



The Political Economy of Trade Barriers in Peru

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Abstract: This paper analyzes the political economy factors and actors that may have influenced trade instruments in Peru during the liberalization period of 2001-2015 (which started in 1990 under Fujimori's administration). The evidence supports the hypothesis that Peruvian trade barriers liberalization in period 2000-2015 was led by the "Ministry of Economy and Finance (MEF)", accompanied by traditional and diversified exporters (that consolidated the unilateral trade liberalization) and by import substitution firms that influenced to some degree, and slowed down the rate of liberalization of unilateral trade barriers. In addition, the unilateral trade liberalization was facilitated by the weak role of the formal labor force and liberal-oriented consumer interest groups.

Keywords: tariffs, non-tariff barriers, political economy, Ministry of Economy and Finance, Peru.

JEL Classification: P16, F13

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La economía política de las barreras comerciales en Perú

Resumen

Este artículo analiza los factores y actores de la economía política que pueden haber influido en los instrumentos comerciales en Perú durante el período de liberalización de 2001-2015 (que comenzó en 1990 bajo la administración de Fujimori). El análisis y las evidencias respaldan la hipótesis de que la liberalización de las barreras comerciales peruanas en el período 2000-2015 fue liderada por el el Ministerio de Economía y Finanzas (MEF), acompañado por exportadores tradicionales y diversificados que consolidaron la liberalización comercial unilateral, y por empresas de sustitución de importaciones que influyeron en cierto grado y redujeron la tasa de velocidad del proceso de liberalización de las barreras comerciales unilaterales. Además, la liberalización unilateral del comercio fue facilitada por el papel débil de la fuerza laboral formal y los grupos de interés del consumidor con orientación liberal.

Palabras clave: aranceles, barreras no arancelarias, economía política, Ministerio de Economía y Finanzas, Perú.

INTRODUCTION

Peru's current international trade strategy is based upon three main set of policies: the unilateral trade liberalization process; a set of bilateral and regional preferential trade agreements (PTA) and export promotion policies. In period 2001-2015, such strategy was consolidated under the institutional trade policy framework built in the 1990s, led by the minister of Economy and Finance (MEF) and accompanied by major interest groups associated to new economic groups, large firms, and guild of companies. In such period, the average of the most favored nation tariff (MFN) decreased from 13,5% in 2000 to 2,2% in 2015 (up to 2017) whereas the share of tariff lines with non-tariff barriers (NTB) increased from 8,5% in 2000 to a third of the total import tariff lines in 2016.

This paper analyses the political economy factors that may have affected the evolution of trade barriers in the unilateral liberalization period of 2001-2015. The political economy analysis does suggest that despite of the power

of the ministers of the MEF, political actors associated to large firms and guild of companies and other external factors had a role on shaping the trends of tariffs and non-tariffs barriers.

Despite of the empirical approach of the paper, in the first section, a very brief discussion of the theoretical literature is outlined. The next four sections contain the empirical analysis. Thus, second section describes trade barriers of Peru in period 2000-2015. Third section develops the main hypotheses of the paper. Fourth section uses an *ad-hoc* political economy model to estimate the role of the interests of national and exporting companies, labor factors and entry barriers in the formation of trade barriers in period 2001-2015. Section fifth offers a summary of the main results. A list of references is presented at the end of the paper.

THEORETICAL LITERATURE

There are at least four broad strands of the economic literature by which trade policy could be analyzed. The first and the one that this paper is based upon, is

the literature on the political economy of trade policy. The pioneers work of this strand of the economic literature (denominated the endogenous trade policy theory literature) are the works of Olson (1965) Brock and Magee (1974, 1975, 1978, 1980, 1983), Baldwin (1976, 1985), Findlay and Wellisz (1982), Hillman (1982, 1989), Mayer (1984), Magee *et al.* (1989). Regarding the political science literature, two works are quoted frequently, Schattschneider (1935), and Dixit and Londregan (1995). Surveys of these literatures are presented in Helpman (1995), Rodrik (1995), Krishna and Gawande (2003), Lederman (2005) and McLaren (2016). According to the endogenous trade policy literature, “the equilibrium level of protection is determined by supply and demand¹. Protection is demanded by interest groups² that rationally weigh the costs and benefits of lobbying for protection and is supplied by politicians seeking to maximize self-interested objectives” (Trefler, 1993, p. 140). On the other hand, Rodrik (1995) points out that

political-economy models generally take the specific-factors or Heckscher-Ohlin settings and modify it in one or both of the following ways. The objective function maximized by the policymaker is taken to show a preference for certain distributional outcomes, and hence to differ from that

of the social planner and individuals or lobbying groups are assumed to be able to take actions to shape the policy-maker’s preferences. (p. 1463)

Taken these features, Rodrik (1995), Helpman (1995) and Krishna and Gawande (2003) analyze five models: the tariff-formation function model; the political support function model; the direct democracy or median-voter model; the electoral competition or campaign contributions model; and the interest-group or influence-drivers political contributions model (developed by Grossman-Helpman, 1994).

The literature on the political economy of trade liberalization policy postulates arguments (such as liberal ideas, politician’s preferences and institutional changes, macroeconomic performance factors, etc.) in favor of reductions of trade barriers instruments as opposed to protectionist barriers. Stand out in this literature the works of Nabli (1990), Dornbusch (1992), Edwards and Lederman (1998), Milner (1999), Sally (2007) and Ludema *et al.* (2010). Among the key aspects analyzed in this literature are: i) the strength of exporters groups³ (represented by the diversification and importance of manufactures and traditional exports); ii) the strength of import-competing sector’s opposition (measured by the share of

1 According to Rodrik (1995), the demand side is composed by individual preferences and interest groups, and the supply side composed by government preferences and the institutional structure of government.

2 These groups usually represent government industries and/or the owners of factors of production (Lederman, 2005).

3 Alternatively, the emerge of new interest groups constellations with exports orientation to counter traditional protectionist interests.

manufacturing in GDP); iii) the occurrence of a political or macroeconomic crisis or poor economic performance that led a major opening of the economy; iv) open-market ideas; v) greater level of information on world trade; vi) pressures for structural reforms from international institutions; and vii) stronger institutions to support and manage open-market policies. Since the focus of the empirical analysis are trade barriers, the theoretical basis of the political economy of preferential trade agreements (PTA) are not considered in this paper⁴.

The second strand of the literature is related to the microanalysis of strategic trade policy, wherein the field of trade is combined with the field of industrial organization. As result of the new trade theory (Krugman, 1989), the microanalysis of strategic trade policy was developed in early 1980s. According to Örgün (2012), Brander and Spencer (1983, 1985) created a considerable stir

with an analysis of trade policy under imperfect competition. They introduced economies of scale, product specialization and technology as new aspects for the basis of trade. The Brander-Spencer analysis offered a particularly clever way of setting up the case for activist trade policy, one which simplified the issue enormously and thereby revealed its core. This new trade theory provided at least limited support for a kind of neo-mercantilism, means that governments could in fact raise national income at other countries' expense by supporting national firms in international competition. As the most important part of Brander and Spencer approach could be briefly described with a term of strategic trade policy. Although there exist cases wherein strategic trade policy may be relevant for developing economies (e.g., Dixit *et al.*, 1995, and Bhattacharjea, 1993), the facts presented below on Peru are consistent with the arguments of Krugman (1993, 1987) and Örgün (2012), that free trade policy

4 In this regard, it is worthwhile to point out that Rodrik (1995) considers that the welfare objective of the government differs from that of a social planner and that there are individual, producers or groups lobbies that make contributions or take actions to shape the policymaker's welfare objective. The additional element on PTA is that this will emerge when the welfare of the government of PTA member countries are greater than the respective welfares without PTA. Thus, one of many of the interesting results from this literature presented in Maggi (2014) is that PTA enhanced protection can occur when there are differences in the external tariffs in a sufficient number of sectors and in a relatively balanced way between the countries such that PTA be politically viable. In such case, PTA causes trade diversion and decreases social welfare. In the other extreme: PTA cause trade creation and increase social welfare for "natural" member countries (i.e., countries characterized by especially large gains from mutual trade liberalization because of their geographical proximity or their comparative advantage structure). These results imply that welfare impact of endogenously formed PTA is ultimately an empirical one.

may be the least harmful policy for developing economies⁵.

The last two strands of literature –non-relevant for this paper due to the lack of evidence and the size of Peru’ interest groups at the international markets– are that of the voluminous literature on interest groups (e.g., Sharif & Swank, 2019) and of the international political economy literature⁶ (e.g., Oatley, 2019).

TRADE BARRIERS IN PERU 2000-2015

Tables from A1 to A4 (of annex) show the evolution and the structure of trade barriers of Peru in period 2000-2016. Tables A1 and A3 show the MFN tariffs and non-tariff barriers (NTB)⁷ imposed to imports from the rest of the world and Tables A2 and A4 show those imposed to imports from the United States of America⁸. In these latter tables, it is shown the preferential tariffs and NTB which prevailed since 2009 according to the PTA between Peru

and the United States. The figures in all these tables indicate that:

- i) Peruvian tariffs have been structured in a staggered way, higher for consumer goods, lower for capital goods and in the middle for inputs or intermediate goods. Although this pattern has been maintained in period 2000-2016, the tariff gap rate between these goods has decreased (i.e., tariffs dispersion has been reduced for imports from the world and from the United States).
- ii) Imports of intermediate and consumer goods have had the highest number of tariff lines whereas capital goods have had the lowest number. Tariff levels have had the highest value for consumer goods, followed by intermediate goods and then for capital goods.
- iii) Peruvian most favored nation (MFN) tariffs have had a decreasing trend. Since 2016, Peru has the lowest simple average tariffs of 2,2%

5 The arguments are as follows: i) the issue of *free trade versus strategic trade policy* has not yet been clearly solved at the level of the main theoreticians of international trade; ii) such issue needs to be illustrated and researched in detail. Research should be in detail and industry level to explain which industry deserves to be protected; iii) free trade is a pretty good if not perfect policy, while an effort to deviate from it in a sophisticated way will probably end up doing more harm than good, or that there is more to it than our altruistic desire to persuade society to avoid deadweight losses; iv) it is impossible to formulate useful interventionist policies given the empirical difficulties involved in modeling imperfect markets; v) any gains from intervention may be dissipated by entry of rent-seeking firms; vi) general equilibrium considerations radically increase the empirical difficulty of formulating interventionist trade policies and make it even more unlikely that these policies will do more good than harm; vii) to the extent that the policies work, they will have a beggar-thy-neighbor component that can lead to retaliation and mutually harmful trade war; and viii) at the domestic level an effort to pursue efficiency through intervention could be captured by special interests and turned into an inefficient redistributionist program.

6 According to Oatley (2019), this branch studies the political battle between the winners and losers of global economic exchange.

7 Which include sanitary and phytosanitary measures (SPS, group A); technical barriers (TBT, group B), non-automatic licensing, quotas, prohibitions, and quantity control measures other than for SPS or TBT reasons (group E); rest of NTB (group R).

8 Trade barriers from other PTA signed by Peru are not included in the analysis. Among others, the PTA with China (in force since 2010), European Union (in force since 2013) and the Pacific Alliance (in force since 2015).

in the last 60 years from imports of the world and 0,2% from imports of the United States.

- iv) Although in the entire period 2000-2016, the sets of tariff lines associated to a determined tariff level have consistently decreased, there have been years (i.e., 2001, 2005, 2006 and 2008 for consumer goods) wherein small set of tariff lines have not followed this pattern. In such years, that small set of tariff lines has either increased or decreased their tariff rates levels in both for world and for United States imports⁹.
- v) Contrary to the case of tariffs, NTB have been increasing from both the world and the United States imports. Thus, in 2000, 8,5% and 7,3% of the tariff lines from imports of the world and the United States had respectively NTB, in 2015 these percentages increased to 34,1% and 27%. In addition, the number of NTB per tariff line has increased from both imports (world and the USA).
- vi) More than a half of the tariff lines with NTB are imposed to intermediate goods followed for consumer goods which covers more than a third of NTB in both imports (world and the USA).

These stylized facts would suggest a rather different behavior of political economy factors and actors regarding

tariffs and non-tariffs barriers regardless the origin of imports (world and the USA). For the latter, it seems the behavior of the factors and/or actor was to “increase” or to protect industries and for the former, with some exceptions, to liberalize tariffs.

HYPOTHESES ON THE POLITICAL ECONOMY OF TRADE POLICY IN PERU

From the political economy of trade policy point of view, six aspects delineated the institutional framework and interest groups on trade policy of Peru in period 2000-2015. First, the structural reforms implemented under Fujimori administration (1990-2000). Second, the empowerment of the Ministry of Economy and Finance (MEF). Third, the liberal ideas shared by the ministers at MEF selected by the different administrations (from 2000 to 2018). Fourth, interest groups associated to firms biased towards to commercial opening. Fifth, the dominance of the informal, underemployment and not salaried workers of the labor force; and last, the small role of consumers on trade issues. These aspects are described next.

Liberal Structural Reforms in Fujimori’s Administration 1990-2000

After a short period of liberalization during 1979-1982, Peru continued its

⁹ For example, in 2001 tobacco and sugar cane world imports tariff rate increased from 12% to 25%. In 2005, 2006, and 2008, tariff lines associated to diverse industries including tobacco, sugar cane, agriculture and manufactures decreased their tariff rates from imports of the world. In the case of PTA Peru-USA, some consumer goods increased their tariff rates as results of the trade negotiations.

import substitution industrialization model (which began with the administration of General Juan Velasco Alvarado in 1967). Peru's trade policy was highly protectionist with high tariff and non-tariffs barriers and export subsidies. Thus, the share of tariff lines with NTB (related to import licenses, quotas, and quantitative restrictions) increased from 7% in 1980 to 90% in 1988. Prohibition of imports increased from 0% in 1980 to 10% in 1988. The average tariff rate increased from 32,8% in 1980 to 69,5% in 1988. The tariffs dispersion was also high, in 1988, the maximum tariff rate for consumer goods was 110% and the minimum 25,5% for intermediate and capital goods. Non-Traditional export promotion was based upon two main instruments "el Certificado de Exportación, CER-TEX y el Fondo de Exportaciones No Tradicionales, FENT". The first provided an export refund of a maximum of 30% of the export value and in FENT reached a maximum figure of 41,1% of the total non-traditional export value in 1984. The Andean Community was the only relevant agreement signed by Bolivia, Colombia, Chile, Ecuador and Peru (on May 26 of 1969). On February 1973 Venezuela joined the agreement, and Chile exited by October of 1973. On August 25, 1992, Peru exited temporarily from the Andean Community until 1997 (by Decision 424), the date of its full reincorporation into the Andean Free Trade Area that began in 1992.

Trade and other distortions (in foreign exchange markets, interest rates, prices control, etc.) and macroeconomic imbalance led to hyperinflation and recession by the end of 1989 as the macro figures of Table 1 show. The Peruvian crisis of the 1980s led to a new liberal market model of growth in 1990 under Fujimori administration. The "new liberal model" was "accidentally decided" in a 1990 meeting with his leading promoter, Dr. Carlos Boloña.

I went on time to a meeting in a New York Hotel wherein Rodriguez-Pastor, Fujimori, Felipe Morris, Hernando de Soto and Adolfo Figueroa were all seated to discuss the economic plan to eliminate the hyperinflation in Peru and I presented my ideas on such plan whereas the other idea of the plan was gradualism I said decidedly that in Peru we have to start with our statistics from zero because what will be emerging from the plan is a 'new country'. Besides, your program is like taking a blood pressure to a sick person when a tumor removal is needed to save its live. The country is a patient that we need to operate now otherwise it would be dead. Well, said the President, I have listened you for two hours, although I am not an economist, I have a lot of intuition and it is not for nothing that I won the elections. I do not believe your plan Adolfo it seems that what Dr. Boloña said it can work. (Boloña, 1993, pp. 23-24)

Liberal market economy reforms were initiated by President Fujimori in July 1990. The reforms included a drastic

stabilization program¹⁰, trade policy reform, tax reform, financial, privatization and investment promotion reforms, capital market reforms, and labor market policies.

Table 1. Macroeconomic Indicators of Peru 1980-2017

Variables	80-84	85-89	90-94	95-1999	2000-04	2005-10	2011-15	2016-2017
y	2966,9	2797,3	2270,1	2684,5	2831,9	3661,8	4705,8	5092,2
gy	-1,54	-2,31	0,87	1,81	2,13	5,58	3,62	2,79
gY	0,89	-0,11	2,85	3,56	3,58	6,50	4,79	3,27
SX	17,7	15,8	18,1	21,3	27,5	30,2	26,2	27,0
gX	0,82	-0,13	4,19	8,15	8,75	5,09	2,92	8,33
SX _T	77,4	72,5	70,0	69,1	69,5	76,4	73,0	72,2
SX _{NT}	21,3	26,4	28,8	29,7	29,1	23,0	26,5	27,5
SM	15,04	10,91	15,11	20,39	18,56	23,02	26,94	24,82
gM	-6,83	3,77	16,66	0,66	5,96	13,23	2,74	4,04
SM _{CG}	13,0	11,0	20,5	22,8	21,9	17,8	20,9	24,3
SM _{INTG}	38,4	48,2	43,7	41,6	51,3	51,6	46,2	44,8
SM _{KG}	36,0	28,8	28,2	31,4	25,7	29,9	32,0	30,3
SY _G	38,7	37,2	36,2	35,1	37,9	37,1	32,8	32,0
gY _G	-0,89	-0,98	2,18	3,77	4,91	5,12	2,70	3,83
gTT	-2,90	-4,11	-3,62	-0,01	3,84	7,70	-2,48	3,29
FD	-8,22	-8,89	-4,37	-1,75	-2,27	1,03	0,57	-2,79
gCPI	88,6	966,6	1580,1	7,7	2,2	2,6	3,6	2,3
gRER _{BI}	2,66	-1,28	-13,43	3,18	0,37	-3,21	0,91	-0,19
gRER _M			-1,52	2,42	0,38	-0,75	0,05	-1,28

Source: BCRP (2018), INEI (2018c). Author's work. Y= GDP, y= per capita GDP (US\$ 2007), gZ = rate of growth of variable Z, SX= export share out of GDP, SX_T= traditional exports share out of total exports, SX_{NT}= non-traditional exports share out of total exports, SM= share of imports out of GDP; SM_{CG}= share of imported consumers goods out of total imports, SM_{INTG}= share of imported intermediate or inputs goods out of total imports, SM_{KG}= share of imported capital goods out of total imports, SY_G= share of GDP of goods out of total GDP, TT= terms of trade, FD= share of fiscal deficit out of GDP, gCPI= rate of inflation (or rate of growth of consumer price index price), gRER_{BI}= growth of the US-Peru bilateral real exchange rate, gRER_M= rate of growth of the multiple real exchange rate.

¹⁰ This "shock program" included: elimination of macroeconomic imbalances, money supply control, unification and stabilization of the foreign exchange rates, and the correction and stabilization of prices of public utilities.

The Empowerment of the Ministry of Economy and Finance (MEF) and the Institutional Trade Framework

Regarding trade, five legal devices empowered the role of MEF in the making of trade policy, practically without any check and balance from other governmental entities. In the first place, MEF determines tariffs levels and its structure, export drawbacks¹¹, and safeguards¹². Second, although the National Institute for the Defense of Free Competition and the Protection of Intellectual Property (INDECOPI) – through the Commission of Dumping, Subsidies, Countervailing Duties, and the elimination of non-tariffs barriers NTB– controls defense measures, the elimination of NTB needs to be validated also by the MEF¹³. Third, according to Legislative Decree N° 25909-11-1992, the only governmental entity to dictate measures intended to restrict or prevent the free flow of goods and services through requirements, formalities of any measure that affect imports and exports is the MEF. Other NTB such as sanitary and phytosa-

nitary measures were determined by National Service of Agrarian Health (SENASA),¹⁴ and environmental, health and food safety, technical obstacles and customs procedures were determined for several governmental institutions such as the National Quality Institute (INACAL), Ministry of Production (PRODUCE), Ministry of Agriculture (MINAGRI), the General Directorate of Environmental Health and Food Safety (DIGESA), and MEF. Fourth, although the Ministry of Trade and Tourism (MINCETUR) negotiates the preferential trade agreements (PTA), official representatives of the MEF, and the Ministry of External Relations (RREE) also participate in trade negotiations. The intervention and approval of the Congress is necessary only for extended PTA (such as the Peru-USA, PTA in force since 2009 and the Peru-European Union PTA in force since 2013).

The Liberal Features Shared by the Ministers at MEF from 1990-2018

From 1990 to 2018, the empowered MEF was led by suitable technocrats

11 Drawback was introduced in Executive Order No 722 (New Customs General Law on, November 11, article 159, Section II). On June 23rd, 1995, through Supreme Decree N° 104-95-EF, the Rules of the Simplified Restitution Procedure of Customs Rights were approved. It established a 5% (out of total FOB value) restitution rate to the export tariff lines that are applicable to drawback benefits. The requirement is that export fob value for each tariff line fall within a range of higher or equal to US\$ 10,000 and lower or equal to 10 million dollars. This upper bound was modified to 20 million dollars through Supreme Decree N° 093-96-EF, enacted on September 25th, 1996. Since then, several times the drawback rates were modified. The last changed has been in October of 2016 which will remain to 4% until 2019 and thereafter will be 3%.

12 In the case of safeguards applications, the Ministry of External Trade and Tourism (MINCETUR), and a productive ministry such as Ministry of Production (PRODUCE), and Ministry of Agriculture and Irrigation (MINAGRI) also intervene.

13 Article 4 of Executive Order N° 25629-21-07-1992, says: “the provisions by which establish requirements or formalities or affect somehow the free internal commercialization or the exports and/or imports of goods and services should be approved only by Supreme Decree validated by MEF and by the sector involved”.

14 According to Law No N° 27322 (July 22, 2000) and Legislative Decree No 1059 (June 27, 2008), these measures were not considered as NTB as in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).

who shared five common liberal features¹⁵. First, all of them have strong convictions on trade liberalization using tariffs reductions and PTA as the main instruments of trade policy. These convictions were based upon ideology (e.g., Boloña), technical theory (e.g., Aráoz), and pragmatism (e.g., Benavides). Second, they also have strong convictions on macroeconomic prudence and fiscal balance. Third, most of them have had experience in the private sector working in large firms including economic groups (EG). Fourth, most of them had experience with international organizations including the World Bank, IADB and IMF. Fifth, although to different degree, they believed that a “social market economy” is an ideal economic model that guarantee economic growth and social inclusion. These features implied, among other things, that MEF ministers reduced trade barriers aggressively (including export drawbacks) and promoted multiple preferential trade agreements.

The New Economic Groups and Large Firms

According to Durand (2010), the continuity of neoliberalism depended upon the degree of acceptance or consensus of its general principles among the main political leaders, public opinion, and the behavior of private sector. Among the latter, large enterprises, and old

and new economic groups, constituted a new economic power structure since 1990s from which they carried out their political management.

The economic groups in Peruvian economy have been studied throughout the last 60 years. These groups have changed from the dominance of multinational enterprises (MNE), oligarchy landowners and national enterprises in the 1960s to the dominance of MNE and economic groups from Peru and Latin American Countries (Durand, 2004) in the present century. Durand (2017) points out that the “new economic groups” (NEG) are a conglomerated and diversified group of firms¹⁶ that create and buy companies acquiring market power. They are highly competitive at local, continental and world level. They use their enormous resources to influence politics, establish favorable relationships with political parties and congressional representatives, and to maintain a narrow and productive relationship with the government. The main mechanisms of the relationship between NEG and Government are the financing of political campaigns, lobbies, revolving doors, interpersonal contacts, and bribery.

Table 2 shows some concentration indicators of the NEG in period 2003-2015. The figures indicate that NEG have interests on mining exports,

¹⁵ A detailed description of these features is presented in a working paper of the author.

¹⁶ NEG participate in the following sectors: mining, manufactures, banking, financial and education services (i.e., universities).

(X_M), non-traditional exports (X_{NT})¹⁷, and domestic products¹⁸. These sectors and products imply that mining NEG would be interested in reducing barriers to investment and promote mining concessions. NEG of non-traditional exporters would be interested in reducing trade barriers on inputs and capital goods, and if possible, export subsidies. Domestic producers NEG would be interested in imposing barriers on final consumer goods and eliminating trade barriers to inputs and capital goods. Second, the high degree of concentration in the goods (S_G) and goods and services markets (S_{GS}) may be related to domestic market power (in differentiated products) wherein trade barriers may reinforce its power by restricting foreign competition. Third, the enormous resources generated by the NEG not only could grant them political

power but also may create government fiscal dependency on the economic performance of these groups.

Aside from the political and economic role of NEG, *other domestic large firms* may also have political power since their markets are relatively concentrated. Table 3 shows the figures for concentration ratios of the main firms in Peru. Companies share of the value added, exports and imports are also high. It should be noted that the total universe of formal firms in Peru is more than a million, most of them of small and medium size (i.e., less than 100 workers¹⁹). Additionally, the income tax revenues of these firms are also high. Thus, in period 2003-2015 about half of income tax revenues of Peru were contributed by the biggest 280 firms.

Table 2. Concentration Indicators of NEG²⁰ 2003-2015 (US\$ Millions)

NEG	2003			2013			2015		
	INC	X	M	INC	X	M	INC	X	M
Romero	1520,6	127,2	272,6	1292,8	150,7	458,7	1225,9	103,2	372,1
Brescia (X_M)	414,7	196,4	34,9	1271,4	426,5	121,2	1065,3	662,7	114,7
Benavides (X_M)	1977,6	1670,4	75,6	2789,5	2636,7	114,0	2507,9	2084,8	226,3
Graña y Montero	37,4	0,0	0,3	67,9	0,0	3,9	64,5	0,0	2,9
Ferreyros	10,3	1,8	1,5	0,0	0,0	0,0	0,0	0,0	0,0
Rodríguez-Pastor	na	na	na	105,9	39,7	42,4	108,8	52,2	42,8
Dyer (X_{NT})	84,5	65,5	1,3	221,8	131,7	20,8	199,6	149,6	20,3
Rodríguez	510,7	21,0	82,2	1569,1	150,7	297,7	1687,2	176,1	326,2
Huancaruna (X_{NT})	64,0	50,4	0,4	180,5	119,1	8,3	168,2	143,0	9,4
Flores (X_{NT})	94,0	69,7	6,3	73,5	49,4	0,7	58,9	39,0	0,6

17 Particularly dairy products, manufacture of grain mill products and manufacture of wearing apparel, except fur apparel; and fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing.

18 Such as manufacture of other food products; building of complete constructions or parts thereof, and civil engineering; manufacture of soft drinks; production of mineral waters; wholesale of machinery, equipment and supplies; and storage and warehousing.

19 Details in Tello (2011).

20 The Acuña's NEG is not considered since its activities (mainly universities) are not related to tradable goods.

Continuation Table 2

Años	63,0	1,7	5,1	176,8	2,4	61,2	170,5	0,8	60,7
Total	4776,8	2204,1	480,2	7749,3	3706,8	1128,9	7256,9	3411,5	1175,9
S _{INC} (%)	100,0	46,1	21,8	100,0	47,8	30,5	100,0	47,0	34,5
S _G (%)	9,4	18,4	4,3	7,8	12,0	3,6	7,8	12,5	3,8
S _{GS} (%)	7,2	14,8	5,1	7,7	10,3	5,1	7,7	10,4	4,7

Source: Peru Top (2018), INEI (2018c), INEI (2007), BCRP (2018). Author's work. S_{INC} the share of exports and import of goods out of total income of the NEG; S_G share of value added generated by NEG income out of GDP of goods; in the case of X and M the share of NEG's exports and imports of goods out of the total exports and imports of goods. S_{GS} similar, to S_G, but including services (sector, export' and imports' services). na not available. X_M mining exports, X_{NT} non-traditional exports

Table 3. Concentration Indicators of Peruvian Firms 2003-2015

CI _N	2003					2013					2014				2015			
N	S _G	S _X	S _M	S _R 1/	S _{INC}	S _X	S _M	S _R 2/	S _{INC}	S _X	S _M	S _R	S _{INC}	S _X	S _M	S _R		
10	24,4	24,1	12,2	na	21,3	19,7	13,1	na.	18,5	18,7	13,2	na	16,9	18,3	8,9	Na		
20	31,2	32,0	15,3	na	28,8	28,9	16,5	Na	25,0	26,5	16,2	na	24,6	26,2	11,9	Na		
50	40,5	44,2	20,8	33,6	39,2	44,3	22,6	29,8	34,1	39,7	21,4	29,2	35,1	39,3	17,4	24,6		
100	47,7	53,3	26,1	na	47,2	56,4	28,4	na	42,1	51,0	26,6	na	43,0	50,7	22,9	na		
280	58,3	67,1	35,7	52,2	57,5	70,6	37,5	52,4	53,0	65,2	36,2	50,5	54,8	64,4	32,8	45,6		

Source: INEI (2018c), Peru Top (2018), SUNAT (2018b). 1/ For S_R N for 2003, are 54 and 254 firms. These firms are chosen because of their levels of assets, income, sales, and purchases. 2/ Firms are chosen since 2013 because of their level of assets, sales, income, purchases, and payrolls. CI_N is the N firms concentration ratios indices; S_G, S_X and S_M are respectively the share of value added, exports and imports of the N firms out of total GDP, exports, and imports of goods²¹. S_R is the share firms' tax income of N firms out of the total firms' tax income. na= not available

Firms associations may also influence trade policy in Peruvian economy. The three main associations are: Sociedad Nacional de Industrias (National Industry Society, SNI, Asociación de Exportadores, (Exporters Associations), ADEX, and Sociedad de Comercio Exterior (External Trade Society), COMEXPeru. SNI gather mainly domestic oriented firms and promotes the development of the manufacturing industry, boosts the market economy, and contributes to the development of

the country through technical proposals (on labor, tax, and industrial policies). It serves the industry by promoting its competitiveness, the generation of value and the sustainable development of the country.

ADEX is an association, primarily, of non-traditional exporters. It represents and provides services to partners organizations (such as exporters, importers, and service providers to trade). It has as objectives to contribute to the

21 In average for period 2003-2015, the share of GDP of goods has been about 35,7% out of the total GDP of the Peruvian economy.

competitiveness of companies and develop the exportable offer, promoting exports, international trade, and investments. It also contributes to national development, generation of welfare and employment.

COMEXPeru, composed by exporters and importers, has three main objectives: to promote the development of foreign trade, defend the free market and encourage private investment.

The managers or directors of these associations have participated on trade negotiation of the PTAs as members of the “adjoining room” and also in meetings or seminars with government entities (e.g., Minister of Trade and Tourism and the Congress) to exchange ideas or to get information on diverse topics related to external trade and productive activities.

Informal Employment, Not Salaried Workers, Under and Unemployment in Peru 1980-2012

A singular feature of the productive structure and the tradable sector of Peru is the dominance of products intensive in the use of natural resources (particularly, mining resources) and in a minor scale, manufactured products intensive in the use of capital. Thus, the average

share of primary sector production in GDP was 20,0% in period 1950-1989 and 22,3% in period 1990-2017. The liberal structural reforms, however, did affect the manufacturing import substitution sector, particularly to large firms and economic groups, which had to adjust to the new market conditions (Vega-Castro, 2007). The adjustment implied that the share of manufacturing in GDP decreased from 16.8% in the period 1950-1989 to 15.6% in the period 1990-2017. Regarding exports, Table 4 shows that in average about 75% of total exports correspond to traditional natural resources intensive sectors in period 1980-2017.

The productive structure and the tradable sector originate a low propensity to generate jobs with troublesome consequences on the degree and type of employment of the labor force²². On the one hand, figures in Table 4 show a surplus in the labor market wherein the rate of growth of the urban labor supply for period 1961-1997 has been higher than the respective rate of labor demand. On the other hand, figures in Table 5 point out that main problem in Peruvian labor markets is not the rate of unemployment, which has had an average rate of 5% in period 1980-2012, but the rate of underemployment, not salaried workers and informal employment²³.

22 Since 1980s, the main import substitution sector of manufactures employed less than 12% of total labor force (Tello, 1993), MTPE 2013). The share of labor in the mining sector, historically has been very low and less than 1,5% (MTPE, 2013). The share of the agricultural sector even though has been relative higher (more than 25%), most of this labor is dominated for informal activities (Banco Mundial, 2017).

23 The relationship between underemployment and informality is reported by Bardales (2012) and Uribe *et al.* (2008).

Table 4. Rate of Growth of Urban Labor Demand and Supply of Peru: 1961-1997 (%)

Period	Supply Rate of Growth	Demand Rate of Growth
1961-1972	2,9	2,8
1972-1981	3,2	2,9
1981-1984	2,8	-1,5
1986-1990	2,3	-1,4
1990-1992	2,5	0,3
1997-1992	4,1	4,2

Source: MTPE (1998).

Table 5. Underemployment, Not Salaried Workers and Informal Employment

Period	Under-Employment ^{1,4, 5, 6}	No Salaried Workers ²	Informal Employment ³	Unemployment ²
1980	51,2	53,1	na	5,5
1984	57,4	59,4	na	6,4
1991	78,5	56,9	na	4,2
1994	74,5	50,3	na	6,3
1997	45,0	63,8	na	6,6
2001	47,6	60,1	78,2	5,1
2007	48,4	58,7	79,9	4,7
2012	30,2	54,6	74,1	3,7

Source: ¹ 1980 and 1985, Noguez (1991), ⁴ 1991 and 1994 data of Metropolitan Lima Vega-Castro (2007), ⁵ 1997 and 2001, MTPE-INEI (2002), ⁶ 2007 and 2012 MTEP (2013); ² Castillo (2015), ³ Tello (2013) and INEI (2017).

These figures point out that labor force in Peru was not organized, not representing an interest group for trade policy. Furthermore, the influence of workers on trade (and any) policy was reduced close to nil due to the Collective Law of Labor of July 1992 (Executive Order No 25593) and the Law of Job Promotion (Legislative Decree No 728) as suggested by Villavicencio (2010).²⁴

Consumers and Trade Policy

The fact that most of the labor force in period 2000-2016 had an informal employment²⁵ and that the average level of education of the labor force was lower than secondary complete in period 1997-2017 implied that consumers did not have consumers culture and representativeness on trade issues (as suggested by Castro-García, 2017;

²⁴ The Job Promotion Law facilitated diverse ways of temporal contracts and simplified administrative procedures. It allowed labor contracts of low non-wages cost for young people and the creation of firms that provided workers to enterprises without paying social benefits to such workers. The Collective Law of Labor allowed to have more than one labor union per firm and established that workers in strike would not be paid salaries during the period of strikes.

²⁵ In 2016, 72% of the labor force works in informal activities (INEI, 2017).

INDECOPI 2016; and Galván-Pareja, 2006). Furthermore, the “legitimate and political speech perspectives” that explain the permanence of the liberal model assert that the beliefs of consumers and most people in Peru have a “liberal orientation” and consequently their interest did not oppose in effective way, to trade liberalization.

These six aspects show that Peruvian trade barriers liberalization in period 2000-2015 was led by the powerful MEF and accompanied by traditional and diversified exporters that support the unilateral trade liberalization and import substitution firms that influenced to some degree, and reduced the speed rate of, the process of the unilateral trade barriers liberalization. In addition, the unilateral trade liberalization was facilitated by the weak role of the formal labor force and consumer’s interest groups with liberal orientation. Next section presents evidence supporting this hypothesis.

THE POLITICAL ECONOMY OF TRADE POLICY IN PERU: AN EMPIRICAL EXERCISE

Modern and old theoretical models of the “political economy of trade policy” on trade barriers (tariffs or equivalent tariffs of NTB²⁶) point out that such a policy is determined by supply and demand political factors (Rodrik, 1995).

On the demand side, interest groups (economic groups, firms, associations of firms, workers, consumers and so on) rationally weigh the costs and benefits of lobbying for trade barriers (either protection or dismantling and elimination of protection). On the supply side, politicians, and policy makers (government and its institutions, which seek maximize self-interested objectives) supply either protection or liberalization.

At the macro level, two particular “models” have been used for the empirical political economy analysis of trade policy. One is the Trefler (1993) ad-hoc specification of tariff formation model, and the other is the Grossman-Helpman (GH, 1994) structural model of protection. In Trefler’s approach, there is not an implicit political economy trade policy outcome, whereas in GH model, free trade is the implicit political economy trade policy which arises when government does not care about contributions and does not have incentive to impose trade barriers or when all industries are organized, and each citizen is represented by some lobby. In this case, the joint surplus of all lobbies coincides with the well-being of the society hence free trade is the equilibrium outcome. In Peruvian economy, there is no legal device on “political contributions” to political parties. Furthermore, recent

26 NTB coverage ratios have been used as trade barriers. However, they are a notoriously imprecise measure of non-tariff barriers. Nonetheless, according to Goldberg and Maggi (1999) there seems to be consensus that, in the absence of reliable numbers on tariff equivalents, they are the best available measure (see Laird & Yeats 1990; Trefler, 1993, for a detailed discussion).

investigations on such firms contributions from infrastructure sector to some political parties have been assumed as corrupt activities.

The macro analysis of this section is based upon the political economy approach to the trade liberalization policy in Peru in period 2001-2015 using the Treffer's specification of trade barriers. The specification estimates the statistical relevance of three of the six aspects that make up the political economy of trade policy in Peru for period 2001-2015. The specification is as follow:

$$Y_{it} = \begin{cases} \alpha_{1it} \cdot M_{it} + X'_{it} \cdot \vec{\beta}_{it} + \varepsilon_{it}; \\ Y_{it} > 1; Y_{it} = t_{it}; t_{it}^w; t_{it}^a; t_{nit}; t_{nit}^p \\ 1 \text{ otherwise.} \end{cases} \quad [1]$$

Wherein is a trade barrier instrument (i.e., one plus MFN tariffs, and a non-tariff measure²⁷) imposed to imports from the world and is the import penetration index, "i" represents an ISIC (Rev.3) and "t" a year of period 2001-2015. The set of explanatory variables includes three set of political factors and one economic factor. The first political factor is related to new economic groups

and large firms. The variables that represent this group are seller, buyer, and geographic output concentration ratios. The second political factor is the labor force. The variables that represent this group are human capital, the share of skill (i.e., employees) and unskilled labor (i.e., workers) out of total employment and formal employment. The third political factor are traditional and diversified exporters represented by total real export value and export diversification indicators. The set of economic factors includes entry barriers represented by scale of the sector, capital-labor ratio, and the rate of growth of the real value added of each sector. In addition, the variables consider a dummy variable representing either consumer, intermediate, or capital goods as well as a time trend. This can be interpreted as the basic trade policy followed by the trade instrument. For a liberal evolution of the trade instrument, the coefficient of the time trend should be negative, and for a protectionist evolution, such coefficient should be positive.

Table 6 presents the definition and sources of the set of variables used in (1)²⁸. The data of this table could be found in a previous working paper²⁹. The features of the main indicators of such data are the following: i) there are 17 (four-digit ISIC-Rev. 3) sectors; ii) the

27 Note that τ_{nit} (coverage NTB) indicator is measured as percentages and $t_{nit} = (1 + \tau_{nit}) \geq 1$ and $t_{nit}^p = 1 + \tau_{nit}^p$, wherein τ_{nit}^p (the average number of NTB) has a minimum value of one (Table 6).

28 Given the relative stability of the real exchange rate was not included equation (1).

29 See Table A1 in <https://repositorio.pucp.edu.pe/index/bitstream/handle/123456789/176227/DDD486.pdf?sequence=4&isAllowed=y>

mean of tariffs value ranges from 0% to 17%, and the two measures of NTB ranges between 0% to 100% for the NTB coverage, and between 0 and 23.3 NTB per tariff line, for all sectors; iii) the average of the import penetration ratio ranged from 1.484% (for manufacture of bakery products) and 66.35% (for manufacture of vegetable and animal oils and fats); and finally, iv) firms concentration ratios ranges from 0.060% (for buyers of processing and preserving of fish and fish products) to 98.78% (for the geographic concentration of the distilling, rectifying and blending of spirits; ethyl alcohol production from fermented sector).

Given the possible endogeneity of the import penetration ratio (which also may be affected by trade barriers)

exogeneity tests based on Blundell and Smith (1986) and Wooldridge (2007) were undertaken, and then specification (1) is estimated in two steps. In the first step, two import penetration equations were estimated with different instruments. The initial instruments were capital stock (measured by the real value assets), the size of labor force, and GDP as proxy of others productive factors. However, due to potential collinearities among these instruments, labor force and GDP were dropped. Given that is truncated from below at the value of one, in the second step, the import penetration variable estimated was used in the Tobit estimation of (1) Details and results of the exogeneity tests and the import penetration equation estimations are reported in a previous paper³⁰.

Table 6. Economic and Political Economy Indicators that Influence Trade Barriers in Peru

Indicators	Description Source
A. Trade Barriers and Import Penetration Ratio	
t_{it}	Weighted average of tariffs including MFN and preferential tariffs. $(1 + \tau_{itmf_n})$; $\tau_{itmf_n} = \sum_{j=1}^J \sum_{k=1}^K \omega_{jikt} \cdot \tau_{jikt}$; $\omega_{jikt} = m_{jikt} / \sum_{j=1}^J \sum_{k=1}^K m_{jikt}$; $\sum_{j=1}^J \sum_{k=1}^K \omega_{jikt} = 1$; $j = tariff\ line; i = sector; k = country; t = year$
t_{it}^w	Weighted average of MFN tariffs $(1 + \tau_{itmf_n})$; $\tau_{itmf_n} = \sum_{j=1}^J \sum_{k=1}^K \omega_{jikt} \cdot \tau_{jikt}$; $\omega_{jikt} = m_{jikt} / \sum_{j=1}^J \sum_{k=1}^K m_{jikt}$; $\sum_{j=1}^J \sum_{k=1}^K \omega_{jikt} = 1$; $j = tariff\ line; i = sector; k = country; t = year$
t_{it}^a	Simple average of MFN tariffs $(1 + \tau_{itmf_n})$; $\tau_{itmf_n} = \sum_{j=1}^J \sum_{k=1}^K \left(\frac{\tau_{jikt}}{J} \right)$; $J = number\ of\ total\ tariff\ line\ in\ "i"\ sector$ $j = tariff\ line; i = sector; k = country; t = year$

30 In <https://repositorio.pucp.edu.pe/index/bitstream/handle/123456789/176227/DDD486.pdf?sequence=4&isAllowed=y>

Continuation table 6

Indicators	Description Source
t_{nit}	NTB Coverage indicator (percentage of tariff lines with a NTB within a sector) $(1 + \tau_{itn})$; $\tau_{itn} = \sum_{j=1}^{J_i} \sum_{k=1}^K \omega_{jikt} \cdot D_{jikt}$; $\omega_{jikt} = m_{jikt} / \sum_{j=1}^{J_i} \sum_{k=1}^K m_{jikt}$; $\sum_{j=1}^{J_i} \sum_{k=1}^K \omega_{jikt} = 1$; $j = tariff\ line$; $i = sector$; $k = country$; $t = year$ $D_{jikt} = 1$, if at least one non-tariff measured is applied to the tariff line j , otherwise $D_{jikt} = 0$;
t_{nit}^p	Average Number of NTB per tariff line. $1 + \tau_{nit}^p$; $\tau_{nit}^p = \sum_{j=1}^{J_i} \sum_{k=1}^K (N_{jikt} / J)$; $J = number\ of\ total\ tariff\ line\ in\ "i"\ sector$ $j = tariff\ line$; $i = sector$; $k = country$; $t = year$ N_{jikt} , is the number of NTB applied to tariff line j , sector 'i' country 'k' at period 't'
M_{it}	Import penetration ratio of sector 'i' at period 't'. ³¹ $M_{it} = m_{it} / (GDP_{it} + m_{it})$; Wherein m_{it} is real value of imports.
B. Market (Seller, Buyer, and Geographic) Concentration and Barriers to Entry	
IC_{sit}	Seller concentration. The ten largest seller firms concentration index of sector 'i' at period 't'
CI_{sit_DCG}	$IC_{sit} \cdot D_{CGi}$
CI_{sit_DING}	$IC_{sit} \cdot D_{INGi}$
CI_{sit_DKG}	$IC_{sit} \cdot D_{KGi}$
IC_{bit}	Buyer concentration. The ten largest buyer firms concentration indexes of the production of sector 'i' (consumers and downstream industries) at period 't'
CI_{bit_DCG}	$IC_{bit} \cdot D_{CGi}$
CI_{bit_DING}	$IC_{bit} \cdot D_{INGi}$
CI_{bit_DKG}	$IC_{bit} \cdot D_{KGi}$
IC_{git}	Geographic concentration. $\sum_{r=1}^{25} S_{rit} / S_{rit} - PS_{rt}$; S_{rit} is the share of value added of sector 'i' at period 't' of region 'r' out of total valor share; PS_{rt} is the respective population share
k_{it}	Capital entry barrier. The average capital ratio of the sample of firms of sector 'i' at period 't' (millions of US dollars of 2007 per worker).
SC_{it}	Scale of the sector. The average sales per firm of the sample of firms divided by half of the sales of sector 'i' at period 't'
g_{vait}	Rate of real valued added growth of sector 'i' at period 't'
C. Labor Force Indicators	
HK_{it}	Human capital. Share of employed with undergraduate and postgraduate studies out of total labor force of sector 'i' at period 't'
SK_{it}	Skilled labor. Share of employees of sector 'i' at period 't'
USK_{it}	Unskilled Labor. Share of laborers ("obreros" in Spanish) or with at most secondary education of sector 'i' at period 't'
SL_{fit}	Formal employment size. The share of the formal workers out of the total employed workers in sector 'i' at period 't'
D. Export Size and Diversification Indicators	
X_{it}	Real export value of sector 'i' at period 't'
TH_{it}	Theil index of diversification

31 Alternative measure could be: $M_{it} = m_{it} / (DP_{it} + m_{it} + x_{it})$, where DP_{it} is real value of domestic production and x_{it} is real value of exports.

Continuation table 6

Indicators	Description Source
TH_{Bit}	Between (extensive) Theil index of diversification
TH_{Wit}	Within (intensive) Theil index of diversification
E. Other Indicators	
Y_t	Real GDP of the economy at period 't'
K_{it}	Real asset value of the largest 10 firms in sector 'i' at period 't'
L_{it}	Labor force employed in sector 'i' at period 't'
D_{jit}	Binary variable with value of one for good type j, otherwise the value is zero; j= CG for each sector 'i' at period 't'.
D_{jit}	Binary variable with value of one for good type j, otherwise the value is zero; j= INTG for each sector 'i' at period 't'.
D_{jit}	Binary variable with value of one for good type j, otherwise the value is zero; j= KG for each sector 'i' at period 't'.

Source: SUNAT (2018), WITS (2018a, b), INEI (2018a, b, c; 2007), Peru Top (2018). Author's work.

Table 7 presents the coefficients of the Tobit maximum likelihood, ML, estimation of (1) and Table 8 presents the coefficient using instrumental Tobit ML estimations. Note that for robustness purposes three tariffs measures and two NTB are used. The estimation results indicate first, in both estimations (Tables 7 and 8) the import penetration variable affect positively for most of the trade barriers although with different degree of statistical significance³². Second, the influence of the firms interest group on trade barriers is robust in both estimations (Tables 7 and 8): supplier concentrated firms increase trade barriers and buyer

concentrated firms decrease trade barriers³³. However, the degree of statistical significance is higher for buyers than for seller firms. Furthermore, the magnitude of the influence of supplier firms was reduced for consumer and intermediate goods although not in a significant way. Regarding geographically concentrated industries (mainly in the capital of Peru, Lima with greater access to ministries), the coefficients of both estimations (M and \hat{M}) seem to suggest that they pressed for trade barriers reductions. Third, most of the coefficients of the labor force indicators were not statistically significant, corroborating the hypothesis of the weak role

32 According to Trefler (1993) higher imports generate higher level of non-tariff barriers (t_{nsit}) and supposedly also higher level of tariffs (t_{it}). According to Goldberg and Maggi (1989), this relationship, in the GH model, should be negative. However, Trefler's result can be generated in the GH model if the effect of organized and non-organized sector on trade barriers is the same, and the import penetration enters additively in the trade barrier equation. In Tables 7 and 8, the effects of the "degree of sectoral organization" and 'market power' on tariffs are assumed to be incorporated in the 10-largest firms seller concentration ratio (IC_{sit}) consequently it is expected that import-penetration affects positively to tariffs.

33 Assuming that buyer and seller firms concentration ratios are proxy of political influence of large and economic groups of firms, then Trefler (1993) argues that greater seller concentration and/or a smaller seller number of firms alleviate the free-rider problem in coordinating a lobby, thus increasing the level of protection. On the other hand, greater buyer concentration and/or a smaller buyer number of firms alleviate the free-rider problem faced by consumer and downstream groups, thus strengthening the lobby against protection (Olsen's 1965 theory).

of the labor force on the determination of trade barriers. Fourth, the coefficients of the indicators of traditional and

diversified exporters corroborate the hypothesis of the orientation of exporters towards trade liberalization.

Table 7. Tariff and Non-Tariff Barriers Equations 2001-2015

Indicator	t_{it}	t_{it}	t_{mfnit}^a	t_{mfnit}^a	t_{mfnit}^w	t_{mfnit}^w	t_{nit}	t_{nit}^p
A. Import Penetration								
M_{it}	0.0558***	0.0525***	0.0242*	0.0196	0.0324**	0.0290*	-0.176	0.027**
	(0.0133)	(0.0132)	(0.0141)	(0.0140)	(0.0151)	(0.0149)	(0.118)	(0.013)
B. Market (Seller, Buyer and Geographic) Concentration and Barriers to Entry								
CI_{sit}	0.122	0.533	1.698**	2.480***	1.507**	2.078**	0.57***	0.05***
	(1.204)	(1.367)	(0.724)	(0.847)	(0.747)	(0.879)	(0.143)	(0.010)
CI_{sit_DCG}	0.0149	-0.392	-1.574**	-2.350***	-1.377*	-1.944**		
	(1.205)	(1.367)	(0.723)	(0.846)	(0.746)	(0.878)		
CI_{sit_DING}	-0.124	-0.535	-1.742**	-2.525***	-1.549**	-2.121**		
	(1.204)	(1.368)	(0.724)	(0.847)	(0.747)	(0.881)		
CI_{bit}	-0.110***	-0.117***	-0.111***	-0.120***	-0.116***	-0.122***	0.257**	-0.003
	(0.0197)	(0.0199)	(0.0183)	(0.0178)	(0.0190)	(0.0190)	(0.114)	(0.116)
CI_{bit_DCG}	-1.171***	-1.185***	-1.027***	-1.041***	-1.047***	-1.058***		
	(0.189)	(0.188)	(0.191)	(0.187)	(0.175)	(0.176)		
CI_{bit_DING}	-0.0158	0.00297	0.110***	0.134***	0.0773*	0.0950**		
	(0.0347)	(0.0354)	(0.0362)	(0.0386)	(0.0432)	(0.0469)		
GC_{it}	-0.156*	-0.189**	-0.0816	-0.125	-0.121	-0.153*	-3.57***	-0.4***
	(0.0894)	(0.0931)	(0.0790)	(0.0821)	(0.0841)	(0.0888)	(0.897)	(0.061)
k_{it}	-0.372***	-0.365***	-0.306***	-0.293***	-0.470***	-0.468***	0.00270	0.090
	(0.112)	(0.119)	(0.0842)	(0.0945)	(0.126)	(0.127)	(0.231)	(0.024)
SC_{it}	-0.156*	-0.189**	-0.0816	-0.125	-0.121	-0.153*	3.195	1.219
	(0.0894)	(0.0931)	(0.0790)	(0.0821)	(0.0841)	(0.0888)	(7.830)	(0.875)
g_{vait}	-0.0302*	-0.0310*	-0.00692	-0.00785	-0.00891	-0.00964	-0.397**	-0.36**
	(0.0166)	(0.0167)	(0.0182)	(0.0181)	(0.0181)	(0.0181)	(0.196)	(1.399)
C. Labor Force Indicators								
USK_{it}	0.00132	0.00156	0.0262	0.0272	0.0278	0.0284	0.0953	-0.033**
	(0.0193)	(0.0193)	(0.0183)	(0.0182)	(0.0195)	(0.0194)	(0.193)	(0.015)
SK_{it}	0.0106	0.0142	0.0103	0.0153	0.0184	0.0221	0.421**	-0.039**
	(0.0183)	(0.0185)	(0.0181)	(0.0182)	(0.0191)	(0.0194)	(0.214)	(0.015)
HK_{it}	-0.00995	-0.00788	-0.0144	-0.0114	0.00193	0.00410	-0.215	-0.1***
	(0.0190)	(0.0190)	(0.0175)	(0.0171)	(0.0186)	(0.0183)	(0.213)	(0.017)
SL_{fit}	-0.00984	-0.00921	-0.00103	-0.000402	-0.00659	-0.00609	0.276*	0.04***
	(0.0113)	(0.0113)	(0.0115)	(0.0116)	(0.0124)	(0.0125)	(0.142)	(0.009)
D. Exports and Diversification								
X_{it}	-0.006***	-0.006***	-0.004***	-0.004***	-0.004***	-0.004***		
	(0.000927)	(0.000953)	(0.000920)	(0.000924)	(0.000964)	(0.000979)		

Continuation table 7

Indicator	t_{it}	t_{it}	t_{mfnit}^a	t_{mfnit}^a	t_{mfnit}^w	t_{mfnit}^w	t_{nit}	t_{nit}^p
TH_{it}	-1.066** (0.453)		-1.504*** (0.418)		-1.591*** (0.448)			
TH_{bit}		-3.544* (2.084)		-4.782** (1.899)		-4.028* (2.074)		
TH_{wit}		-0.890* (0.478)		-1.276*** (0.445)		-1.425*** (0.469)		
E. Other Indicators								
<i>Trend</i>	-0.962*** (0.0473)	-0.946*** (0.0502)	-0.902*** (0.0474)	-0.883*** (0.0479)	-0.940*** (0.0499)	-0.926*** (0.0508)	3.32*** (0.591)	0.5*** (0.040)
D_{CGit}	2.378 (5.683)	2.475 (6.032)	10.88*** (3.282)	12.23*** (3.455)	10.17*** (3.410)	11.12*** (3.549)	303*** (62.29)	25.57 (245.9)
D_{INGit}	-0.645 (5.679)	-0.498 (6.041)	8.250** (3.319)	9.664*** (3.545)	7.464** (3.430)	8.465** (3.612)	253*** (62.53)	22.50 (245.7)
Cte	2.054*** (94.04)	2.24*** (99.40)	1.917*** (93.43)	1.884*** (94.26)	1.997*** (98.07)	1.973*** (99.61)	-6.5*** (1,206)	-1.02*** (259.3)
$Seudo R^2$	0.1489	0.1497	0.1592	0.1608	0.155	0.1558	0.0571	0.0575
F	37.35***	36.58***	38.55***	37.26***	35.76***	34.30***	125.8***	72.7***
N_t	25	25	37	37	37	37	100	98
N	417	417	393	393	393	393	417	417

Source: SUNAT (2018a), WITS (2018a, 2018b), Peru Top (2018), INEI (2018a, 2018b, 2017, 2014, 2007), Table 6. Author's work. N_t is the number of observations that are truncated (i.e., $Y_{it} = 1$).

Table 8. Tariff and Non-Tariff Barriers Equations 2001-2015 Using \widehat{M}_{it} Estimated

Indicator	t_{it}	t_{it}	t_{mfnit}^a	t_{mfnit}^a	t_{mfnit}^w	t_{mfnit}^w	t_{nit}	t_{nit}^p
A. Import Penetration								
\widehat{M}_{it}	0.110* (0.0624)	0.116* (0.0600)	0.0440 (0.0564)	0.0536 (0.0545)	0.0683 (0.0592)	0.0755 (0.0574)	-1.339 (0.877)	-1.322 (0.870)
B. Market (Seller, Buyer and Geographic) Concentration and Barriers to Entry								
CI_{sit}	0.550 (1.584)	0.917 (1.577)	1.743 (1.649)	2.571 (1.748)	1.685 (1.726)	2.247 (1.815)	0.395* (0.202)	0.411** (0.200)
$CI_{sit-D_{CG}}$	-0.400 (1.579)	-0.762 (1.573)	-1.614 (1.645)	-2.435 (1.745)	-1.546 (1.722)	-2.103 (1.811)		
$CI_{sit-D_{ING}}$	-0.534 (1.577)	-0.898 (1.573)	-1.780 (1.644)	-2.605 (1.745)	-1.715 (1.722)	-2.275 (1.812)		
CI_{bit}	-0.105*** (0.0238)	-0.109*** (0.0249)	-0.109*** (0.0211)	-0.115*** (0.0221)	-0.112*** (0.0221)	-0.116*** (0.0233)	0.0832 (0.223)	0.132 (0.221)
$CI_{bit-D_{CG}}$	-1.400*** (0.330)	-1.447*** (0.315)	-1.108*** (0.289)	-1.174*** (0.277)	-1.194*** (0.304)	-1.239*** (0.292)		
$CI_{bit-D_{ING}}$	-0.0537 (0.0653)	-0.0473 (0.0687)	0.0939 (0.0625)	0.104 (0.0655)	0.0485 (0.0656)	0.0540 (0.0690)		
GC_{it}	-0.305	-0.351**	-0.137	-0.211	-0.221	-0.270	-1.159	-0.623

Continuation table 8

	(0.192)	(0.176)	(0.174)	(0.160)	(0.183)	(0.168)	(2.015)	(1.998)
k_{it}	-0.400**	-0.400*	-0.310*	-0.306*	-0.486**	-0.490**	0.480	0.539
	(0.201)	(0.205)	(0.169)	(0.179)	(0.195)	(0.195)	(0.516)	(0.512)
SC_{it}	-0.256	-0.265	0.0994	0.111	0.129	0.138	3.670	7.569
	(0.341)	(0.339)	(0.318)	(0.322)	(0.335)	(0.338)	(12.77)	(12.63)
g_{vait}	-2.836	-2.885	-0.546	-0.525	-0.619	-0.607	-44.23**	-44.03**
	(1.903)	(1.909)	(1.811)	(1.810)	(1.903)	(1.907)	(22.50)	(22.31)
C. Labor Force Indicators								
USK_{it}	-0.00484	-0.00584	0.0241	0.0235	0.0239	0.0233	0.260	0.313
	(0.0220)	(0.0220)	(0.0195)	(0.0196)	(0.0205)	(0.0206)	(0.265)	(0.263)
SK_{it}	0.00104	0.00176	0.00662	0.00836	0.0117	0.0126	0.564**	0.611**
	(0.0230)	(0.0235)	(0.0210)	(0.0214)	(0.0221)	(0.0226)	(0.262)	(0.259)
HK_{it}	-0.0306	-0.0329	-0.0221	-0.0250	-0.0122	-0.0146	0.304	0.300
	(0.0318)	(0.0314)	(0.0290)	(0.0288)	(0.0305)	(0.0303)	(0.461)	(0.457)
SL_{fit}	-0.0132	-0.0133	-0.00194	-0.00195	-0.00809	-0.00813	0.326**	0.319**
	(0.0139)	(0.0140)	(0.0124)	(0.0124)	(0.0130)	(0.0131)	(0.158)	(0.157)
D. Exports and Diversification								
X_{it}	-0.006***	-0.006***	-0.004***	-0.004***	-0.004***	-0.004***		
	(0.00104)	(0.00105)	(0.000970)	(0.000963)	(0.00102)	(0.00102)		
TH_{it}	-1.676**		-1.719**		-1.991***			
	(0.811)		(0.733)		(0.770)			
TH_{bit}		-3.450*		-4.659***		-3.878**		
		(1.773)		(1.689)		(1.774)		
TH_{wit}		-1.661**		-1.682**		-1.983**		
		(0.831)		(0.757)		(0.797)		
E. Other Indicators								
$Trend$	-0.949***	-0.936***	-0.895***	-0.877***	-0.930***	-0.918***	3.485***	3.547***
	(0.0549)	(0.0552)	(0.0506)	(0.0507)	(0.0532)	(0.0534)	(0.639)	(0.633)
D_{CGit}	2.431	2.619	10.31*	11.77*	9.635	10.71	329.1	355.8
	(4.864)	(4.900)	(5.997)	(6.480)	(6.283)	(6.695)	(5,786)	(4,873)
D_{INGit}	-0.838	-0.664	7.607	9.075	6.802	7.872	279.5	306.4
	(4.867)	(4.903)	(6.005)	(6.490)	(6.292)	(6.706)	(5,786)	(4,873)
Cte	2.044***	2.022***	1.911***	1.880***	1.989***	1.969***	-7.104	-7.314
	(106.9)	(108.8)	(99.00)	(100.3)	(104.1)	(105.7)	(5,938)	(5,054)
$Seudo R^2$	0.1489	0.1497	0.1592	0.1608	0.155	0.1558	0.0571	0.0575
$Wald$	589.1***	587.3***	581.1***	579.7***	558.8***	554.4***	173***	174.7***
N_t	25	25	37	37	37	37	100	98
N	417	417	393	393	393	393	417	417

Source: SUNAT (2018a), WITS (2018a, 2018b), Peru Top (2018), INEI (2018a, 2018b, 2017, 2014, 2007), Table 6. Author's work N_t is the number of observations that are truncated (i.e., $Y_{it} = 1$)

Fifth, due to the size of entry barriers (i.e., capital-labor ratios and the sectoral scale) the competitive capacity of firms in domestic and foreign markets seems to have eliminated the need for protection. By the same arguments, growing or advantaged sectors in which competitive firms prevail) do not seem to have needed protection either. Lastly, the effects of the type of goods on trade barriers are consistent with the staggered structure of tariffs higher for consumer goods, then intermediate goods and lastly capital goods. An interesting estimation result is that the protection (or liberal) effect of the pressures of supplier (or buyer) firms is reduced (or increased) for consumer and intermediate goods. This result is consistent with the GH model, which predicts that firms producing goods with high import elasticity (such as consumer goods) would have a lower demand for protection since the dead-weight loss from protection is higher and the government would be less willing to grant protection.

In summary, the quantitative evidence seems to support the hypothesis that traditional and diversified exporters contributed to the unilateral trade liberalization experienced by Peru in period 2001-2015 and that import substitution firms (represented by suppliers

concentration indicators) influenced to some degree the decreasing speed rate of tariffs and have made possible some degree of protection based upon NTB indicators³⁴. In addition, this process was facilitated by the weak role of the formal labor force³⁵.

CONCLUSIONS

This paper has presented quantitative evidence showing that political economy factors and actors have influenced the Peruvian process of trade liberalization in period 2001-2015. The evidence supports the hypothesis that Peruvian trade barriers liberalization in period 2000-2015 was led by the powerful MEF and accompanied by traditional and diversified exporters (that consolidated the unilateral trade liberalization) and import substitution firms. These influenced to some degree³⁶ and reduced the speed rate of the process of the unilateral trade barriers liberalization. In addition, the unilateral trade liberalization was facilitated by the weak role of the formal labor force and consumer interest groups with liberal orientation.

Two main lessons arising from the trade liberalization process in Peru are, on the one hand, that the process must be internalized and that most of the relevant actors that influence trade policy (i.e., key ministries, entrepreneurs,

34 Recent empirical literature of endogenous protection also finds the protectionist role of firms in concentrated industries (e.g., Ludema *et al.*, 2021).

35 It should be noted that the magnitude of the aggregated sum of regression coefficients including the time trend in the tariffs equations is negative and positive for the NTB equations in accordance with the rate of growth of tariffs and NTBs in period 2000-2015.

36 These are from light industries (such as textiles, apparels, shoes, and steel products).

politicians, and consumers) believe in benefits of the process. On the other hand, institutional framework of trade must be organized in such way that the process flows in a coordinated way, facilitated by the absence (or low level) of restrictions or forces against liberalization.

In the case of Peru, the trade liberalization, and more specifically the liberal model, is thought by many, as the one that has produced economic growth, poverty alleviation with high degree of macroeconomic stability, and in consequence, populist cycles of economic policies have been defeated along the past two decades. In addition, not only the trade interventions of the two keys ministries (i.e., MEF and MINCETUR) have been smooth and coordinated, but also the influence on trade of formal workers has been limited mainly to labor regulations (such as, the Collective Law of Labor in July 1992 and the Law of Job Promotion) and its reduced size in the economy. Most labor force in Peru is employed on informal employment.

Although the liberal trade regime may be a natural and comfortable state for agents and people due to their supposed benefits, the liberal model and the trade regime have failed to produce economic development given the large size and the prevalence of informal employment in the labor force. The primary export structure and the light domestic industries, revitalized with

the liberal trade regime, do not seem to be enough to generate formal job opportunities to include or absorb the informal labor force. Consequently, a structural productive change is needed to produce economic development with continuous and sustainable economic growth, social inclusion, and without informal employment. The Peruvian case of trade liberalization shows that policy makers should carefully consider the pro and cons of two ways to face trade policy in a developing economy such as Peru. The first way, the point of view (based upon ideology, technical fundamentals, or pragmatism) that free trade is the most convenient policy to obtain sustainable economic growth and social inclusion. The second way that trade policy should be consistent with a general economic policy that leads the economy to a sustainable economic development process with the absence of informal activities and social inclusion. In this position, the trade liberalization process (and the implementation of many PTA) experienced by Peru, may have limited other set of economic policies and instruments to yield economic development.

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The author declares that there is no conflict of interest.

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Appendix

Table A.I. MFN Tariff Structure of Peru: 2001-2016

Type of Good	Tariff Rates	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011-2013	2014-2016
Consumer Goods	% T. lines	26.4	26.4	26.4	26.4	26.4	26.4	26.0	25.8	23.3	23.3	20.0	20.0	20.0
	S _{CG}	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6
	Aveg.	16.0	15.8	15.8	15.8	15.8	15.8	15.6	11.6	8.5	8.5	5.9	5.5	5.5
Intermediate or Inputs	N° t-lines	2079	2079	2079	2079	2079	2079	2079	2079	2079	2079	2079	2079	2079
	% T. lines	54.9	54.9	54.9	53.3	53.3	52.9	29.6	29.4	29.4	29.2	24.0	23.9	9.5
	S _{INTG}	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9	54.9
Capital Goods	Aveg.	12.8	9.9	9.8	9.7	9.4	9.1	7.2	4.9	4.9	4.8	3.2	3.0	1.3
	N° t-lines	4285	4285	4285	4285	4285	4285	4285	4285	4285	4285	4285	4285	4285
	% T. lines	18.4	18.4	18.4	18.4	18.0	18.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
All Goods	S _{KG}	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
	Aveg.	12.1	12.1	7.3	5.0	4.9	4.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0
	N° t-lines	1438	1438	1438	1438	1438	1438	1438	1438	1438	1438	1438	1438	1438
All Goods	% T. lines	99.7	99.7	99.7	99.7	97.7	97.3	57.2	55.2	52.7	52.5	44.0	43.9	29.5
	S _G	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Aveg.	13.5	11.9	10.9	10.5	10.3	10.1	8.3	5.8	4.9	4.9	3.4	3.1	2.2
N° t-lines	7802	7802	7802	7802	7802	7802	7802	7802	7802	7802	7802	7802	7802	7802

Source: SUNAT (2018a). Author's work. Tariffs include ad-valorem surcharges. % T. lines is the share of tariff lines with non-zero tariffs out of total number of tariff lines. S_{CG}: share of consumer goods tariffs lines out of the total tariff lines; S_{INTG}: share of intermediate goods tariffs lines out of the total tariff lines; S_{KG}: share of capital goods tariffs lines out of the total tariff lines; S_G = S_{CG} + S_{INTG} + S_{KG}.

Table A2. Preferential Tariffs of Peru-USA 2000-2016

Type of good	Tariff rate	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
% T. lines		24.6	24.6	24.6	24.6	24.5	24.5	23.2	22.8	19.2	6.0	5.9	5.9	5.9	2.9	2.9	2.7	2.7
S_{CG}		24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Aveg.		16.5	16.1	16.0	16.0	15.8	15.8	15.5	11.5	8.9	3.4	2.8	2.1	1.6	1.0	0.8	0.6	0.5
N° t-lines		1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724	1724
% T. lines		57.3	57.3	57.3	57.3	55.8	55.6	30.2	26.2	26.1	8.0	8.0	8.0	8.0	3.8	3.8	3.6	3.6
S_{INTG}		57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
Aveg.		12.9	9.9	9.8	9.6	9.4	9.1	7.1	4.9	4.8	1.5	1.2	1.0	0.7	0.4	0.3	0.2	0.2
N° t-lines		4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0	4024.0
% T. lines		18.1	18.1	18.1	18.1	17.8	17.8	2.4	0.9	0.9	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
S_{KG}		18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1
Aveg.		12.2	12.1	7.6	5.5	5.4	5.3	1.7	0.5	0.5	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
N° t-lines		1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270	1270
% T. lines		100	100	100	100	98.1	97.9	55.8	49.9	46.1	14.3	14.2	14.2	14.2	6.8	6.8	6.4	6.4
Suma		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Aveg.		13.6	11.8	10.9	10.4	10.2	10.1	8.2	5.7	5.1	1.7	1.4	1.1	0.8	0.5	0.4	0.3	0.2
N° t-lines		7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018	7018

Source: SUNAT (2018a). Author's work. Tariffs include ad-valorem surcharges. T. lines is the share of tariff lines with non-zero tariffs out of total number of tariff lines. S_{CG} : share of consumer goods tariffs lines out of the total tariff lines; S_{INTG} : share of intermediate goods tariffs lines out of the total tariff lines; S_{KG} : share of capital goods tariffs lines out of the total tariff lines; $S_G = S_{CG} + S_{INTG} + S_{KG}$.

Table A3. Non-Tariff Barriers of Peru 2000-2015

Type of Good	N _{NTB}	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
	na	5,7	5,8	5,1	5,0	5,0	5,1	5,0	3,1	3,1	3,2	3,0	3,0	3,1	3,3	3,1	3,2
Consumer Goods	S _{TL} (%)	4,7	4,6	4,9	6,2	7,0	11,0	11,2	12,0	12,5	13,1	13,3	13,3	13,9	13,8	14,1	14,0
	ST _{TL} (%)	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6	25,6
	NTB _{TL}	4,1	4,1	4,1	5,1	4,7	3,3	4,0	4,1	5,4	5,3	5,4	5,4	6,0	6,0	6,2	6,3
	na	15,6	15,1	11,9	12,5	11,4	11,8	12,3	5,8	6,1	6,7	5,9	6,3	7,5	7,6	7,3	7,4
Inputs	S _{TL} (%)	3,4	3,9	4,4	6,1	6,6	6,4	6,7	8,2	17,6	17,5	17,9	17,7	17,8	18,2	18,3	18,0
	ST _{TL} (%)	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6	56,6
	NTB _{TL}	2,5	2,7	2,7	4,8	4,7	4,6	4,9	4,9	4,8	4,9	4,9	4,8	5,0	5,0	5,1	5,2
	na	3,4	3,4	2,8	2,8	2,9	2,9	2,7	0,9	0,8	0,7	0,8	0,7	0,7	0,7	0,9	0,9
	S _{TL} (%)	0,5	0,6	0,8	1,3	1,3	1,3	1,4	1,7	1,7	2,3	2,3	2,3	2,5	2,5	2,4	2,5
Capital	ST _{TL} (%)	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8	17,8
	NTB _{TL}	1,7	2,8	2,3	2,3	2,5	2,4	2,4	2,3	2,3	2,4	2,4	2,4	2,2	2,2	2,2	2,2
	S _{TL} (%)	8,5	9,0	10,1	13,6	14,9	18,7	19,2	21,9	31,8	32,9	33,5	33,4	34,2	34,5	34,8	34,5
	N _{TL}	366	386	434	584	638	803	823	940	1362	1408	1434	1429	1466	1477	1494	1473
All Goods	N _{TL/NTB}	1211	1320	1458	2748	2860	2960	3450	3997	6722	6876	7054	6934	7670	7697	8006	7975
	ST _{TL} (%)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	N	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283
	NTB _{TL}	3,3	3,4	3,4	4,7	4,5	3,7	4,2	4,3	4,9	4,9	4,9	4,9	5,2	5,2	5,4	5,4

Source: UNCTAD (2018). Author's own elaboration. N_{TL}= number of tariff lines with NTM, N_{NTB}= number of NTM, S_{TL}= the share of tariff lines with NTB out of total number of tariff lines, ST_{TL}=the share of tariff lines of each type of goods out of total of tariff lines, N= total number of tariff lines; N_{TL/NTB}= number of total NTB for all tariff lines with NTB, NTB_{TL}= number of NTM per tariff line and na= the share of tariff lines which were not available out of total number of tariff lines.

Table A4. Non-Tariff Barriers of Peru-USA 2000-2015

Type of Good	N _{NTB}	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	
Consumer Goods	na	7.0	8.0	6.9	8.2	8.5	8.6	9.0	7.2	6.8	6.7	6.8	6.4	6.7	7.1	6.9	7.0	
	S _{TL} (%)	4.0	3.8	4.1	4.4	5.1	8.2	8.0	8.6	9.3	10.2	10.2	10.3	10.6	10.4	10.8	10.5	
	ST _{TL} (%)	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	
Inputs	NTB _{TL}	1.3	1.3	1.2	1.8	1.3	1.3	1.4	1.6	1.7	1.7	1.7	1.6	1.9	1.7	1.8	1.9	
	na	20.9	21.0	18.4	19.7	18.7	19.5	19.8	14.8	14.8	16.2	14.7	14.4	16.2	16.2	17.0	17.5	
	S _{TL} (%)	2.8	3.0	3.4	4.6	4.9	4.6	0.6	5.5	13.3	13.4	13.9	14.0	14.7	14.4	14.5	14.0	
Capital	ST _{TL} (%)	55.5	55.5	55.5	55.5	55.5	55.5	51.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5	
	NTB _{TL}	1.2	1.3	1.2	1.9	1.6	1.5	1.7	1.8	1.5	1.5	1.5	1.4	1.6	1.5	1.5	1.5	
	na	4.5	4.8	4.3	4.6	4.1	4.0	4.2	2.1	2.1	2.2	2.0	2.1	1.9	2.2	2.5	2.4	
All Goods	S _{TL} (%)	0.5	0.6	0.8	1.1	1.3	1.3	4.2	1.7	1.7	2.3	2.2	2.3	2.5	2.4	2.4	2.5	
	ST _{TL} (%)	19.0	19.0	19.0	19.0	19.0	19.0	21.9	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	
	NTB _{TL}	1.0	1.2	1.2	1.1	1.3	1.2	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.1	
All Goods	S _{TL} (%)	7.3	7.3	8.4	10.2	11.3	14.1	12.8	15.8	24.3	25.9	26.3	26.6	27.8	27.2	27.7	27.0	
	N _{TL}	296	297	339	413	457	572	521	641	988	1052	1068	1080	1127	1109	1124	1094	
	N _{TL/NTB}	369	380	413	729	668	780	818	1024	1527	1621	1671	1596	1900	1700	1781	1749	
	ST _{TL} (%)	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100
	N	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058
NTB _{TL}	1.2	1.3	1.2	1.8	1.5	1.4	1.6	1.6	1.5	1.5	1.5	1.6	1.5	1.7	1.5	1.6	1.6	

Source: UNCTAD (2018). Author's own elaboration. N_{TL}= number of tariff lines with NTM, N_{NTB}= number of NTM, S_{TL}= the share of tariff lines with NTB out of total number of tariff lines, ST_{TL}=the share of tariff lines of each type of goods out of total of tariff lines, N= total number of tariff lines; N_{TL/NTB}= number of total NTB for all tariff lines with NTB, NTB_{TL}=number of NTM per tariff line and na= the share of tariff lines which were not available out of total number of tariff lines.

