



THESES OF DOCTORAL (PhD) DISSERTATION

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**Consumer perception of illegal or questionable
commercial practices**

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1. BACKGROUND

History of food frauds goes back for many centuries in human history. We have written evidence about attempts to regulate it from the 4th century BC. The literature shows that competition between food counterfeiters and the authorities has been common in all ages, but its complexity has peaked today.

There are simultaneous cases of food adulteration using the most basic methods (eg placing horsemeat on the market as beef, duck liver as goose liver, watering various products, falsifying the protein content of feed with melamine, selling conventional products as organic ones) and using the most development technologies such as using genetically modified organisms, counterfeiting of protected products by the addition of microcomponents, production of food supplements with medical substances or other active substances not authorized for food use).

In my dissertation, I aimed to review the legal and historical background of food counterfeiting, and to analyze some recent Hungarian events, to identify the applicable measurements of authorities to reduce the harm. Food chain has to be observed as a system, of which safety depends on the behaviour of the individual actors. Researchers agree that almost every food counterfeiting event should be considered unique. The possible techniques of perpetration are endless, considering the large number of potential perpetrators, their different capacities, and their various combinations. In addition, food fraudsters are constantly improving their methods and adapting quickly



to regulatory changes. This study makes an attempt to explore important elements of the social context of food counterfeiting, with the aim to propose system oriented developments.

Deliberate misleading of consumers is a closely related area to food counterfeiting. I have also addresses this area in the dissertation through a case study. The phenomenon of the dual quality of food stuffs (the perception that Western European producers sell lower quality products in Eastern Europe), is still one of the leading news in the food industry in Hungary.

In my dissertation, therefore, I focus on issues that pose actual challenge to the food chain supervision even in the relatively calm period that followed the large-scale food scandals of the 1990s and 2000s.



2. RESEARCH METHODOLOGY

During the literature review and the analysis of the case studies, I set up 4 hypotheses. My aim was to clarify aspects that could help the practice of official risk management and risk communication in a relevant way in the future.

Research hypotheses

H1: Respondents with lower income are more likely to buy food stuffs from illegal sources.

Explanation: In the case of illegally traded products, public charges are not paid, so they can be marketed at a lower price, but guarantees that protect the consumers are missing. Based on this, it can be assumed that the probability of buying food from illegal sources is higher at those who have less income, while better-off consumers are able to afford safer products.

If the hypothesis is confirmed, we would have to change the consumer habits of a more vulnerable group, which would lead to rise their living costs further. While it is a state responsibility to protect their health from food safety risks, it is a moral dilemma to cut even more off their already tight household budget. However, this moral dilemma is eased by the fact that the state can't turn a blind eye to illegal activities, especially when they pose health risks for already vulnerable social groups. In case of rejecting the hypothesis, we can state that the demand for illegally traded products is independent of income. In this case, the proposed measure could be to improve general risk communication.



H2: Women are less open to buy illegal products.

Explanation: Studies in the field of risk perception have a consistent view that women show a higher level of risk perception. It can be assumed that this tendency could be also identified in the case of the illegal food products.

If the hypothesis is confirmed, men should be specifically targeted and informed about the risks associated with products from illegal sources using their preferred information channels and communication tools. If the suggestion is not verified, the development of general risk communication can be recommended in this case, as well.

H3: Young consumers have a lower risk perception of counterfeit food than older people.

Explanation: Numerous risk perception studies have revealed that the younger age group has a lower level of food safety risk perception.

If the hypothesis is confirmed, it is recommended to launch an awareness-raising campaign aimed at young people. If the assumption is not verified, then general risk communication should be developed.

H4: The majority of the Hungarian people disapproves the dual quality of food stuffs.

Explanation: In the news about the dual quality of food stuffs, the population was mostly informed that international companies sell lower quality products in Eastern Europe than in Western Europe. Previous



studies by Nébih have also uncovered such products, albeit at a lower rate than previously expected. Still, the feeling of discrimination is a sensitive issue for the public, especially if it is done through by misleading the consumers with similar packaging and brands. If the hypothesis is confirmed, the problem must be addressed at the official level, the phenomenon must be explored, and its actual extent on the market must be examined. For products where dual quality practices are present, the state must take firm action. However, if the inspection does not find actual evidence for this phenomenon, we also have to deliver this information to consumers, showing all the methods by which we have gained this result. In both cases, the aim is to strengthen consumer confidence in food chain supervision.

Questionnaire based quantitative consumer survey was selected as research methodology. Personal interviews were conducted at the transport hubs of larger cities. The sample is representative for the Hungarian population from the aspect of sex, age and geographic region. Sample size is 1003. Besides descriptive statistical tools (mean, standard deviation, median, mode, minimum, maximum, frequency) multivariate statistical methods (cross-tabulations with Pearson's chi² test, analysis of variance, construction of regression equation, factor analysis, cluster analysis) were also applied. The confidence interval was set at 95%.



3. RESULTS AND DISCUSSION

3.1. Food frauds

It is clear from the results that certain consumer groups in Hungary pose a perceptible demand for counterfeit products. In the case of all four products, it can be observed that even respondents who otherwise do not buy the given product would become potential consumers when receiving a significant discount. Consumers who perceive a stronger risk tend to avoid products from illegal sources. In the order of perceived risks the concern about bad quality was found to be the most important (3.40 in a 5-grade Likert scale), concern about counterfeit came second (3.33), health/food safety risk found to be the third (3.20) and tax avoiding closed the list (2.84).

The ANOVA test verified that women tend to perceive higher risks than men about illegal sources of food purchase. A synthetic variable has been created for multivariate tests that represented the individual consumer's resistance/acceptance level towards food from illegal sources in a range of 0 to 100%. 0% represents no resistance at all, while 100% means that the individual would not buy the good even for free of charge. Distribution of this indicator is shown at Figure 1.

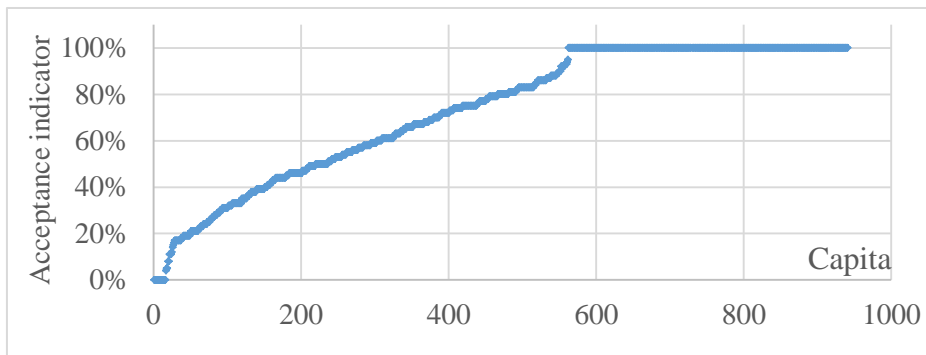


Figure 1. Aggregated distribution of the acceptance indicator in the sample

I examined the indicator along various sociodemographic parameters - gender, age group, type of residence, education, economic status, income level, food expenditure per capita. Although our sample was not representative of all factors, we obtained statistically verifiable results for each category. The most important finding is that the demand for products from illegal sources is almost independent of an individual's social status. I found no correlation in this regard with gender, type of residence, or education. Only age seemed to be decisive in this respect, which was strongly significant ($p < 0.001$). While the average value of the acceptance indicator of the respondents over the age of 60 is 79.10%, for the youngest age group between the ages of 18 and 30 it was only 62.87%. The most surprising result is that this indicator is completely independent of income. In addition to the household income level, I also encountered this with food expenditure per capita, which also showed no correlation.



I have analyzed the relationship between recorded concerns about products from illegal sources and the acceptance indicator. I examined the concerns as aggregate, which turned out to be strongly correlated with the acceptance indicator with the exception of the concern about counterfeiting. The relationship can be described by the following equation:

$$y=0.319+0.067a+0.036b+0.021c,$$

- where
- a: aggregated health concern
 - b: aggregated quality concern
 - c: aggregated tax evasion concern

This indicates that the perception of risk delivers a significant impact on the purchase of food products from illegal sources.

3.2. Dual quality

The results show that the Hungarian population is concerned about the issue of the dual quality of food stuffs. Respondents expect international food brands to be marketed with the same composition in all countries (4.42). In their view, it would be worthwhile to examine the quality of food, which is marketed by producers in different countries under the same brand name and packaging (4.40). Furthermore, the country of origin is considered important for the reliability of the products (4.32). The respondents strongly agreed that if a manufacturer markets its products in different countries in different quality, it should be done under a different brand name or packaging (4.25). More than half of the respondents (55.49%) said that the examination of dual quality should be the responsibility of the food



chain supervision organization. Significantly fewer (33.03%) named the EU agencies to be responsible for this task. 16.21% of respondents could not decide at all which institution should be responsible for this area. The results show that the majority of respondents (59.84%) believe that it is not acceptable for a manufacturer to market different quality foods under the same brand name in different countries. 37.28% of respondents believe that if the difference is marked clearly, this phenomenon is not a problem. A very small percentage (2.88%) said that dual quality is a completely natural manufacturing practice and had no problem with it. 88.92% of respondents believe that the differences in quality, when exist, should also be indicated on food packaging. In their view, the best solution would be to have an accurate description of the difference on the packaging (4.35). The independent use of both the inscription (3.68) and the logo (3.56) to warn of differences was rated with a medium score, but their combined use was found to be much more appropriate for the respondents (3.99). The third highest average score (3.94) was achieved by a logo on the packaging, supported by an accurate description available on the Internet.

I was able to define 3 clusters within the society by using Ward's cluster analysis. The largest group (51.64%) considers Austrian products to be of better quality. The second largest group (27.92%) are more ethnocentric and prefer domestic products. The members of these two groups have a higher proportion of older people (over 60 years old). These two clusters demand strong control over the issue of dual quality of food stuffs in the EU. The group with the smallest share (20.44%) are mostly young people, for them the dual quality of food is not a determining problem.



4. CONCLUSIONS

The results of the research show that consumer demand towards food from illegal sources do exists. It is well observed that one of the main reasons for this is the underestimation of the risks of counterfeit foods, which is primarily due to the low level of risk related information. My hypothesis that the income level contributes to the demand for illegal products was not validated, there was no significant difference in acceptance of consumers living in different income conditions (H1). Besides income, we did not find significant differences for the other demographic variables either, except for age (H2 and H3). There is a strong inverse correlation between age and willingness to buy from an illegal source. However, there is a strong correlation between the perception of different types of risks and the purchase of illegally traded products. These results suggest that we have to develop the official risk communication in this direction, especially targeting the younger age group. Ideally, this education would start from the primary school age.

The most important result regarding the assessment of the dual quality of food is that it is an important problem for the people (H4), which echoes the Slovakian and Czech results known from the literature and other sources. However, even for the 20.4% who have a significantly lower interest in the topic, it is a relatively important issue that manufacturers should indicate the dual quality on the label of their products. Thus, consumer expectations in this area can be clearly identified, therefore it can be concluded that state actors have to address this issue.



Suggestions

- With the help of the literature research, I have indicated that the techniques of food frauds are constantly evolving, which is difficult for a public authority to keep the pace with, especially with limited resources. If we approach this issue from a social aspect, as I did in this study, it can be stated that not only the supply but also the demand for these products is given. My research has provided evidence that (contrary to the expectations), that this phenomenon is not limited to the social segments, which are in need, as the purchase of food from illegal sources is independent of income. At the same time, it has been highlighted that respondents' perceptions of risk greatly influence the acceptance of illegal foods. I therefore recommend that the authority should focus on providing accurate risk related information for the social dialogue on food frauding. Social awareness campaigns and information sharing activities should be initiated in this area.

- Based on the research results, it can be said that consumers do not have a strong picture of the importance of originality and brand. This is important information not only for the producers of the branded food stuffs, but for those also who operate smaller businesses. I suggest that, when communicating about food frauds, both food business operators and public actors, including education institutions, should place more emphasis on the benefits of traceability, producer responsibility and accountability in the light of consumer rights. It must also be presented for the public that food frauds narrow the market for legal and fair business actors, thus actually reduce the opportunity for protecting consumer rights and the health of consumers.



- Among the patterns of food fraud perpetration, networking is becoming more frequent, and its field is increasingly shifting to the international arena. Accordingly, it is recommended that official staff dealing with the detection of food counterfeiting also acquire forensic knowledge. Attention should be paid to linking the databases of various national and international authorities during the reconnaissance, which would help identifying criminal organizations, which exploit the differences and gaps between different surveillance systems.

- It has been proven that for most people the dual quality of food is an important issue. It must be ensured that food business operators cannot sell lower quality food to Hungarian consumers under the same or very similar brand name and packaging without consequences. In that regard, even the most uninterested consumer segment expects a clear indication of different quality from one geographical region to another. I recommend to carry out comparative product analyses to examine actual product pairs and informing consumers about the results. If the dual quality of food is confirmed by random product inspections, the problem should also be kept on the agenda of the EU. If the inspections point out to that the phenomenon of double quality has ceased to exist or that manufacturers label their products responsibly in accordance with consumer expectations, the public must also be informed of this fact. Only in this way can we maintain the consumer confidence that the national level authority in Hungary has achieved, which is the cornerstone of consumer risk communication.



5. NEW AND NOVEL FINDINGS

1. I have demonstrated that the demand for food from illegal sources is independent of the income status and gender of consumers, but strongly depends on the age and risk perception of the individual.
2. I have demonstrated that concerns about quality, food safety and tax fraud are predominant among concerns about illegally sourced products, however, I have not been able to demonstrate that concerns about food counterfeiting have a significant influence on consumer attitudes.
3. I have proven that the “dual quality” of food products - the phenomenon that international producers sell lower quality products to certain markets with the same or misleadingly similar labeling - is unacceptable to the majority of Hungarian consumers and they expect strong mitigating actions from the national level authority.
4. I have proven that the dual quality of food divides the society into 3 well-defined segments by hierarchical cluster analysis. The two largest groups are firmly aware of the problem and urge strong actions. The smallest group, most of whose members are young people, does not consider the dual quality of food to be a major problem, but still expect clear consumer information on this issue on food labels.



6. RELATED PUBLICATIONS OF THE AUTHOR

1. **Bognár, L.**, Helik, F., Izsó, T., & Kasza, Gy. (2018). Studies on adulteration of goose foie gras assessed in the years 2015 and 2016 in Hungary-case reports. *European Poultry Science*, 82.
2. Barna, S., **Bognár, L.**, Dorkó, A., Szakos, D., & Kasza, Gy. (2018). Consumer perception of product recall in the food sector (A termékvisszahívás fogyasztói megítélése az élelmiszerágazatban). *Journal of Food Investigations (Élelmiszervizsgálati Közlemények)*, 64(3), 2130-2139.
3. Barna, S., Mikulka, P., Frum, Zs., Szakos, D., **Bognár, L.**, & Kasza, Gy. (2018). Assessing the impact of the fipronil egg scandal on consumer behavior in Hungary (A fipronilos tojásbotrány vásárlói magatartásra gyakorolt hatásának vizsgálata Magyarországon). *Journal of Food Investigations (Élelmiszervizsgálati Közlemények)*, 64(1), 1882-1893.
4. **Bognár, L.**, Mikulka, P., & Kasza, Gy. (2018). Influence of the highly pathogenic avian influenza outbreak of 2016 on poultry meat consumption. *Acta Alimentaria*, 47(4), 479-486.
5. Bódi, B., Kasza, Gy., **Bognár, L.**, & Szakos, D. (2016). Online food shopping habits in Hungary (Internetes élelmiszer-vásárlási szokások Magyarországon). *Élelmiszervizsgálati Közlemények*, 62(1), 996-1003.



6. Szegedyné Fricz, Á., Dömölki, M., Kuti, B., Izsó, T., Szakos, D., **Bognár, L.**, & Kasza, Gy. (2016). Searching for quality Hungarian products – the operation of the Hungarian Food Codex (Minőségi magyar termékek nyomában – a Magyar Élelmiszerkönyv működése). *Élelmiszervizsgálati Közlemények*, 62(4), 1339-1350.

Conference papers

1. Szakos, D., Barna, S., **Bognár, L.**, Dorkó, A., & Kasza, Gy. (2018). How an Integrated Food Chain Safety Authority Thinks the About Risk Factors – Recall of Food Products. In G. Géczy, P. Korzenszky (Eds.), *Researched Risk Factors of Food Chain* (pp. 107-110). XIX. Risk Factors of Food Chain Conference, Mátrafüred, Hungary, 26-28 September 2018. Gödöllő: Szent István University (ISBN 978-963-269-775-8).
2. **Bognár, L.** (2014). Approaches and Experiences in Hungarian Food Chain Fraud Control. IAFP European Symposium on Food Safety. Budapest, 2014. május 7-9.
3. **Bognár, L.** (2014). Security and Safety of the Food Chain. IAFP European Symposium on Food Safety. Budapest, 2014. május 7-9.
4. **Bognár, L.** (2013). Élelmiszerlánc-biztonsági stratégia 2013-2020. „Az élelmiszerlánc-biztonság jövője” szakmai konferencia. Budapest, 2013. október 15.



7. UNRELATED PUBLICATIONS OF THE AUTHOR

Peer-reviewed journal articles

1. **Bognár, L.**, Izsó, T., Szakos, D., & Kasza, Gy. (2017). Toxoplasmosis, the insidious parasitic infection: dangers of asymptomatic carrier state (Toxoplazmózis, az alattomos parazitafertőzés: a tünetmentes hordozás veszélyei). *Magyar Állatorvosok Lapja*, 139(8), 479-487.
2. Kemenczei, Á., Izsó, T., Frecskáné Csáki, K., Maczó, A., **Bognár, L.**, & Kasza, Gy. (2016). Stevia: beyond the sweetener (Stevia: az édesítőszeren túl). *Élelmiszervizsgálati Közlemények*, 62(3), 1224-1234.

Other publications

1. Bende, B., Fodor, K., **Bognár, L.**, & Kasza, Gy. (2019). Fogyasztói jelenségek és hatásuk a magyar termelőkre a haszonállat-tartás állatjóléti vonatkozásaiban. MTA Állatorvostudományi Bizottságának és az Állatorvostudományi Egyetem Állatorvostudományi Doktori Iskolájának 45. akadémiai beszámolók ülése, Állathigiénia, Állattenyésztés, Genetika, Takarmányozástan szekció. Konferencia helye, ideje: Budapest, Állatorvostudományi Egyetem, 2019. január 21.



2. Doma, E., Szakos, D., Kasza, Gy., Szabó-Bódi, B., & **Bognár, L.** (2018). Food waste measurement and prevention in Hungarian households. In: Book of Abstracts, 17th Annual STS Conference Graz, 7th – 8th May 2018, pp. 107-108.
3. **Bognár, L.** (2017). Az állat-, állati termék- és takarmányforgalmazással kapcsolatos szerződések, szavatosság, kártérítési felelősség és az állami kártalanításAz élelmiszerlánc hatósági felügyelete. (szerk: Egri Borisz), Budapest: Mezőgazda Kiadó, ISBN: 978-963-286-730-4
4. **Bognár, L.** (2017). A hazai madárinfluenza járvány tapasztalatai. In Gy. Kasza, & D. Szakos (Eds.), *A Magyar Zoonózis Társaság 2017. évi tudományos konferenciáin elhangzott előadások összefoglaló kötete* (pp. 4-13.). Budapest: Magyar Zoonózis Társaság. ISBN 978-615-80432-3-6
5. Kemenczei, Á., Izsó, T., **Bognár, L.**, & Kasza, Gy. (2016). Terítéken az entomofágia - áttekintő. In L. Bíró, É. Gelencsér, A. Lugasi, & I. Rurik (Eds.) *A 60 éves Magyar Táplálkozástudományi Társaság XLI. vándorgyűlése: Program és az előadások kivonatai*. Budapest: Magyar Táplálkozástudományi Társaság, p. 36. ISBN:978-615-5606-02-1
6. **Bognár, L.** (2015). Az állategészségügyi igazgatás aktuális kérdései a szarvasmarha ágazatban. Szarvasmarha-ágazati Szemináriumok. Szolnoki Főiskola (Campus) – Szolnok, Tiszaliget, 2015. november 25-26.



7. **Bognár, L.** (2015). Az afrikai sertéspestis igazgatási vonatkozásai. Magyar Állatorvosok Világszervezete szakmai konferenciája. Beregszász, Ukrajna, 2015. április 17.
8. **Bognár, L.** (2014). Magyarország állategészségügyi státuszának változása az elmúlt években. Országos Állatorvos Napok, VIII. Praxismenedzsment Konferencia. Szent István Egyetem Állatorvos-tudományi Kar, 2014. november 22.
9. **Bognár, L.** (2014). Vadászvizsga aktuális kérdései. A hazai vadegészségügy aktuális kérdései konferencia. Szent István Egyetem Állatorvos-tudományi Kar, Budapest, 2014. március 25.
10. **Bognár, L.** (2013). Classical and African Swine Fever surveillance programs and activities. Workshop on Strengthening and Adaptation of the Preventive Measures to the Existing Risk of Classical and African Swine Fever Introduction into the EU. Vilnius, Litvánia, 2013. szeptember 3.
11. **Bognár, L.** (2012). Az állategészségügyi szolgálatok szerepe az Európai Unióban. MÁVSZ szakmai konferencia. Lemberg, Ukrajna, 2012. október 5-6
12. **Bognár, L.** (2009). A Mezőgazdasági Szakigazgatási Hivatal Élelmiszerlánc-biztonsági elnökhelyettesének közleménye a sertések influenzabetegségéről. Az Európai Unió agrárgazdasága, 2009. (14. évf.) 5-6. sz. 8-9. old., ISSN 1786-4518.
13. **Bognár, L.** (2009). Közlemény családi gazdasághoz kötődő trichinella megbetegedésekről. Az Európai Unió agrárgazdasága, 2009. (14. évf.) 3. sz. 8. old., ISSN 1786-4518.



14. **Bognár, L.** (2008). Az FVM 2008-as zoonózis rendelet érvényre jutása az állategészségügyi szolgálatban. Magyar Zoonózis Társaság, Szent-Iványi – Binder Napok és Rudani-Kemenes Tudományos Ülés. Ráckeve, 2008. október 7-9.
15. **Bognár, L.** (2007). Az állatállományok betegségektől való mentesítésének, a mentességi státusz elérésének uniós szabályai. MÁV SZ szakmai konferencia. Munkács, Ukrajna, 2007. október 26.
16. **Bognár, L., & Flink, F.** (2006). Kéknyelvűség a BENELUX országokban. Magyar juhászat + kecsketenyésztés: a Magyar mezőgazdaság melléklete (15. évf.) 9. sz. 12. old.
17. **Bognár, L., & Flink, F.** (2006): Kéknyelv-betegség (Bluetongue) a BENELUX országokban. Holstein magazin, 2006. (14. évf.) 4. sz. 42. old.