The TRIPs Agreement has led to the patentability of food, most notably in Brazil, China and India. The economic effects of this change are mirrored in numbers of patent applications, which have almost doubled in Brazil and China since food became patentable. Prospering food sectors, increasing foreign direct investments and declining food prices indicate that patentability of food does not restrict food availability nor negatively influence the food sector. From the following analysis it can thus be concluded that the patentability of food has positive effects on economic welfare.

A. Patentability of food in Germany

Germany's approach to the patentability of food is one of the eldest in modern societies. The first German Patent Act of 1877 already excluded food from patentability, but allowed the patentability of food-related processes. The German approach is representative for many developed countries and its development will be later in history repeated by many developing or emerging countries. The path for the exemption in the German Patent Act of 1877, its perpetuation in the Amending Act of 1891, and its abolition in 1967 are the main focus of this section.

I. The exemption in the German Patent Act of 1877

1. German Patent Act of 1877

Germany was at the time of the genesis of the first German Patent Act of 1877 a divided country with many sovereign nations under the umbrella of supranational agreements. Only at the birth of the first German Empire under the emperor Friedrich could a common Patent Act be adopted.

The uniform German Patent Act was primarily based on the results of the enquete commission "Enquete über die reichsgesetzliche Regelung des Patentwesens." The enquete commission was an expert group launched by the Federal Council in 1876 to work out a draft of a uniform German Patent Act.[3] This commission broadly discussed a potential exemption to patentability of food.[4] Its members were split with respect to the patentability of food. *Von Steinbeis,*[5] the representative of the state Wuerttemberg,

3 *Lenz*, Entwurf eines Patentgesetzes, Berlin 1877.

4 Ergebnis der Enquete über die reichsgesetzliche Regelung des Patentwesens, No. 70 der Drucksachen, Bundesrat, Session von 1978, 12.

pleaded against the exemption. According to him, every invention capable of serving public welfare should be patentable.

The well-known legal scholar and author of the first commentary on the German Patent Act *Klostermann* was in favor of excluding food from patentability.[6] He pointed out that patents on food could be potentially abused as a means of unfair marketing. This danger of abuse has led to an exemption of food in many other countries. Other experts did not share this opinion because the patent system did not aim at the protection of the public from misleading advertisement with patents that were abused as a certificate of quality.[7] The German industrialist and founder of the formerly Berlin and nowadays Munich based corporation Siemens Aktiengesellschaft which mainly produces electronic equipment *von Siemens* stressed that the German patent system would not be a mere registry system, but a thorough examination of the respective patent application. This examination could prevent the abuse of patents for marketing reasons.[8] Finally, only one of the 20 experts voted for the exemption.[9]

Nevertheless the first draft of a uniform German Patent Act excluded food from patentability. Astonishingly, this first draft did not follow the suggestion of the enquete commission to allow the patentability of food. It was brought forward by chancellor *von Bismarck* on February 24, 1877. This first draft stated with regard to patentable subject matter and exemptions to patentability:

> "Patents shall be granted for any new invention which is susceptible of industrial application except: (...) inventions of food and drugs, as far as the inventions do not regard methods of production thereof."[10]

After a first reading in parliament, the draft was handed over to a special commission appointed by parliament to discuss the draft.[11] A minority of the commission pleaded against an exemption of food. These opponents of the exemption to patentability of food argued with the common welfare guaranteed by the patent system. Moreover, they criti-

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5 Ergebnis der Enquete über die reichsgesetzliche Regelung des Patentwesens, No. 70 der Drucksachen, Bundesrath, Session von 1978, 12. *Möhler*, Entwicklung des gewerblichen Rechtsschutzes in Württemberg, Stuttgart 1927, 87.

6 Klostermann, Das Patentgesetz für das deutsche Reich vom 25. Mai 1877: Nebst Einl. u. Comm. und mit vergleichender Uebersicht der ausländischen Patentgesetze, Berlin 1877.

7 *Von Steinbeis*, Ergebnis der Enquete über die reichsgesetzliche Regelung des Patentwesens, No. 70 der Drucksachen, Bundesrath, Session von 1978, 12.

8 Ergebnis der Enquete über die reichsgesetzliche Regelung des Patentwesens, No. 70 der Drucksachen, Bundesrath, Session von 1978, 12.

9 Ergebnis der Enquete über die reichsgesetzliche Regelung des Patentwesens, No. 70 der Drucksachen, Bundesrath, Session von 1978, 13.

10 Entwurf eines Patentgesetzes nebst Motiven zur Vorlage an den Reichstag, Nr. 8 der Drucksachen, 3. Legislatur-Periode, 1. Sitzung 1877. “Ausgenommen sind: 1. Erfindungen, deren Verwerthung den Gesetzen oder guten Sitten zuwiderlaufen würde; 2. Erfindungen von Mustern oder Modellen, welche lediglich die Verschönerung oder die Ausschmückung eines Gegenstandes bezwecken; 3. Erfindungeen von Genuß- oder Arzneimitteln, soweit die Erfindungen nicht das Verfahren zur Herstellung der Gegenstände betreffen.”

11 Bericht der VII. Kommission betreffend den derselben zu Vorberathung überwiesenen Entwurf eines Patentgesetzes, No. 144 der Drucksachen, Deutscher Reichstag, 3. Legislatur-Periode, 1. Session 1877.

cized the lack of convincing arguments. Nevertheless, the majority of the commission endorsed the exemption. This endorsement was based on the arguments of the first draft.

The commission approved the first draft and clarified the wording of the exemption. The term "Nahrungsmittel" was substituted by the term "Nahrungs- und Genussmittel." This new wording was only intended to clarify what food was and had no effect on the scope of the exemption.[12]

This draft was ratified by the German legislative body, the so called “Reichstag”, on May 25, 1877. The German Patent Act became effective on July 1, 1877 and codified the first uniform German patent system. Sec. 1 of the German Patent Act of 1877 excluded food, pharmaceuticals and chemical substances from patentability:

> "Patents shall be granted for any new inventions which are susceptible of industrial application except: 1. Inventions the exploitation of which would be contrary to law or morality. 2. Inventions of food and foodstuffs or drugs and substances which are chemically manufactured as far as the inventions do not regard methods of productions thereof."[13]

2. The scope of the exemption

The scope of the exemption is defined by the interpretation of the term "Nahrungs- und Genussmittel" in the German Patent Act of 1877.

"Nahrungsmittel" was defined as "was bestimmt ist, durch Eintritt in den Stoffwechsel zur Erhaltung und Entfaltung des menschlichen Organismus zu dienen."[14] A substance or a composition must have the purpose of being metabolized in the human organism in order to be qualified as a "Nahrungsmittel".[15] Substances intended for use of food and for non-food use were only excluded from patentability when their main purpose was to be metabolized in the organism.[16]

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12 Bericht der VII. Kommission betreffen den derselben zu Vorberathung überwiesenen Entwurf eines Patentgesetzes, No. 144 der Drucksachen, Deutscher Reichstag, 3. Legislatur-Periode, 1. Session 1877, 6.

13 Sec. 1 of the German Patent Act of May 25, 1877, Reichsgesetzblatt 1877, 501. "Patente werden erteilt für neue Erfindungen, welche eine gewerbliche Verwerthung gestatten. Ausgenommen sind: 1. Erfindungen, deren Verwerthung den Gesetzen oder guten Sitten zuwiderlaufen würde; 2. Erfindungen von Nahrungs-, Genuß- und Arzneimitteln, sowie von Stoffen, welche auf chemischen Wegen hergestellt werden, soweit die Erfindugnen nicht ein bestimmtes Verfahren zur Herstellung der Gegenstände betreffen."

14 *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 173, *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 115.

15 Another definition of the term "Nahrungsmittel" is "Mittel (…), die zur Ernährung des Menschen dienen, von ihm genossen werden, um in den Stoffwechsel des menschlicheen Organismus zum Zweck der Ernährung einzutreten." *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 115.

16 *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 175, *Pietzcker*, Patentgesetz und Gebrauchsmusterschutzgesetz, Berlin&Leipzig 1929, 147.

"Genussmittel ist, wass zu dem Zwecke in uns aufgenommen wird, um Gefühls-, Geschmacks- oder Geruchssinn in wohlthuender Weise zu beeinflussen."[17] Inventions were only classified as "Genusssmittel" if they were intended for consumption in the human organism.[18] Odorous substances, tobacco, cigars and cigarettes as well as cosmetics, were not qualified as "Genussmittel", as they were not consumed in the human organism.[19]

The exemption referred only to food, e.g. substances or compositions. The exemption did not cover patents on food-related processes. The wording "as far as the inventions do not regard methods of production thereof" of Sec. 1 of the German Patent Act of 1877 did not explicitly refer to food. It referred directly only to chemical substances. The rationale of Sec. 1 of the German Patent Act of 1877 was only to keep food *per se* free from patent protection. Moreover, food was regarded as a chemical substance. Thus, food-related processes were considered patentable.[20]

Feed was in principle patentable, because food did not include feed according to the "allgemeinen Sprachgebrauch und die Ausdrucksweise verschiedener anderer Reichsgesetze."[21] Consequently also patents on feed-related processes were obtainable.

The exemption was not included in the German Utility Model Act, the "Gebrauchsmustergesetz" (GebrMG). Utility models granted the owner similar rights as patents. But the reasons for the exemption applied also to utility models. Thus, the exemption was considered valid for utility models too, and food was consequently not eligible for protection by utility models.[22]

17 *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 173.

18 *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 115.

19 *Metzger*, Nahrungsmittel und Erfindungsschutz: Eine Zusammenstellung patent- und erfinderrechtlicher Gesichtspunkte für die Lebensmittelindustrie, Ph.D. Thesis, University of Erlangen 1951, 12.

20 The patentability of processes for the production of chemical substances was directly referred to in Sec. 1 PatG of 1877. *Seligsohn*, Patentgesetz und Gesetz, betreffend den Schutz von Gebrauchsmustern, 7th ed., Berlin&Leipzig 1932, 53.

21 *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 115. *Kohler*, Handbuch des Deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 173. The "Nahrungsmittelgesetez vom 14. Mai 1879" was also not applicable to animal feed. The rationale of the German Patent Act of 1877 would have also required that feed be excluded from patentability as well, as the constellation of interests with regard to feed is comparable with that to food. *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 115.

22 *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln 1968, 1854.

The reactions to the exemption diverged from agreement to disagreement. The legislature's justification and the different opinions in jurisprudence about the exemption in the German Patent Act of 1877 are explained.

The legislature of the first German Patent Act of 1877 justified the exemption with the danger of diminishing food availability and the danger of unfair competition. Public health and nutrition were considered superior public goods and thus led to the exemption in the German Patent Act of 1877. These superior public goods prohibited any drop in food availability. Patents were regarded as monopolies at that time that entailed the danger of excluding the public from beneficial food. Moreover, patents on food would prohibit competition. Thus, patents on food might lead to a price increase for food.

Another reason for this step was related to unfair competition. The public was to be protected from advertising with patents, as it could associate regulatory approval with a patent on a food. This assumption could lead to blind confidence in patented food. Additionally, the exemption would not cause a gap in protection. Patents on food-related processes would guarantee effective protection. Process patents on food-related inventions were considered politically appropriate because unlimited consumption of food would be possible. Potential misuse of food-related patents would be avoided by disclosure of the patent application. This disclosure would allow the public to assess the benefits of an invention.[23]

Many authors attacked the exemption in the German Patent Act of 1877 because they were not convinced of the legislature's reasons for excluding food from patentability. The author of the most acknowledged commentary on the German Patent Act of 1877, *Kohler,* criticized the German Patent Act of 1877, based on his assertion that not the patent system, but competition law was the proper means to prevent the abuse of patents for advertising purposes. *Kohler* also stated that the option of compulsory licenses would ensure public nutrition and availability of food. There was hardly any necessity for the exemption in view of compulsory licenses.[24] He suggested expropriation as an effective means to make patent-protected food accessible to the public.[25]

23 Entwurf eines Patentgesetzes nebst Motiven zur Vorlage an den Reichstag, Nr. 8 der Drucksachen, 3. Legislatur-Periode, 1. Sitzung 1877, 17.

24 *Damme&Lutter*, Das deutsche Patentrecht: Ein Handbuch für Praxis und Studium, 3rd ed., Berlin 1925, 202.

25 *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 172, 173, *Ephraim*, Deutsches Patentrecht für Chemiker, Halle an der Saale. 1907, 103, *Osterrieth*, Lehrbuch des gewerblichen Rechtsschutzes, Leipzig 1908, 77, *Hubmann&Götting*, Gewerblicher Rechtsschutz, 7th ed., München 2002, 177. Dissenting *Seligsohn*, who judges the exemption to patentability of foodstuffs as abolutely important for public welfare ("größte Wichtigkeit für die Volkswohlfahrt"), Patentgesetz und Gesetz, betreffend den Schutz von Gebrauchsmustern, 7th ed., Berlin&Leipzig 1932, 53.

Kohler[26] argued that the exemption did not meet its goal at all because it did not guarantee the availability of beneficial food-related inventions. Market exclusivity due to patent protection constitutes the award for the inventor's hard and costly work. The exemption thus diminishes the incentive for inventors to create new beneficial food.

The author of a well-known commentary on the German Patent Act, *Seligsohn,*[27] discovered an anomaly in the exemption and the patentability of food-related processes. Concerns about substance patents for food apply also to patents on food-related processes. This anomaly is based on the legislature's intention to enable the economic exploitation of more effective processes.

The reasoning behind of Sec. 1 German Patent Act of 1877 should also have required the exemption to patentability of food-related processes because of the economically comparable threat of monopolies.[28] Patents on food-related processes could influence food availability to the same extent as patents on substances. A patent on a breakthrough innovation in the form of a food-related process can endanger food availability in the same way as a patent on food.

Food was regarded as a chemical substance that was excluded from patentability in the German Patent Act of 1877. So patenting food would not have been possible even without the exemption.[29] The exemption to patentability of chemical substances was widely criticized, too.[30] Supporters of the exemption of chemical substances argued that chemical substances as opposed to mechanical products, were discoveries rather than inventions and therefore must be excluded from patentability. Finally, the legal scholar *Gareis* argued that public welfare rather than an inventor's rights justified the exemption leaving no space for patent protection in areas of public interest.[31]

An international survey of the patentability of food in the 19th century delivered a cleaved picture. While there was no exemption in Anglo-American legal systems, many other countries[32] did exclude food from patentability.

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26 Even more convincing the wording of *Kohler*: "(Verhinderung von Monopolen als Argument) enthält ein Moment, das gerade in Gegentheil umschlägt; denn da das Erfinderrecht die Menschheit bereichert, so sollte man gerade das Erfinderrecht auf dieses Gebiet lenken: solches könnte nur dazu führen, dass die Erfindungen vermehrt und dadurch die Lebensgüter der Menschheit gesteigert werden. Sollte die Allgemeinbenützung der Erfindung unumgänglich sein, so wäre nöthigenfalls vom Recht der Enteignung Gebrauch zu machen." In: *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 173.

27 *Seligsohn,* Patentgesetz und Gesetz, betreffend den Schutz von Gebrauchsmustern, 7th ed., Berlin&Leipzig 1932, 53.

28 *Nastelski,* in: *Reimer* (ed.), Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln etc. 1968, No. 87, Sec. 1, 115.

29 *Kent*, Das Patentgesetz vom 7.4.1891, Berlin 1906, No. 348, Sec. 1.

30 *Metzger*, Nahrungsmittel und Erfindungsschutz: Eine Zusammenstellung patent- und erfinderrechtlicher Gesichtspunkte für die Lebensmittelindustrie, Ph.D. Thesis, University of Erlangen 1951, 3.

31 *Gareis*, Das Deutsche Patentgesetz vom 25. Mai 1877 samt den hierzu erschienenen Verordnungen und Bekanntmachungen, Berlin 1877, 39.

32 Luxembourg, Sweden, Norway, Tunis, Austria, Denmark, Hungary, Russia, Finland and Japan, in: *Kohler*, Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 176.

II. The Amending Act of 1891 and the *Kongorot* decision

The exemption refers only to food, but not to food-related processes.[33] So substance claims were excluded from patentability, but process claims were allowable under the German Patent Act of 1877.

Parallel imports of food from countries where food-related processes were not patentable could not be prohibited, as the scope of process patents did not extend to the product directly obtained from the process. Switzerland did not have a patent system until 1888 and chemical substances were not patentable until 1907 in the Swiss patent system.[34] Consequently, there was no patent protection for food and chemical substances in general. The circumvention of patented processes by imports from Switzerland was considered to be an enormous deficit.[35]

The deficits in the scope of protection of the German Patent Act of 1877 led to the Amending Act of 1891, which increased the scope of protection of patents on food-related processes as described below, but did not yet abolish the exemption. An expert commission, the "Enquete in Betreff der Revision des Patentgesetzes vom 25. Mai 1877," was appointed to draft the Amending Act. The task was to improve and internationalize the German Patent Act of 1877. The enquete commission focused on an extension of the scope of process patents to include the product that was directly obtained from a patented process.[36] The discussion was concentrated on processes for chemical substances in general. The abolition of the exemption to patentability of food, pharmaceuticals and chemical substances was not discussed. The reasons for this omission have not been traceable. The exemption was only negotiated in the context of improvement of process patents.[37]

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33 *Kohler*, Handbuch des Deutschen Patentrechts in rechtsvergleichender Darstellung, Mannheim 1900, 176.

34 *Stolz*, Der Aufbruch der Schweiz ins Industriezeitalter, 7, in: *Stolz*, Industrialisierung und Innovation in Großbritannien und der Schweiz, Basel 2004, available at www.wwz.unibas.ch/wige/-lehre/skripten_stolz/Stolz_Vorl2_Schweiz_im_Industriezeitalter.pdf.

35 Swiss exports of dye used for colouring and printing to Germany, one of the main producers of coal based dye, amounted to 1.75 million *Reichsmark* in 1884. Bericht der Enquete-Kommisssion zur Revision des Patentgesetzes, Berlin 1887, 16.

36 Stenographische Bereichte über die Verhandlungen der Enquete in Betreff der Revision des Patentgesetzes vom 25. Mai 1877, Berlin 1887, questions 7-9, 89.

37 The representatives of the chemical industry opposed patents for chemical substances in the first place during the negotiations of the German Patent Act of 1877. These representatives persisted during the negotiations of the Amending Act of 1891 that product claims would prevent improvements of the production process and therefore could not be allowed. Bericht der Enquete-Kommisssion zur Revision des Patentgesetzes, Berlin 1887, 19.