et al (2009) reaffirmed that for countries far from the technological frontier, the patterns of allocation of resources which are efficient on the grounds of the incumbent distribution of technological capabilities and relative prices might entail negative long-term effects in terms of demand elasticities of the goods one country will be able to produce, that is the growth efficiency, and of the innovative potential associated with that, that is the innovative efficiency. Consequently, the structural transformation, rather than the efficient allocation of resources, is desirable not only for promoting higher productivity growth and per capita incomes, but also as it brings greater diversity in economic structure (Ul-Haque, 2007).

At the same time, the role of selective state interventions in achieving the structural transformation was put in evidence for (newly) industrialized countries (Chang, 2003, Wade, 1990, Amsden, 1989, Amsden, 2001). Moreover, the question of limitation of the external demand contribution to development is being raised, while emphasizing the potential of domestic demand (UNCATD, 2013).

Today's discussion on Industrial policy seems to be concerned about the how (application) and content of industrial policy rather than "why" and the rationale for it. One important aspect of this debate is the changing international economic regime and, by consequence, the question of applicability of selective industrial policy in such a context. Accordingly, Development Economics saw the emergence of the debate on the *Policy Space for Development* that investigates, among other things, the availability of industrial policy's tools given the disciplines of the contemporary international financial, monetary, trade and investment regimes.

On the one hand, financial liberalization has created an environment where de facto control of national authorities over macroeconomic policy instrument was weakened (Ocampo and Vos, 2011). On the other hand, the new international trading regime, with its core principles reciprocity and non-discrimination, reduced *de jure* autonomy of national policy makers (for theoretical conception of policy space, see UNCTAD, 2004; Hamwey, 2005; Mayer, 2009).

One of policy tools that have received little attention in this debate is the standards, the technical regulations and the conformity assessment which are regrouped under the term of technical barrier to trade (TBT). That might be due to the fact that the function of standards in

economic development tends to be reduced to only an instrument of public policy and trade policy. By contrast, literature on the economics of standards, both theoretical and empirical, highlights the contribution of standards to both overall and productivity growth, in addition to its role in the innovation. As put by Swan (2000) “early standardization can help to achieve focus, cohesion and critical mass in a nascent industry” (pp.34).

While tariff barriers have been substantially reduced during successive GATT and WTO negotiations, various non-tariff measures, including the technical barrier to trade, were relatively less liberalized at the multilateral level. This is why some trade negotiations agenda, particularly at the bilateral level, have shifted from tariffs to more complex issues. Regulatory measures such as technical regulations, standards and related conformity assessment procedures feature prominently in those agendas.

The present paper aims to contribute to the literature examining the extent to which the emerging international trade regime leaves nations the necessary policy space to deploy the “technical barrier to trade” as a tool of long-run diversification and development. It investigates the liberalization of (TBT) under North-South and South-South preferential trade agreements (PTAs).

The paper offers *de jure* assessment of the TBT provisions in PTAs of United States of America (US), European Union (EU), China and India with developing countries. The reviewed PTAs cover different types of agreements, 9 free trade agreements Of US, 10 association and economic partnership agreements with EU, 5 free trade agreements with China and 8 trade agreements with India. The rationale behind the choice of these countries is to evaluate if there are significant differences between the conduct of emerging economies and core countries in their economic agreements with developing countries in a manner that impacts the policy space for industrial policy.

The results of the paper show that the liberalization of TBT under EU and US PTAs is the most extensive, going, systematically, beyond commitment of the WTO Agreement on TBT. The PTAs of both EU and US enlarge the liberalization coverage to include metrology and public procurement. EU adopts harmonization toward its rules as an approach of liberalization with association agreements. US adopt mutual equivalence for the technical regulations and introduce commitment to advance liberalization of the conformity assessment procedures. The overall result is that the PTAs of US and EU introduce substantial disciplines on the design of TBT in developing countries in manner that hinders its integration in an industrial policy framework.

While US and EU have more stylized PTAs in the sense that they show little variations from an accord to another, China's PTAs seems to adopt varied approach. Some agreements affirm engagements under WTO Agreement on TBT, though it consolidates it by establishing institutions to administrate the engagements. Others have a tendency, rather than a firm obligation, to liberalize TBT through the approach of acceptance as equivalent for technical regulation. However, taking into account that most of commitments of *WTO plus* nature are contained in PTAs with countries having agreements with US and EU, it seems necessary to conduct a study on the China's negotiation position on TBT, specially that literature on china's negotiations conduct highlight its flexible and adaptive approach.

The PTAs of India adopt a position that affirms commitment to the WTO Agreement on TBT, with no additional engagements. Furthermore, one of its PTAs introduces derogation that permit the use of non-tariff restriction for reasons of protection of local industries.

The rest of the paper is structured as follows. Next section survey the literature. Section 3 attempts to theorize a rationale for the design of standards to be integrated into an overall selective industrial policy framework. Section 4 analyses the restrictiveness of different approaches of liberalizing TBT. Section 5 presents an analytical framework that permits to examine the PTAs. Section 6, present the results for each country in an attempts to deduce their approaches to liberalize (or not) the TBT. Section 7 concludes.

2- Literature review

Several studies have investigated the policy space covered by the WTO agreements, especially in relation to industrial tariffs (Akyuz, 2005); industrial subsidies (Ayala and Gallagher, 2005); investment related measures (Kumar, 2005; Wade, 2003; Shadlen, 2005a) and technology related policy (Correa, 2000; Khan, 2009). In addition, many studies investigated the discipline on policy space in several areas under the agreements of WTO (Akyuz, 2009; Di Caprio and Gallagher 2008, UNCTAD, 2006; Kumar and Gallagher 2007, Bora et al, 2000).

By contrast, little attention has been paid to the impact of PTAs on the industrial policy instruments. Shadlen (2005b) examined intellectual property provisions in US PTAs agreements. The study showed that the PTAs of US eliminate many flexibilities existing under the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights.

Khor (2008) showed that the PTAs of US not only eliminate flexibilities present in the agreements of WTO, but it also disciplines policy areas which were not covered by the WTO.

Gallagher and Thrasher (2008) evaluated policy space in several trade related areas across 13 trade agreements. Their results affirm the conclusions of previous studies about the PTAs of US, but find that South-South agreements provide ample policy space for industrial development and that EU agreements largely represent the middle of the spectrum.

However, there is an emerging literature that investigates the content of bilateral and regional trade agreements compared to the agreements of WTO but without a special reference to the question of policy space. One notable contribution is the paper of Horan et al (2009) on the PTAs of the US and the EU. It divides commitments under those agreements to *WTO Plus* to refer to commitments building on those already agreed to at the multilateral level, but introducing additional disciplines, and *WTO extra* to refer to commitments dealing with issues going beyond the current WTO mandate altogether.

Piermartini and Budetta (2009) survey 58 PTAs with TBT provisions. They analyzed its legal text and scrutinize whether the TBT provisions refer to the WTO agreement on TBT and whether regional liberalization of TBTs through harmonization or mutual recognition is pursued. They also examine transparency requirements, institutional and administrative frameworks, and cooperation between members on TBTs. The study shows that PTAs signed by the US promote the mutual recognition of conformity assessment procedures, whereas PTAs signed by the EU frequently promote further harmonization of technical regulations.

Lesser (2007) extends Piermartini and Budetta's (2009) mapping² to 82 PTAs, with a special focus on Chile, Singapore, and Morocco. The study reveals that most provisions on TBT converge towards the multilateral trading system.

By using provisions of the WTO Agreement on TBT as a yardstick for their analysis, Meyer et al (2010) examine whether and how eight major regional integration agreements within the African region address TBT issues. They find that TBT are not an important issue in Sub-Saharan African RTAs.

3- Standards and industrial policy

In this section, the paper attempts to theorize a rationale for the integration of standards' design in the overall framework of selective industrial policy. Two arguments are introduced, the first focuses on the potential role of standards in dealing with investment coordination failure. The second considers the standards as element of control mechanisms that should accompany

² First published in 2006.

different types of state supports delivered to investors.

3.1- standards and investment's coordination failure

The presence of overwhelming coordination failures in investment is one of the principle arguments in favor of industrial policy. This argument is traced back to the early year of Development Economics, and especially to four articulated and complementary works of Rosenstein-Rodan (1943) on the complementarities of intra-industry demand, Nurske (1953) on the underdevelopment as a product of offer shortage in investment, Scitovsky (1954) on the investment pecuniary external economies and Hirschman (1958) on the optimal investment undertaking sequence. Policy implication of the argument is the need of “Big Push” by the state in the form of simultaneous and coordinated investment undertaking.

Later, the argument has been developed. Westphal and Pack (1986), basing their analysis on the evolutionary approach of Nelson and Winter (1982), consider coordination failure in technology investment. They show the existence of pecuniary and non-pecuniary external economy in technology investment, in addition to the non-tradable elements embodied in technology. Recently, the argument found again its significance. According to Rodrik (2004) coordination problems typically arise when “profitable new industries fail to develop unless upstream and downstream investments are coaxed simultaneously [...] More generally, coordination failures can arise whenever new industries exhibit scale economies and some of the inputs are non-tradable” (Rodrik 2004, p.13).

Standards might be seen as a pivotal tool in dealing with the investment coordination failure. In fact, standards are commonly classified according to their specific function. Most standards serve several purposes and cannot be neatly classified into a single category (DTI 2005; Swann 2000; Blind, 2004; and Guasch et al, 2007). We can distinguish two interconnected categories of standards functions that are of special importance in relation to investment coordination failure.

The first category is the compatibility and interface standards, which define physical or virtual relationships between independent entities for the purpose of interoperability or communication (Guasch et al, 2007). Many positive effects for this category are recognized in the literature, but two of them are of relevant importance in relation to coordination failure. First of all, the network effect or network externality.

The central feature of the market that determines the scope of the relevant network is whether the product of different firms may be used together (Katz and Shapiro, 1985). Two relevant sources of such externalities

- Direct externalities (direct physical effect), where the increase in the number of users increases the utility of all participants in the network.
- Indirect externalities, it arises for products that require the presence of a complementary good or service.

Swan (2000, 2010) argues that compatibility and interface standards help to expand market opportunities because they help to increase both direct and indirect network effects.

However, network externalities may produce dynamic inefficiencies leading to excess inertia or excess momentum (Katz and Shapiro, 1985). In addition, supply-side mechanisms can lead to excess inertia, since in industries characterized by network externalities the dominant firm usually sets the standard. Competing firms may then wait to adopt a new technology because they fear being displaced by a subsequent innovation of a dominant firm (WTO, 2005). Such problems might produce lock-in in technological paradigms, and more generally it could produce lock-in in inferior set of standards from the point of view of necessary restructuring of the economy.

Consequently, a distinction should be made between network externalities that correspond to the actual structure of economy to be changed, and the network externalities that facilitate and accelerate the structural transformation.

Accordingly, the dynamic design and the continuous upgrading of standards could be seen as an important tool to be integrated into the industrial policy framework. In general, one can say that compatibility standards are necessary condition, but it is not sufficient by itself, for effecting measures of trade and investment policy aiming at enhancing domestic investments complementary.

The second category of standards function is the variety reduction or focusing device standards, where the majority of standards fall into this category (Guasch et al, 2007). These standards perform two different functions. First, it seeks to exploit economies of scale by minimizing the wasteful proliferation of minimally differentiated models. The second function influence technological capacity of the economy.

Swann and Watts (2000) argue that some technologies get locked into a pre-paradigmatic stage because suppliers and users are too dispersed and there is no focus or critical mass in developing a market for that technology. The variety-reducing standard can help to achieve that focus, and hence help the market to take off. As put by Swan (2000) “Standards play a role as a rallying post”.

3.2- Standard as an element of control mechanisms

Today, many of development economists share the view that the key difference between failed and succeeded industrialization experiences is the presence or not of effective control mechanisms based on the principle of reciprocity, accompanying the different types of support provided by the state for local investors (Amsden, 2001, Lal, 2004).

In her influential work, Amsden (2001) defines the control mechanism as “a set of institutions that imposes discipline on economic behavior.” She adds, “A control mechanism involves a sensor, to detect the “givens” in the process to be controlled; an assessor, to compare what is happening with what should happen; an effector, to change behavior; and a communications network, to transmit information between all functions” (Amsden, 2001, pp.9).

Standards could be an element of control mechanism. The compatibility standards for complementary investments permit to give signs by involved producers about the conformity of their production inputs (which are output of others producer in the network) to an established standard. In addition, Standards are clearly adapted to the function of communication network.

If domestic producers are engaged in standardization process, the latter might become a forum to better comprehend the state of national industries and it facilitate the dynamic design of standards. As Rodrik (2004) put it “the task of industrial policy is as much about eliciting information from the private sector on significant externalities and their remedies as it is about implementing appropriate policies. The right model for industrial policy is not that of an autonomous government applying Pigovian taxes or subsidies, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them.”

4- Extent of liberalization³

³ Definitions in this section are sourced from WTO (2005) and Piermartini and Bhudetta (2009)

In examining the effects of TBT liberalization, the literature focuses on trade effect, global and national welfare effect and cost of compliance. However, a distinction should be introduced between direct and quantifiable effects that play at the short term such as the cost of compliance, and the effects that play at the long term and influence the whole structure of the economy, or at least the capability to change its structure.

What is of particular importance to note is that all methods of liberalization of TBT, even if, theoretically, favor some export sectors for developing countries, they contribute to the sustaining of the static specialization of the economy. At the same time they deprive decision makers from a tool that could be used to create, ameliorate and enhance the productive capacities of domestic economy. However, it is still important to study the relative differences of each methods of liberalization of TBT.

4.1- Harmonization

Harmonization could be based on both international standards and a party's standards (or regional standards). In general, harmonization consists of a process that could take less or more time, and where parties could, deliberately, introduce obstacles to gain time, particularly where international standards doesn't exist. However, the outcome of such a possibility shouldn't be overestimated, given the asymmetric bargaining powers of countries involved in negotiations.

Concerning trade effect, harmonization toward a party's standards could seriously impact developing countries by reducing their trade with a third party. The probability of such outcome is very considerable, especially in the context of developing countries' lack of resources, both financial and technical, to establish multiple production lines in conformity with the multiple standards requirements. Piermartini and Budetta (2009), conclude that harmonization on a regional basis locks countries into some markets and reinforces hub-and-spoke trade structures. Disdier et al (2013) empirical study shows that hub-and-spoke trade structures, is not only promoted and enhanced by harmonization based on regional standards, but also by harmonization based on international standard included in North-South PTAs.

Given that the majority of standards in developing countries are not based on international standards, one can expect that South-South trade might be impeded even by harmonization toward international standard.

Even if harmonization had to occur at the multilateral level, the problem exists as to whether developing countries can effectively participate in deliberations of international

standard-setting bodies, as they might lack the technical expertise to influence the creation of some technical standards (WTO, 2005). By consequent, the central question is whether international standards are compatible with developing countries needs and their level of development, technological capacities and more importantly with development strategy guided by the objective of structural transformation.

WTO (2005) reported the results of a survey that was conducted by ISO in 110 developing countries showed that the level of participation of respondent countries in international standardization work was still very low, and that only a minority of their standards and technical regulations were based on international standards. In 70% of respondent countries, more than half the standards were not based on international standards and in 61% of the countries, more than half the mandatory technical regulations were not based on international standards. 42% per cent of the respondent countries were not registered as members of any ISO technical committee and 52% of the respondent countries had not attended any meetings of these technical committees in the last two years. 48% of the respondent countries did not even follow the work by correspondence. The main reason given for low participation was lack of funds at both industry and standardizing body level and lack of awareness and expertise in standardization.

Morikawa and Morrison (2004) examine the regional representation in ISO's technical committees (TCs) (see table(1)). Their study illustrates that "ISO standards have historically, and continue to be, dominated by industrialized nations, especially Western European countries" (Morikawa and Morrison, 2004, Pp.25). The study shows that even when developing countries do establish Participating Member status in a TC, evidence suggests their involvement in standards development is typically not as substantive as developed nations, which tend to send far more delegates to meetings and to hold more leadership positions within TCs.

Table(1)

	% membership bodies (full members)	ISO Average TC participating-membership	%TC Chairs	% TC secretariat
Western Europe	12%	48%	47%	58%
North America	2%	7%	22%	19%
Asia	25%	22%	8%	10%

Central East Europe	\$	15%	13%	2%	3%
Central South America	\$	14%	3%	0%	1%
Africa		30%	4%	2%	3%

Source: Morikawa and Morrison (2004)

A priori, both the demand for standards and the capacity to develop standardization infrastructure and activities depend to a large extent on factors correlated with a country's level of development⁴. Standardization infrastructure in developing countries has thus often been non-existent or relatively basic. If countries lack expertise that would allow them to take full part in the setting of international standards or if they lack bargaining power, harmonization can generate asymmetric compliance costs for different countries (WTO, 2005). Gains and cost generated by harmonization will not be distributed equally among participating countries.

4.2- Acceptance as equivalent

Acceptance as equivalent implies that a country recognizes that the exporting country's product standard, although characterized by a different technical specification, is effective in pursuing the same objective as is achieved by the importing country's technical requirements, and it can therefore enter the domestic market.

In contrast to harmonization which is a process that could take long period and where parties can introduce obstacles leading stalemate in negotiations, acceptance as equivalent does not require extensive phase of preparation, thus leading to immediate liberalization.

Moreover, when non-acceptance of party's standards as equivalent needs to be justified, technical expertise asymmetries could lead to de facto asymmetric liberalization in the interest of industrialized countries. Therefore, equivalence might be translated into unilateral liberalization of TBT in developing countries without obtaining access for products where they are supposed to have comparative advantage.

⁴ "Demand for network externality standards (compatibility/interface) that emanates from producers clearly increases with the level of industrialization and development of the country. Similarly, demand for information asymmetry standards and environmental standards, tends to increase with the level of income and development. On the supply side, setting up a full fledged standardization infrastructure with all the responsibilities generally assigned to such infrastructure is very costly and takes time, and without much involvement from the private sector, developing country governments bear all the responsibility" (WTO, 2005, pp.93).

Consequently, equivalence as an approach of liberalization may not only restrict the ability of developing countries to design their standards as part of industrial policy framework, but it might also deprive them from effecting market access in sectors where they have comparative advantage, which is supposed to be the *raison d'être* of TBT liberalization.

4.3- Mutual recognition of conformity assessments

Conformity assessment is the process whereby a product, process or/and service is evaluated against specified requirements. It is the technical proof that a product complies with the laws of the country where it is sold. Hence, exporters often have to test or certify their products in each of the countries to which they are exporting. This can substantially increase the costs of exports, in a number of ways⁵. In order to reduce such costs, the (mutual) recognition of conformity assessment procedures has been negotiated among different countries. The importing country recognizes the competence of the exporting country's conformity assessment bodies to test and certify that a product complies with the laws of the country where it is sold.

Importantly, where countries rely on internationally harmonized standards or accept as equivalent another country's standard, they may not rely on an exporting country's conformity assessment results. Alternatively, (mutual) recognition of conformity assessments requires neither recognition nor harmonization of product standards. Therefore, even without adopting either of previous liberalization approach, (mutual) recognition permits the access of foreign markets, and thus it fulfills the function of harmonization and (mutual) equivalence of standards.

An empirical study, by Chen and Mattoo (2008), finds that mutual recognition arrangement with rules of origin creates hub-and-spoke pattern, impeding trade with third party by third to one.

4.4- Transparency

Helble et al (2009) and Wolfe (2003, 2013) associated transparency with both predictability and simplicity. Helble et al (2009) argue that trade transaction cost is not just affected by what governments do, but also by how they do it. The argument is based on the recognition that the trading environment has a procedural aspect. Accordingly, unpredictability

⁵ First of all, exporters incur the costs of redundant testing and certification for each of the destination markets. Second, they face the risk of higher transportation costs if the goods are rejected by the importing country after shipment. Third, there is a cost in terms of time required for complying with administrative requirements and inspections by the importing country's authorities. For some time-sensitive products, such as textile and clothing, the time delays associated with product testing and certification in the importing country can severely impact on profitability and the ability to penetrate the market.

and undue complexity in the design, implementation and administration of trade policy can constitute independent sources of transaction costs. The predictability is a way of reducing “soft” transaction costs stemming from uncertainty while the simplification reduces information costs related to an overly complex environment.

Wolf (2013) argues that transparency, in general, serves three purposes. First, it lets actors know what others are doing, so they can act accordingly. Second, transparency is the basis for one actor to try to influence another actor to act differently. Third, transparency is the basis on which an actor can be held accountable for obligations.

As a result, transparency is a key element for the functioning of whole system of trade liberalization. On the one hand, information asymmetries and procedural complexity might be seen as non-tariffs barriers. Therefore, transparency requirements reduce costs for the access of foreign goods. On the other hand, transparency is necessary to the verification of implementation of supranational rules, and thus, to the well-functioning of enforceability mechanism. This is why Wolf (2013) pointed out “the ultimate objective of transparency is systemic stability”.

Therefore, notification about the modification and introduction of new standards and technical regulations, and the establishment of enquiry points to facilitate day to day communication between standard bodies, could be seen as a necessary complementary element of TBT liberalization whatever approach is adopted.

4.5- The extent of overall liberalization

The tightness of overall liberalization approach depends on the combination of the following factors:

- The scope of liberalization commitments.
- The subject of liberalization: Standards, Technical regulation and conformity assessment.

Here stringency is related to:

- The degree of obligation of the considered subject. Or, liberalization of technical regulation seems to have more effective consequence than liberalization of standards.
- The inclusive character. This concerns the conformity assessment whose liberalization on whatever approach, may include implicitly accepting as equivalent other party’s standards and technical regulation.
- The approach of liberalization. Here a differentiation should be considered between two elements of liberalization approach:

- The core elements which deal directly with the subject of liberalization; harmonization, mutual recognition and accepting as equivalent. Here again, we have to differentiate between the different versions of each approach of liberalization. For example, when justification of non-equivalence is needed, a distinction should be made between the version where such justification is need in order to make corrective measures, and the version where the function of justification is not defined and thus have probably no effective consequence. Clearly, the former is more stringent than the latter.
- The administrative and institutional elements, i.e. the transparency requirements and enforceability provisions.

Hence, it should be noted that the overall extent of liberalization depends on the combination of different approaches of liberalization of TBT. Hence, extensive transparency provision accompanied with a limited coverage and soft liberalization commitments can be considered less liberal that an approach that engage deeply at the last two elements while not extending transparency requirements.

5- Analytical framework

In order to examine the TBT coverage in the studied PTAs, the paper develops a framework that permit to compare PTAs to each other (See table(2)), through assessing their contents to Agreement of WTO on TBT. While the present framework construct on Piermartini and Budetta (2009), it includes many aspects that were not covered there. In fact, to permit better comparative understanding, its content reflects the most liberalizing provisions observed in the studied PTAs. The framework is organized in (4) sections.

Table (2)

The scope of liberalization	
	Metrology
	Public procurement
The Approach of Liberalization	
	Harmonization
	Harmonization based on International Standards
	Harmonization based on a party's Standards
	Acceptance as equivalent
	National standards should be based on international standards
	National standards should be based on a party's standards
	Justification needed in case of Non-ac

	Mutual recognition
	Illustrative list of recognition mechanisms
	Commitment to negotiate in a defined time
	Justification needed in case of refusing negotiation request
	National treatment provision for accreditation of conformity assessment body
Transparency Requirements	
	Extension period for notification
	shortening the period for notification
	Tolerance of notification procedures in case of urgency
	Justification needed in case of not considering another party comments
	Commitment to permit the participation of other in the development of its own TBT
	the inclusion of a delay for the application of transparency requirements
Administrative structure	
	Establishment of a Committee on TBT
	If consultation should be undertaken under dispute settlement

5.1- The scope of liberalization

TBT Agreement covers three elements of standardization: technical regulations, standards and conformity assessment (see Box for the definitions of these terms). At this level, the framework investigates if the PTAs broaden the coverage of liberalization through including other elements of standardization and quality assessment process, such as Metrology.

In addition, the WTO Agreement on TBT covers all products, whether industrial or agricultural (article 1.3), but it excludes government procurement transactions and measures related to the sanitary and phytosanitary (article 1.5). While the latter was regulated at the multilateral level during the Uruguay Round, the former was the subject of a plurilateral Agreement where limited number of country are signatory. While examining the contents of PTAs chapters on sanitary and phytosanitary measures is beyond the scope of the paper, it considers whether the studied PTAs proceed to the liberalization of TBT related to Public Procurement.

Technical Regulations

Technical regulations are a set of rules which lay down: (i) the characteristics of a product; (ii) related processes and production methods; and (iii) applicable administrative provisions, compliance with which is process or production method will be considered "related" if it has an effect on the quality or characteristics of the product.

Standards

Standards are formulations approved by a recognised body, providing for rules and guidelines on characteristics of products and related processes and production methods. These may also cover terminology, symbols, packaging, marking or labelling applicable to a product or process or production method. Standards are not mandatory, but their importance lies in the fact that products conforming to them are often accepted by consumers as being of assured quality.

Conformity Assessment Procedure

The conformity assessment procedure is used, directly or indirectly, to determine that relevant requirements in technical regulations or standards are fulfilled. These may include procedures for (i) sampling, testing and inspection; (ii) evaluation, verification and assurance of conformity; and (iii) registration, accreditation and approval.

Source: Annex I TBT

5.2- The core approach of liberalization

The WTO Agreement on TBT established both pillars of non-discrimination, National Treatment and Most Favored Nation for goods of WTO members, in respect to the technical regulation, standard and conformity assessment (Article 2.1)⁶. It stipulates that the preparation, adoption and application of TBT should not create “unnecessary obstacles to international trade” (Article 2.2, Article 5.1.2)⁷.

The main approach of liberalization adopted by The WTO Agreement on TBT is the harmonization. It introduces multifaceted obligations:

- National TBT should be based on international standard⁸, whenever they do exist.

⁶ The agreement addresses many concrete aspects in order to ensure the non-discrimination, such as the procedures, the fees and the location of facilities which are used in conformity assessment.

⁷ Though the precise definition of "unnecessary obstacles to international trade" hasn't been given, there are the following guidelines in this regard (Article 2.2 for technical regulation): (i) The risk of not having these regulations will have to be weighed against the effects on trade, to determine whether the regulations are disproportionate in the light of the risks. (ii) if an alternative measure is available which would meet the same objective and permit to address policy concerns with “less restrictive manner”. However a technical regulation must not be continued if the need for it no longer exists.

⁸ Technical Regulation are permitted only for list of « legitimate objective ».

Exceptions⁹ have been established for situations when the international standards will be ineffective or inappropriate. Though these terms are not defined clearly, the agreement states that such situations may arise because of fundamental climatic or geographical factors or fundamental technological problems.

- An incentive for using international standards is provided by the presumption that a national regulation will not be considered to be creating an “unnecessary obstacle to international trade”, if it is based on international standards. However such presumption is rebuttable by any affected member.

Concerning the harmonization, the framework examine if the studied PTAs tighten harmonization engagement under WTO, more precisely through examining two points:

- If the PTAs establish a firm obligation to harmonization on the base of international standards. Given that exception are considered in WTO, the affirmation or not of commitments under WTO might have an effect on the level of tightness of commitment introduced by PTAs, affirming or removing the flexibility under WTO TBT.
- If the PTAs introduce a commitment to harmonization on the basis of a party’s own TBT.

Similar to Piermartini and Budetta (2009), the framework considers that the policy adopted is harmonization also in all those cases in which the text of the agreement states that parties should ‘bridge the gap’, ‘reduce divergence’ or ‘make compatible’ their standards, technical regulations or conformity assessment procedures.

In respect to acceptance as equivalence, the WTO Agreement on TBT introduces soft obligations to “give positive consideration to accepting as equivalent technical regulations of other Members”, and to accept as equivalent, “whenever possible”, other Members conformity assessments results and procedures. Thus, in case of adopting acceptance as equivalent as a liberalization approach in the studied PTAs, the framework examines the following points:

- If the PTAs promote international standards as basis for national standards
- If the PTAs promote a party’s technical regulation.
- If the importing country needs to provide reasons for not accepting as equivalent other party technical regulations or conformity assessment procedures.
- If the PTAs introduce MFN clause

⁹ We consider that these exceptions are eliminated in PTAs that don’t restate commitments to WTO TBT.

Concerning the mutual recognition of conformity assessment, the framework investigates the following points:

- If PTAs introduce an illustrative list of mechanisms for mutual recognition of conformity assessment results and procedures.
- Whether countries commit to negotiate mutual recognition within a certain time.
- If the burden of declining a negotiation request for mutual recognition in specific sectors is on the refusing party.
- If it introduces National Treatment provision for the accreditation of conformity assessment bodies.

5.3- Transparency requirements

In the case that member countries envisage to adopt a TBT not based on international standard¹⁰, the WTO Agreement on TBT introduces many transparency requirements. Member should notify other Members through the WTO Secretariat of the purpose of the proposed measure. In such circumstances, Members must allow “reasonable time” for other Members to comment on proposed technical regulations and conformity assessment procedures, which the WTO TBT Committee has recommended to be “at least 60 days”¹¹. In addition, the Member should take comments it receives from other Members into account (Art. 2.9 and 5.6). At this level, the framework investigates the following points:

- Whether PTAs rules extend the time period for notification beyond sixty days or it promotes its extension.
- If the notification period is less than 60 days.
- If the notification procedure is tolerated in case of urgency.
- If justification is requested in case of not considering another party comments.
- If the party should permit others to participate in the development of its own TBT.
- If it defines a delay for the application of transparency requirements.

5.4- The administrative structure

There may be a considerable difference between the text of the agreement and the extent to which commitments are implemented. Hence, similar provisions in two different PTAs may correspond to extremely different practices. In general, the gap between the law and the practice

¹⁰ Either because there is no international standards or the technical content of TBT measure is not in accordance with the technical content of relevant international standards.

¹¹ Document (G/TBT/26).

is likely to depend on the institutional settings and administrative procedures (Piermartini and Budetta, 2009). Two points are investigated here:

- If the PTA establishes Committee on TBT.
- If consultation should be undertaken under dispute settlement chapter.

6- Overview of The Results

In this section the paper presents a general review of the studied PTAs (see table(3)) grouped by countries. The detailed results are contained in table in the annexe.

Table(3)

US	EU	China	India
CAFTA-DR (2006)	Morocco (2000)	Chile (2010)	Afghanistan (2003)
Chile (2004)	Algeria (2005)	Peru (2010)	Bhutan (2006)
Peru (2009)	Tunisia (1998)	ASEAN (2007)	Nepal (2009)
Colombia (2012)	Egypt (2004)	Costa Rica (2011)	Sri Lanka (2001)
Panama (2012)	Jordan (2002)	Pakistan (2009)	MERCOSUR (2009)
Bahrain (2006)	Lebanon (2003)		SAFTA (Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka) (2006)
Oman (2009)	Chile (2005)	ASEAN (2010)	
Jordan (2001)	Mexico (2000)		Chile (2007)
Morocco (2006)	Andean Community (2013)		
	South Africa (2000)		
	CARIFORUM (2008)		

6.1- European Union

The PTAs of EU broaden the scope of TBT liberalization to include the public procurement transactions. The chapter on Public Procurement introduces many disciplines on the design of the “technical specification”¹². It should be based on international standards “except

¹² EU definition “ technical specifications’ means a specification which lays down the characteristics of the products or services to be procured, such as quality, performance, safety and dimensions, symbols, terminology, packaging, marking and labelling, or the processes and methods for their production and requirements relating to conformity assessment procedures prescribed by the procuring entities covered by this Chapter; »

where the use of an international standard would fail to meet the procuring entity's program requirements or would impose more burdens than the use of a government unique standard"; and should not create unnecessary obstacles to trade between parties. Importantly, it prohibits the interaction between the government and the private sector in the elaboration of TBT¹³.

While there is no any reference to metrology in the WTO Agreement on TBT, EU PTAs broaden its TBT coverage to include metrology. Some agreements¹⁴ aim at the cooperation in this domain, and other include an obligation to adopt EU metrology rules¹⁵.

In general, the dominant approach in the EU PTAs is the harmonization. To achieve this aim two different methods are used¹⁶, the first adopt the harmonization toward standards and technical regulation of EU. While using the term harmonization, what is observed here is rather a unilateral recognition by one party of the other party's standard, with engagement to adapt its own standard to the European ones. In the case of conformity assessment for MED countries, the engagement to the harmonization based on EU conformity standard is combined with article implying that eventual "mutual recognition" could take place when the MED countries laboratories are upgraded. The second method adopts harmonization toward international standards. This approach is observed for agreements with Mexico, Andean Community, CARIFORUM and South Africa.

Concerning transparency requirements, EU-Andean Community PTAs push toward extending the period of comment in case of introducing a modification of (new) measure that concerns TBT. The establishment of sub-committee on TBT is only observed in the EU-Chile PTAs, which should meet once a year, except of parties see otherwise.

6.2- United States

Similarly, the PTAs of US broaden the scope of TBT liberalization. It includes a chapter on Public Procurement that introduces disciplines on the design of "technical specification"¹⁷. In general, those disciplines are the same as those found in EU Public Procurement chapter. In

¹³ It States that parties "May not accept an advice that may be used in the preparation or adoption of any technical specification from a person who might have commercial interest in that procurement".

¹⁴ CARIFOUM, CA, Egypt, Chile and South Africa.

¹⁵ Tunis, Morroco and Jordan. In the case of Algeria an obligation to upgrade its metrology is introduced with no reference on which bases.

¹⁶ The agreement with Chile combines the both methods for the Technical Regulation and Standards.

¹⁷ US definition "technical specification means a tendering requirement that: (a) sets out the characteristics of: (i) goods to be procured, including quality, performance, safety, and dimensions, or the processes and methods for their production; or (ii) services to be procured, or the processes or methods for their provision, including any applicable administrative provisions; or (b) addresses terminology, symbols, packaging, marking, or labeling requirements, as they apply to a good or service

addition, US agreement with Colombia, Peru, CAFTA-DR and Panama include a footnote which affirm that any reference to “standard, technical regulation or conformity assessment procedure includes those related to metrology“.

The dominant liberalization approach¹⁸ is the equivalence. Concerning technical regulation, US PTAs push toward acceptance as equivalent. The party refusing to accept as equivalent the other party technical regulation, should justify its non-acceptance¹⁹, in both cases where it provides that foreign technical regulation may be accepted as equivalent to its own, or not.

Concerning the conformity assessments, all US PTAs foster initiatives to develop mutual recognition, and, they include list of mechanisms to achieve this aim. Moreover, when a country does not accept the result of conformity assessment procedures in other party’s territory, it must justify its decisions. In the PTAs with Peru and Colombia it defines the aim of justification to “take corrective action”.

The PTAs of US go much further by introducing national treatment provision for the accreditation and recognition of conformity assessment bodies in the territory of other party. In case of non-compliance with this provision, the refusing country must provide reasons behind its decision “so that corrective action may be taken, if necessary”²⁰. Such provisions clearly go beyond the WTO commitments that only encourage Members to permit the participation of conformity assessment bodies located in the territories of other Members (Art. 6.4, WTO Agreement on TBT). Finally, it goes beyond WTO Agreement on TBT, that only encourages countries to enter in negotiations to conclude mutual recognition agreements, by charging the country that decline the request with the burden of justification of its decision.

In addition to its encouragement for the extension of the period of comments in its PTAs with Peru and Colombia, it introduces a novelty consisting of permitting and receiving comments from persons not only governments. Moreover, US PTAs introduce an obligation to permit all foreigners (not just agreements’ party) to participate in the development of its standards, technical regulations, and conformity assessment procedures on terms no less favourable than those accorded to nationals. Furthermore, it defines time period for the implementation of transparency requirements “in no event later than three years”²¹.

¹⁸ US PTAs don’t tackle the standard.

¹⁹ While Peru and Colombia use the term « Shall », Chile, CAFTA-DR and panama provide lesser obligation by introducing the term “may”.

²⁰ PTA with Peru and Colombia.

²¹ Peru and Colombia; the period is five years for agreements with Morocco, Oman, Bahrain, CAFTA-DR.

Regional bodies are established under US PTAs. For some countries the agreement establishes a committee²², for others it establishes a coordinator²³. Anyway, the difference in names reflects differences in the structure and the functions. Agreements establishing committee, include a commitment that “the Parties shall make every effort to obtain a mutually satisfactory solution within 60 days » in case of consultation. Moreover, such a consultation should be conducted under the provision on consultation contained in the dispute settlement chapter. The Committee shall meet at least once a year unless the Parties otherwise agree. All decisions of the Committee shall be made by consensus unless the Committee decides otherwise.

6.3- China

China’s provisions on technical regulation restate two obligations of TBT WTO, the first is to use international standard as a basis for their technical regulations and related conformity assessment where “international standards exist or their completion is imminent, each Party shall use them, or relevant parts of them” and secondly, « Each Party shall give positive consideration to accepting as equivalent, technical regulations of another Party” if it fulfills the objective of its own regulation. Three out of five agreements²⁴, go beyond that by the inclusion of an obligation to provide explanation, under other party request, whenever technical regulations of that Party are not accepted as equivalent. Concerning standards, it refers to the Code of the Good Practice under TBT WTO.

Even to variant degrees, the PTAs of china seek the mutual recognition of conformity assessment on the base of international standard, where it does exist. Four agreements²⁵ recognize the existence of broad mechanism to facilitate the acceptance of conformity assessment procedures and its results but without defining them, except for the agreement with Chile which includes an illustrative list of such mechanisms. Three agreements put the burden of justifying of non-acceptance of conformity procedures conducted in partner territory on the importing party²⁶. Agreements with Chile and Peru request justification for rejection of engagement in negotiations.

China-Peru PTA introduces provision similar to those of US and EU on encouraging extension of comments period under the condition that the request should be sent prior to the end

²² Colombia, Peru, Panama, CAFTA-DR, Chile.

²³ Oman, Morocco, and Bahrain.

²⁴ Chile, Peru and ASEAN (Both Peru and Chile have had this engagement under PTA with US, ASEAN don’t have).

²⁵ ASEAN, Peru, Chile, Costa Rica.

²⁶ ASEAN Article 7.6 Peru Article 98.3, Chile Article 66.4. Chile and Peru do have the same with US, engagement included in ASEAN is more complex and liberal where an agreement on mutual recognition is signed.

of comment period. Moreover, it demands a clarification in case of non-extension under a request by the other party. China-Chile PTA introduces a time limit of 3 years as a period to the implementation of transparency provision. In addition, after a modification of TBT measure has been notified, China-Costa Rica and China ASEAN introduce a time limit²⁷ for the application of engagement under WTO to provide the notification about the modification of TBT measure to other member under request from its part. It is worth noting, that China PTAs²⁸ exempt party from the obligation to allow 60 days for comments on proposed technical and assessment conformity under urgency.

Concerning the administrative body and the legal enforcement, China PTAs²⁹ established committees on the technical barrier to trade with a contact point. The committee have to meet once each two years, unless the Parties otherwise agree³⁰. Finally, PTAs with Peru and Chile provide the possibility to recourse to dispute settlement mechanism established by the agreement³¹.

6.4- India

India's PTAs do not include extensive provisions on TBT. Some agreements don't have a direct indication to TBT (ASEAN Article.8). However, whenever direct reference to TBT does exist, it consists to affirm obligation and rights under TBT agreement in WTO. Agreements with MERCOSUR and Chile contain provision on cooperation in the area of standards, technical regulations and conformity assessment procedures (Mercosur Article 19, Chile Article XII, SAFTA Article.8).

Although there is no direct reference to TBT in PTA between India and Bhutan, it, interestingly, introduces derogation that permit the use of non-tariff restriction "on the entry into Bhutan of certain goods of Indian origin as may be necessary for the protection of industries in Bhutan", and it permits to impose such measures on goods of a third country.

6.5 Discussion of results

It hard to decide which overall approach of liberalization is the more stringent, that's of US or EU. Although both models broaden the coverage of liberalization to include public procurement and metrology, there are many essential differences between the two approaches:

²⁷ It 5 days in China-Costa Rica Costa Rica Article 75.1 and 15 under China-ASEAN Article 8.2 since the request of other party is received.

²⁸ ASEAN Article 8.3, Costa Rica Article 75.1.

²⁹ Chile, Peru, Pakistan, and Costa Rica.

³⁰ Peru Article 101.5, Costa Rica 77.2. One year for chile, Article 69.7.

³¹ Peru Article 101.4, Chile Article 69.5.

- While EU TBT Chapters include provisions in all area of TBT, the US Chapters focus on area that has obligatory character, the technical regulation and conformity assessment.
- While EU establish direct obligation to harmonization toward both EU and international TBT, US adopt indirect obligation, but probably effective, to accept as equivalent the technical regulation and the conformity assessment of other party.
- In contrast the EU PTAs, the US PTAs include extensive provision on transparency and enforceability.

Still, EU adopts the harmonization towards its own standards in association agreements, that might be seen the hardest approach of liberalization.

Contrary to US and EU, China approach does not broaden the scope of liberalization. Approach of liberalization of TBT in PTAs involving China, whenever they do exist, adopt the indirect obligation, that is giving positive consideration to the acceptance as equivalent, both technical regulation and conformity assessment. This indirect obligation comprises another element that is the provision of justification in case of non-acceptance.

While some US PTAS³² define the objective of justification as to be “in order to take corrective action”, the Chinese approach still silent, alleviating the tightness of liberalization, and even making it ineffective. Moreover, all US PTAs include illustrative list of mechanism for accepting as equivalent conformity assessment results. China does not include such list except in its PTAs with Chile.

PTAs involving China have extensive provision on Transparency, especially in respect to the comments period. Again, US approach in respect to transparency include deep commitments, such as the permission to persons of others parties to participate in the development of its own TBT on the basis of national treatment and most favor nation clauses.

Similar to the US approach, PTAs that involve China introduce a sub-committee on TBT. By contrast, their functions are less clearly and extensively defined compared to US chapters, and more importantly, consultations should not have to take place under dispute settlement procedure.

However, it is important to note that the majority of provisions going beyond WTO are contained in PTAs with countries that have had another PTA with US, especially Peru and Chile.

³² Peru and Colombia.

By contrast, PTA with Costa Rica, who is a party of the PTA of US-CAFTA, does not go beyond commitments under WTO. Consequently, questions are raised on whether China or its partners requested these provisions?

While empirical investigation of negotiations conduct of China concerning TBT is beyond the scope of this paper, it worth noting that many studies underline that one of china PTAs' characteristic is its flexibility and the ability to adapt to the circumstances and needs of each partner on a case-by-case basis. China tends to design individually tailored PTAs that address the varied preferences of its partners, resulting in agreements that are highly differentiated in terms of their substance. However, such flexibility have its limits, where China refuse to go beyond certain degree of liberalization³³ (Berger, 2013; Zhao and Webster, 2011; Yu, 2010). Concerning TBT, it seems that China's ceiling liberalization is the soft indirect commitments to accept as equivalent other party's TBT.

7- Conclusion

The article basis its analysis on the attempts to enlarge the perception of TBT beyond its standard functions as "barrier to trade" and public policy tools, by taking into consideration its function as industrial policy tool that influence the very structure of the economy. Dynamic standards design could be an instrument in the overall policy framework that envisages to address the coordination failure in investments. In addition, standards could be designed as part of control mechanisms related to different types of government support for investments that have the aim of developing local productive capacities. Consequently, the development economics debate about the international cooperation in the domain of standards has some additional concerns to deal with, other than trade liberalization's direct gain and cost. A question should be confronted: to which extent the "one size fits all" models of international and regional standards are compatible with different economic needs of involved countries?

Although a certain degree of coordination of standards is desirable, the question of compatibility of "one size fits all" standards design to different countries should be integrated in the overall analysis. In fact, countries differ in terms of levels of development, technological capacities and national economic policy preferences. By consequence, it is natural that optimal

³³ For example the result of Berger (2013) empirical study on Chinese Preferential Trade and Investment Agreements (PTIA) shows that "treaty language diffuses from its partner country PTIA policies in the process of negotiations towards China's PTIA policy [...]China has been flexible and responsive to the model texts proposed by the respective partner countries, as is explained in greater detail below. The only limiting factor to China's pragmatism was the inclusion of liberalization commitments in its PTIAs that are not in line with China's industrial policy, which relies on a selective admission system that results in discriminatory treatment against domestic and foreign investors"

national standards differ across countries, giving that it is extremely rare that countries have identical policy objectives (WTO, 2005).

However, the disciplines introduced by studied trade agreements show a tendency to reduce the ability of countries to design TBT at the national level. Under the WTO, despite the constraint on policy space, there remains room to maneuver. While some PTAs push for broader and deeper liberalization of TBT, others continue to keep space for the policies aimed at industrial development. While the studied North-South PTAs include WTO plus commitments, the studied South-South PTAs show varied pattern ranging from just affirming engagement under TBT agreement under WTO to include WTO plus provisions. However, WTO Plus commitments in South-South, are less liberal than those found in North-South.

A common feature of PTA signed by US and EU is that they broaden the coverage of liberalization commitments under WTO Agreement on TBT. The PTAs signed by the US tend to encourage the acceptance as equivalent the technical regulations of other parties and the mutual recognition of conformity assessment. The PTAs signed by the EU also includes provisions in favour of harmonization of TBT. In particular, EU agreements with Mediterranean countries tend to promote harmonization to European standards. In addition, the PTAs signed by US seem to have strong provisions on transparency and the establishment of institutions to deal with the administration of the agreement and with the resolution of disputes.

Thus, the results of the paper confirm the conclusion of studies in other domains on the tendency of US and EU to introduce WTO plus commitments in their PTAs.

China's PTAs seems to adopt varied approach. Some PTAs affirm commitments under WTO Agreement on TBT, though with consolidating it through the establishment of institutions to administrate commitments. Others PTAs have a tendency to liberalize TBT through a soft commitment to accept as equivalent technical regulation. However, taking into account that most of commitments of WTO plus nature are contained in PTAs with countries having agreements with US and EU, it seems necessary to conduct a study on China's negotiation position on TBT, specially that literature on china's negotiations conduct highlight its flexible and adaptive approach.

India PTAs adopt a clear position that affirms commitment to TBT under WTO, with no introduction of any serious additional disciplines.

It is important to highlight that the paper proposes de jure assessment of studied PTAs, that's why it is unable to evaluate the extent to which rules are implemented. Especially in the context where some commitments are not mandated, rather a justification is required in case of

not applying it. Therefore, whether parties are recurring to such request or not and the implication in term of changing previous conduct, need further investigation.

References

- Akyüz, Y. (2005), « WTO Negotiations on Industrial Tariffs: What is at Stake for Developing Countries? », TWN Trade & Development Series, No.24, Third World Network, Penang.
- Akyüz, Y. (2009), « Multilateral Disciplines and the Question of Policy Space », TWN Trade & Development Series, No. 38, Third World Network, Penang.
- Amsden, A. (2001), *The Rise of the Rest: Challenges to the West from Late-Industrializing Economies*, Oxford University Press, Oxford.
- Amsden, A. (1989). *Asia's Next Giant: South Korea's Late Industrialization*, Oxford University Press, Oxford.
- Ayala, F-A. and Gallagher, P-K. (2005), « Preserving Policy Space for Sustainable Development », *Working Paper*, Trade Knowledge Network, International Institute for Sustainable Development, December, Winnipeg.
- Baldwin, R. E. (1970), *Nontariff Distortions in International Trade*, The Brookings Institution, Washington, D.C.
- Bergek, A., Jacobsson, S., Hekkert., M. and Smith., K. (2007), « Functionality of Innovation Systems as a Rationale for and Guide to Innovation Policy », *Working Paper: RIDE/IMIT*.
- Berger, A, (2013), “Investment Rules In Chinese Preferential Trade And Investment Agreements: Is China Following The Global Trend Towards Comprehensive Agreements?”, Discussion Paper No. 7/2013, German Development Institute, Bonn.
- Blind, K. (2004), *The Economics Of Standards: Theory, Evidence, and Policy*, Edward Elgar Publishing, Cheltenham.
- Bora, B. P., Lloyd, J. and Pangetsu , M. (1999), « Industrial Policy and the WTO», *WTO/World Bank Conference on Developing Countries in a Millennium Round*, WTO Secretariat, Geneva.
- Chang, H.J. (2002), *Kicking Away the Ladder*, Anthem Press, London.
- Chang, H.J. (2009), « Industrial Policy: Can We Go Beyond an Unproductive Confrontation? », Paper presented at the 2009 World Bank ABCDE Conference, 22-24 June, Seoul.

- Chen, Maggie X., and AadityaMattoo. (2008), « Regionalism in standards: good or bad for trade? », *Canadian Journal of Economics*, Vol. 41, No. 3, pp. 838–63.
- Cimoli, M., Dosi , G., Nelson, R. and Stiglitz, J. (2006), « Institutions and Policies Shaping Industrial Development. An Introductory Note », Paper prepared for the task force on Industrial Policies and Development, Columbia University, New York.
- Cimoli, M., Dosi , G. and Stiglitz, J. (2009), *Industrial policy and development: The political economy of capabilities accumulation*, Oxford University Press.
- Correa, C-M. (2005), « The TRIPS Agreement and Transfer of Technology. », In *Putting Development First: The Importance of Policy Space in the WTO and International Financial Institutions*, (Edited by K. Gallagher), Zed Books London, pp. 126-145.
- Correa, C.M. (2000), *International Property Rights, the WTO and Developing Countries: The TRIPS Agreement and Policy Options*, Zed Books, London.
- Das, B-L. (1999), *TheWorld Trade Organisation. A Guide to the Framework for International Trade*, Third World Network, Penang.
- DiCaprio, A. and Gallagher, K. P. (2006), « The WTO and the Shrinking of Development Space: How Big is the Bite? », *Journal of World Investment and Trade*, Vol.7, No. 5, pp. 781-803.
- Disdier, A.C., Fontagne, L., and Cadot, O. (2013), « North-South standards harmonization and international trade», *Policy Research Working Paper*, World Bank, No.6710.
- Dosi G., Pavitt, K. and Soete, L. (1990), *The Economics of Technical Change and International Trade*, Harvester Wheatsheaf, London.
- Dosi G., Pavitt, K. and Soete, L. (1990), *The Economics of Technical Change and International Trade*, Harvester Wheatsheaf, London. (repeated)
- DTI. (2005), « The Empirical Economics Of Standards», *DTI Economics Paper 12*, Department of Trade and Industry, London.
- Gallagher, K and Thrasher, R.D. (2008), « 21st Century Trade Agreements: Implications for Long-Run Development Policy », *The PARDEE PAPERS*, No. 2, Boston University.
- Geraats, P. M. (2002), « Central Bank Transparency », *Economic Journal*, Vol. 112, No. 483, pp. 532-565.

- Guasch, J.L., Racine, J.L., Sanchez, I., and Diop, M. (2007), *Quality Systems and Standards for a Competitive Edge*, The World Bank, Washington, DC.
- Hamwey, R-M. (2005), « Expanding National Policy Space for Development : Why The Multilateral System Must Change », *T.R.A.D.E Working paper*, No. 25, South Center, September.
- Hausmann, R. and Rodrik, D. (2003), « Economic development as self-discovery ». *Journal of Development Economics*, Vol. 72, pp. 603-633.
- Helble, M., Shepherd, B. and Wilson, J. S. (2009), « Transparency and Regional Integration in Asia Pacific », *World Economy*, Vol.32, No. 3, pp. 479-508.
- Hirschman, A. O. (1958), *The Strategy of Economic Development*, Yale University Press, New Haven.
- Horn, H., Mavroidis, P.C., and Sapir, A. (2009), « Beyond the WTO? An Anatomy of EU and US Preferential Trade Agreements », *Bruegel Blueprint 7*, Bruegel Institute, Brussels.
- Katz, M. L. and Shapiro, C. (1985a), « Network Externalities, Competition and Compatibility », *American Economic Review*, Vol. 75, No. 3, pp. 424-440.
- Khor, M. (2008), *Bilateral and regional free trade agreements: some critical elements and development implications*, Third World Network, Malaysia, Penang.
- Kumar, N. and Gallagher, K.P. (2007), « Relevance of ‘policy space’ for development: Implications for multilateral trade negotiations », *RIS Discussion Paper No. 20*. New Delhi.
- Kumar, N. (2005), « Performance Requirements as Tools of Development Policy : Lessons from Developed and Developing Countries », In *Putting Development First. The Importance of Policy Space in the WTO and International Financial Institutions*, (Edited by K. Gallagher), Zed Books, London, pp.179-194.
- Lall, S. (2004), « Reinventing industrial strategy: the role of government policy in building industrial competitiveness », *G-24 Discussion Paper Series*, No.28, UNCTAD.
- Lall, S. (2004), « Selective Industrial and Trade Policies in Developing Countries: Theoretical and Empirical Issues ». In *The Politics of Trade and Industrial Policy in Africa: Forced Consensus*, (Edited by C. Soludo, O. Ogbu and H.-J. Chang), Africa World Press & IDRC, pp. 4-14.
- Lesser, C. (2007), « Do Bilateral and Regional Approaches for Reducing Technical Barriers to Trade Converge towards the Multilateral Trading System? », *OECD Trade Policy Working Paper 58*, Organization for Economic Co-operation and Development, Paris.

- Lin, J. and Chang, H.-J. (2009), « Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate between Justin Lin and Ha-Joon Chang », *Development Policy Review*, Vol. 27, No. 5, pp. 483-502.
- Mayer, J. (2009), « Policy Space: What, for What, and Where ? », *Development Policy Review*, Vol. 27, No. 4, pp.373-395.
- Meyer, N., Fenyés, T., Breitenbach, M., and Idsardi, E. (2010), « Bilateral and Regional Trade Agreements and Technical Barriers to Trade: An African Perspective », *OECD Trade Policy Papers*, No. 96, OECD Publishing.
- Morikawa, M. and Morrison, J. (2004), *Who Develops ISO Standards? A Survey of Participation in ISO's International Standards Development Processes*, Pacific Institute for Studies in Development, Environment, and Security, Oakland.
- Nelson, R.R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Harvard University Press, Cambridge.
- Nurske, R. (1953), *Problems of Capital Formation in Underdeveloped Countries*, Oxford University Press, New York.
- Ocampo, J-A. and Rob, V. (2008), « Policy space and the changing paradigm in conducting macroeconomic policies in developing countries », *BIS Papers*, No. 36, Bank for International Settlements, February.
- Pack, H. and L.E. Westphal. (1986), « Industrial strategy and technological change: theory versus reality », *Journal of Development Economics*, Vol. 22, No. 1, pp. 87-128.
- Piermartini, Roberta, and Michele Budetta. (2009), « A Mapping of Regional Rules on Technical Barriers to Trade », In *Rules in the Global Trading System*, (Edited by A. Estevadeordal, K. Suominen and R. Tech), Cambridge University Press, Cambridge.
- Robert, W. (2005), « What strategies are viable for developing countries today? The World Trade Organization and the shrinking of 'development space' », In *Putting Development First. The Importance of Policy Space in the WTO and International Financial Institutions*, (Edited by K. Gallagher), Zed Books, London, pp.80-101.
- Rodrik, D. (2004), « Industrial Policy for the Twenty-First Century », *CEPR Discussion Paper 4767*, Centre for Economic Policy Research, London.

- Rodrik, D. (2007), « Normalizing Industrial Policy », John F Kennedy School of Government, Harvard University.
- Rosenstein-Rodan, P. (1943), « Problems of Industrialization of Eastern and South-eastern Europe », *Economic Journal*, Vol. 53, pp. 202-11.
- Scitovsky, T. (1954), « Two Concepts of External Economies », *Journal of Political Economy*, Vol. 62, No. 2, pp. 143-51.
- Shadlen, K. (2005a), « Exchanging Development for Market Access? Deep Integration and Industrial Policy under Multilateral and Regional-Bilateral trade agreements », *Review of International Political Economy*, Vol. 12, No. 5, pp.750-775.
- Shadlen, K. (2005b), « Policy Space for Development in the WTO and Beyond: The Case of Intellectual Property Rights », *Working Paper*, No. 05-06, Global Development and Environment Institute at Tufts University.
- Swann, G.M.P., Temple, P. and Shurmer, M. (1996), « Standards and Trade Performance: The British Experience», *Economic Journal*, Vol. 106, pp. 1297-1313.
- Swann, G.M.P. (2000), « The Economics of Standardization », *Report for Department of Trade and Industry, Standards and Technical Regulations Directorate*.
- Swann, P. (2010), « Economics of Standardization: An Update Innovative Economics Limited», *Report for the UK Department of Business, Innovation and Skills (BIS)*.
- Ul-Haque, I. (2007), « Rethinking Industrial Policy », *UNCTAD Discussion Paper No.183*, UNCTAD, Geneva.
- UNCTAD. (2004), Sao Paulo Consensus. UNCTAD. Genève.
- UNCTAD. (2006), *Trade and Development Report*, United Nations Conference Trade and Development, New York.
- Wade, R. (1990), *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*, Princeton University Press, Princeton.
- Wade, R. (2003), « What Strategies are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space' », *Review of International Political Economy*, Vol. 10, No. 4, pp. 621-644.

- Wolfe, R. (2003), « Letting the Sun Shine in at the WTO: How Transparency Brings the Trading System to Life », *Staff Working Paper ERSD*, World Trade Organization.
- Wolfe, R. (2003), « Regulatory Transparency, Developing Countries and the WTO », *World Trade Review*, Vol. 2, No. 2, pp. 157-182.
- World Trade Report, (2005), *Trade, standards and the WTO*, WTO, Geneva.
- World Trade Report, (2012), *Trade and public policies: A closer look at non-tariff measures in the 21st century*, WTO, Geneva.
- Yu, P-K. (2010), “Sinic Trade Agreements”, Research Paper No. 11–08, University of California, Davis.
- Zhao, J and Webster, T. (2011) “Taking Stock: China’s First Decade of Free Trade”, University of Pennsylvania Journal of International Law, Vol 33, Pp.65-119.