

# The Trans-Pacific Partnership: Trade's Prosperous Potential for San Diego

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## Abstract

We survey the impact of the recently negotiated TPP on the US economy, and explore its likely effects on the local San Diego economy. San Diego's strong existing trade links with the region, as well as its specialisation in sub-sectors such as research and development that are singled out for strengthened international protection under the agreement, make it likely that the San Diego region would enjoy a disproportionate share of the gains enjoyed by the US economy as a whole.

Keywords: Trade

## 1 Introduction

In this paper we explore the likely impact of the recently negotiated Trans-Pacific Partnership (TPP) on the San Diego region. If ratified and fully implemented, the TPP will be one of the most ambitious trade agreements ever negotiated, deepening economic and political ties between twelve diverse economies around the Pacific Rim.

The agreement goes beyond slashing tariffs (which are taxes of imports). It reduces non-tariff barriers, such as regulations that discriminate against foreign competitors and encourages foreign direct investment. It includes extensive safeguards for intellectual property, a key competitive asset of San Diego firms. At the same time, it innovates by using trade rules to enforce international environmental and labor standards.

Nevertheless, the proposals remain a source of concern and uncertainty for many. One natural question is the impact on US workers of closer economic ties with economies with much lower labor costs. Others fear that the attempt to harmonize standards and regulations risks the imposition of a one-size-fits-all approach that may be inappropriate for economies at different stages of development, or which could neuter the authority of democratic decision-making processes.

The unprecedented scope of the TPP makes it impossible to resolve these concerns entirely - quite simply, nothing this ambitious has been attempted before, and it is impossible

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to foresee with certainty exactly how the agreement will be implemented in every respect. In any event, the arguments about the national opportunities and risks for the United States from TPP are extensive. So, we leave this field to others. (See, for example, Plummer and Petri, 2016, or Scott and Glass, 2016) Instead, we believe that it is useful to add texture to the debate over the TPP's economic impact by looking at a major metropolitan area, San Diego. Moreover, we believe that local leaders have to make important decisions about their positions on this national policy issue, and thus we want to demonstrate how a deep dive into available economic data can provide fresh insight on the trade debate at the regional level. While this is a San Diego centric analysis similar exercises could be undertaken in other regions.

Our analysis leads us to conclude that San Diego stands to benefit disproportionately from the opportunities that the TPP presents for two reasons.

First, San Diego has a geographic advantage.

Despite notions that the world economy is highly integrated, international trade remains overwhelmingly determined by geographical considerations. Physical distance is by far the most important factor driving the intensity of trade links between economies<sup>1</sup>. San Diego's prime location, on the edge of the Pacific Rim, facing both Latin America, the southern Pacific and Asia, means that it is a natural trading partner for TPP members. San Diego already conducts a disproportionate amount of trade with the region, and the reduction in trade costs that the TPP promises suggests that San Diego will reap a disproportionate share of the benefits.

Second, San Diego's existing pattern of industrial specialization is well aligned with the sectors that could expect to gain most from the TPP. San Diego is highly specialized in scientific research and development (such as biotech), services, and high-tech manufacturing, particularly with application to telecommunications and information technology. These sectors have historically successfully appealed for protection to policymakers, who have sought to promote strategic local companies at the expense of foreign partners. The TPP embodies commitments by members not to discriminate against one another in this way, and includes Chapters dedicated to the strengthening of intellectual property rights among members, and ensuring fair competition and equality of market access in telecommunications. Since San Diego enjoys a strong comparative advantage in these sectors, it is likely to benefit from the commitment by TPP partners not to handicap US firms in the future.

San Diego also boasts a large service sector, in part thanks to its exceptional climate which supports extensive tourist-related activities. The jobs supported in this sector are insulated from competition with foreign workers, being in essentially non-traded activities. This suggests that downward pressures on wages from potential labor market competition will be very limited. In fact, the prospects of strong growth in export sectors promises to deliver rising real wages for local workers.

## 2 Potential Benefits of the TPP to San Diego

We begin by briefly putting San Diego into the context of the impact of TPP on the overall U.S. economy. Our purpose is not to resolve the dispute on its total impact on the national economy. Instead, we want to clarify an important asymmetry in the existing trade system that disadvantages the US and which the TPP corrects.

The most sophisticated economic model of the impact of the TPP

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<sup>1</sup> Consensus estimates from gravity equation regressions are that the value of trade falls by about 1% for every 1% increase in bilateral distance (See Chaney (2015)). Distance also makes the largest contribution of any conventional trade barrier to the  $R^2$ , or fit, of standard empirical gravity equations.

was published by Petri & Plummer (2016). (The computable general equilibrium model that underpins their forecast is a sophisticated analysis of 19 sectors across 29 regions.). Their headline estimate is that by 2030 the TPP would raise annual US real income by \$131 billion, or 0.5% of GDP, and annual exports by \$357 billion, or 9.1%. They forecast that world income would rise by \$492 billion, so that while the US would be the largest single beneficiary, the gains would be shared widely among other members, contributing to the likely political durability of the arrangement.

Such forecasts are necessarily uncertain for many reasons. Implementation of previous Preferential Trade Agreements has not always adhered to agreed schedules. Quantifying the impact of changes in non-tariff barriers, such as quotas, arbitrary standards and regulations that discriminate against foreign companies, or unpredictable customs procedures, is as much an art as a science. Or U.S. labor markets may not adjust in the way that the model projects. As a result, even such sophisticated estimates are best regarded as an upper-bound on the likely gains. But the key point is that many of the gains projected in the model come from correcting a current asymmetry between the openness of the U.S. market compared to those of the other TPP countries. In other words, the status quo (no TPP) works significantly against the United States

Put differently, the current trade policy regime of the US is already relatively liberalized compared to most of its TPP trade partners. The reductions in protection offered by other trade partners are significantly larger than the reciprocal concessions necessary by the US, and so US exporters will enjoy a larger average reduction in the costs of doing business.

	All Sectors	Agriculture	Manufacturing
Australia	11.3%	29.5%	9.8%
Brunei	N\A	N\A	N\A
Canada	4.8%	18.5%	3.3%
Chile	7.2%	22.3%	5.9%
Japan	8.9%	38.3%	4.7%
Malaysia	27.4%	61.1%	24.5%
Mexico	15.2%	28.3%	13.8%
New Zealand	11.3%	23.6%	9.1%
Peru	9.3%	25.7%	5.2%
Singapore	14.1%	52.9%	12.7%
United States	5.7%	17.0%	4.5%
Vietnam	N\A	N\A	N\A

Table 1: Overall Trade Restrictiveness Index, 2009

Table 1 presents estimates from Kee, Nicita & Olarreaga (2009) of the uniform ad valorem tariff that would have led to the same volume of trade as the prevailing mix of trade policies in 2009 for the 10 member countries for which data is available<sup>2</sup>. The US has low average trade barriers compared to other TPP members, both in agriculture and for

<sup>2</sup> This Overall Trade Restrictiveness Index (OTRI) reflects the average impact of both tariff and non-tariff barriers, and is a useful summary measure of the stance of countries' overall trade policy. Estimates are not available for Brunei or Vietnam.

manufactured goods. This is particularly true for relative tariff levels<sup>3</sup>. Kee et al. (2009) estimate that the US maintains comparable non-tariff barriers to other partner countries. Since there is much greater certainty about the implementation of the reductions in tariffs, significant reductions in the relative costs facing US exporters are likely to be achieved despite possible uncertainty about the speed with which non-tariff barriers will be dismantled.

The other asymmetry between the US and many TPP countries is in the treatment of intellectual property protection and the liberalization of services tied to a high tech economy. In both respects TPP significantly narrows the gap between US arrangements for its domestic market and the practices of other countries.

Chapter 18 of the TPP requires that members ratify or accede to a series of additional international agreements upholding international intellectual property rights: the Madrid Protocol<sup>4</sup>; the Budapest Treaty<sup>5</sup>; the Singapore Treaty<sup>6</sup>; the International Union for the Protection of New Varieties of Plants<sup>7</sup>; the WIPO Copyright Treaty<sup>8</sup>; and the WIPO Performances and Phonograms Treaty<sup>9</sup>. Since only the US, Australia, Mexico and Singapore among TPP members are already signatories to all of these conventions, this represents a significant strengthening of the intellectual property rights of US-based inventors and researchers.

As the next section shows high tech services are growing in significance in the San Diego economy, partly because U.S. rules have provided a supportive environment for innovators in these services. Yet, numerous barriers to these services have crept up in recent years. Two examples illustrate the problems. One is growing restrictions on the use of global cloud computing networks (like Amazon's AWS) to drastically reduce the cost and improve the reliability of information technology that is essential to advanced services (and many goods). The second is the restriction on the movement of data across national borders so that a service (like engineering or cyber security support, to name two San Diego specialties) can be supplied remotely<sup>10</sup>. TPP creates the first rules to limit these restrictions on international commerce while acknowledging the right to regulate in a non-discriminatory and transparent manner in order to protect privacy and security. These and other rules on services and non-tariff barriers, including curbs on regulations designed to favor local over U.S. technologies, are significant for the U.S. economy as a whole but especially for San Diego, as we now explain.

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<sup>3</sup> The tariff-based OTRI for the US is 1.3%, while the unweighted average across the nine other TPP members with data is double that at 2.6%.

<sup>4</sup> International Registration of Marks: Brunei, Canada, Chile, Malaysia and Peru are not yet signatories.

<sup>5</sup> Patent protection for microorganisms: Malaysia, New Zealand and Vietnam are not yet signatories.

<sup>6</sup> Trademark registration and communication technologies: Brunei, Canada, Chile, Japan, Malaysia, Peru and Vietnam are not yet signatories.

<sup>7</sup> Brunei and Malaysia are not yet signatories.

<sup>8</sup> Strengthening copyright protection for software and databases: Brunei, Vietnam and New Zealand are not yet signatories.

<sup>9</sup> Brunei, Vietnam and New Zealand are not yet signatories.

<sup>10</sup> The most comprehensive summary of restrictions is: Anupam Chander and Ulyen P. Le, "Breaking the Web: Data Localization vs. The Global Internet," April 2014.

Available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2407858](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2407858).

## 2.1 Significant Sectors in San Diego's Economy

San Diego's economy is heavily oriented towards service sectors. Table 2 reports employment levels in San Diego in 2013 across the 11 NAICS super-sectors, and compares them to the US as whole.

NAICS Super-Sector	Employment Level		Employment Share		Location Quotient
	San Diego	US	SD (%)	US (%)	
Unclassified	3,906	165,321	0.36%	0.15%	2.5
Professional and business services	222,969	18,478,164	20.48%	16.36%	1.3
Leisure and hospitality	167,164	14,195,179	15.35%	12.57%	1.2
Other services	45,615	4,149,819	4.19%	3.67%	1.1
Construction	60,619	5,819,950	5.57%	5.15%	1.1
Financial activities	71,124	7,616,922	6.53%	6.74%	1
Information	23,928	2,703,250	2.2%	2.39%	0.9
Education and health services	177,380	20,204,352	16.29%	17.89%	0.9
Trade, transportation, and utilities	211,558	25,606,723	19.43%	22.67%	0.9
Manufacturing	94,507	11,994,922	8.68%	10.62%	0.8
Natural resources and mining	10,105	2,023,732	0.93%	1.79%	0.5
Total Employment	1,088,875	112,958,334			

Table 2: San Diego Employment and Location Quotients by NAICS Super-Sector

The sectors are ordered by their Location Quotients. This metric provides a measure of the relative specialization of the San Diego economy compared to the wider US economy. *Location Quotients are calculated as the fraction of local employment in a given sector, relative to that sector's employment share in the wider economy. When this measure of relative specialization in employment exceeds one, it indicates an underlying comparative advantage in productivity*<sup>11</sup>.

Ignoring the Unclassified sector, which represents a small fraction of both the San Diego and wider US economy, San Diego's economy is heavily concentrated in service sectors. *Professional and business services represent the largest single group, employing over 20% of the workforce, which is 1.3 times larger than this sector's share in the rest of the US.* Other service categories, such as Leisure and Hospitality, and Other Services are also over-represented, while Manufacturing, Natural resources and Mining employ a much lower share of workers than average.

Table 3 explores San Diego's labor market in more detail, presenting the 10 4-digit NAICS (North American Industry Classification System) sectors with highest local employment. The top five employers are service sectors that reflect San Diego's strengths in tourism and professional services.

Of course the US economy as a whole is heavily dependent on services, and several of

<sup>11</sup> For more discussion of Location Quotients, see (Brugues, Combs, Cox, Bautista, Flyte, Fuentes, Luhn, Mason, Shirk & Wright 2014).

these locally significant sectors are major employers throughout the US. To tease out the sectors in which San Diego enjoys unusually high employment and underlying productivity advantages, Table 4 presents the 10 4-digit NAICS sectors in which San Diego has the highest Location Quotients, or relatively concentrated local employment.

NAICS code	NAICS category	Employment Level		Employment Share	
		San Diego	US	SD (%)	US (%)
7225	Restaurants	104,499	9,361,504	9.79%	8.29%
5417	Scientific research and development services	30,178	632,261	2.83%	0.56%
7211	Traveler accommodation	27,559	1,780,096	2.58%	1.58%
6241	Individual and family services	27,497	1,884,11	2.58%	1.67%
5613	Employment services	27,139	3,257,19	2.54%	2.88%
6211	Offices of physicians	26,647	2,430,043	2.5%	2.15%
4451	Grocery stores	24,887	2,564,403	2.33%	2.27%
5413	Architectural and engineering services	24,356	1,341,77	2.28%	1.19%
5511	Management of companies and enterprises	20,509	2,087,081	1.92%	1.85%
6221	General medical and surgical hospitals	20,264	4,437,590	1.9%	3.93%

Table 3: The 10 Largest 4-digit NAICS Sectors by Employment in San Diego

NAICS code	NAICS category	San Diego	US	SD (%)	US (%)	Location Quotient
3343	Audio and video equipment manufacturing	1,984	19,115	0.19%	0.02%	11
5417	Scientific research and development services	30,178	632,261	2.83%	0.56%	5.1
3366	Ship and boat building	5,973	131,543	0.56%	0.12%	4.8
3342	Communications equipment manufacturing	4,397	101,898	0.41%	0.09%	4.6
4872	Scenic and sightseeing transportation, water	508	14,575	0.05%	0.01%	3.7
1114	Greenhouse and nursery production	4,795	143,331	0.45%	0.13%	3.5
7131	Amusement parks and arcades	5,536	184,293	0.52%	0.16%	3.2
3345	Electronic instrument manufacturing	10,126	392,459	0.95%	0.35%	2.7
7121	Museums, historical sites, zoos, and parks	3,601	141,242	0.34%	0.13%	2.7
9999	Unclassified	3,906	165,321	0.37%	0.15%	2.5

Table 4: Top 10 4-digit NAICS Sectors in San Diego by Location Quotient

## 2.2 San Diego's Exposure to Trade with the TPP

Highly concentrated sectors are typically associated with exporting sectors. When a region produces a disproportionately large quantity of a good or service, it trades it with other regions or countries. Since many services are personal (e.g. hair cutting), they are usually locally produced. In contrast, manufacturing, commodities like vegetables, and tradable services (such as scientific research, or tourism, where the consumer travels to the service provider) can be supercharged by trade. These sectors are much more highly represented in the list of San Diego's sectors with unusually high concentrations of employment. Out of the 304 4-digit NAICS sub-sectors, these 10 most highly concentrated sub-sectors employed over 70,000 people in 2013, or about 6.5% of San Diego's workforce.

Of the 10 sub-sectors with highest LQs listed in Table 4, half involve trade in physical goods that are recorded by US Customs. Table 5 reports the exports leaving the San Diego customs district in 2015 for these sub-sectors, and compares San Diego's exports to total US exports.

Table 5 also reports the fraction of these sectors' exports that are sold to TPP member countries. *A strikingly high fraction of San Diego's exports is sold into the TPP market. For four of the five sectors the TPP purchases over 90%, and for all five San Diego's exposure to the TPP is much higher than for the US as a whole.*

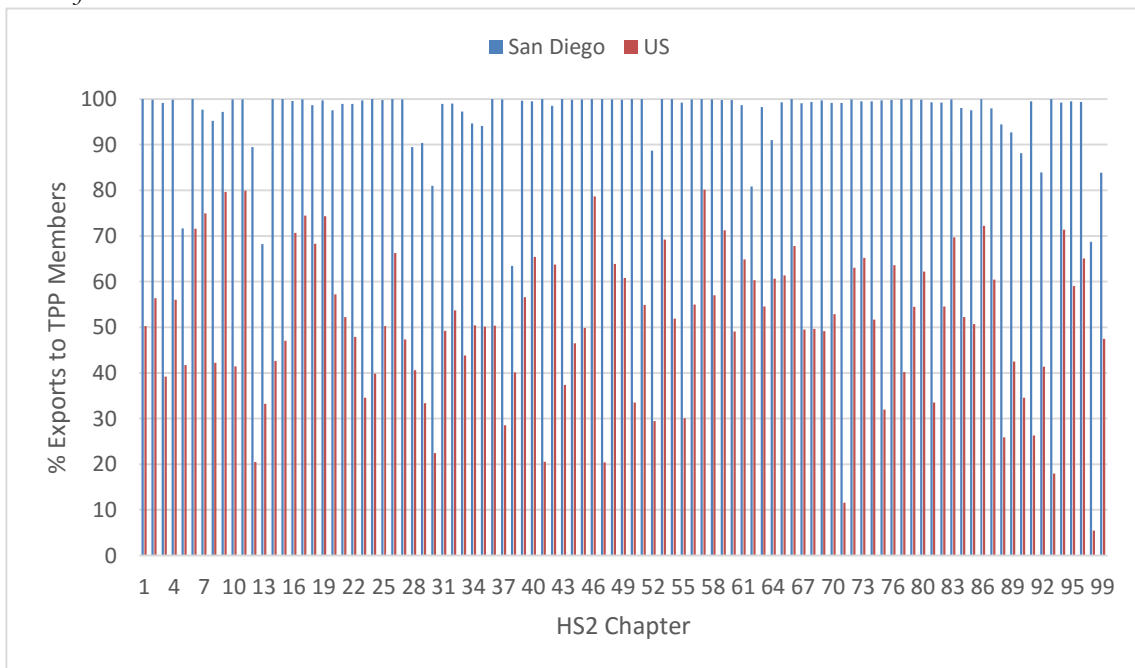


Figure 1: TPP Market Share in San Diego and US Exports

These strong trade links between San Diego and the TPP markets are not an anomaly, manifest only in San Diego's high comparative advantage sectors. Figure 1 illustrates the fraction of both San Diego's and the US's exports destined for TPP markets, across the range of 97 HS2 Chapters tracked by US Customs. For every goods category, San Diego exports a disproportionately larger fraction of its sales to the TPP than the US does as a whole. The lowest proportion of San Diegan exports destined for the TPP is 63.4% (HS 38, Miscellaneous Chemical Products); for 85 of the 97 Chapters the fraction already exceeds 90%; and for 17 Chapters 100% of San Diego's exports are sold to the TPP.

This strong existing relationship between San Diego and the TPP can also be seen in Figure 2, which illustrates, by HS2 Chapter, the fraction of US total goods exported from San Diego, and the proportion sent to TPP markets. As is clear from the graph, *San Diego already makes a disproportionate contribution to US exports to the TPP.*

These strong trade ties are quite unsurprising, given San Diego’s geography, on the edge of the Pacific Rim, facing both Latin America and the Asia-Pacific, and the strong influence that proximity exerts on aggregate trade flows. US companies targeting exports to TPP markets already have strong incentives to locate in the San Diego region in order to minimize transport costs.

*This does not simply reflect San Diego’s proximity to one major TPP market (Mexico).* The last two columns of Table 5 recalculate the share of San Diego’s exports destined for TPP markets, excluding NAFTA members. For all five sub-sectors, the remaining TPP markets account for a significant fraction of San Diego’s exports, and at a much higher intensity than for US exports as a whole.

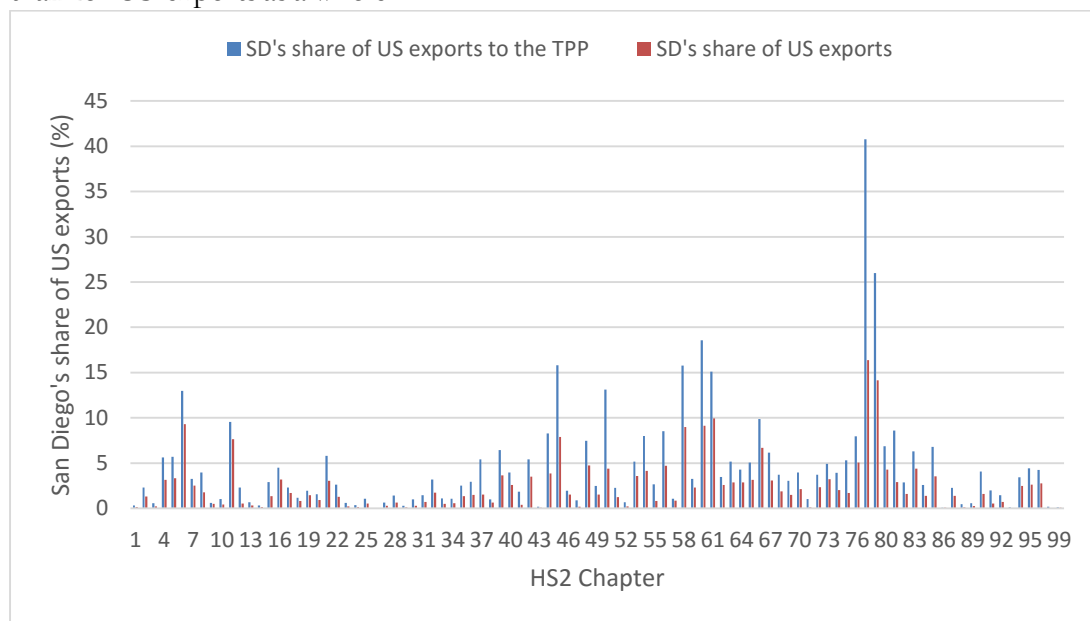


Figure 2: TPP Market Share in San Diego and US Exports

Table 6 reports the 10 HS2 Chapters for which San Diego had the largest trade volumes in 2015. The Table also reports San Diego’s revealed comparative advantage in these sectors, and compares them to the US as a whole. Revealed comparative advantage is a widely used measure to indicate a regions’ underlying relative productivity<sup>12</sup>. *A revealed comparative advantage score in excess of 1 indicates that the good is exported more intensively from the home region than in the rest of the world. Unsurprisingly, San Diego has a revealed comparative advantage in all 10 of its largest export sectors (although the US as a whole does not necessarily enjoy a comparative advantage in all of these sectors).*

<sup>12</sup> First developed by Belassa (1965), this measure can be constructed from observed trade flows. A region *i*'s revealed comparative advantage in sector *j* is calculated as the fraction of sector *j* in *i*'s total exports, relative to the fraction of sector *j* in global exports. A region that exports goods in sector *j* at a higher intensity than the world average might be inferred to be relatively productive in sector *j*. The need to benchmark San Diegan exports against world trade flows motivates the shift to exports measured by the HS (harmonized system) classification, which is collected globally, rather than NAICS, which applies only to North America.



NAICS code	NAICS category	Exports		TPP (%)		TPP (%) ex. NAFTA	
		San Diego	US	San Diego	US	San Diego	US
3343	Audio & Video Equipment	565,378,491	9,593,436,456	99.8	76.5	70.3	20.6
3366	Ships & Boats	7,824,999	2,954,162,744	92.4	80.9	43.8	24
3342	Communications Equipment	827,835,521	42,169,363,187	98.2	57.3	38.7	14.3
1114	Mushrooms, Nursery & Related Products	38,306,328	484,303,966	99.9	43.2	70.5	16
3345	Navigational/measuring/medical/control Instrument	608,232,201	48,855,046,171	83.4	28.1	36.1	19.5

Table 5: Trade with the TPP for San Diego's highest LQ sectors

HS Code	HS Category	San Diego's Exports 2015 (\$)	Revealed Comparative Advantage		SD's Share of US exports
			SD	US	
85	Electric Machinery Etc; Sound Equip; Tv Equip; Pts	6,007,377,824	1.94	0.83	3.54%
84	Nuclear Reactors, Boilers, Machinery Etc.; Parts	2,836,825,519	1.09	1.2	1.38%
39	Plastics & Articles Thereof	2,198,195,604	2.91	1.2	3.65%
87	Vehicles, Except Railway Or Tramway, And Parts Etc	1,779,556,741	1.07	1.15	1.4%
90	Optic, Photo Etc, Medic Or Surgical Instrments Etc	1,334,911,331	1.95	1.84	1.6%
48	Paper & Paperboard & Articles (inc Papr Pulp Artl)	746,868,384	3.53	1.12	4.76%
73	Articles Of Iron Or Steel	636,051,791	1.72	0.8	3.24%
76	Aluminum & Articles Thereof	610,170,859	2.99	0.89	5.07%
40	Rubber & Articles Thereof	354,682,022	1.46	0.85	2.6%
44	Wood & Articles Of Wood; Wood Charcoal	343,900,694	1.94	0.76	3.86%

Table 6: San Diego's Top 10 Goods Export Sectors

HS Code	HS Category	San Diego's Exports to the TPP 2015 (\$)	Fraction of Exports to the TPP		Fraction of SD's Exports to the TPP ex. NAFTA
			SD	US	
85	Electric Machinery Etc; Sound Equip; Tv Equip; Pts	5,859,207,472	97.5%	50.7%	44.4%
84	Nuclear Reactors, Boilers, Machinery Etc.; Parts	2,780,620,003	98%	52.2%	43.4%
39	Plastics & Articles Thereof	2,190,584,173	99.7%	56.6%	12%
87	Vehicles, Except Railway Or Tramway, And Parts Etc	1,742,822,466	97.9%	60.4%	64.1%
90	Optic, Photo Etc, Medic Or Surgical Instrments Etc	1,176,020,832	88.1%	34.6%	36.7%
48	Paper & Paperboard & Articles (inc Papr Pulp Artl)	746,399,800	99.9%	63.9%	1.2%
73	Articles Of Iron Or Steel	632,713,703	99.5%	65.2%	16.8%
76	Aluminum & Articles Thereof	608,898,304	99.8%	63.6%	35.5%
40	Rubber & Articles Thereof	352,934,783	99.5%	65.4%	8.6%
44	Wood & Articles Of Wood; Wood Charcoal	343,444,272	99.9%	46.5%	13%

Table 7: Trade of San Diego's Top 10 HS2 Export Sectors with the TPP

As reported in Table 7, the TPP is the dominant market for San Diegan exports for all of these sectors, accounting for a much higher fraction of export sales than for US exports as a whole. *Even excluding exports to Mexico and Canada, the TPP remains a very significant market for San Diego*, as reported in the final column of Table 7.

Table 8 explores San Diego's exports in more detail. It presents the 10 6-digit HS sectors with largest export volumes from San Diego in 2015, collectively in excess of \$3.5 billion. TPP markets account for an overwhelming proportion of these sales.

HS Code	HS Category	San Diego's Exports to the TPP 2015 (\$)	Fraction of San Diego's Exports to the TPP	Fraction of SD's Exports to the TPP ex. NAFTA
854231	Processors And Controllers, Electronic Integ Circ	780,810,404	99.83%	39.06%
870829	Pts & Access Of Bodies Of Motor Vehicles, Nesoi	422,666,989	99.98%	14.65%
392690	Articles Of Plastics, Nesoi	406,219,994	99.51%	13.33%
901890	Instr & Appl F Medical Surgical Dental Vet, Nesoi	325,256,535	97%	57.34%
732690	Articles Of Iron Or Steel Nesoi	307,861,304	99.98%	21.56%
852872	Reception Apparatus For Television, Color, Nesoi	305,631,046	100%	0%
840820	Compression-igntn Int Combustion Piston Engine Etc	282,433,295	100%	0%
853890	Pt F Elect Appr F Elect Circ; F Elct Contrl Nesoi	274,016,003	99.86%	31.13%
854121	Transistors Ex Photosensitive, dissipation Rate &lt; 1 W	268,249,909	100%	100%
870899	Parts And Accessories Of Motor Vehicles, Nesoi	250,836,742	95.3%	0%

Table 8: Trade of San Diego's Top 10 HS6 Export Sectors with the TPP

HS code	AUS	BRN	CHL	JPN	MYS	NZL	PER	SGP	VNM	USA
854231	0	0	6	0	0	0	0	0	0	0
870829	0-5	20	6	0	0-25	0-10	0	0	3-27	0-2.5
392690	5	0	6	0-3.9	0-20	0-5	9	0	0-20	0-6.5
901890	0	0-20	6	0	0	0	0	0	0	0
732690	5	0	6	0	0-25	0-5	0	0	0-15	0-8.6
852872	5	5	6	0	0-30	0	9	0	37	0-5
840820	0-5	20	6	0	0	5	0	0	3-27	0-2.5
853890	0-5	20	6	0	0	0-5	0	0	3-12	0-3.5
854121	0	0	6	0	0	0	0	0	0	0
870899	0-5	20	6	0	0-30	0-10	0	0	3-27	0-2.5

Table 9: TPP Tariff rates for San Diego's top 10 Export Sectors

Table 9 presents the current range of tariffs among TPP members for goods in these

HS6 categories. Where a range of tariff rates is indicated, these represent the minimum and maximum tariffs on goods in these categories. A single number implies that all goods in the category face the same rate. For the sake of space, Canada and Mexico are omitted, since they are members of NAFTA and so current MFN tariffs do not apply to US exporters. Most of San Diego’s leading export sectors face moderate tariffs in TPP export markets, particularly in Brunei, Malaysia and Vietnam. Current US tariffs in these sectors are relatively low, compared to TPP members. This suggests that US based firms will enjoy a disproportionate reduction in trade costs as a result of the TPP, allowing San Diego’s exporters to lower their relative price and expand their market share.

	OLS	probit
tariffrate	-2,270,006 (1,247,699*)	-0.045 (0.014***)
Observations	110	110

Standard errors in parentheses

Statistical significance: \* 10%; \*\* 5%; \*\*\* 1%

Probit: marginal effect

Table 10: Influence of TPP members’ tariffs on San Diego’s exports

*Tariffs are more than a financial nuisance to San Diego firms, as the data show clearly that the size of the tariff barriers has a direct effect on the volume of San Diego exports.* In a regression of the value of exports from San Diego to each partner in each sub-sector on the maximum tariff applicable in the sector, a 1% increase in the tariff level is associated with \$2.3 million lower export volumes, and the relationship is statistically significant.

The maximum tariff rate also matters for San Diego firms’ decision to enter these markets. In a probit regression of the entry decision on the maximum tariff rate, the marginal effect of a 1% increase in the maximum tariff is to reduce the likelihood that any San Diego firms export in the sub- sector by 4.5%, and this is also very statistically significant.

### 2.3 Broader Benefits of the TPP for San Diego

HS code	AUS	CHL	JPN	MYS	MEX	NZL	PER	SGP	USA
854231	0	0	0	0	0	0	0	0	0
870829	0	0	0	0	0	0	0	0	0
392690	0	0	0	5.7	34.4	0	0	16.6	17.5
901890	0	63.8	0	73.3	74.9	0	58.4	68.1	0
732690	100	0	122	103	113	0	116	80.4	0
852872	0	0	0	68.2	0	0	82.2	35.7	0
840820	0	0	0	0	0	0	0	0	0
853890	0	0	0	15.3	0	0	0	5.7	0
854121	0	0	0	0.2	0	37.4	0	0.4	0
870899	0	0	0	48.3	65.6	0	0	0.9	74.3

Table 11: TPP Ad Valorem Tariff equivalents (%) to Non-Tariff Barriers for San Diego’s top 10 Export Sectors

A distinctive feature of the TPP agreement is the emphasis it places on removing Non-Tariff Barriers, such as technical barriers to trade. Table 11 reports estimates from Kee et al. (2009) of ad valorem tariff equivalents to non-tariff barriers, for San Diego's ten largest HS6 sub-sectors for 2012<sup>13</sup>. Comparing Tables 9 and 11, non-tariff barriers currently constitute a major impediment to trade, including partners which maintain very low formal tariff rates. *It is clear that even a partial liberalization could contribute to a substantial reduction in trade costs, and strong growth in San Diego's export sectors.*

MSA	population	patents	patents/1000
New York-Newark-Jersey City	20,002,086	7,886	0.394
Los Angeles-Long Beach-Anaheim	13,175,849	6,271	0.476
Chicago-Naperville-Elgin	9,544,796	3,766	0.395
Dallas-Fort Worth-Arlington	6,823,113	2,922	0.429
Houston-The Woodlands-Sugar Land	6,333,809	2,655	0.419
Philadelphia-Camden-Wilmington	6,036,228	2,630	0.436
Washington-Arlington-Alexandria	5,967,176	2,152	0.361
Miami-Fort Lauderdale-West Palm Beach	5,863,458	1,363	0.232
Atlanta-Sandy Springs-Roswell	5,525,432	2,232	0.404
Boston-Cambridge-Newton	4,698,049	5,610	1.194
San Francisco-Oakland-Hayward	4,529,654	8,721	1.925
Phoenix-Mesa-Scottsdale	4,404,129	1,543	0.35
Riverside-San Bernardino-Ontario	4,390,262	463	0.105
Detroit-Warren-Dearborn	4,295,394	3,000	0.698
Seattle-Tacoma-Bellevue	3,613,621	4,364	1.208
Minneapolis-St. Paul-Bloomington	3,461,434	3,445	0.995
<b>San Diego-Carlsbad-San Marcos</b>	<b>3,222,558</b>	<b>4,805</b>	<b>1.491</b>
Tampa-St. Petersburg-Clearwater	3,121,854	596	0.191
St. Louis	2,801,587	850	0.303
Baltimore-Columbia-Towson	2,774,050	786	0.283

Table 12: Patents and Patents/1000 people for the 20 largest MSAs, 2013

Another important goal of the TPP is to reinforce intellectual property rights throughout the area. This could be of great value to San Diego, which is a major hub of research and innovation in the US.

*Strengthening the intellectual property rights of US inventors through the TPP also plays to one of San Diego's strong comparative advantages, and could drive significant further growth in this high value sector.* With a patenting rate of 1.49 patents filed per 1000 inhabitants, inventors resident in San Diego had the second highest rate of patenting in the 20 largest urban conglomerations in America, only behind San Francisco. (Table 12 reports the number of patents registered to an inventor based in the 20 largest Metropolitan Statistical Areas in 2013.) This is not an artefact of San Diego's relatively small population. Table 13 ranks MSAs by the number of patents registered in 2013. The San Diego MSA generated the sixth highest number of patents, at the third highest rate per capita, behind only San Jose and San Francisco. These very high patent rates are consistent with the high Location Quotient of San

<sup>13</sup> Data is unavailable for Vietnam. Brunei and Canada were assessed as having no non-tariff barriers in these 10 sectors, and so are omitted from Table 11.

Diego in Scientific research and development services, with five times as many employees in this sector as in the US on average (see Table 4).

MSA	patents	Patent/1000
San Jose-Sunnyvale-Santa Clara	12,899	6.688
San Francisco-Oakland-Fremont	8,721	1.925
New York-Northern New Jersey-Long Island	7,886	0.394
Los Angeles-Long Beach-Santa Ana	6,271	0.476
Boston-Cambridge-Quincy	5,610	1.194
<b>San Diego-Carlsbad-San Marcos</b>	<b>4,805</b>	<b>1.491</b>
Seattle-Tacoma-Bellevue	4,364	1.208
Chicago-Joliet-Naperville	3,766	0.395
Minneapolis-St. Paul-Bloomington	3,445	0.995
Detroit-Warren-Livonia	3,000	0.698
Dallas-Fort Worth-Arlington	2,922	0.428
Austin-Round Rock-San Marcos	2,683	1.423
Houston-Sugar Land-Baytown	2,655	0.419
Philadelphia-Camden-Wilmington	2,630	0.436
Atlanta-Sandy Springs-Marietta	2,232	0.404
Washington-Arlington-Alexandria	2,152	0.457
Portland-Vancouver-Hillsboro	1,928	0.833
Phoenix-Mesa-Glendale	1,543	0.35
Rochester	1,542	1.422
Raleigh-Cary	1,384	1.139

Table 13: Patenting for the 20 MSAs with most patents, 2013

### 3 Conclusion

The TPP is a very ambitious agreement, covering a diverse set of countries, and aspiring to dismantle both traditional and non-traditional trade barriers, while retaining safeguards to cushion the burden of rapid adjustment<sup>14</sup>.

Early studies of the proposal estimate that the TPP will contribute to modest growth in long-term US incomes and living standards, by lowering prices for US consumers and expanding market access for the US's most productive export industries.

San Diego appears singularly well placed to take advantage of these growth opportunities, as both its geography, and its existing pattern of industrial specialization, will allow it to take disproportionate advantage of the opportunities that the TPP presents. San Diego exporters already sell the vast majority of their output into TPP markets, and a reduction in their trade costs would help them further expand their market share. Dismantling non-tariff barriers could expand market access into new product lines, even in markets which have already lowered tariff barriers thanks to existing FTAs with the US. The strengthening of IP rights could support strong growth in one of San Diego's leading sectors,

<sup>14</sup> Safeguards include the phased reduction of protection in strategic sectors, and the ability to reintroduce tariffs in response to unanticipated import surges.

scientific research and development.

At the same time, the potential downsides to San Diego seem very limited. The large number of jobs in non-traded services will be insulated from competitive pressure from lower wage economies, while households will benefit from any reductions in US prices arising from lower import tariffs.

If implemented as planned, the TPP appears to offer prosperous potential for the San Diego economy.

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