On estimation of Armington elasticities for Japan’s meat imports

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Abstract
By fully taking the distinct tariff regimes levied on imported meat into account, we estimate substitution elasticities of Japan’s two-stage import aggregation functions for beef, chicken and pork. While the regression analysis crucially depends on the price the consumers face, post-tariff price of imported meat depends not only on ad-valorem duties but also on tariff rate quotas and gate price system regimes. The effective rate of tariff is consequently evaluated by utilizing monthly transactions data. In remediating the potential endogeneity problems, we apply exchange rates which we believe to be independent of the demand shocks for imported meat. The panel nature of the data allows to retrieve the first-stage aggregates via time dummy variables, free of demand shocks, to be used as part of the explanatory variable and as an instrument in the second-stage regression.

Keywords: Two-stage CES aggregation, Armington elasticity, Instrumental variables, Exchange rates, Tariff rate quotas, Gate price system

1. Introduction
This study focuses on estimating Japan’s elasticity of substitution among commodities from different countries (or Armington elasticity) for three different kinds of meat, i.e., beef, chicken and pork. Our interest is led by the fact that Japan has been the world’s largest meat importer. The importance of Armington elasticities in quantitative analysis of various trade policy have been well documented (Hillberry and Hummels, 2013; Bajzik et al., 2020). We are aware that welfare implications of any trade policy cannot be properly evaluated without a finely tuned model equipping reliable elasticity parameters. Conversely, reliable estimates of elasticity parameters cannot be obtained unless we are able to properly incorporate the myriads of trade regimes that be. For Japan’s part, meat imports are subject to TRQ (tariff rate quota) regime that allows a lower rate for under-quota imports. Pork imports are particularly subject to GPS (gate price system) regime that discourages imports with prices lower than the gate price.

The main concern of the previous related studies have been the difficulty of identifying demand and supply parameters. The potential simultaneity of demand and supply equations brings about endogeneity problems in an attempt to estimate elasticity of substitution of imports (i.e., the demand side), by way of a single demand-side equation. A method established by Feenstra (1994) and its extensions by Broda and Weinstein (2006); Soderbery (2015); Feenstra et al. (2018) focus on the combined quadratic equation that delivers consistent estimators under the orthogonality assumption between the demand and supply shocks, in a panel data setting. Feenstra’s method is a convenient work-around when one cannot find a relevant instrument for the endogenous variable (i.e., post-tariff price). An orthodox approach to remediate the bias is to find and

*Note: Replication Data for this study is available at Nakano and Nishimura (2022).
apply an instrument that supposed to be independent of the demand shocks. In this regard Fajgelbaum et al. (2019) use tariff rates, while Erkel-Rousse and Mirza (2002) use exchange rates.

For our purpose of the study, we are compelled to evaluate the applied tariff rates as accurately as possible, by taking the modifications of TRQ regimes and schedule changes of the thresholds governing the GPS, fully into account. Tariff duty under TRQ depends on in- and out-quota rates of duty and on the cumulative volume of registered imports that judges which rate of the two applies to each incident of imports. In order to detect the timing of cumulative volume exceeding the annually scheduled quotas, we utilize monthly data of import incidents in all cases. As regards GPS, tariffs are levied so as to keep the post-tariff price at a constant level, for all import incidents with pre-tax prices lower than the gate price. From another perspective, the applied tariff duties under TRQ and GPS are dependent on volumes and pre-tax prices of import incidents, and hence, they must be correlated with import demand and so with the import demand shocks. We must therefore rule tariffs out from the instrument option.

Consequently, we utilize exchange rates for instrumenting the endogenous explanatory variable, i.e., the post-tariff price, of the first-stage regression, under the notion that the exchange rates and meat import demand shocks are independent. Our instrument turns out to be sufficiently relevant in all cases. The first-stage regression is based on a multi-input CES function where the elasticity of substitution (microelasticity) can be estimated by way of fixed effects estimation based on our country-wise import observations in time series. Also, by using time-dummy variables we are able to retrieve the first-stage aggregates from the dummy coefficients and the microelasticity. Since the estimate of the first-stage aggregates do not contain the demand shocks, we are able to apply them as an instrument to remediate the endogeneity in the second-stage regression, where the error term may contain the first-stage demand shocks. In this way the second-stage elasticity of substitution (macroelasticity) is estimated.

The remainder of this paper proceeds as follows. In the following section, we introduce the two-stage CES aggregation model, deriving two (first- and second-stage) regression equations for estimating the microelasticity and the macroelasticity. While microelasticity and first-stage aggregates are estimated by the first-stage regression, the second-stage regression utilizes the first-stage aggregates and estimates the macroelasticity. In Section 3, we present how we prepare data for the above mentioned regression analyses. All applied tariff rates are calculated according to the tariff scheme applied for meat imports to Japan, which we summarize in an Appendix. Our main results are presented in Section 4 where we show the final estimates of microelasticities and macroelasticities for beef, chicken, and pork. Section 5 concludes the paper.

2. Model

2.1. Two-stage CES aggregation

Consider, for some kind of commodity \( m \) (index supressed), a two-stage Armington aggregator of the following type:

\[
\begin{align*}
    u &= \left( \beta \frac{1}{\sigma} z \frac{\sigma - 1}{\rho} + (1 - \beta) \frac{1}{\sigma} y \frac{\sigma - 1}{\rho} \right)^{\frac{\sigma - 1}{\rho - 1}} \\
    y &= \left( \sum_{i=1}^{N} \left( \alpha_i \right) \frac{1}{\rho} \left( x_i \right) \frac{\sigma - 1}{\rho} \right)^{\frac{\sigma - 1}{\rho - 1}}
\end{align*}
\]

where \( x_i \) denotes the quantity (of commodity \( m \)) imported from country \( i \), \( y \) denotes the utility of aggregated imports, \( z \) denotes the quantity produced and consumed in the home country, and \( u \) denotes the representative utility in the home country. For the parameters, \( \sigma \) denotes the elasticity of substitution among imports from different countries (or microelasticity), \( \rho \) denotes the elasticity of substitution between domestic and
aggregate imports (or macroelasticity), and $\alpha_i \geq 0$ and $\beta \geq 0$ are the preference parameters with $\sum_{i=1}^{N} \alpha_i = 1$ and $\beta \leq 1$. The first function (on the right) is called the first-stage aggregator, and the second (on the left) is called the second-stage aggregator.

The dual function of this two-stage Armington aggregator can be written as follows:

$$v = \left( \beta r^{1-\rho} + (1-\beta)q^{1-\rho} \right) \frac{1}{1-\rho}$$
$$q = \left( \sum_{i=1}^{N} \alpha_i (p_i)^{1-\sigma} \right)^{1-\sigma}$$

(1)

where $p_i$ denotes the (tariff included) import commodity price from country $i$ in the home country. Note that the price of the commodity from the $i$th country $p_i$ (JPY/kg) in terms of Japan’s currency unit, domestic price $r$ (JPY/kg), import physical quantity $x_i$ (kg), and domestic physical quantity $z$ (kg) are all observable, but the aggregated values, namely, $y$ (utility), $q$ (JPY/utility), $u$ (utility) and $v$ (JPY/utility), are not. As per duality, however, we know that the following identities must hold.

$$vu = rz + qy$$
$$qy = \sum_{i=1}^{N} p_{it} x_{it}$$

2.2. First-stage estimation

Applying Shephard’s lemma for the first-stage aggregator (1) gives the following:

$$s_i = \frac{p_{it} x_{it}}{q_{yt}} = \frac{\partial q}{\partial p_{it}} = \alpha_i \left( \frac{p_{it}}{q} \right)^{1-\sigma}$$

Here, $s_i$ denotes the value share of imports of the commodity from the $i$th country. As we label observations by $t = 1, \cdots, J$, we have the following regression equation:

$$\ln s_{it} = \ln \frac{p_{it} x_{it}}{\sum_{i=1}^{N} p_{it} x_{it}} = -(1-\sigma) \ln q_t + (1-\sigma) \ln p_{it} + \ln \alpha_i + \epsilon_{it}$$

(2)

where the error terms $\epsilon_{it}$ are assumed to be iid normally distributed with mean zero. The regression equation (2) can be estimated (for $\sigma$ and $q_t$ from $p_{it}$ and $s_{it}$) by fixed effects (FE) panel regression. That is, the first-stage aggregates $q_t$, in terms of indices, are indirectly measured by the coefficients on time dummy variables through the FE panel regression. Let us rewrite regression equation (2) using time dummy variables ($D_\tau = 1$ if $t = \tau$ and $D_\tau = 0$ otherwise), as follows:

$$S_{it} = (\mu_1 - \mu_J)D_1 + \cdots + (\mu_{J-1} - \mu_J)D_{J-1} + \mu_J + \gamma P_{it} + \ln \alpha_i + \epsilon_{it}$$

(3)

where $S_{it} = \ln s_{it}$, $P_{it} = \ln p_{it}$, and the coefficients therefore denote that

$$\mu_t = -\gamma \ln q_t$$
$$\gamma = 1 - \sigma$$

The first-stage aggregates $q_t$ can be resolved, in terms of index standardized at $t = J$, as follows:

$$q_t = e^{-(\mu_t - \mu_J)/\gamma}$$

(4)

The first-stage regression (3) suffers from endogeneity problem because the demand shock $\epsilon_{it}$ enters the explanatory variable $P_{it}$ via the potential supply function connecting $S_{it}$ (the demand for meat from country
to \( \mathcal{F}_a \) (FOB (free on board) price of meat from country \( i \)), where \( \mathcal{F}_a \) is a component of \( P_a \), such that

\[
P_a = C_a + T_a = (\mathcal{F}_a + E_a + \Delta_a) + T_a
\]  

(5)

where \( C \) denotes CIF (cost, insurance and freight) price in JPY (Japanese Yen), \( T \) denotes tariff rate, and \( E \) denotes exchange rate, all in log terms, and \( \Delta = C - (\mathcal{F} + E) \) denotes the CIF/FOB discrepancy. To obtain a consistent estimation for (3), we apply exchange rate \( E_a \) as an instrumental variable onto the endogenous explanatory variable \( P_a \). Because we believe that demand shocks \( \epsilon_i \) for meat from country \( i \) and the exchange rates \( E_a \) against the currency of country \( i \) are independent, our instrument \( E_a \) must be exogenous. Moreover, because \( E_a \) is a component of \( P_a \), our instrument \( E_a \) must be relevant, i.e., strongly correlated with our explanatory variable \( P_a \).

2.3. Second-stage estimation

Application of Shephard’s lemma for the second-stage aggregator of (1) gives the following:

\[
\frac{r}{v} \frac{\partial v}{\partial r} = \beta \left( \frac{r}{v} \right)^{1-\rho} \quad \frac{q}{v} \frac{\partial q}{\partial q} = \frac{qy}{vu} = (1 - \beta) \left( \frac{q}{v} \right)^{1-\rho}
\]

By combining the above two identities, and labelling observations by \( t = 1, \ldots, J \), we have the following simple regression equation:

\[
\ln \left( \frac{r_t z_t}{\sum_{i=1}^{N} p_i x_i} \right) = \ln \left( \frac{\beta}{1 - \beta} \right) + (1 - \rho) \ln \left( \frac{r_t}{q_t} \right) + \nu_t
\]

(6)

where \( \nu_t \) denotes the demand shocks that include the demand shocks for foreign meat \( \epsilon_i \) and those for domestic meat \( \delta_t \). The explanatory variable \( \ln(r_t/q_t) \), however, must be correlated with \( \nu_t \), because of the reverse cause of the response variable into the explanatory variable via the possible supply function.

Thus, the second-stage regression (6) also suffers from an endogeneity problem. To obtain a consistent estimation we apply \( Q_t = \ln \hat{q}_t \) onto the endogenous explanatory variable \( (R_t - Q_t) \) of regression (6) which can be rewritten as follows:

\[
H_t = \phi + \eta (R_t - Q_t) + \nu_t
\]

(7)

where \( \eta = 1 - \rho \), \( R_t = \ln r_t \), and so on. We can suppose that \( Q_t = \ln \hat{q}_t \) is exogenous because \( \hat{q}_t \) does not contain the (estimate of) demand shocks \( \hat{\epsilon}_a \) and \( \hat{\delta}_a \) neither, both of which constitute \( \nu_t \). Moreover, because \( Q_t \) is a component of the explanatory variable, our instrument \( Q_t \) must be relevant against our explanatory variable \( (R_t - Q_t) \).

3. Data compilation

3.1. First-stage estimation

We draw our main data, i.e., monthly import values and quantities from Jan 1996 to Dec 2020 for all 78 items whose HS codes are specified in Table 8 from the Commodity by Country link of Trade Statistics.

1. Note that \( C, T, \) and \( E \) are observable, while \( \mathcal{F} \) and \( \Delta \) are not.

2. On the other hand, effective tariff rate \( T_a \) will not be exogenous because \( T_a \) will depend on quantity demanded \( x_a \) (which inevitably be correlated with the demand shock \( \epsilon_a \)) under the tariff regime of import quotas and gate price system.
Let $v^g_t$ and $x^g_t$ respectively denote JPY value and kg quantity of item $g = 1, \cdots, G$ imported from country $i = 1, \cdots, N$ at time $t = 1, \cdots, T$, where $N = 86$, $G = 78$, and $T = 300$. Also let $G_m$ denote the set of item ids of meat kind $m$ where $m = 1$ stands for Beef, $m = 2$ for Pork, and $m = 3$ for Chicken. Specifically, $G_1 = \{1, \cdots, 16\}$, $G_2 = \{28, \cdots, 48\}$, and $G_3 = \{68, \cdots, 74\}$ as regards to Table 8. We prepare data for regression analysis by calculating the following:

$$
\begin{align*}
    v_t &= \sum_{g \in G_m} v^g_t \\
    x_t &= \sum_{g \in G_m} x^g_t \\
    c_t &= \frac{v_t}{x_t}
\end{align*}
$$

for three kinds of meat ($m = 1, 2, 3$). Here, $c_t$ denotes CIF price (for one kind of meat) where $\ln c_t = C_t$ mentioned in (5). Also, note that $s_t = e^{v_t}$ is calculated by using $p_t = e^{p_t}$ from (5) and $x_t$ given above, according to its definition in (7).

Effective tariff rates $T_{it}$ are evaluated according to Japan’s tariff scheme summarized in Appendix. We obtain tariff schedules applied to each item ($g$) with respect to each regime classification, from Chapter 2 (Meat and edible meat offal) and Chapter 16 (Preparation of meat etc.) links of Tariff Schedule 2022. The above source however only provides tariff schedules from Apr 2007 on and after, and so we refer to the version in Japanese where covers schedules from Jan 2003 on and after. For earlier schedules beyond 2002, we refer to the hardcopy version of Customs Tariff Schedules of Japan (by Japan Tariff Association). We assign proper tariff schedule to each partner country in each period $t$, according to the tariff regime classifications available from WTO 2020 (by selecting Japan in the Reporter window and 02 and 16 in the Products window). The tariff quota schemes (i.e., quota eligible items and annual in-quota quantities) in regard to each bilateral FTA are comprehended by the information obtained from MAFF 2020. The monthly in-quota tariff duty for each item ($g$) from each FTA country ($i$) is evaluated in regard to the monthly cumulative kg quantity of items specified in Table 8. Finally, note that historical JPY/LCC exchange rates $e^{E_{it}}$ are drawn from fxtop 2022.

### 3.2. Second-stage estimation

Yearly domestic production data (in tons) from 1996 to 2020 are drawn from e-Stat 2022 Statistical Survey on Livestock (Chikusanbutsu Ryutsu Chosa) for Beef and Pork. Similar data for Chicken are drawn from e-Stat 2022 Survey on Broiler Slaughterhouses (Shokuchu Shorijo Chosa). Yearly domestic price data (in JPY/weight) from 1996 to 2020 are drawn from e-Stat 2022 Central Wholesale Meat Market Prices (Shokuniku Chuo Oroshiuri Shijo Kakaku) for Beef and Pork, and similar data for Chicken are drawn from BOJ 2020 Corporate Goods Price Index (2015 base)/Producer Price Index/Chicken/1995-2020 (item index PR01/PRCG15_2202050011).

The above mentioned data sources all provide annual statistics, so our macroelasticity estimation (7) must be performed on 25 (1996-2020) observations. Let us hereafter denote annual periods by $k = 1, \cdots, 25$. The acquired prices and quantities of domestic commodities can then be written as $r_k$ and $z_k$, respectively. Below, we rewrite the second-stage regression (7) on annual observations:

$$
H_k = \phi + \eta(R_k - Q_k) + v_k
$$

where $R_k = \ln r_k$. Let $J(k)$ denote a set of monthly periods ($i$) within year $k$. We can then aggregate our monthly variables into annual ones in a following manner:

$$
\hat{q}_k = \frac{\sum_{t \in J(k)} w_t}{\sum_{t \in J(k)} w_t / q_t} \\
\hat{h}_k = \frac{r_k z_k}{\sum_{i=1}^{N} w_{ik}}
$$
where we define $w_t = \sum_{i=1}^{N} p_{it} x_{it}$, and $w_{ik} = \sum_{t \in J(k)} p_{it} x_{it}$. In this way our variables $H_k = \ln h_k$ and $Q_k = \ln \hat{q}_k$ for the second-stage regression (5) are prepared.

4. Results

4.1. First-stage estimation for Beef and Chicken

After all the process of data preparation described above, we perform panel regression analysis based on (3) to estimate microelasticities, and to obtain first-stage aggregates via (4). The results for Beef are presented in Table 1 (for microelasticity) and Figure 1 left (for first-stage aggregates), and those for Chicken are presented in Table 2 (for microelasticity) and Figure 1 right (for first-stage aggregates). We apply heteroskedasticity and autocorrelation consistent estimator based on Bartlett’s kernel with bandwidth set equal to $6 \approx 4(J/100)^{2/9} + 1$, in all first-stage estimations. Moreover, for sake of credibility, we drop panels that have less than or equal to 9 observations out of the 300 possible time periods spanned in 25 years.

Let us briefly review the diagnostics regarding the two-stage least squares (2SLS) fixed effects instrumental variables (FE (IV)) estimation. The first two tests are concerned with whether the instruments (say, $E$) are relevant predictors of the endogenous explanatory variable (say, $P$). The corresponding statistic for Underidentification test is used to assess the null hypothesis that the minimal canonical correlations between $P$ and $E$ are zero. The relevance of instruments is further examined by Weak identification test. The rule of thumb for rejection of the null hypothesis that $E$ is only weakly correlated with $P$ is for the corresponding statistic to exceed 10. The third test (Overidentification restriction) is concerned with the exogeneity of the (multiple) instruments. The corresponding statistic examines the null hypothesis that the instruments are uncorrelated with the residuals given that at least one of the instruments is exogenous.

The fourth test (Endogeneity) is concerned with the endogeneity of the regressor in the fixed effects setting. A rejection of the null hypothesis indicates that the instrumental variables estimator should be employed over the least squares estimator, in terms of the efficiency of inference. For both (Beef and Chicken) cases, based on the Endogeneity test results, FE(IV) is chosen for further inferences on the estimates of microelasticity and first-stage aggregates, via Delta Method. Final microelasticities estimation results are presented in the Delta Method column of Tables 1 and 2. Figure 1 depicts the levels of the first-stage aggregates as indices with corresponding standard errors.

4.2. Second-stage estimation for Beef and Chicken

In regard to the time-series nature of the regression equation (2), we first examine the stationarity of all variables. The ADF unit root test results on all variables ($H_k$ and $(R_k - Q_k)$) in levels and differences (not shown for brevity) suggest that the variables are stationary in first differences for both cases (Beef and Chicken). We also conduct Engle-Granger cointegration test; the results (not shown for brevity) suggest that the null hypothesis of no cointegration would not be rejected for the case of Beef, while the converse would stand for the case of Chicken. We therefore estimate macroelasticities by the first differences of variables for the case of Beef, while by the levels of variables for the case of Chicken. The results are presented in Tables 3 and 4 for Beef and Chicken, respectively. For both cases, the first-stage aggregator and its log are applied as instrumental variables onto the corresponding explanatory variable. Note also that we were able to make a proper assessment on the macro-share parameter $\beta$ for the case of Chicken in Table 4.

4.3. First- and Second-stage estimations for Pork

Let us first examine the CIF price ($c_{it}$) we compiled by way of (8) for Pork, which is depicted in Figure 2 left. From this figure we clearly see that the CIF price of Pork is affected by the gate price in the
Table 1: First-stage estimation for Beef

|                | FE (LS) | FE (IV) | Delta Method |
|----------------|---------|---------|--------------|
|                | coef.   | s.e.    | coef.        | s.e.    | estim. | s.e. |
| lnpr           | −1.251  | 0.236   | −3.247       | 0.857   | σ      | 4.247 | 0.857 |
| obs.           | 2.501   | 2.406   |              |         |        |      |

— Tests for 2SLS FE (IV) estimation —

|                         | lnjpylcc | lnyjpylcc |
|-------------------------|----------|-----------|
| Underidentification    | Kleibergen-Paap rk LM statistic | 23.582 | (0.000) |
| Weak identification     | Kleibergen-Paap rk Wald F statistic | 13.839 |
| Overidentifying restriction | Hansen J statistic | 1.209 | (0.272) |
| Endogeneity             | statistic | 6.754 | (0.009) |

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: Delta method estimates are based on FE (IV) according to the endogeneity test result.
Note 3: All standard errors are robust for heteroskedasticity and autocorrelation.
Note 4: Applied instruments: 1) log of exchange rates and 2) log of annual cumulated exchange rates.

Table 2: First-stage estimation for Chicken

|                | FE (LS) | FE (IV) | Delta Method |
|----------------|---------|---------|--------------|
|                | coef.   | s.e.    | coef.        | s.e.    | estim. | s.e. |
| lnpr           | −0.589  | 0.488   | −3.021       | 0.749   | σ      | 4.021 | 0.749 |
| obs.           | 2.834   | 2.834   |              |         |        |      |

— Tests for 2SLS FE (IV) estimation —

|                         | jpylcc | yjpylcc |
|-------------------------|--------|--------|
| Underidentification    | Kleibergen-Paap rk LM statistic | 25.294 | (0.000) |
| Weak identification     | Kleibergen-Paap rk Wald F statistic | 19.34 |
| Overidentifying restriction | Hansen J statistic | 0.002 | (0.964) |
| Endogeneity             | statistic | 8.566 | (0.003) |

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: Delta method estimates are based on FE (IV) according to the endogeneity test result.
Note 3: All standard errors are robust for heteroskedasticity and autocorrelation.
Note 4: Applied instruments: 1) exchange rates and 2) annual cumulated exchange rates.

timeline, as depicted in Figure 6. Notice that most of Pork imports are priced very near to the gate price where tax payment is minimized. It is therefore considered that the importers combine expensive meat with inexpensive one within the container, so that the meat price (of the container) nears the gate price. We then looked closely into the data compiled as $c_{it}$ and found that 4730 (98.5%) observations were under 0.8 KJPY/kg; and among the remaining 74 (1.5%) observations that were over 0.8 KJPY/kg, 72% came from Italy and Spain.

We therefore opt to split the observations into two classes and conduct first-stage estimation separately. For convenience let us hereafter denote the set of observations whose CIF prices are under 0.8 KJPY/kg by Pork(1), and its complementary set (that are more expensive than 0.8 KJPY/kg) by Pork(2). The results
Figure 1: Point estimates of the first-stage aggregates $\hat{q}_t$ (in solid line) and their corresponding standard errors (in gray line) for Beef (left) and Chicken (right). According to (4), the levels are standardized at the last period $t = J = 300 = Dec 2020$.

Table 3: Second-stage estimation for Beef

|                  | LS | IV | Delta Method |
|------------------|----|----|--------------|
|                  | coef. | s.e. | coef. | s.e. | estim. | s.e. |
| $d \cdot \ln rq$ | $-0.142$ | $0.372$ | $-0.009$ | $0.524$ | $\rho$ | $1.142$ | $0.372$ |

obs. 24 24
— Tests for 2SLS IV estimation — $d \cdot \ln pfi$ $d \cdot pfi$

|                  |                     |
|------------------|---------------------|
| Underidentification | Kleibergen-Paap rk LM statistic | 5.448 | (0.066) |
| Weak identification | Kleibergen-Paap rk Wald F statistic | 56.309 |
| Overidentifying restriction | Hansen J statistic | 1.782 | (0.182) |
| Endogeneity restriction | statistic | 0.292 | (0.589) |

Note 1 The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2 Delta method estimates are based on LS according to the endogeneity test result.
Note 3 All standard errors are robust for heteroskedasticity.
Note 4 Applied instruments: first differences of 1) log of first-stage aggregates and 2) first-stage aggregates.

for estimating microelasticity for Pork(1) based on (3) is presented in Table 5. The corresponding point estimates of the first-stage aggregates are depicted in Figure 2 right with standard errors. Note that a large elasticity is consistent with the small variation of CIF prices of Pork(1).

As for the case of Pork(2), however, we could not find our instruments relevant. We then focus on the feedback channel via the potential supply function from $S$ of (3) into $F$ of (5), which causes the endogeneity problem by letting the error term $\varepsilon$ enter the explanatory variable $P$. If such channel is to be effective, $E$ must also enter $F$ in which event $E$ and $F + \Delta = C - E$ become correlated. In such perspective, we regress $E$ on $C - E$ by fixed effects, only to find out that there were no valid interactions between these two
Figure 2: Left: Scatterplot of CIF price ($c_{it}$) compiled by way of (8) for Pork. Right: Point estimates of the first-stage aggregates $\hat{q}_t$ (in solid line) and their corresponding standard errors (in gray line) for Pork(1).

Table 4: Second-stage estimation for Chicken

|                | LS            | IV            |
|----------------|---------------|---------------|
|                | coef. | s.e.    | coef. | s.e.    | estim. | s.e.    |
| lnrq           | -0.109 | 0.239   | -0.091 | 0.201   | 1.109  | 0.239   |
| const.         | 0.367  | 0.035   | 0.367  | 0.034   | 0.591  | 0.008   |

Tests for 2SLS IV estimation —1npfi pfi
- Underidentification: Kleibergen-Paap rk LM statistic 9.303 (0.010)
- Weak identification: Kleibergen-Paap rk Wald F statistic 67.533
- Overidentifying restriction: Hansen J statistic 0.005 (0.942)
- Endogeneity: statistic 0.015 (0.902)

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: Delta method estimates are based on LS according to the endogeneity test result.
Note 3: All standard errors are robust for heteroskedasticity.
Note 4: Applied instruments: 1) log of first-stage aggregates and 2) first-stage aggregates.

variables, and therefore, no channel for endogeneity. We hence applied FE (LS) to obtain the estimates of the microelasticity for the case of Pork(2) as shown in Table 6. Note however that we could not retrieve the estimates of the first-stage aggregates due to lack of observations in the rage of the timeline.

As regards the second-stage estimation using the first-stage aggregates obtained from Pork(1), we could not find our instruments relevant. So, we investigated on the possible feedback channel from $H$ of (9) into $R$, which causes the endogeneity problem by letting the error term $\nu$ enter the explanatory variable $(R - Q)$. If such channel is to be effective, $Q$ must also enter $R$ in which event $Q$ and $R$ become correlated. In such per-
Table 5: First-stage estimation for Pork(1)

|                | FE (LS)     | FE (IV)     | Delta Method |
|----------------|-------------|-------------|--------------|
|                | coef. s.e.  | coef. s.e.  | estim. s.e.  |
| lnpr           | −9.568 0.777 | −27.533 6.287 | σ 28.533 6.287 |
| obs.           | 4,730 4,718 |             |              |
| Tests for 2SLS FE (IV) estimation — | lnjpylcc jpylcc |
| Underidentification | Kleibergen-Paap rk LM statistic | 24.324 (0.000) |
| Weak identification | Kleibergen-Paap rk Wald F statistic | 14.993 |
| Overidentifying restriction | Hansen J statistic | 1.492 (0.222) |
| Endogeneity     | statistic   | 13.094 (0.000) |

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: Delta method estimates are based on FE (IV) according to the endogeneity test result.
Note 3: All standard errors are robust for heteroskedasticity and autocorrelation.
Note 4: Applied instruments: 1) exchange rates and 2) log of exchange rates.

Table 6: First-stage estimation for Pork(2)

|                | FE (LS)     | FE (IV)     | Delta Method |
|----------------|-------------|-------------|--------------|
|                | coef. s.e.  | coef. s.e.  | estim. s.e.  |
| lnpr           | −0.849 0.227 | σ 1.849 0.227 |
| obs.           | 74          |             |              |
| Test FE regression — | Dependent variable: lnce |
| lnjpylcc       | 0.456 0.269  | (0.118)  |
| cons           | 8.367 0.168  | (0.000)  |

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: All standard errors are robust for heteroskedasticity.

Perspective, we regress \( Q \) on \( R \) by the first differences, and found that there were some undeniable interactions between these two variables. Thus, we have to say that the estimate of macroelasticity for Pork(1) based on LS, as presented in Table 7, could be biased, and yet we have no remedy for that endogeneity problem. With that being told, we note that this inference is based on heteroskedasticity-robust standard errors. To the contrary, plain standard error of the slope (i.e., 0.527), which gives the p-value of 0.068, suggests the converse. In that respect, we may not have to worry too much about the bias of the point estimate.

5. Final Remarks

As regards the measurement of microelasticity, IV estimators were employed for Beef, Chicken, and Pork(1), whereas we were not able to use the IV estimator for Pork(2) because our IV in this case was not sufficiently relevant. As for macroelasticity, IV estimation was possible for Beef and Chicken, although LS
Table 7: Second-stage estimation for Pork(1)

|                | LS |        |         | IV |        |         | Delta Method |        |         |
|----------------|----|--------|---------|----|--------|---------|--------------|--------|---------|
|                | coef. | s.e.   |         |    | coef.  | s.e.    |             |        |         |
| d.lnrq         | 0.503 | 0.217  |         |    |        |         |             |        |         |
| obs.           | 24   |        |         |    |        |         |             |        |         |
|                | Test regression | Dependent variable: d.lnpdi |        |    |        |         |             |        |         |
|                | coef. | s.e.   |         |    |        |         | estim.       | s.e.   |         |
| d.lnpfi        | 1.013 | 0.397  |         |    |        |         | 0.497        | 0.217  |         |
| cons           | 0.013 | 0.020  |         |    |        |         |             |        |         |

Note 1: The numbers in parentheses for all tests are the p-values for rejecting the null hypotheses.
Note 2: All standard errors are robust for heteroskedasticity.

The estimator was employed for both cases owing to the endogeneity test results, whereas it was not possible for Pork(1) because our IV in this case was not sufficiently relevant. In all cases, we further investigated the data to see if there was a reverse cause from the response variable to the explanatory variable of the regression, by looking into the correlation between the two components of the explanatory variable where either one potentially had the feedback effect from the response variable. As the result and as we expected, such correlation was found in the first-stage regression for Beef, Chicken, and Pork(1), where the endogeneity test result was positive and where we hence employed the IV estimator, while such correlation was not found in the second-stage regression for Beef and Chicken, where the endogeneity test result was negative and where we hence employed the LS estimator. Since we did not find the above mentioned correlation in the remaining regressions (i.e., first-stage for Pork(2) and second-stage for Pork(1)), we allowed ourselves to estimate the elasticities without the concern of endogeneity for these cases.

Finally, let us compare the results with those of the previous studies. As regards microelasticity, recall that our point estimates were 4.25 (for Beef), 4.02 (for Chicken), 28.53 (for Pork(1)), and 1.85 (for Pork(2)). These figures can be comparable to 3.53 (for agriculture by Saito (2004)), 2.44 (for rice imports of EU by Huchet-Bourdon and Pishbahar (2009)), 3.42 (Feenstra et al. 2018), 4.01 (for beef by Sato (2019) via Feenstra’s method), 17.32 (for chicken), and 33.00 (for pork). The GTAP microelasticities (Hertel et al., 2007) are 7.70 (for bovine meat products) and 8.80 (for meat products etc.) which were derived by doubling the estimates of the macroelasticities, following the “rule of two.” We know that large microelasticity for pork is due to the GPS regime where the exporters have the strong incentive to set their price at the gate price regardless of the volume (Onji, 2014). As regards macroelasticity, recall that our point estimates were 1.14 (for Beef), 1.19 (for Chicken), and 0.50 (for Pork(1)). These figures are comparable to 1.68 (for meat packing plants and prepared meats by Reinert and Roland-Holst (1992)), 1.07 (for chickens by Kapuscinski and Ward (1999)), 1.89 (for other livestock), 0.24 (for agriculture by Saito (2004)), 0.82 (for beef import of Japan by Kawashima and Puspito Sari (2010)), 0.92 (for agriculture, forestry and fishing by Bajzik et al. (2020)), 1.78 (Feenstra et al., 2018), and 6.41 (for all meat by Sato (2019) via Feenstra’s method). By looking at our elasticity estimates of import aggregation under non-GPS regime in the end, it seems that “rule of four” is more appropriate.
Appendix. Summary of tariff scheme

Tariff duties for Beef and Chicken 1996–2020

Figure 3 left depicts the timeline of ad valorem tariff rate applied to all Beef items, HS codes of which are specified in Table 8 except for those that were imported from LDC and countries with EPA, with a solid line. A dashed line in the same figure corresponds to general rate of duty, which was applied to all Beef items during Aug 2003 – Mar 2004, and Aug 2017 – Mar 2018 (except for imports from Mexico, Chile, and Australia), due to safeguard activation. All Beef items imported from LDC have been subject to tariff exemption since JFY2007. The EPA against Mexico since JFY2007 allows 34.6% to be levied on items 2 and 16, and 30.8% on items 5–8, 10, 13–15, for below-quota imports. The EPA against Chile allowed 34.6% to be levied on items 10, 13–16 from JFY2007 to JFY2008, and 30.8% on the same items since JFY2009, for below-quota imports. The timeline of annual quota limits for Beef from Mexico and Chile are depicted in Figure 5 left, using solid lines with circles and triangles, respectively. The target items pertaining to quota limits against Mexico and Chile are specified in Table 8 with a tag B. As regards the EPA against Australia, tariff concession has been the dashed line for items 1, 2, 5–8, and the dash-dotted line for items 9, 10, 13–16, of Figure 3 (right). EPA against EU and CPTPP countries allowed tariff concessions as, respectively, the solid and dotted lines of Figure 3 (right). Trade agreement with the US in JFY2020 allowed 25.8% to be levied on all Beef items from the US.

As for Chicken items, HS codes of which are specified in Table 8, general tariff rate throughout the timeline have been 14% for items 68 and 69, 20% for items 70 and 73, 12% for items 70 and 73, and 10% for item 72. Tariff exemption has been granted on all Chicken items from LDC and GSP countries. Tariff exemption has also been granted on all Chicken items from Malaysia, Singapore, Indonesia, Brunei, Switzerland, Viet Nam, India, and Mongolia, since JFY2006, JFY2008, JFY2008, JFY2008, JFY2010, JFY2010, JFY2011, and JFY2017, respectively. Figure 4 left depicts the timeline of MFN tariff rates applied to item groups a) and b) with a solid line, c) with a dashed line, and d) with a dotted line, where we categorize the items into four groups i.e., a) 68 and 74, b) 69 and 71, c) 70 and 73, and d) 72. The same figure includes EPA tariff rate for Chicken items 69, 71, and 74 from Thailand since JFY2007 with a dot-dashed line. Since JFY2007, item 72 from Thailand has been subject to tariff exemption. ASEAN EPA since JFY2008, allowed MFN tariff rates to be applied to all Chicken items, except for item 72, which has been subject to tariff exemption. Figure 4 right depicts the timeline of EPA tariff rates against CPTPP and EU countries, since JFY2019. Circles (solid line), triangles (dashed line), and pluses (dotted line) correspond to EU (CPTPP) tariff rates applied to Chicken item groups a), b), and c), respectively. Since JFY2019, item 72 from CPTPP and EU countries has been subject to tariff exemption. Trade agreement with the US in JFY2020 allowed 8.6%, 6.1%, and 5.9% on Chicken items 69, 73, and 74, respectively, from the US. EPA with Australia, since JFY2014, allowed 10.7% on items 68, 69, and 71, 7.6% on item 70, tariff exemption on item 72, 6.8% on item 73, and 8.5% on item 74, for all below-quota imports. The EPA with Peru, since JFY2011, allowed 10.7% on items 68, 69, 7.6% on item 70, tariff exemption on item 72, 6.8% on item 73, and 8.5% (JFY2013 and after) and 10.7% (before JFY2013) on item 74, for all below-quota imports. The EPA with the Philippines, since JFY2008, allowed 8.5% on items 68, 69, 71, 74, and tariff exemption on item 72, for all below-quota imports. The EPA with Chile, since JFY2007, allowed 8.5% on item 74, and tariff exemption on item 72, for all below-quota imports. The EPA with Mexico, below-quota tariff rate for items 68, 69, 71 was 10.7% (from JFY2006 to JFY2011), and 7.1% (from JFY2012), whereas that of item 70 was 7.6% (from JFY2006 to JFY2011) and 5.1% (from JFY2012). As for item 73, the below-quota tariff rate was 7.6% (in JFY2006), 6.8% (from JFY2007 to JFY2011), and 5.1% (from JFY2012). As for item 74, the below-quota tariff rate was 10.7% (in JFY2006), 8.5% (from JFY2007 to JFY2011), and 7.1% (from JFY2012). The timeline of annual quota limits for Chicken from
Figure 3: Left: Tariff rates applied to Beef items from all countries except LDC and those with EPA (solid line). General rate of duty (dashed line). Right: EPA tariff rates for Australia (dashed and dash-dotted lines), CPTPP (dotted line), and EU (solid line).

Figure 4: Left: Tariff rates applied to Chicken items imported from MFN and ASEAN (since JFY2008) countries. Solid line corresponds to item groups a) and b). Dashed line corresponds to item group c). Dotted line corresponds to item group d). The dot-dashed line corresponds to item groups a) and b) from Thailand since JFY2007. Right: Tariff rates applied to Chicken items from CPTPP and EU countries. Solid line and circles correspond to item group a) from CPTPP and EU countries, respectively. Dashed line and triangles correspond to item group b) from CPTPP and EU countries, respectively. Dotted line and pluses correspond to item group c) from CPTPP and EU countries, respectively.

Mexico, Chile, Peru, the Philippines, and Australia, are depicted in Figure 5 left, using dotted lines with circles, triangles, pluses, crosses, and diamonds, respectively. The target items pertaining to quota limits with these five countries are specified in Table 8 with a tag C.
Figure 5: Circles, triangles, pluses, crosses, and diamonds indicate Mexico (MEX), Chile (CHI), Peru (PER), The Philippines (PHI), and Australia (AUS), respectively. Solid, dashed, and dotted lines indicate Beef, Pork, and Chicken, respectively.

Figure 6: Gate price system for Japan’s pork imports. Left: A unit tax ($D$) is applied if import price ($c$) is below the threshold price ($B$). Less duty will be levied if $c$ is between $B$ and the gate price ($G$) so that the after tax price ($p$) is leveled at the floor price ($F = D + B$). If $c$ exceeds $G$, the greater of $rc$ and $F – c$ will be levied. The figure depicts the baseline case where $(1 + r)G = F$. Right: Solid, dashed, and dotted lines represent levels of $G$, $F$, and $D$, respectively, in timeline.

Tariff duties for Pork 1996–2020

Tariff duty applied to pork imports of Japan has been subject to the gate price system (GPS), which we explain by Figure 6. GPS is a type of variable levy whereby the tariff duty depends on import prices (of CIF). For each of Pork items shown in Table 8, a per unit tax of $D$ applies, if import price $c$ is below the threshold price $B$. If $c$ is above $B$ and below the gate price $G$, the levy is the difference between...
the floor price $F$ and $c$. If $c$ is above $G$, the greater of the ad valorem tax of rate $r$ and the difference between $F$ and $c$, is applied. We suppose hereafter that the boundary values ($G, B, F, D$) of GPS are those of non-carcass Pork items (ids 30–36, 39–38) in JPY per kilogram. For carcass Pork items (ids 28–29, 37–38), these boundary values are reduced to 3/4, due to their meat content. The boundary values $G, F,$ and $D$, during the observation period (Jan 1996 – Dec 2020), have changed, as depicted in Figure 6. Note that the peaks observed during Jun 1996 – Mar 1997 and Aug 2001 – Mar 2005 were due to activation of safeguards. The baseline ad valorem tax rates ($r$) for all Pork items have been 4.9% (JFY1995), 4.8% (JFY1996), 6.4% (due to activation of safeguards Jul 1996 – Mar 1997), 4.7% (JFY1997), 4.5% (JFY1998), 4.4% (JFY1999), and 4.3% after JFY2000.

Japan’s Pork imports have been subject to quota limits on account of bilateral EPAs with Mexico, Chile, Peru, and Australia. The target items pertaining to quota limits with these four countries are specified in Table 8 with a tag P. Reduced ad valorem tax rates and boundary values are applied for all Pork items until the total volume of the target items exceeds the annual quota limit (which is shown in Figure 5). Specifically, the sub-quota tax rates and boundary values are reduced to $r = 2.2\%$, $F = 535.35$, $G = 524$, $D = 482$, against Mexico, Chile, Peru and Australia, while the baseline tax rates and boundary values have been $r = 4.3\%$, $F = 546.35$, $G = 524$, $D = 482$ since JFY2000. Besides the four EPA countries, Japan joined CPTPP and entered the FTA with EU in JFY2019 whereby allowing reduced ad valorem rates ($r = 1.9\%$ for CPTPP and $r = 2.0\%$ for EU countries) and boundary values ($F = 524 \times 1.017$, $G = 524$, $D = 125$). The same boundary values and more reduced tax rate ($r = 1.7\%$) have been applied to the items from CPTPP and EU countries and from the US (via Japan-US Trade Agreement) in JFY2020.

Table 8: Target items subject to import quotas.

| id  | HS code    | meat      | note1 | note2 | MEX | CHI | PER | PHI | AUS |
|-----|------------|-----------|-------|-------|-----|-----|-----|-----|-----|
| 1   | 0201.10-000| Beef      | fresh | carcass |     |     |     |     |     |
| 2   | 0201.20-000| Beef      | fresh | bonein | B   |     |     |     |     |
| 3   | 0201.20-010| Beef      | fresh | bonein |     |     |     |     |     |
| 4   | 0201.20-090| Beef      | fresh | bonein |     |     |     |     |     |
| 5   | 0201.30-010| Beef      | fresh | boneless | B |     |     |     |     |
| 6   | 0201.30-020| Beef      | fresh | boneless | B |     |     |     |     |
| 7   | 0201.30-030| Beef      | fresh | boneless | B |     |     |     |     |
| 8   | 0201.30-090| Beef      | fresh | boneless | B |     |     |     |     |
| 9   | 0202.10-000| Beef      | freezed | carcass |     |     |     |     |     |
| 10  | 0202.20-000| Beef      | freezed | bonein | B | B   |     |     |     |
| 11  | 0202.20-010| Beef      | freezed | bonein |     |     |     |     |     |
| 12  | 0202.20-090| Beef      | freezed | bonein |     |     |     |     |     |
| 13  | 0202.30-010| Beef      | freezed | boneless | B | B   |     |     |     |
| 14  | 0202.30-020| Beef      | freezed | boneless | B | B   |     |     |     |
| 15  | 0202.30-030| Beef      | freezed | boneless | B | B   |     |     |     |
| 16  | 0202.30-090| Beef      | freezed | boneless | B | B   |     |     |     |
| 17  | 0206.10-010| Beef      |       |       |     |     |     |     |     |
| 18  | 0206.21-000| Beef      |       |       | B   |     |     |     |     |
| 19  | 0206.22-000| Beef      |       |       | B   |     |     |     |     |
| 20  | 0206.29-010| Beef      |       |       | B   |     |     |     |     |
| 21  | 0206.29-020| Beef      |       |       | B   |     |     |     |     |
| id | HS code   | meat | note1 | note2 | MEX¹ | CHI² | PER³ | PHI⁴ | AUS⁵ |
|----|-----------|------|-------|-------|------|------|------|------|------|
| 22 | 0206.29-090 |      |       |       |      |      |      |      |      |
| 23 | 1602.50-510 |      |       |       |      |      |      |      |      |
| 24 | 1602.50-520 |      |       |       |      |      |      |      |      |
| 25 | 1602.50-590 |      |       |       |      |      |      |      |      |
| 26 | 1602.50-600 |      |       |       |      |      |      |      |      |
| 27 | 1602.50-700 |      |       |       |      |      |      |      |      |
| 28 | 0203.11-030 | Pork | fresh | carcass | P |      |      |      |      |
| 29 | 0203.11-040 | Pork | fresh | carcass | P |      |      |      |      |
| 30 | 0203.12-021 | Pork | fresh | bonein | P |      |      |      |      |
| 31 | 0203.12-022 | Pork | fresh | bonein | P |      |      |      |      |
| 32 | 0203.12-025 | Pork | fresh | bonein | P |      |      |      |      |
| 33 | 0203.19-021 | Pork | fresh | boneless | P |      |      |      |      |
| 34 | 0203.19-022 | Pork | fresh | boneless | P |      |      |      |      |
| 35 | 0203.19-024 | Pork | fresh | boneless | P |      |      |      |      |
| 36 | 0203.19-025 | Pork | fresh | boneless | P |      |      |      |      |
| 37 | 0203.21-030 | Pork | freezer | carcass | P |      |      |      |      |
| 38 | 0203.21-040 | Pork | freezer | carcass | P |      |      |      |      |
| 39 | 0203.22-021 | Pork | freezer | bonein | P | P | P |      |      |
| 40 | 0203.22-022 | Pork | freezer | bonein | P | P | P |      |      |
| 41 | 0203.22-023 | Pork | freezer | bonein | P | P | P |      |      |
| 42 | 0203.22-024 | Pork | freezer | bonein | P | P | P |      |      |
| 43 | 0203.22-025 | Pork | freezer | boneless | P | P | P |      |      |
| 44 | 0203.29-021 | Pork | freezer | boneless | P | P | P |      |      |
| 45 | 0203.29-022 | Pork | freezer | boneless | P | P | P |      |      |
| 46 | 0203.29-023 | Pork | freezer | boneless | P | P | P |      |      |
| 47 | 0203.29-024 | Pork | freezer | boneless | P | P | P |      |      |
| 48 | 0203.29-025 | Pork | freezer | boneless | P | P | P |      |      |
| 49 | 0206.49-091 |      |       |       |      |      |      |      |      |
| 50 | 0206.49-092 |      |       |       |      |      |      |      |      |
| 51 | 0206.49-094 |      |       |       |      |      |      |      |      |
| 52 | 0206.49-099 |      |       |       |      |      |      |      |      |
| 53 | 0210.11-010 |      |       |       |      |      |      |      |      |
| 54 | 0210.11-020 |      |       |       |      |      |      |      |      |
| 55 | 0210.12-010 |      |       |       |      |      |      |      |      |
| 56 | 0210.12-020 |      |       |       |      |      |      |      |      |
| 57 | 0210.19-010 |      |       |       |      |      |      |      |      |
| 58 | 0210.19-020 |      |       |       |      |      |      |      |      |
| 59 | 1602.41-011 |      |       |       |      |      |      |      |      |
| 60 | 1602.41-019 |      |       |       |      |      |      |      |      |
| 61 | 1602.41-090 |      |       |       |      |      |      |      |      |
| 62 | 1602.42-011 |      |       |       |      |      |      |      |      |
| 63 | 1602.42-019 |      |       |       |      |      |      |      |      |
| 64 | 1602.42-090 |      |       |       |      |      |      |      |      |
| id | HS code  | meat | note1 | note2 | MEX | CHI | PER | PHI | AUS |
|----|----------|------|-------|-------|-----|-----|-----|-----|-----|
| 65 | 1602.49-210 |     | P     | P     |     |     |     |     | P   |
| 66 | 1602.49-220 |     | P     | P     |     |     |     |     | P   |
| 67 | 1602.49-290 |     | P     | P     |     |     |     |     | P   |
| 68 | 0207.11-000 | Chicken | gallus d. |     | C   | C   | C   | C   |     |
| 69 | 0207.12-000 | Chicken | gallus d. |     | C   | C   | C   | C   |     |
| 70 | 0207.13-100 | Chicken | gallus d. |     | C   | C   | C   |     |     |
| 71 | 0207.13-200 | Chicken | gallus d. |     | C   | C   | C   |     |     |
| 72 | 0207.14-100 | Chicken | gallus d. | liver |     |     |     |     |     |
| 73 | 0207.14-210 | Chicken | gallus d. |     | C   | C   | C   |     |     |
| 74 | 0207.14-220 | Chicken | gallus d. |     | C   | C   | C   | C   |     |
| 75 | 1602.31-210 |     | C     | C     |     |     |     |     |     |
| 76 | 1602.32-210 |     | C     | C     |     |     |     |     |     |
| 77 | 1602.32-290 |     | C     | C     |     |     |     |     |     |
| 78 | 1602.39-210 |     | C     | C     |     |     |     |     |     |

Note: B, P, and C indicate target items pertaining to Beef, Pork, and Chicken, respectively.
1. Items qualified for import quota with Mexico.
2. Items qualified for import quota with Chile.
3. Items qualified for import quota with Peru.
4. Items qualified for import quota with the Philippines.
5. Items qualified for import quota with Australia.

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