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Impacts of tariffs and trade agreements on Japanese wine imports by source

Emily Greear
Graduate Research Assistant
University of Tennessee, Knoxville
egreear@vols.utk.edu

Andrew Muhammad
Professor and Blasingame Chair of Excellence
University of Tennessee, Knoxville
amuhamm4@utk.edu

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Abstract

In recent years, the Japanese bottled wine market (HS classification: 220.421) has steadily grown due to an increase in consumption, with the majority demand being satisfied by imports. Recent trade negotiations have resulted in Japan lowering and eventually eliminating tariffs on wine from countries in the European Union (EU) and Chile. However, Japan has continued to impose a 15 percent tariff on U.S. wine. This tariff significantly increases the cost of U.S. wine in Japan. On October 16, 2018 President Trump announced plans to negotiate the United States-Japan Trade Agreement. Securing market access by reducing or eliminating tariffs on agriculture goods, including wine, is a specific negotiating objective of this agreement. The U.S.-Japan Trade Agreement and U.S.-Japan Digital Trade Agreement was signed in October 2019, Resulting in a phase out of tariffs on U.S. wine over a 7-year period. The purpose of this study is to examine Japanese wine demand by source and to assess the impacts of tariff reductions on U.S. wine in Japan.

Introduction

Wine imports in Japan satisfy the growing demand for wine. An increase in consumption can be seen over the past twenty-five years as tastes and preferences have expanded and shifted (Sumio & Negishi, 2019). Over the past 10 years, various trade negotiations have resulted in Japan lowering and eventually eliminating tariffs on wine from specific countries. Important for this study, are countries in the European Union (EU) and Chile, top suppliers of Japanese wine imports. The negotiations between these countries has resulted in the Japan-EU Economic Partnership Agreement (EPA) and the Japan-Chile EPA (Paulson & Kurai, 2018). Under the Japan-EU EPA, the 15 percent import duty levied on wine will be immediately eliminated (Paulson & Kurai, 2018). The Japan-Chile EPA resulted in an import duty levied on Chilean wine to be lowered from 15 percent to 10 percent in the first year of the agreement. This was followed by equal annual reductions until the tariff was eliminated in 2019 (Paulson & Kurai, 2018). All else equal, Japanese consumers will face relatively lower prices for wine from France, Italy, Spain, and Chile.

During this period, Japan continued to impose a 15 percent tariff on U.S. wine (Paulson & Kurai, 2018). The 15 percent tariff significantly increases the cost of U.S. wine in Japan. In 2018, U.S. exports were valued at $129 million (Sumio & Negishi, 2019). With a 15 percent tariff, along with Japan's 8 percent value added tax, the total cost of importing U.S. wine was $158,670,000.

On October 16, 2018 President Trump announced plans to negotiate the United States-Japan Trade Agreement (Office of the United States Trade Representative, 2019). Japan's role as an important export market for the US is a key factor for the negotiations. Securing market access by reducing or eliminating tariffs on agriculture goods, including wine, is a specific negotiating objective of the United States-Japan Trade Agreement Negotiations. The U.S.-Japan Trade Agreement and U.S.-Japan Digital Trade Agreement was signed on October 2019 resulting in a phase-out of tariffs on U.S. wine over a 7-year period (Office of the United States Trade Representative, 2019).

By the end of 2019, Japan will no longer impose tariffs on wine from all major suppliers, except the U.S. It is important to understand how zero tariffs will affect U.S. wine exports to Japan moving forward. This study will address the impacts of the Japan-EU EPA and the Japan-Chile EPA on U.S. wine exports to Japan as well as the impacts of the new agreement between the U.S and Japan.

Background and Objectives

In this study, wine is classified using a six-digit harmonized system (HS) 220421. This classification for this specific good indicates wine of fresh grapes in containers holding two liters or less (Johanson, Williamson, Broadbent, Schmidtlein, & Kearns, 2019).

The objectives of this study are to:

1) estimate Japanese wine demand differentiated by supplying country;
2) using estimates, derive the elasticities of import demand for Japanese wine imports for each exporting country;
3) using elasticities, simulate the impacts of existing and potential trade agreements on Japanese wine imports.

Data and Methods

The data used in this study were accessed via the Global Trade Atlas. Two separate datasets, monthly and annual, were downloaded and analyzed. Both include data that begins in 1994 and ends in September of 2019, but only data up until December of 2018 was used for this study. The following information applies to both datasets downloaded and used. There are two categories of data including value (in USD) and volume (in liters). Only wine that falls under HS 2204.21 was included. Values and volumes are separated by source. More specifically, Japan's total wine imports, called "World", during the specified timeframe as well as Japan's total wine imports by source were used. Seven countries, excluding world, were used in this study. Those seven countries, in alphabetical order, are Australia, Chile, France, Germany, Italy, Spain, and the U.S. To calculate the rest of world value, "ROW", the sum of the seven countries were subtracted from the world. This was done for both value and volume. Descriptive statistics for model variables are presented in table 1. The average price of wine was highest in France at $7.91/liter which is significantly higher than the average price of wine from other suppliers. However, the average price for wine from the U.S. was competitive with France at $7.08/liter. The average price of wine was least in Chile at $3.26/liter. France imported the largest average volume of wine in liters at 4,294,143.36 liters.

The total amount of imported wine makes Japan the 7th largest wine import market globally (United Nations Statistics Division, 2019). Table 2 summarizes the exporter market share and Japanese total wine imports by value and volume from 1994 to 2018. Averages show that France dominates the market share percentage followed by Italy. Table 3 summarizes the price per liter (in USD) of Japanese wine imports, by source, from 1994 to 2018. On average, Chile was responsible for the lowest price per liter while France was responsible for the highest price per liter.

Figure 1 depicts the increase over the past twenty-five years of Japanese wine imports, by source, in both value and volume. In 1994, France was the leading supplier of wine (by volume) to Japan and accounted for 47% (30,852,885 liters) of Japanese imports. U.S. wine accounted for 8% (5,413,685 liters) of Japanese wine imports in 1994, and Chile accounted for 0.3% (8,570,945 liters) of Japanese wine imports. In 2018, Chile was the leading supplier of wine (by volume) to Japan and accounted for 31% (51,415,532 liters) of Japanese imports. U.S. wine accounted for 4% (7,174,766 liters) of Japanese imports in 2018, and France accounted for 25% (42,221,975 liters) of Japanese wine imports in 2018 (Global Trade Atlas, 2019). During this time, the surge in imports by value and volume during 1998 is linked to a boom in red wine demand after a series of studies linking the health benefits of red wine consumption (Rod & Beal, 2014; Sumio & Negishi, 2019). Specific to US wine, Japan is the fourth largest importer as of 2018 (Foreign Agriculture Service, 2018). Figure 2 depicts the top 12 destinations for US wine exports in 2018.

By analyzing the seven countries and ROW figures from the dataset, determining top suppliers to Japan is possible. Figure 3 shows the percentage breakdown of wine imported, by volume, in Japan by supplying country in 1994 and 2018, respectively. Between 1994 and 2018, the leading supplier of Japanese wine imports, by volume, changed from France to Chile. Even though France fell from the top supplier in 2018, there was a 37% increase in the quantity of wine exported to Japan between 1994 and 2018. However, Chile saw a significant increase, almost 29000%, in quantity of wine exported to Japan from 1994 to 2018. U.S. wine exported to Japan has increased in volume over the past 25 years by 33%.

Japanese wine imports may not be fully responsive to changes in external factors in the short-run. Instead, an impactful shift would be noticed over a longer timeframe as a result of habit formation and persistence as well as shifts in exporting supply (Pollak, 1970). Trade negotiations between exporting countries and Japan do not occur immediately, nor do the implementations. To account for these dynamics, the generalized dynamic Rotterdam model will be used to estimate Japanese wine demand and consumption (Bushehri, 2003). This study will present a generalization of the absolute price version of the Rotterdam model that includes dynamic effects through habit formation and the derivation of long-run elasticities for Japanese wine consumption. The particular model was analyzed through a search of literature, including (Muhammad, Leister, McPhail, & Chen, 2014) and (Muhammad, 2011) and was determined to best fit this study.

Let *q* and *p* represent the quantity and price of wine[1], respectively, *h* represents a measure of dynamic behavior, *i* and *j* represent product origin (given these terms), *k* represents the number of lags used in the model to account for seasonality in the data, *n* represent the number of trading countries studied, *t* represents time, and *x* represent total expenditures on wine imports where $x = \sum_{i=1}^{n} p_i q_i$. The Rotterdam model used in this study is as follows:

$$\overline{w}_{1t}\Delta q_{1t} = C_1 + C_{11}\Delta q_{(1t-1)} + C_{12}\Delta q_{2t-1} + C_{13}\Delta q_{3t-1} + \cdots + C_{18}\Delta q_{8t-1} + A_1\Delta Q_t + B_{11}\Delta p_{1t} + B_{12}\Delta p_{2t} + B_{13}\Delta p_{3t} + \cdots + B_{18}\Delta p_{8t} + \mu_{1t}$$

$$\overline{w}_{2t}\Delta q_{2t} = C_2 + C_{21}\Delta q_{(1t-1)} + C_{22}\Delta q_{2t-1} + C_{23}\Delta q_{3t-1} + \cdots + C_{28}\Delta q_{8t-1} + A_2\Delta Q_t + B_{12}\Delta p_{1t} + B_{22}\Delta p_{2t} + B_{23}\Delta p_{3t} + \cdots + B_{28}\Delta p_{8t} + \mu_{2t}$$

$$\overline{w}_{3t}\Delta q_{3t} = C_3 + C_{31}\Delta q_{(1t-1)} + C_{32}\Delta \mathrm{q}_{2t-1} + C_{33}\Delta q_{3t-1} + \cdots + C_{38}\Delta q_{8t-1} + A_3\Delta Q_t + B_{31}\Delta p_{1t} + B_{23}\Delta p_{2t} + B_{33}\Delta \mathrm{p}_{3t} + \cdots + B_{38}\Delta p_{8t} + \mu_{3t}$$

$$\vdots$$

[1] The quantity and price of wine are defined according to a six-digit harmonized system (HS) classification of 2204.21. This classification includes wine of fresh grapes in containers holding two liters or less.

$$\overline{w}_{8t}\Delta q_{8t} = C_8 + C_{81}\Delta q_{(1t-1)} + C_{82}\Delta q_{2t-1} + C_{83}\Delta q_{3t-1} + \cdots + C_{88}\Delta q_{8t-1} + A_8\Delta Q_t + B_{18}\Delta p_{1t} + B_{28}\Delta p_{2t} + B_{38}\Delta p_{3t} + \cdots + B_{88}\Delta p_{8t} + \mu_{8t} \quad (1)$$

A, B, and C are parameters that are estimated in the model. The Δ is the log change operator where $\Delta q_{it} = \log q_{it} - \log q_{it-12}$ and $\Delta p_{it} = \log p_{it} - \log p_{it-12}$. Also note that ΔQ_t is the Divisia index which is a measure of real aggregate expenditures, where $\Delta Q_t = \sum_{i=1}^{8} \overline{w}_{it}\Delta q_{it}$. In this study, $\overline{w}_{it}$ is the import share for exporting country *i*, where $w_{it} = \frac{spending\ wine\ from\ country\ i\ at\ time\ t}{spending\ wine\ from\ all\ countries\ at\ time\ t} = \frac{p_{it}q_{it}}{p_{1t}q_{1t} + p_{2t}q_{2t} + p_{3t}q_{3t} + \cdots + p_{8t}q_{8t}}$, and $w_{it} = 0.5(w_{it} + w_{it-12})$, which is the average over two periods. Equation 1 accounts for seasonality in the dataset over a twelve-period lag, as monthly data is used in this study.

The following are demand theory restrictions for adding-up (2), homogeneity (3), symmetry (4), and negativity (5), respectively:

$$\sum_i A_i = 1,\ \sum_i B_{ij} = 0 \quad (2)$$

$$\sum_j B_{ij} = 0 \quad (3)$$

$$B_{ij} = B_{ji} \quad (4)$$

$$B_{ji} \leq 0 \text{ for all i} = 1, 2, \ldots, \text{n}. \quad (5)$$

The focus of the model section, at this point for the project, is on elasticities that are calculated using parameter estimates. It is important to note that in the short-run, lag terms do not apply. The following are short-run elasticities including expenditure (6), compensated (Hicksian) (7), and uncompensated (Marshallian) (8), respectively:

$$\eta_i = \frac{A_i}{\overline{w}_i} \quad (6)$$

$$\eta_{ij}^c = \frac{B_{ij}}{\overline{w}_j} \quad (7)$$

$$\eta_{ij} = \eta_{ij}^c - \eta_i\overline{w}_j \quad (8)$$

In the long-run, lag terms do apply to elasticities calculated. The following are long-run elasticities including expenditure (9), compensated (Hicksian) (10), and uncompensated (Marshallian) (11), respectively:

$$\eta_i = \frac{A_i}{\bar{w}_i - C_{ii}} \quad (9)$$

$$\eta_{ij}^c = \frac{B_{ij}}{\bar{w}_i - C_{ii}} \quad (10)$$

$$\eta_{ij} = \frac{B_{ij}}{\bar{w}_i - C_{ii}} - \frac{A_i}{\bar{w}_i - C_{ii}} \bar{w}_j \quad (11)$$

Expenditure elasticities are conditional on expenditures for imported wine and indicate the percentage change in quantities demanded from each of the supplying countries that would result from a 1% increase in wine import expenditures (Seale, Sparks, & Buxton, 1992). Compensated own-price elasticities represent the percentage change in quantities demanded resulting from a 1% change in price, holding real expenditures on imported wine constant (Seale et al., 1992). Uncompensated price elasticities are calculated by holding real income constant, and reflect both substitution and income effects as a result of price changes (Seale et al., 1992).

Equation (1) will be used to report demand estimates for Japanese wine imports. Using past consumption patterns and behavior, equation (1) can be used to estimate the effects of Japanese wine demand habits on current consumption**.** Equation (9), equation (10), and equation (11) estimate changes in quantity demanded based on a change in wine import expenditures, change in price, and change in price holding real income constant, respectively. Using the model estimates or elasticities, the impacts of the Japan-EU EPA, the Japan-Chile EPA, and the United States-Japan Trade Agreement on Japanese wine demand by source will be estimated (Kasten & Brester, 1996).

The model and projections are programmed using SAS software packages as well as Microsoft Excel. In SAS, the necessary variables are created from the dataset so that the model can run. The PROC MODEL statement is used in SAS as the procedure is able to analyze models in which the relationships among the variables form a system of one or more nonlinear equations. This is particularly important in this project, as there are eight equations to be estimated ("SAS user's guide : basics," 1985). The FIT statement is used in non-linear regression to determine unknown parameters; the FIT statement is in response to the statement PROC MODEL ("SAS user's guide : basics," 1985). In the initial model, the eight equation is dropped. The missing values are found using the ESTIMATE statement in SAS. To check for accuracy, another model is tested, dropping the seventh equation and using ESTIMATE to find the missing variables. When comparing the outputs of the two models, parameter estimates are the same. Elasticities are also found by using the ESTIMATE statement followed by the necessary equation.

Results:

The estimates for each coefficient from the model are shown in table 4 and table 5. Because there are eight countries, including rest of world, to be estimated, there are many coefficients to be estimated. However, the law of symmetry allows for repeated coefficient values to be omitted from the table. In tables 4 and 5, the following denotes statistical significance: * is ≤ 0.01, **≤ 0.05, and *** is ≤ 0.10. Table 4 shows the conditional demand estimates for Japanese wine imports by source. In table 4, the real expenditure estimates for each country, A_i, including rest of world, are positive and have statistically significant P-values at the ≤ 0.01 level. Real expenditure estimates indicate how a dollar increase in wine expenditure was allocated across the eight countries, including rest of world. As table 4 shows, France has the largest portion of the real expenditure share.

Of the cross-price estimates in table 4, four are statistically significant at the ≤ 0.01 level, six at the $\leq$ 0.05 level, and three at the ≤ 0.10 level. All significant cross-price relationships were positive and therefore seen as competitive (substitutes). The own-price estimates for all eight countries, including rest of world, were negative and statistically significant at the $\leq$ 0.01 level which is consistent with economic theory. The own-price effect was largest for France, meaning that the change the price of wine from France will decrease quantity demanded. Chile also faces a large, negative own-price estimate.

Table 5 shows the dynamic adjustment estimates from the model. The constant term, c_i, and the impact of a lag on present imports, c_{ij}, include ten estimates that are statistically significant at the $\leq$ 0.01 level, twelve estimates at the $\leq$ 0.05 level, and three estimates at the $\leq$ 0.10 level; this is out of a total of seventy-two estimates. Own lag terms that are statistically significant and positive, Australia, France, and rest of world, show habit formation. Simply, repeated consumption of imported wine increases preferences for that product resulting in even greater consumption in the future, ceteris peribus.

Table 6 depicts the own-price elasticities for Japanese wine demand by source during the short-run and the long-run. Of the forty-two elasticities calculated in both the short-run and long-run, all are statically significant at the $\leq$ 0.01 level. Own-price values are all negative, as expected. Germany has the highest expenditure elasticity in both the short-run and long-run, meaning that for a 1% increase in the import share for German wine imports, there will be a 2.236 increase in real expenditure on German wine, in the short-run. The US has a relatively small expenditure elasticity in both the short-run and long-run. For a 1% increase in the import share for US wine imports, there will be a 0.680 increase in real expenditure on US wine, in the short-run. In the short-run, only Germany has elastic demand for wine supplied to Japan for all the elasticities calculated in the model. The demand for French wine is expenditure elastic. The demand for Australian wine is compensated and uncompensated own-price elastic. In the long-run, demand for Australian and German wine is elastic for all elasticities calculated in the model. The demand for French wine is expenditure elastic. In the instances where demand is elastic, a change in price will impact the quantity demanded by Japan.

Conclusion:

This study provided an application of the Rotterdam model on estimating demand for Japanese wine imports by source. The overall objective was to simulate the impacts of existing and new trade agreements on Japanese wine imports from model estimates and elasticities., The dynamic Rotterdam model performed well in this study with estimates and elasticities performing as they are expected under economic theory. Results provided further insight and information on the Japanese consumer and their demands for wine imports by supplier. For wine from France, consumers are highly responsive to changes in price. The zero tariff that is now in effectuation for countries in the EU will aid in no additional cost of French wine supplied to Japan. Chilean wine, which has the lowest average price per liter and is responsive to a change in own-price, will also benefit from tariff elimination. However, U.S. wine, which has a higher average price per liter, will see potential setbacks with the ad valorem tariff as many suppliers' products are seen as substitutes in the eyes of Japanese consumers.

Table 1 Summary of Variables

Variable	Definition	Mean	Std Deviation
Q_0	Quantity of World Wine	11,626,429.93	4,225,772.73
Q_1	Quantity of Wine from Australia	464,114.86	210,558.52
Q_2	Quantity of Wine from Chile	1,753,050.18	1,615,929.61
Q_3	Quantity of Wine from France	4,294,143.36	2,144,589.62
Q_4	Quantity of Wine from Italy	2,193,419.87	833,986.00
Q_5	Quantity of Wine from Spain	961,593.43	641,363.02
Q_6	Quantity of Wine from US	808,431.33	324,770.45
Q_7	Quantity of Wine for Germany	592,463.58	445,919.80
Q_8	Quantity of Wine from ROW	559,213.32	293,983.99
X_0	Value of World Wine	64,856,324.13	26,659,104.38
X_1	Value of Wine from Australia	2,076,339.97	961,736.13
X_2	Value of Wine from Chile	5,434,191.71	4,715,933.87
X_3	Value of Wine from France	34,012,229.20	18,835,872.38
X_4	Value of Wine from Italy	9,784,526.19	4,016,181.28
X_5	Value of Wine from Spain	2,961,363.70	1,758,649.59
X_6	Value of Wine from US	5,287,427.70	2,648,624.29
X_7	Value of Wine from Germany	2,448,917.31	1,449,402.95
X_8	Value of Wine from ROW	2,851,328.34	1,376,210.18
P_1	Price of Wine from Australia	4.49	0.65
P_2	Price of Wine from Chile	3.26	0.35
P_3	Price of Wine from France	7.91	1.58
P_4	Price of Wine from Italy	4.41	0.81
P_5	Price of Wine from Spain	3.27	0.60
P_6	Price of Wine from US	7.08	4.33
P_7	Price of Wine from Germany	4.76	1.19
P_8	Price of Wine from ROW	5.13	0.93

Note: Japanese foreign wine import prices are defined according to HS 2204.21: *wine of fresh grapes (other than sparkling wine), containers not over 2 liters.* ROW is rest of world. Value and Price are in USD.

Table 2 Japanese foreign wine imports and exporter market share: 1994-2018

Year	Volume (liters)	Value ($US)	Australi a	Chile	France	German y	Italy	Spain	US	ROW
			Market Share %							
1994	66.2	273.5	2.2	0.2	59.4	18.2	8.0	2.6	5.6	3.9
1995	74.7	339.4	1.8	0.4	58.9	16.8	10.1	2.3	6.1	3.7
1996	74.0	381.5	2.1	1.6	52.7	15.1	16.0	2.8	6.1	3.6
1997	101.4	504.9	1.9	3.5	56.5	10.9	14.5	2.6	5.7	4.4
1998	243.5	1,099.4	1.8	8.2	54.3	5.7	15.4	3.1	6.5	4.9
1999	126.1	669.4	2.5	3.6	56.7	7.8	13.3	3.0	9.4	3.7
2000	124.5	617.9	2.9	4.6	57.9	5.8	13.5	2.8	8.8	3.7
2001	131.6	612.7	2.3	4.9	58.3	4.8	15.3	2.7	8.1	3.5
2002	130.5	628.0	2.5	4.1	59.4	4.5	15.9	2.8	7.5	3.2
2003	124.0	694.3	3.0	3.7	60.0	4.0	15.9	3.2	7.1	3.2
2004	127.0	779.8	3.9	3.4	62.6	3.5	13.6	3.1	6.4	3.5
2005	119.0	744.9	4.8	3.5	61.1	3.5	13.9	3.5	6.4	3.4
2006	120.2	789.4	3.6	3.5	61.8	3.3	13.8	3.4	6.9	3.5
2007	119.9	844.4	4.2	4.2	60.7	2.4	14.3	3.8	7.1	3.2
2008	119.7	890.9	4.1	5.2	58.4	2.4	15.0	4.2	6.9	3.8
2009	128.5	773.4	4.3	7.2	54.8	2.3	14.9	5.2	6.7	4.4
2010	134.3	778.6	4.6	8.7	51.3	2.3	15.0	5.3	7.8	5.2
2011	145.1	884.7	4.0	8.7	51.5	2.2	16.0	5.6	7.5	4.6
2012	182.0	1,046.2	3.7	9.8	49.7	1.9	15.7	6.6	7.7	5.0
2013	181.0	1,055.8	3.1	11.0	47.6	1.8	16.3	6.7	8.6	4.8
2014	181.7	1,059.9	2.9	12.9	45.3	1.6	16.7	6.6	7.7	5.3
2015	186.4	949.1	2.9	16.1	43.2	1.5	15.7	5.8	9.5	5.1
2016	173.2	921.7	3.1	15.8	42.7	1.4	15.6	5.6	10.4	5.4
2017	180.0	978.6	3.0	16.2	42.2	1.4	15.7	5.7	10.6	5.2
2018	167.1	978.4	2.9	15.1	42.1	1.5	15.6	5.5	11.8	5.5
Average	**138.5**	**771.9**	**3.1**	**7.0**	**54.0**	**5.1**	**14.6**	**4.2**	**7.7**	**4.2**

Note: Japanese foreign wine import prices are defined according to HS 2204.21: *wine of fresh grapes (other than sparkling wine), containers not over 2 liters.* ROW is rest of world.
Source: Global Trade Atlas®, HIS Markit Inc

Table 3 Japanese foreign wine import prices by source: 1994-2018

Year	Australia	Chile	France	Germany	Italy	Spain	US	ROW
	Price ($U.S./Liter)							
1994	3.73	3.19	5.26	3.15	2.98	2.83	2.84	4.20
1995	3.98	2.96	5.80	3.83	3.17	2.85	3.02	4.09
1996	4.91	3.12	6.94	4.01	4.24	4.11	3.45	4.16
1997	5.10	3.19	6.55	3.81	3.83	3.55	3.85	3.93
1998	4.42	3.26	5.77	3.66	3.72	3.22	3.91	3.32
1999	4.52	3.79	7.07	3.57	3.92	3.40	4.79	4.14
2000	4.07	3.33	6.87	3.15	3.31	3.45	4.33	4.37
2001	3.92	3.31	6.14	3.05	3.19	3.11	4.39	4.34
2002	3.82	3.33	6.12	3.28	3.60	2.85	4.61	4.25
2003	4.17	3.42	7.45	4.11	4.32	3.24	4.07	4.90
2004	4.52	3.39	8.23	4.79	4.65	3.35	4.07	5.26
2005	4.30	3.44	8.47	5.08	4.75	3.50	4.44	5.71
2006	4.58	3.49	8.84	5.24	4.79	3.66	4.89	6.32
2007	4.92	3.35	9.74	5.72	5.31	3.75	6.03	5.89
2008	4.94	3.47	10.41	6.30	5.83	4.17	7.96	5.63
2009	4.00	3.21	8.71	6.00	4.87	3.22	6.41	5.10
2010	4.78	3.16	8.47	6.04	4.67	2.95	6.94	5.17
2011	5.50	3.17	9.02	5.52	4.99	3.10	7.12	5.94
2012	5.38	3.24	8.65	5.44	4.73	2.76	7.59	5.70
2013	4.79	3.19	8.86	5.85	5.17	3.01	7.83	5.59
2014	4.54	3.13	9.06	5.86	5.20	3.28	9.55	5.42
2015	4.00	2.97	7.96	4.97	4.30	2.68	9.74	5.43
2016	4.09	2.88	8.61	4.79	4.47	2.65	14.53	5.60
2017	4.10	2.86	9.07	5.34	4.56	2.77	15.07	5.82
2018	4.17	2.87	9.75	6.00	5.05	3.05	16.14	5.94
Average	**4.45**	**3.23**	**7.91**	**4.74**	**4.38**	**3.22**	**6.70**	**5.05**

Note: Japanese foreign wine import prices are defined according to HS 2204.21: *wine of fresh grapes (other than sparkling wine), containers not over 2 liters.* ROW is rest of world.
Source: Global Trade Atlas®, HIS Markit Inc.

Table 4. Conditional Demand Estimates for Japanese Wine Imports by Source

	Price Coefficients B_{ij}								
Country	Australia	Chile	France	Italy	Spain	US	Germany	ROW	A_i
Australia	-0.04398 (0.00443) ***	0.00253 (0.00457)	0.01167 (0.00594)	0.01073 (0.00492)**	0.00251 (0.00278)	0.00854 (0.00278)***	0.00391 (0.00239)	0.00409 (0.00304)	0.02278 (0.00455)***
Chile		-0.07081 (0.0116)***	0.03900 (0.0120)***	-0.00707 (0.00807)	0.01242 (0.00418)***	0.01326 (0.00572)**	0.00119 (0.00493)	0.00951 (0.00433)**	0.09404 (0.0112)***
France			-0.10285 (0.0215)***	0.01542 (0.0117)	0.00354 (0.00573)	0.01741 (0.00775)**	0.00531 (0.00654)	0.01053 (0.00554)*	0.57666 (0.0161)***
Italy				-0.06084 (0.0115)***	0.01408 (0.00445)***	0.01120 (0.00520)**	0.00863 (0.00536)	0.00787 (0.00461)*	0.14124 (0.00927)***
Spain					-0.04588 (0.00352)***	0.00152 (0.00260)	0.00517 (0.00294)*	0.00664 (0.00268)**	0.14124 (0.00434)***
US						-0.05791 (0.00535)***	0.00256 (0.00535	0.00342 (0.0259)	0.05792 (0.00822)***
Germany							-0.02679 (0.00490)***	0.00002 (0.00314)	0.03581 (0.00507)***
ROW								-0.04207 (0.00407)***	0.03067 (0.00422)***
Equation R^2	0.38	0.53	0.94	0.78	0.59	0.53	0.34	0.72	

Note: Asymptotic standard errors are in parenthesis. Homogeneity and symmetry are imposed.
***, **, * Significance level = 0.01, 0.05, and 0.10 respectively.

Table 5. Dynamic Adjustment Estimates

Country	Lag Coefficients C_{ij} (one-period lag effects)								
	Constant C_i*	Australia	Chile	France	Italy	Spain	US	Germany	ROW
Australia	-0.0011 (0.00077)	0.004594 (0.00182)**	0.000678 (0.00115)	-0.01188 (0.00446)***	0.000323 (0.00364)	0.00195 (0.00203)	0.002755 (0.00219)	-0.00617 (0.00246)**	0.00665 (0.00539)
Chile	0.00274 (0.00187)	0.00077 (0.00448)	0.003384 (0.00284)	0.001351 (0.0110)	0.003508 (0.00897)	-0.00046 (0.00499)**	-0.00046 (0.00536)	0.008942 (0.00606)	0.09404 (0.0112)***
France	-0.00422 (0.00267)	-0.00373 (0.00642)	-0.01125 (0.00404)***	0.042273 (0.0158)***	-0.01926 (0.0128)	0.01741 (0.00775)**	-0.00011 (0.000714)	-0.01446 (0.00766)*	-0.500971 (0.00770)**
Italy	0.000943 (0.00156)	-0.00487 (0.00373)	-0.010759 (0.03)***	-0.01879 (0.0914)**	0.010896 (0.00747)	-0.00045 (0.00415)	0.0006316 (0.00447)	0.000103 (0.00504)	0.002762 (0.00449)
Spain	0.001975 (0.001)***	0.00005 (0.00174)	-0.00019 (0.00110)	-0.01124 (0.004)***	0.004565 (0.00349)	-0.0038 (0.00195)*	0.002306 (0.209)	0.005085 (0.002)**	0.00842 (0.00211)
US	0.00281 (0.00140)**	-0.00153 (0.00333)	0.001194 (0.00210)	-0.00029 (0.00818)	0.00095 (0.00667)	-0.00136 (0.00371)	0.004967 (0.00400)	0.014364 (0.00450)**	-0.00663 (0.00400)*
Germany	-0.00332 (0.00853)***	0.002536 (0.00203)	-0.00602 (0.00128)***	-0.01069 (0.0050**	-0.00084 (0.00407)	0.002383 (0.00226)	-0.00129 (0.00244)	-0.00009 (0.00274)	0.003444) (0.00507)
ROW	0.000175 (0.00710)	0.002185 (0.00169)	0.001435 (0.00107)	0.009266 (0.0042)**	-0.00015 (0.0039)	0.001848 (0.00199)	-0.00014 (0.00204)	0.000004 (0.0228)	0.004534 (0.00205)**

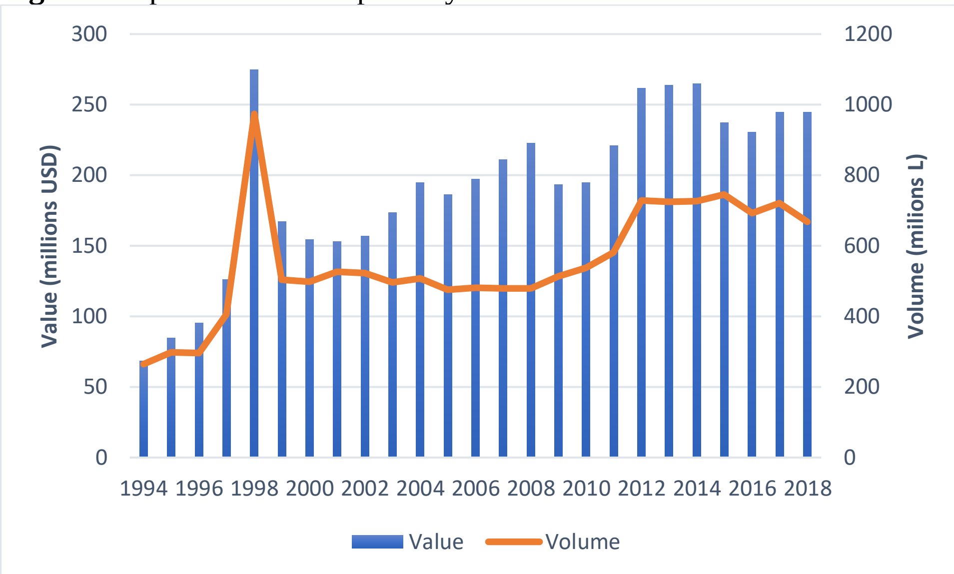
Note: Asymptotic standard errors are in parenthesis. Homogeneity and symmetry are imposed.
***, **, * Significance level = 0.01, 0.05, and 0.10 respectively. ROW is rest of world.

Table 6. Conditional demand estimates for Japanese wine imports

	Short-Run Elasticities			Long-Run Elasticities		
	Expenditure	Hicksian Own-Price	Marshallian Own-Price	Expenditure	Hicksian Own-Price	Marshallian Own-Price
Australia	0.978	-1.889	-1.912	1.219	-2.353	-2.382
Chile	0.643	-0.484	-0.578	0.658	-0.496	-0.592
France	1.375	-0.245	-0.822	1.529	-0.273	-0.914
Germany	2.236	-1.673	-1.709	2.224	-1.664	-1.699
Italy	0.750	-0.323	-0.464	0.795	-0.343	-0.492
ROW	0.559	-0.767	-0.798	0.610	-0.837	-0.870
Spain	0.614	-0.688	-0.729	0.580	-0.651	-0.690
US	0.680	-0.680	-0.738	0.722	-0.722	-0.783

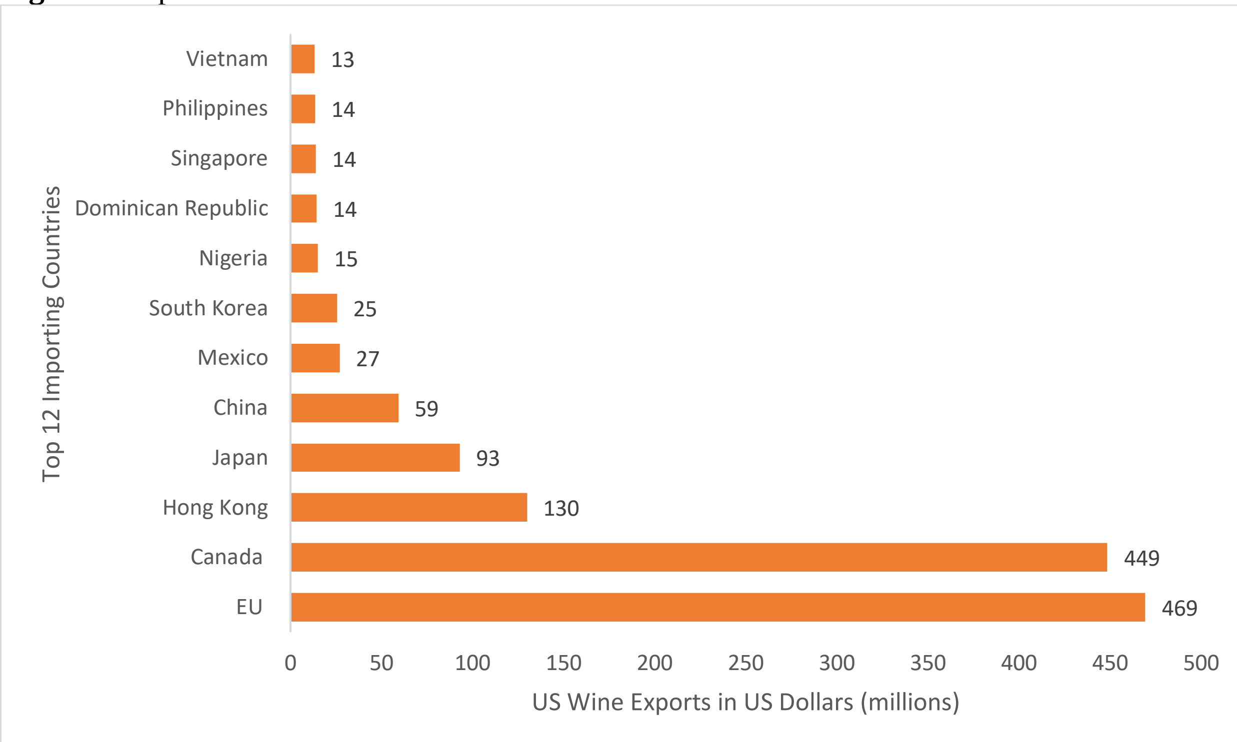
Note: All estimates are significant at the 0.01 level. ROW is rest of world.

Figure 1 Japanese Wine Imports by Value and Volume



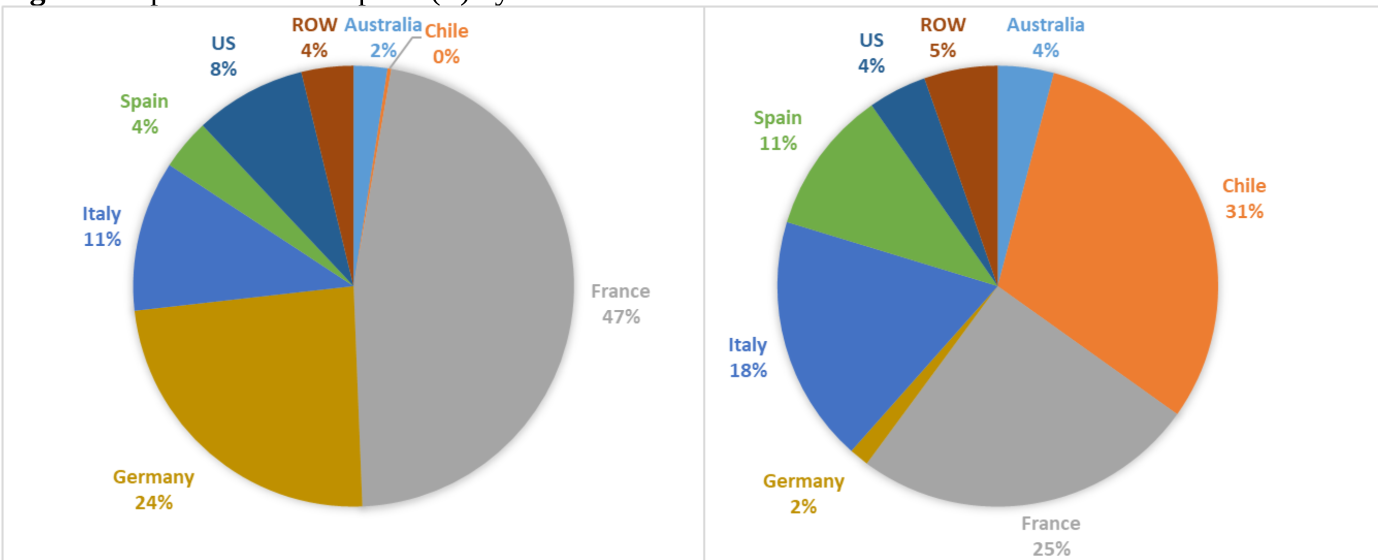
Source: Global Trade Atlas. (2019). Japan Wine Imports Retrieved from: https://my.ihs.com/Connect?callingUrl=https%3a%2f%2fconnect.ihs.com%2f

Figure 2 Top destinations for US wine in 2018.



Source: World Wine Production by Country (2017). Retrieved from: https://www.wineinstitute.org/files/World_Consumption_by_Country_2017_Update.pdf

Figure 3 Japanese Wine Imports (L) by Source in 1994 and 2018



Source: Global Trade Atlas. (2019). Japan Wine Imports Retrieved from: https://my.ihs.com/Connect?callingUrl=https%3a%2f%2fconnect.ihs.com%2f

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