Fake but Original?

Japanese Food in Southeast Asian Countries[1]

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Abstract: This paper essentially tries to answer to two questions: whether restaurants using a national brand to capture customers actually use the named national ingredients for producing food, and ancillary, in cases when they do not use the original ingredients, what is the economic rationale behind this choice? In particular it tries to answer these questions by focusing on Japanese restaurants in three Southeast Asian countries. It does so by means of a theoretical model and a subsequent empirical investigation benefiting from interviews and survey data collected therewith through field research. Considering restaurants, their suppliers, and their customers, we highlight the existence of a double problem of incomplete information, existing both between suppliers and restaurants, and between restaurants and customers. Findings show that while a first reason for buying non-original ingredients may be connected with a desire to reduce costs, and this seems to be important for cheap

restaurants especially, the use is widespread in many Japanese restaurants of the three countries; it does not depend on the presence of a Japanese chef or owner; it does not depend even on the share of Japanese customers; by contrast it significantly depends on the reliability of the wholesale channel and the subsequent difficulty restaurants experience when buying original ingredients.

1. Introduction

In recent decades, Japanese food has become increasingly popular all around the world. Likewise Japanese food exports have steadily grown across the years. In 2014 they amounted to 611.7 billion yen after an increase of 11.1 % from the previous year. Just 12 months later, in 2015, this figure had risen 21.8% to 745.2 billion yen[2]. In 2013 *Washoku*, traditional Japanese cuisine designed to appeal at once to all five senses (and thus seriously concerned with the many characteristics of food and its ingredients), was added to UNESCO's Intangible Cultural Heritage list (Mekata, 2016).

However, it has been shown extensively that success in the food trade is based equally upon stringent control measures that assure consumer product safety and upon quality (Henson and Caswell, 1999; Fagotto, 2014; Charlier, 2017), especially in developing countries (Lamuka, 2014). This issue is particularly important in the Asian countries neighboring Japan, in which the popularity of Japanese food can clash with weaker food control and lower consumer income. This typically provides the grounds upon which restaurants may decide to acquire non-original Japanese ingredients to serve their customers.

The paper specifically addresses trade in non-original Japanese food and ingredients in a sample of three Southeast Asian countries – i.e. Vietnam, Thailand, and Indonesia – and it seeks to investigate the main determinants causing Japanese restaurants to use non-original ingredients, considering the twofold role of restaurants: upstream as buyers from wholesale suppliers and downstream as sellers to consumers. Making use of the field research, the extant economic literature, and a theoretical model, we sketch out a framework under which the use of non-original ingredients might happen. Then, by means of questionnaires and interviews of staff working at Japanese restaurants, the study tries to test the previous hypothesis and to understand in-vivo the reasons why non-original ingredients are, in certain circumstances, used,

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[2]   https://www.japantoday.com/category/business/view/japans-agricultural-fishery-and-food-exports-hit-record-high-in-2014   http://www.japantimes.co.jp/news/2016/02/02/business/economy-business/japanese-food-exports-hit-record-high-third-year-cheap-yen-popularity-washoku/#.WKxyVH9WLAA

despite the expectations of customers, and to identify the main economic reasons explaining this apparently widespread phenomenon.

It will thus be shown that the popularity of Japanese food, at least in Southeast Asia, is creating a paradox: while popularity boosts Japanese exports, it also fosters the activity of many suppliers of counterfeited or non-original ingredients; in turn, this phenomenon might hamper in the long run the perception of original Japanese products and quality, although in our sample consumers seem unable to distinguish original food from non-original. This situation is problematic because many restaurants essentially feel themselves de facto entitled to cheat customers in terms of food content, and this might have severe consequences on trust within the market.

Accordingly, Japanese authorities are considering how to solve this problem in order to promote export and use of original Japanese food and ingredients. Under these circumstances, from November 2013 to March 2015, we visited local Japanese restaurants, marketplaces, customs offices at borders, and authorities in Southeast Asia.[3]

On the whole, the paper provides at least a glimpse of the economic rationale underlying the enounced paradox. Findings show that a large share of restaurants do in fact rely upon non-original ingredients. Behind this evidence, there are many explanations. The first and simplest answer is economic: when the customer is unable to distinguish food's quality while simply looking for the proper flavor, and the restaurant is able to mimic the flavor at a lower price, it is rational to expect non-original ingredients.

Second, and more interesting for its policy implications, the use of non-original ingredients seems also to result from hurdles encountered by restaurants trying to acquire genuine Japanese ingredients. Interviewed restaurants were asked to list the problems that make it harder for them to import Japanese goods successfully. Among a number of complications listed, cumbersome import procedures and, most importantly, the risk of being tricked by importers with regard to the quality of goods leap out statistically as significant key factors. All these factors suggest that there is a problem faced by a restaurant when buying genuine imported Japanese goods, with an

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[3] This field research was done at retailers, wholesalers, and suppliers in Vietnam, Thailand, Malaysia, and Singapore in December 2013. Regarding border trade among Thailand, Myanmar, and Laos; between Singapore and Indonesia; and between Vietnam and China, research was conducted in February 2014. Survey data was then collected in Vietnam, Thailand, and Indonesia.

overall impact on the likelihood of that restaurant to use non-original ingredients. In particular, the analysis shows that two covariates turn out to be strongly significant: the expectation that most of the ingredients sold by the retailers and suppliers are non-original anyway, and, in the case of local ingredients produced by Japanese brands, that their production did not follow proper procedures.

On the whole, given the risk of being deceived by wholesalers and retailers of ingredients and given consumers' inability to distinguish the origin of the ingredients in terms of flavor (as further shown by the empirical analysis), plus a robust savings in terms of inputs' cost, restaurants' decision to use non-original goods may rationally serve as a double-sided solution to increase profits while maintaining better control of the quality of ingredients. The latter, of course, is the outcome of an adverse selection.

In the next pages we proceed as follows. In Section 2, we consider information from interviews about the origins of incomplete information in the trade of Japanese food and ingredients. We also present a model to explain how counterfeits are used in Japanese restaurants. In Section 3, we statistically analyze survey data in detail and show a difficulty in obtaining ingredients for Japanese restaurants. In Section 4, we comment on further extension of this work. Finally, in Section 5, we conclude our analysis.

2. Ingredient supply, the food chain, and incomplete information

The paper focuses on Japanese food served in restaurants using original or non-original (sometimes possibly counterfeited) ingredients. Now, there are two kinds of original Japanese food ingredients, differing in terms of the place of production. The majority are produced in Japan, but there is also local production run by Japanese companies. For example, a typical Japanese ingredient, soy sauce, is produced in several countries in Southeast Asia. For our investigation, the two kinds of ingredients are equally considered originals.

2.1 The tale of the two asymmetric information cases
The customer of a Japanese restaurant in general expects that the food produced uses one of the two kinds of original ingredients. By contrast, the restaurant may face the following situations: to buy an original product (whatever the production place), to

decide to buy an original ingredient and be cheated, or to buy a non-original ingredient. The production of non-original ingredients is widespread in Asia, and of course local production by Japanese companies has made know-how more accessible[4]. In general, prices will be higher for Japanese production and lower for non-original production.

Now, if we refer to the extant economic literature broadly focusing on the topic of counterfeiting, the following results emerge. Counterfeit (or non-original) products are classified into two categories, deceptive and non-deceptive (Grossman and Shapiro [1988])[5]. While both kinds of counterfeit products harm original producers, non-deceptive ones do not harm consumers. In the case of food, however, the issue is that either the restaurant is cheated by the supplier, or it intentionally buys non-original ingredients and in turn deceives the consumer who expects Japanese ingredients[6]. In this respect, regarding deception, food may fall into the class of goods affected by whatDarby and Karni (1973) termed "credence quality," which is difficult to judge, even after purchase. These considerations in turn affect the ability of customers to distinguish whether a product is authentic or not. This issue is soimportant to food products that a focal point of current scholarly debate is precisely the ability to provide information through labelling in order to reduce consumer's incomplete information of quality (Teisl & Roe, 1998; Golan, Kuchler et al., 2001; van der Colff et al., 2016; Stojanović, Dragutinović-Mitrović, and Zaouche-Laniau, 2017).

Using spatial price discrimination models with a uniform distribution of customers, Giannakas (2002) analyzed the effects of mislabeling due to insufficient regulation on economic welfareFulton and Giannakas (2004) developed a market model considering both consumers' and producers' behaviors in detail, describing the complicated incentives they face. Bonroy and Constantos (2008) developed the model of

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[4] Although outsourcing can be useful in many ways for production, it can present the negative effect of making the know-how available to develop competitive production locally (see on this Ramello, 2014).

[5] Higgins and Rubin (1986) considered the snob effect of brand-name products on counterfeiting. In food products, this effect is minor, and we need not take it into account.

[6] The issue of food safety might also be at stake here, and indeed it has been the subject of extensive scholarly discussion, resulting in additional private and public regulation (Fagotto, 2014; Charlier, 2017). However, as far as this investigation is concerned, we did not face any safety issues that can thus be here neglected.

Gabszewicz and Grilo (1992) and showed that high-quality producers may not have an incentive to introduce regulation by labels, so mandatory regulation may be necessary.

In a non-spatial model of price discrimination, Anania and Nisticò (2004) considered the effects of public enforcement upon cheating behaviors, which depend on suppliers' levels of risk aversion, and indicated an incentive for each producer for a level of regulation by labels. Vetter and Karantininis (2002) also considered how vertical integration or divestiture of a processed food firm is effective in coping with credence quality. In such research, costs of enforcement and monitoring by authorities are assumed to be covered by fines, and/or a food processor can obtain the public information freely. That is, the level of enforcement and monitoring can be exogenously determined and adjusted. However, for authorities in developing countries confronting many social problems, costs are critical and budgets limited, and they do not have a free hand as this type of model assumes.[7]

As far as our investigation is concerned, as previously described, there are two ways in which non-original ingredients can be used for cooking in Japanese restaurants. Through either, non-original ingredients are smuggled by the distribution system as originals. Hence both restaurant and consumer are deceived.[8] To be sure, the supply chains for ingredients in the three Asian countries can be very articulated. Accordingly, there is a great deal of opacity in the system. Using interviews with wholesalers, importers, retailers, and restaurants, we have tried to obtain a glimpse of this chain.

A first agent acting in the supply chain of Japanese food ingredients is the wholesale distributor. There are several methods for buying original ingredients. There are a few major players in Vietnam, Thailand, and Indonesia, periodically importing by cargo ship from Japan. It is assumed that in general they should not deal with counterfeit ingredients and they should accordingly be sufficiently trusted by

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[7] For example, in Vietnam, effective enforcement by authorities is financially supported by foreign companies producing original products. Without such support, authorities cannot enforce trade rules due to manpower and budget constraints. We heard about concrete measures undertaken with local authorities to combat counterfeits from several Japanese companies. See Koji Domon, Tran Dinh Lam and Simrit Kaur (2013).

[8] A typical case we saw in interviews concerning the three countries under observation involved ingredients using counterfeited brand names and packages, e.g. fake soy sauces, cooking sake, and MSG (Monosodium Glutamate).

restaurants. In most cases, the prices of such imported foods are much higher than the original prices in Japan. Therefore, prices are very high, even compared to the price levels of original ingredients locally produced by a Japanese brand. Often the high prices result from trade tariffs or cumbersome import procedures[9].

In addition, there are many small and medium-size wholesale suppliers selling imported, locally produced, original, or non-original food ingredients. Their targets are inexpensive restaurants thatordinary local people can afford. Since imported Japanese foods are very expensive, such restaurants, especially, try to save money on ingredients, as we heard in interviews with suppliers and restaurants. Beyond this deception, there are two stages in the supply chain where incomplete information -- and hence, potentially, deception -- can occur. One is between suppliers and restaurants, and the other is between restaurants and customers (asymmetric information 1). Suppliers may have correct information on whether food is counterfeit or not, but restaurants might find authenticity difficult to judge. In general, we would expect that when the staff and the ownership are Japanese, this kind of cheating should be more difficult, as personnel as a whole have familiarity with the original taste. [10]

However, even when the authenticity of ingredients can be reliably judged, owners might still be willing to buy non-original ingredients to save money. In this case a second asymmetric information problem may arise between restaurants and customers.

< Insert Figure 1: Supply chain and the double asymmetric information problem>

In this case we would expect two different attitudes, depending on the segment of the market served by the restaurants (see Figure 1). On one hand, we have fancy and expensive restaurants serving customers with willingness to pay higher prices, more education, and accordingly, in theory, more skill in detecting the authenticity of the food. Often such restaurants serve Japanese as well as local customers. In such a

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[9] The latter issue in particular was observed during the field research preceding the collection of survey data, and it has been widely lamented by the restaurants within the sample.

[10] According to some interviews, non-Japanese chefs and staff require training to make them aware of the proper taste, and this training must be renewed in order to avoid the resurgence of local taste.

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case one would expect more extensive use of original ingredients. On the other hand, there are cheaper restaurants that attract low-end customers who are more sensitive to price. As a rule, one would expect less familiarity with traditional Japanese food here, and consequently less ability to distinguish whether original or non-original ingredients have been used in preparing the food. In turn, one also expects non-Japanese owners to be less sensitive to the authenticity of ingredients and thus more willing to contain costs by recruiting less skilled (and less expensive) staff and chefs compared to high-priced restaurants.

In this segment of restaurants, since the customers have presumably not often tasted authentic Japanese food (second type of asymmetric information between restaurant and customer), owners can more easily decide to buy non-original ingredients, but also, owners and staff who on the whole are less skilled at assessing Japanese flavor can be more easily cheated by suppliers selling counterfeited Japanese ingredients (we observe then the first type of asymmetric information between supplier and restaurant).

One might claim that the latter situation does not seriously hamper either restaurants or customers, as long as the food is safe and the price is lower. Moreover, customers can afford to enjoy Japanese flavors, and restaurants also can make profits if they save money, as shown in the case of non-deceptive counterfeiting by Grossman and Shapiro (1988). However there are endogenous effects that should be properly considered: first if a share of customers are exposed to low-quality Japanese tasting food, their willingness to pay for high-end food might decrease, or they might direct their preferences to other foods. Second, we have drawn a simplified scheme of restaurants and suppliers, but this distinction of tastes cannot be easily made, especially by the ordinary consumer. Hence the existence of grey areas[11] could reasonably raise a case of adverse selection, where the customer in absence of other reliable signals will necessary expect of Japanese food an average quality including the cases of both original and non-original ingredients. This is confirmed by our interviews, in which we discovered that in many cases customers have difficulty judging authentic Japanese foods and ingredients. Several major suppliers dealing

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[11] A look at Table 1, showing the distribution of pricing in the different countries, shows that while it is easy to distinguish the extremes, there is an extended zone in which it is more difficult have a clear-cut view.

only with originals know the details of competitors, especially small suppliers who sell counterfeits, invading original food markets.

2.2 Types of ingredients and the variety of restaurants: a simple model

In order to further clarify the picture, we provide herewith a simple model summarizing the framework and trying further to capture what we previously described. To account for the variety of restaurants, we introduce the probability of buying original ingredients, $\Pr = f(p)$, where p is the price of an ingredient with $df/dp > 0$ and $\lim_{p \to \infty} f(p) = 1$. We thus assume that a restaurant is indexed by a type t_i representing the market segment and the profitability of using original ingredients. The expected profit function of restaurant i is then $\pi_i\left(q_{i,} f(p); t_i\right)$, which is strictly concave with respect to q_i, quantity of a product. For the sake of simplicity, we also assume that restaurants face perfect competition in their t_i market segment and determine p after q_i.

The first maximizing problem to solve is

$$(1) \quad \underset{q_i}{Max}\ \pi_i\left(q_{i,} f(p); t_i\right).$$

We denote the solution as $q_i*\left(f(p); t_i\right)$. Next, $\pi_i*(p; t_i) = \pi_i\left(q_i*, f(p); t_i\right)$ must be maximized under the assumption of strict concavity of $\pi*$ with respect to p.

$$(2) \quad \underset{p}{Max}\ \pi_i*(p; t_i)$$

We denote this solution as $p*(t_i)$.

In this situation we obtain a natural result as to the relationship between $p*$ and t_i. By a total differentiation of the first-order condition, $\partial \pi_i* / \partial p = 0$, we obtain

$$(3) \quad \frac{dp^*}{dt_i} = -\frac{\partial^2 \pi_i{}^*/\partial p \partial t_i}{\underbrace{\partial^2 \pi_i{}^*/\partial p^2}_{-}} \begin{pmatrix} > \\ = \\ < \end{pmatrix} 0 \quad \Leftrightarrow \quad \frac{\partial^2 \pi_i{}^*}{\partial p \partial t} \begin{pmatrix} > \\ = \\ < \end{pmatrix} 0.$$

If and only if the effect of t_i on a marginal profit, $\partial \pi_i{}^*/\partial p$, is strictly positive, i.e. $\partial\left(\partial \pi_i{}^*/\partial p\right)/\partial t_i > 0$, then a restaurant with a high t_i prefers the high probability of buying original ingredients and will reasonably go to the expensive importers. Although we do not consider the supply side and equilibrium within the market, it is obvious that menu prices in restaurants increase with a high price of ingredients.

<Insert Table 1: Average payment of customers>

While the survey data will be analyzed in detail in the next section, we list here the variety of restaurants in the sample divided per country and per average bill paid by customers. In accordance to our model, the average payment can be used as a proxy for restaurant quality. As can be easily seen, extreme cases of less than 5 USD and more than 50 USD exist, but they are rare. Restaurants with a price range of between 10 USD and 30 USD represent the majority of restaurants. Although we might try to carve out two distinct market segments, i.e., high-end and low-end restaurants, in reality the majority of restaurants lie in between, in a grey area with overlapping pricing and minor differences. Consequently, we can reasonably assert that a large portion of them, anyway, are exposed to the previously described ingredient-buying decisions and the consequent probability of being cheated by importers.

3. Empirical analysis and results

This study uses data from a survey conducted among Japanese restaurants in Indonesia (July 2014), Thailand, and Vietnam (both August-September 2014) by means of door-to-door submission of questionnaires. On the whole, 222 respondents composed the sample of restaurants serving Japanese food.

The collection was preceded by field research at retailers, wholesalers, and suppliers in South Asian Countries and focusing also on border trades among

Thailand, Myanmar, and Laos (December 2013), between Singapore and Indonesia (February 2014), and between Vietnam and China (February 2014) in order to sketch out the organization of food trade in the region.

The questions focused specifically on details of restaurants' productive organization and on awareness, familiarity, and use of non-original ingredients. More specifically, our investigation used the survey data:

1. To test supply-side whether the use of non-original ingredients is country-specific and whether it depends on stricter Japanese connections (having or not a Japanese chef or owner) used as a proxy for the greater/smaller ability to detect cheating

2. To test demand-side whether the customers matter (e.g., by considering the share of Japanese, i.e. taste-sensitive, customers)

3. To test whether the main determinant for using non-original vs original ingredients is dependent upon a market's characteristics and its institutional setting.

Of course, all the general criticisms for survey data analysis apply here, yet we believe that findings are interesting and worthy of consideration for at least two reasons: first they provide an overview, although limited, on an issue that is otherwise difficult to investigate, and second, although single answers may contain some bias or error, we expect that on the whole, the figures are reliable enough as, given the geographic width of the sample, systematic coordination in the answers is very unlikely.

A first interesting insight derives from the fact that no difference emerges in use of non-original ingredients when considering the three countries analyzed in this report (Indonesia, Thailand, and Vietnam). In other words, country-specific effects do not seem to exist. As can be seen in Table 2, when accounting for the shares of restaurants in each country where counterfeiting was acknowledged, no statistically significant difference emerges from the Chi-squared test: percentages range from 37% (Indonesia) to 46% (Vietnam). The use of non-original ingredients appears thus to be equally spread across the nations considered here.

Second, it seems reasonable to assume, also in accordance with the hypothesis discussed in the previous sections and the relating pricing model, that restaurants

owned by Japanese firms or employing Japanese chefs should be less inclined to use non-original ingredients in their menus. In the case of Japanese companies, one might expect that owners have greater expertise and can therefore more easily prevent undesired use of non-original ingredients and, at the same time, have stronger bonds with Japanese exporting firms that supply such products abroad. With respect to Japanese chefs, because of their training, they should be better equipped to spot counterfeiting and be more inclined to use genuine products in their menus. Moreover the underlying guess is that, given stronger cultural liaisons, they should be to a greater extent loath to use non-original ingredients. Finally, since they are expected to serve the high-end customers (e.g. Japanese businessmen) their profit should be positively correlated with the use of original ingredients.

<Insert Table 2: Non-original ingredients contact in each country>

<Insert Table 3: Non-original ingredients contact in Japanese and non-Japanese chef>

However, empirical evidence shows no such correlations: no statistically significant difference emerges in the contact of non-original ingredients when accounting for these two instances. As emerges from Table 3, when accounting for the 222 considered restaurants, 73 employed Japanese chefs, while 149 did not: in 42% of restaurants employing Japanese chefs contact with non-original ingredients took place, while only 38% of those not employing Japanese chefs reported contact. Despite the raw numbers, no statistically significant relationship arises.

The same is true when accounting for restaurants' ownership, as emerges from Table 4. Although contact with counterfeits took place in a smaller proportion of the 36 restaurants controlled by Japanese firms (33%), the difference with respect to non-Japanese owned restaurants is not statistically significant (40%), as a result of the estimated Chi-squared test. On the whole, Japanese corporate ownership or workforce does not reduce the possibility of adoption of counterfeit ingredients in the restaurants we considered.

<Insert Table 4: Non-original ingredients contact in Japanese and non-Japanese firm>

Even Japanese customer nationality does not matter. As emerges from Column 1 in Table 5, if it is true that restaurants with no contact with non-original ingredients have a slightly bigger share of Japanese customers (46% versus 42%), a Student-t test does not allow us to reject the hypothesis that Japanese equally eat in restaurants with and without non-original ingredients.

<Insert Table 5>

When accounting for other aspects of customer experience, it emerges that clients are not able to discriminate between counterfeit and genuine food (Table 5, columns 2 and 3). When it comes to subjective indicators of their meals' experience, it turns out that customers do not assign a better "Japanese" flavoring to the meals likely to have used only genuine ingredients than to those likely to have adopted counterfeit ones. Also, overall customer satisfaction does not differ between restaurants having contact with counterfeit ingredients and those that do not.

Table 6, reporting pairwise correlation coefficients, further shows interesting results. Although customers are in general unable to distinguish whether food ingredients are original, they prefer Japanese flavoring menus. Moreover, restaurants with a Japanese owner or a Japanese chef are more prone to buy from Japanese suppliers. Finally, Japanese customers prefer restaurants with a Japanese brand or where the sales staff is Japanese (thus conveying a stronger Japanese relationship). Taken together, these results provide the following unexpected evidence: while customers look for strong Japanese signals, in order to be reasonably assured about the quality and the original flavor of the food purchased, restaurants with a Japanese brand or a Japanese cook, despite being more likely to buy ingredients from Japanese suppliers and thus to exploit potentially safer retail channels, do not buy fewer non-original ingredients.

<Insert Table 6>

At this juncture, the question arising is thus why many Japanese restaurants in these three countries are likely to rely indiscriminately upon non-original ingredients. The first and simple answer would be economics: if the customer is unable to distinguish food quality while simply looking for the proper flavor, and the restaurant

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is able to mimic proper flavor at a lower price, it is rational to expect counterfeit ingredients. It is worth noting that this seems to apply for all restaurants and in general represents a long-lasting reason for deceiving consumers in food matters (Otter, 2011).

Second, and subtler, the use of non-original products seems also to descend from the hurdles encountered by restaurants when trying to acquire genuine Japanese ingredients. Interviewed restaurants were asked to list the problems that made it harder for them to buy original Japanese ingredients successfully. Among eight different complications reported, cumbersome procedures for direct import and the risk of being tricked by importers with regard to the quality of goods are key factors. From a preliminary analysis conducted in column 4 of Table 5, it emerges that restaurants with contact with counterfeit food and ingredients suffer from relatively more problems: this difference is (finally) a statistically significant one. The results might be interpreted as follows: on average, when restaurants experienced greater difficulties in the attempt to obtain genuine Japanese ingredients, they were more likely to use non-original goods either intentionally or unintentionally.

<Insert Table 7>

A third explanation of why Japanese restaurants have contact with non-original ingredients stems from Table 7. It presents the results of a logistic regression employed in order to support the robustness of the previous findings while controlling for other factors: restaurant owned by Japanese, presence of Japanese chefs, share of Japanese customers, restaurant supplied directly by a Japanese importer and country-fixed effects. While it emerges from column (1) that all control variables turn out to be not significant, the covariate summing up the observed import problems is a significant determinant of the likelihood of observing contact with non-original products in the restaurants considered. This confirms once more the previous explanation.

Column (2) in Table 7 reports the results of a second model that estimates the impact of all possible problems faced by a restaurant when buying genuine imported Japanese goods on the likelihood of that restaurant to use non-original ingredients. Each independent variable represents a dummy capturing all possible problems (not mutually exclusive). Very clearly, two covariates turn out to be strongly significant--

the expectation that ingredients sold by suppliers are counterfeit or that their production did not follow proper procedures (production deception)-- implying that restaurants' attitudes towards the use of non-original products descends from lack of trust in wholesale suppliers..

On the whole, given the risk of being deceived by suppliers and retailers of ingredients and given the consumers' inability to distinguish the origin of the ingredients in terms of flavor (plus robust savings in terms of input costs), restaurants' decision to use non-original ingredients may rationally serve as a double-sided solution to increase profits while having better control of the quality of ingredients. The latter, of course, is the outcome of an adverse selection.

4. Insights for policy implications

In the current analysis we excluded situations in which the use of non-original ingredients creates safety problems that may be relevant in many cases (Henson and Caswell, 1999; Otter, 2011). In such cases, the issue of public health would require a different analysis and, in accordance to the literature, strong regulatory intervention (Charlier, 2017). Nonetheless, even when health is not a stake, there is a serious issue surrounding the massive use of non-original ingredients for preparing Japanese food (and the debate could extend to consider the use of non-original ingredients used by country-specific restaurants in general).

The recent international success of Japanese food is connected to its peculiar characteristics and its related quality, witnessed equally by the recognition of institutions like UNESCO and by the intrinsic value that variety, in food as in other products, has for customers. However, Japanese food represents a credence good in the sense that many customers -- and sometimes restaurants' staff -- are unable to detect the originality of the ingredients and are happy with generic Japanese-tasting food, an issue that until now has not been seriously questioned. This fosters in turn an intense activity of de facto counterfeiting, as observed in our field research, in which either the suppliers cheat the restaurants (first type of asymmetric information) or the restaurants cheat the customer by using non-original ingredients (second type of asymmetric information).

While in the case of suppliers cheating restaurants, it is possible at least to claim a clear issue of commercial fraud that can be pursued by the authorities, the matter of restaurants deceiving customers might appear more controversial, as Japanese flavoring does not require proof that ingredients are original. In most cases this does not raise any legal concern in the countries where the data was collected. Moreover, one could equally object that as far as the consumer does not perceive the difference, the issue does not necessarily affect social welfare.

Yet, there are two distinct problems to be raised here. The first is that in the long run, laissez-faire use of ingredients can dilute the distinctive features making Japanese food and *Washoku* a special product worthy of interest. This argument could be made for any food outside of its native country, and accordingly this entire kind of differentiation could be weakened: we would have markets of French-tasting foods, Chinese-tasting foods, and so on, made without the proper ingredients. However this is not possible in many cases, like wine, GI products[12], and so on.

The second issue arises in the case of the asymmetric information existing between restaurant and consumer coupled with the latter's inability in most instances to detect the originality of ingredients. This situation is so far leveraged as to permit a de facto, though not yet a de jure, fraud. But this hampers one of the pivotal tenets of market exchange, voluntariness. In the case that the consumer cannot easily distinguish differences, s/he must be informed in order to make choices, or voluntariness could be compromised. However, one could rather claim that if the taste is the same, the choice and hence the equilibrium would not change, hence cheating the customer would not be a problem. But this would be more reason for providing the proper information, preserving the freedom of the customer, the voluntariness of the choice, and the market equilibrium. In many jurisdictions, for example, restaurants must declare whether ingredients used are frozen or fresh, although this has nothing to do with the safety and quality of the food. Likewise it should be simply indicated whether the food is prepared with original or non-original ingredients.

All in all, this might or might not have an impact on the market equilibrium, yet making the consumer aware and conscious of existing differences seems to be in line with respect for the foundations of market exchange. By contrast, it seems quite

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[12] The acronym stands for "geographical indications" and it serves for indicating that a product have a specific geographical origin and possess qualities or a reputation that are due to that origin (ref e.g. http://www.wipo.int/geo_indications/en/)

dubious to accept the principle that when the consumer does not suffer from cheating, fraud can be permitted[13].

5. Concluding remarks

This paper deals with boom of Japanese food consumption in South Asian countries and the contemporary boom of use and production of non-original Japanese food ingredients. Such ingredients per se do not represent a problem as far as buyers, restaurants, and restaurant customers are informed about what they are buying. However, in many cases the restaurant customers and sometimes even the restaurant are not properly informed, and thus they are cheated regarding the authenticity of the Japanese food.

This paper investigates which factors affect the use of non-original ingredients and shows that the first element for choosing non-original ingredients is the existence of a double incomplete information problem, between wholesalers and restaurants and then between restaurants and customers. Yet, in addition to the typical economic reason for buying cheaper non-original ingredients -- saving money -- other issues are brought about by the multiple opportunities for incomplete information to arise in the supply chain.

The observed situation then creates a paradox: the popularity of Japanese cuisine leading to an important increase in Japanese food exports is also fostering the production and the use of non-original, sometimes counterfeited, ingredients, which in the long run might affect the Japanese exports, especially in relation to the observed inability of customers to distinguish original food from non-original.

Developed countries with strict enforcement have a number of measures available for controlling originality, especially in the case of credence goods: labelling, import certificates, quality standards, and so on. These kinds of measures are not seriously used by the countries within this study and do not affect the food produced in restaurants that are more or less free to use the ingredients they want

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[13] In an article dealing with labelling food using ingredients from genetically modified organisms, Crespi & Marette (2003) show that welfare depends extensively on the cost of labelling and the share of consumers sensible to non-GMO ingredients, but it is worth noting that in the case under investigation, labelling de facto happens anyway, and accordingly this is a matter of simply indicating the truth.

without declaring their origins. In selected cases, they are victims of wholesalers that smuggle counterfeited ingredients as original. While apparently consumers can do little, the extant asymmetric information can lead the market to an adverse selection in which original ingredients are seldom used. Now if from a static viewpoint, food is a credence good, from a dynamic perspective education to properly identify food is relevant to making consumers aware of what they are eating. What is more, even when the consumer is unable to detect what s/he buys, as in the case of credence goods, free cheating hampers one of the pillars of market exchange, voluntariness.

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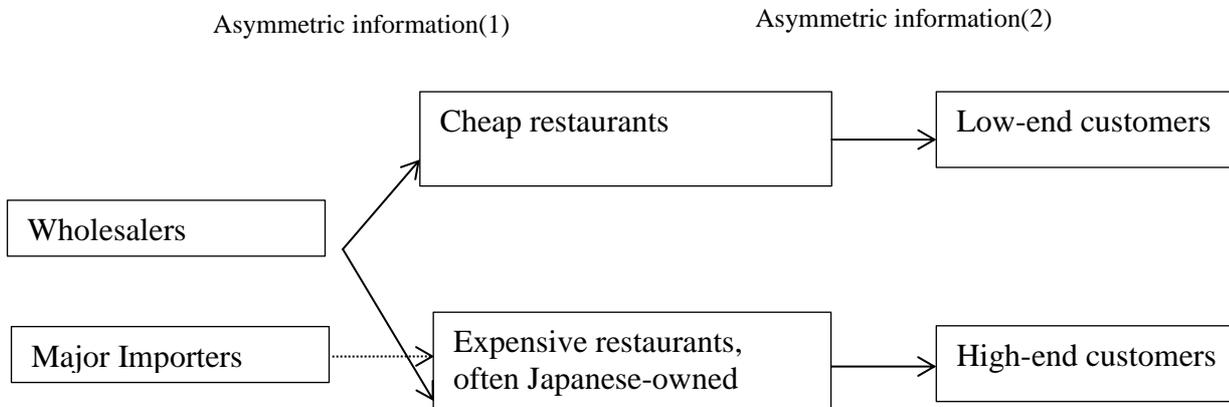
Figures and Tables

Asymmetric information(1)   Asymmetric information(2)

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                        ┌─────────────────────┐              ┌─────────────────────┐
                        │  Cheap restaurants  │ ──────────►  │  Low-end customers  │
                        └─────────────────────┘              └─────────────────────┘
                          ▲
┌─────────────────────┐  │
│   Wholesalers       │ ─┤
└─────────────────────┘  │
                         │
┌─────────────────────┐  ▼ ┌─────────────────────────┐       ┌─────────────────────┐
│  Major Importers    │····►│ Expensive restaurants, │ ────► │  High-end customers │
└─────────────────────┘     │ often Japanese-owned   │       └─────────────────────┘
                            └─────────────────────────┘
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Figure 1: Supply chain and the double asymmetric information problem

Table 1: Average payment of customers*

	Less 5 USD	5 -10 USD	10 -15 USD	15 - 20 USD	20 - 25 USD	25 - 30 USD	30 - 35 USD	35 - 40 USD	45 - 50 USD	More 50 USD
Indonesia	6	11	3	4	1	0	0	3	0	1
Thailand	5	27	18	11	15	4	17	5	3	1
Vietnam	7	26	9	5	5	1	0	2	0	0

 * The scale here must be read less than 5, between 5 and 10, between 10 & 15, and so on

Table 2: Non-original ingredients contact in each country

	Non-original ingredients contact		
	No	Yes	Tot.
Indonesia	29 (63.04)	17 (36.96)	46 (100)
Thailand	72 (62.61)	43 (37.39)	115 (100)
Vietnam	33 (54.10)	28 (45.90)	61 (100)
Tot	134 (60.36)	88 (39.64)	222 (100)

Pearson Chi-squared test: p-value=0.5
(row % in parenthesis)

Table 3: Non-original ingredients contact in Japanese and non-Japanese chefs

	Non-original ingredients contact		
	No	Yes	Tot.
Non-Japanese chef	92 (61.74)	57 (38.26)	149 (100)
Japanese chef	42 (57.53)	31 (42.47)	73 (100)
Tot.	134 (60.36)	88 (39.64)	222 (100)

Pearson Chi-squared test: p-value=0.54
(row % in parenthesis)

Table 4: Non-original ingredients contact in Japanese and non-Japanese firms

	Non-original ingredients contact		
	No	Yes	Tot.
Non-Japanese firm	110 (59.14)	76 (40.86)	186 (100)
Japanese firm	24 (66.67)	12 (33.33)	36 (100)
Tot.	134 (60.36)	88 (39.64)	222 (100)

Pearson Chi-squared test: p-value=0.4
(row % in parenthesis)

Table 5

	(1)	(2)	(3)	(4)
Non-Original ingredients Contact	Avg. % Japanese customers	Avg. perceived flavoring[1]	Avg. customers' satisfaction[2]	Avg. # import problems
Yes	42.48 (85)	1.91 (78)	2 (76)	2.17 (88)
No	45.88 (127)	1.93 (123)	1.89 (124)	1.56 (134)
p-value[3]	0.46	0.9	0.28	<0.0000

(Observations in parenthesis)

[1] Expressed on a five point Likert-scale, where 1 represents traditional Japanese flavoring and 5 local flavoring.

[2] Expressed on a five point Likert-scale, where 1 represents high satisfaction and 5 poor satisfaction.

[3] p-value associated with a Student-t test.

Table 6

	Japanese Company	Japanese Workers	Japanese Chefs	% Japanese Customers	Flavoring Menu	Customers' Satisfaction	Japanese Supplier
Japanese Company	1						
Japanese Workers	0.2400*	1					
Japanese Chefs	0.1829*	0.3001*	1				
% Japanese Customers	0.2346*	0.2051*	0.1071	1			
Flavoring Menu	-0.1066	-0.1827*	-0.2241*	-0.2782*	1		
Customers' Satisfaction	-0.0193	-0.0096	-0.1522*	0.0545	0.2571*	1	
Japanese Supplier	0.1688*	0.0187	0.1669*	-0.0069	-0.0295	-0.1183	1

* $p<0.05$

Table 7

	(1)	(2)
	Non-original=1	Non-original=1
Import difficulties	0.352	
	(0.102)***	
Japanese company	-0.398	
	(0.423)	
Japanese chefs	0.002	
	(0.005)	
Japanese customers	-0.005	
	(0.005)	
Japanese supplier	-0.003	
	(0.006)	
Thailand dummy	0.022	
	(0.388)	
Vietnam dummy	0.589	
	(0.439)	
High taxes		0.039
		(0.336)
Import prohibited		0.454
		(0.520)
Counterfeit ingredients		2.753
		(1.078)**
Production deception		1.881
		(0.837)**
Procedural issues		0.279
		(0.379)
Time		0.073
		(0.361)
Limitations		-0.048
		(0.365)
Other problems		1.075
		(0.765)
Constant	-0.827	-0.797
	(0.381)**	(0.211)***
Obs.	212	222

* $p<0.1$; ** $p<0.05$; *** $p<0.01$