Institut Barcelona d'Estudis Internacionals

Academic Year 2017-2018

EXPLORING THE SPREAD OF OBESITY IN DEVELOPING COUNTRIES THROUGH THE LENSES OF TRADE LIBERALIZATION AND URBANIZATION

Dissertation submitted by:

Marta Anglès

in partial fulfillment of the requirements for the degree of

MASTER'S IN INTERNATIONAL DEVELOPMENT

SUPERVISOR: Matthias Vom Hau

DECLARATION

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ABSTRACT

Nowadays, obesity is spreading at an unprecedented path on the global sphere; which has come to be considered a public health emergency. Nevertheless, the global distribution of such phenomenon seems to be targeting developing countries with more emphasis than ever, with the unusual emergence of a dual burden of malnutrition within the same country. For instance, there are several academic debates on the underlying reasons behind the expansion of such tendency, as there are multiple global events taking place simultaneously that are strongly interconnected and interrelated. The present research aims at exploring the advancement of obesity in developing countries through the lenses of urbanization and trade liberalization processes. Firstly, the paper analyses which factors inherent to trade liberalization and urbanization processes affect the global food distribution, accessibility and availability, which in turn influence the shifts in food consumption patterns over time; termed under the "nutrition transition" process. In order to evaluate such impacts; the paper goes through the analysis of three case studies, in order to identify the main drivers of the obesity epidemic in each case. This study's findings demonstrate that trade liberalization and urbanization do play an important role in shaping obesity patterns, although in completely different levels of importance. Moreover, it assesses that such phenomena affect the obesity trends in developing countries but in different moments across time.

Keywords: Nutrition Transition, Urbanization, Trade Liberalization, WTO, NAFTA, obesity epidemic, malnutrition.

1. Introduction

The process of trade liberalization is expanding worldwide at an unprecedented path. Trade liberalization could be described as the process of reducing or eliminating barriers to trade; and such can be realized unilaterally, bilaterally or multilaterally.[1] Some potential barriers to trade could be governmental laws and regulations such as tariffs, import quotas and governmental subsidies, among others.[2] Overall, such phenomenon allows an easier and quicker transfer of goods and services across borders.

Although economic interactions have been taking place within nations throughout history, particularly after the Second World War; it was not until the decade of the 1990s that trade liberalization got established into the global consciousness. Until 1994, world trade policy was managed by the member nations of the General Agreements on Tariffs and Trade (GATT). However, the final GATT round, the Uruguay Round (1987-1994); established the World Trade Organization (WTO) in 1994.[3] Within this structure, member states agree on trade deals through "Rounds"; in which they address trade mechanisms such as protectionist mechanisms (tariff and non-tariff barriers); subsidies, intellectual property; food direct investment (FDI) and food safety; among many others.[4]To sum up, since such date word trade policy has been managed under such supranational organization; with the aim of improving economic growth through the opening of markets to foreign trade and investment; therefore creating a more integrated global economy.

The integration of the global economy through trade openness predicts a clear impact on the exchange and distribution of all types of goods and services among nations. Specifically, trade openness has a remarkable influence on agricultural and food exchange among nations. Before the era of economic liberalization; developing countries tended to favour the protection of their domestic agricultural markets.

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[1] Sara E. Clark et al. (2012) "Exporting obesity: US farm and trade policy and the transformation of the Mexican consumer food environment". International Journal of Occupational and Environmental Health, Vol. 18, No.1; page 54

[2] Ibid; page 54

[3] Geof Rayner et al. (2007) "Trade liberalization and the diet transition: a public health response". Health Promotion International, Vol. 21, No. S1, page 67

[4] ibid., page 67

Nevertheless, during the 1970s and 1980s, many developing countries went through a process of "structural adjustment"; which went along with the implementation of more market-oriented agricultural policies.[5] Such process got accelerated during the 1990s, when many developing countries liberalized their agricultural markets internally and internationally. On the other hand; GATT's Uruguay Round (1987-1994) established the Agreement on Agriculture (AoA), which introduced agriculture and food into trade negotiations among nations.[6] The AoA specifies reductions in relation to agricultural commodities as well as their tariffication. [7]For instance, the introduction of food and agriculture on trade deals consequently affects the food chain on various layers. The main change-provoking engines are the opening of domestic markets towards international food trade through the increase of imports and exports; the promotion of Foreign Direct Investment (FDI) on food processing; the global expansion and advancement of Transnational Food Corporations (TFC); and the expansion of Global Food advertising and marketing worldwide. [8]

To begin with; the opening of domestic markets towards international food trade implies a progressive removal and reduction of barriers to foreign food imports. Such reduction implies the exponential entry of foreign food imports into the national territory; and therefore means an increase in the amount of food available nationally.[9] Nevertheless, the proportion of food imported is usually not comparable with the domestic food production; as agricultural advances have allowed the domestic production to boost in most countries.[10]Therefore, the main issue to take into account with the removal of barriers to foreign imports lies on the typology and quality of the imported foods; not only the quantity. In the case of developing countries; the removal of barriers to imports has gone in hand with the exponential arrival of processed, animal-sourced foods, and high in fats.

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[5] Corinna Hawkes(2006). "Uneven dietary development: linking the policies and processes of globalization with the nutrition transition, obesity and diet-related chronic diseases". Globalization and Health, 2:4; page 3

[6] Geof Rayner et al., *op.cit,* page 68

[7] Anne Marie Thow (2009) "Trade liberalisation and the nutrition transition: mapping the pathways for public health nutritionists". Public Health Nutrition: 12(11); page 2151

[8] S. Friel et al. (2013) "Monitoring the impacts of trade agreements on food environments". Obesity Reviews, 14 (Suppl.1); page 121

[9] Anne Marie Thow, *op.cit,* page 2151

[10] Anne Marie Thow; *op.cit,* page 2151

On the other side of the coin; the opening of domestic markets towards international food trade implies export promotion efforts. In this particular case, policies are being implemented in order to support export industries; which in turn motivate the use of local land to produce crops for export; especially in developing countries.[11] Such measure implies having a smaller amount of land in order to produce local, traditional foods for domestic consume; which results in a decreased production of traditional fresh foods such as vegetables; and therefore having to rely on foreign, processed imported foods. Overall, the production of crash crops for export goes at the expense of the production of traditional fresh foods; and therefore a decrease in their consumption. This tendency of crop promotion for export has been visible in most African nations since the mid-20th century[12]; which has consequently led to changes in food consumption patterns among their nationals; and an increase in the consumption of Western cereals, and processed foods.

The promotion of investment is also another measure embraced by trade liberalization policies; which plays a fundamental role in the integration of the global marketplace. International investment generally allows companies to buy, sell and invest in other companies in foreign countries.[13] Particularly, Foreign Direct Investment (FDI) would be defined as a long-term investment by an enterprise in one country into an enterprise in a foreign country, in which the foreign enterprise becomes an affiliate to the company.[14]For instance, one of the WTO agreements foresaw the GATS, which brings reductions on the restrictions on the foreign ownership of companies.[15] Such agreement offers an improved protection of the intellectual property rights under the TRIPs (Agreement on Trade-Related Aspects of Intellectual Property Rights) agreement.[16] Furthermore, the TRIMs (Agreement on Trade-Related Investment Measures) agreement is engaged to remove any restrictions on where companies source their inputs. The common ground of the different WTO agreements is the "national treatment" measure; which means that

[11] ibid, page 2153
[12] Ibid page 2154
[13] Corinna Hawkes; *op.cit;* page 6
[14] Corinna Hawkes; *op.cit*; page 6
[15] Anne Marie Thow; *op.cit*; page 2154
[16] ibid, page 2154

foreign companies receive the same treatment as domestic companies. [17]As policies to encourage investment are being implemented; there is a high proportion of food-related foreign direct investment (FDI) that is being redirected by food processors and retailers into food processing of developing countries; with a consequent arrival of highly processed food available for national costumers. Furthermore, FDI is found to be an effective way for Transnational Foreign Companies (TFC) to grow into foreign markets,[18] as fewer barriers to trade and more incentives to investment allow transnational food companies to reduce costs, gain market power and obtain gains in marketing and food distribution.[19] On the other hand, investment into tourism-related industries has also an impact into food availability and distribution. As restrictions on the flow of people among countries are diminishing, such facilitates the introduction of non-traditional foods for tourist's consumption, as well as the passage to a service economy.[20] The increase in the flow of people and tourism flows therefore is linked to the arrival of new processed foods into the local economy.

As mentioned, trade liberalization has gone in hand with an increased investment into advertising corporations; which in turn has brought an expansion of food marketing and advertising, a global phenomenon.[21] Particularly, from 1980s onwards, advertising agencies have consolidated and got transnational through Foreign Direct Investment; which in turn has allowed them to grow into big vertically integrated corporations.[22] Global vertical integration itself defines the process in which a company brings together the entire process of producing, distributing and selling a particular food under its control by buying and contracting other companies and services worldwide; which therefore reduces the transaction costs associated with having different suppliers. [23]Food marketing itself has allowed the speeding up of the food trade flow; and it implements strategies in order to

[17] Barry M Popkin et al. (2011) "Global nutrition transition and the pandemic of obesity in developing countries". Nutrition Reviews, Vol. 70 (1); page 6

[18] S. Friel et al., *op.cit;* page 125

[19] Phillip Baker et al. (2016) "Trade and investment liberalization, food systems change and highly processed food consumption: a natural experiment contrasting the soft-drink markets of Peru and Bolivia". Globalization and Health, 12:24, page 2

[20] Anne Marie Thow; *op.cit*; page 2155

[21] Geof Rayner et al.; *op.cit;* page 71

[22] Corinna Hawkes; *op.cit;* page 9

[23] ibid, page 3

influence the consumption habits of nationals; through changing their cultural expectations on food.[24] Therefore, such has resulted in the encouragement of heavily dense, highly sugared drinks, especially in developing countries.

All these factors influence the attractiveness, accessibility, availability, price and promotion of food items worldwide; therefore inciting changes in the food consumption patterns in worldwide populations; particularly in developing countries.[25]For instance; the progressive change in consumption patterns; also known under the term "nutrition transition"; is a global phenomenon which coincides with the tendency towards a pronounced consumption of animal-sourced foods; vegetable oils and caloric sweeteners; and a reduced intake of traditional domestic foods; basic grains, vegetables and legumes; particularly in developing countries.[26] The nutrition transition seems to have direct implications in terms of health and well being; as there is a global dramatic increase of chronic non-communicable diseases and a remarkable advancement of the obesity epidemic; particularly in developing countries. According to the United Nations Children's Fund (UNICEF); obesity has tripled throughout the world; in 2016, over 650 million adults 18 years and older were considered obese; and 41 million children under the age of five were considered overweight or obese. [27]The rise of such illnesses can probably be tracked in the adoption of unhealthy consumption patterns; with an excessive consumption on products high in fat and sugar. For the first time, malnutrition and obesity are two simultaneous phenomenon's taking place; even within the same country.

On the other hand, urbanization is a growing phenomenon considered to be a crucial factor in bringing important changes in diet and lifestyle, specifically in developing countries. To begin with, urban spaces are linked to a sedentarization process, as urban jobs are increasingly turning capital-intensive and focused on the service sector, which involves a reduction of the human energy in the production of goods

[24] Geof Rayner et al.; *op.cit;* page 71

[25] S. Friel et al.; *op.cit*; page 124

[26] Corinna Hawkes; *op.cit;* page 2

[27] UNICEF (2017) , Centro de prensa: obesidad y sobrepeso. Fondo de las Naciones Unidas para la Infancia; in Felipe Torres et al. (2018), "Obesity and Public Health in Mexico: Transforming the Hegemonic Food Supply and Demand Pattern". Problemas del Desarrollo. Volume 49, Number 193, page 4

and services.[28] Furthermore, urban spaces offer more points of encounter with hypermarkets and fast food outlets, as well as with global food advertising campaigns, which directly influence the consumption preferences of citizens towards processed, westernized foods, high in fats and sugars. Important enough to mention, the technological advancement and its outlets are way more present in urban spheres; such as the use of cars, or the spread of TV. [29]The contact with technological progress clearly reduces the need for human energetic expenditure to perform daily tasks.[30] Finally, the limited space that urban spheres offer due to their high density, limits the performance of physical exercise and mobility, as there is less space to walk.

The present research seeks therefore to study if trade liberalization and urbanization do have a causal link with the expansion of obesity among developing countries. In order to study such hypothesis, I will proceed at reviewing the current academic debates on the role of trade freedom on obesity and dietary-related illnesses on developing countries; the role or urbanization on shaping consumption and lifestyle patterns; and the tendency and distribution of the obesity epidemic on the global sphere; among others. On the following section, I will proceed at analysing 3 case studies out of 10 developing countries with remarkable high or low obesity rates. The chosen countries are Mexico, Egypt and Vietnam; which are really open to global trade, but however present different characteristics concerning obesity rates and urban population rates. The differences in such variables will be analysed in order to prove the correlations between them. Finally, I will make an interpretation of the results and I will extract conclusions from such analysis.

2. Literature Review

There is a vast array of literature that focuses on the linkages between trade liberalization and their effects on the food environment; therefore influencing the nutrition transition in developing countries. The nutrition transition process has been

[28] Barry M.Popkin (1999) "Urbanization, Lifestyle Changes and the Nutrition Transition". World Development Vol. 27, No.11; page 1911
[29] Yevgeniy Goryakin et al. (2014) "Economic development, urbanization, technological change and overweight: What do we learn from 244 Demographic and Health Surveys? ". Economics and Human Biology 14 (2014); page 111
[30] Barry M Popkin et al.; *op.cit;* page 6

vastly mentioned in different academic works, and most authors agree that such process is taking place in most developing countries and that it follows a similar trend towards the increased consumption of animal-sourced and processed foods. For instance Siegel defines the nutrition transition as "*the dual process of dietary convergence towards processed food consumption and dietary adaptation to a wide range of processed foods targeted at different niche markets*" [31]. Particularly, scholarly literature tends to focus on the role of the WTO agreements in the shift in consumption patterns in the developing world; and there is a common agreement that developing countries tend to suffer the worst consequences of trade liberalization. As an example, Thow stresses out that two-thirds of the WTO membership is comprised of developing countries, and that in most cases, such countries lack technical expertise concerning the implications of openness to trade.[32] She therefore implies that such countries tend to be in risk when they make free trade commitments, as they don't have enough understanding of its implications. [33]

On the other hand, most academic work agree on the fact that trade liberalization has provoked and exacerbated sharp inequalities between countries, regions and social groups; concerning their consumption patterns and their accessibility to food. An example of such inequalities is the global academic consensus on the cohabitation of under nutrition and obesity; a dual burden that developing countries are currently facing,[34] as explained by Hawkes. Particularly, Friel et al. and Thow stress the role of trade liberalization on the spread of unequal consumption patterns. While Friel et al. have focused on the uneven development of dietary habits outcomes among regions and its contribution to the unequal spread of under nutrition, obesity and chronic diseases in developing countries;[35] Thow has defended the fact that remarkable changes in food availability has hit the poorest sector of societies; as they are unable

[31] Alana D.Siegel (2016) "NAFTA Largely Responsible for the Obesity Epidemic in Mexico"; Washington University Journal of Law & Policy, Volume 50, page 202
[32] Anne Marie Thow; *op.cit;* page 2151
[33] ibid, page 2151
[34] Corinna Hawkes; *op.cit;* page 2
[35] S. Friel et al.; *op.cit*; page 121

to access health-care services and they are thus more vulnerable to obesity and mortality due to chronic diseases. [36]

Several scholars like Popkin et al., and Goryakin et al. highlight the reduction of barriers to import of agricultural goods as the main and most important measure influencing the nutrition transition in developing countries.[37] [38] For instance, processed and high value imports, such as meat and dairy, have risen dramatically in developing countries the last 15 years. However, other scholars highlight different measures that come with trade liberalization that are crucial in the nutrition transition process. For instance, Thow highlights currency devaluation as a strategy used in order to make exports more attractive, by decreasing the cost for purchasing countries.[39] She stresses that such strategy might affect diets in two manners. On the one hand, currency devaluation might increase the cost of domestic food and therefore reduce food consumption and its diversity; as happened in Senegal and Congo in response to a 50% currency devaluation in 1994. On the other behalf, if the domestic production has the capacity to respond to currency devaluation, such might have positive effects, as it might increase the availability and consumption of locally produced foods. [40]

Furthermore, Thow stresses the reduction of subsidies as an important measure that comes with trade liberalization that has not been accounted for. In her work, she highlights that the reduction of subsidies in developing countries has the power to modify food availability and prices, through changing incentives for consumption.[41] However, the impact on food availability of such measure depends totally on the nature of the products that are being subsidized by the government. As an example, if traditional food items are subsidized but such subsidies are taken away, producers will shift towards the production of crops for export; which will cause a decline in the availability of traditional foods and an increase in the consumption of foreign

[36] Anne Marie Thow ; *op.cit;* page 2156

[37] Barry M Popkin et al.; *op.cit;* page 9

[38] Yevgeniy Goryakin et al.(2015) "The impact of economic, political and social globalization on overweight and obesity in the 56 low and middle income countries". Social Science & Medicine 133 , page 68

[39] Anne Marie Thow ; *op.cit*; page 2154

[40] Ibid, page 2154

[41] Ibid, page 2155

processed foods. [42]In case the subsidized production falls on animal products and highly sugared items; the removal of subsidies will therefore correct the distortions towards an excessive consumption on unhealthy food items.

Scholarly literature vastly agrees that trade liberalization has a clear impact on the nutrition transition on developing countries. Nevertheless, there is a divergence concerning the quality and implications of such impact. For instance, most of literature scholars, such as Baker et al., Hawkes, and Rayner et al. agree on the fact that population's health on developing countries suffers a clear deterioration under trade liberalization; as such allows the easy transfer of extremely unhealthy consumer goods across borders; and therefore eases its consumption.[43] [44] [45] On the other hand, a minority of scholar literature argues that trade liberalization could have both positive and negative influences on the consumption patterns of the developing world. For instance, Thow argues that currency devaluation, a strategy brought by trade liberalization, can stimulate domestic food consumption; and that the removal of subsidies can reduce the availability and affordability of foods high in fats and oils.[46] Therefore, having positive dietary implications on the population. As a concrete example, there is a scholarly discussion over the implications of a higher animal-sourced intake in developing world; on the one side, it is defended that a sustained consumption has improved protein and nutritional intake in countries that suffer under nutrition. On the other behalf, such sustained animal-sourced intake is linked to diseases and obesity.

Concerning the influence on consumption patterns, there is a general agreement that factors such as changes in cultural expectations due to global advertising, the penetration and easy contact with TFC in domestic areas, and the easy availability and diversity of food items, among others, determine the nutrition transition towards a certain kind of foods. Popkin et al. and Hawkes however highlight that the main feature that determines the shift in consumption patterns is the relative price

[42] Ibid, page 2155
[43] Phillip Baker et al.; *op.cit;* page 2
[44] Corinna Hawkes; *op.cit*; page 2
[45] Geof Rayner et al. ; *op.cit*; page 70
[46] Anne Marie Thow ; *op.cit*; page 2154

variation among food items. For instance, they defend that the increased consumption of animal-sourced foods and oils, and the decreased consumption of vegetables can be tracked through the relative shifts in price structures[47] that have been taking place since World War II. [48]

Scholars vastly agree on animal-sourced foods, vegetable oils and highly sugared items to be the main components present in the newly consumption patterns in the developing world. However, some scholars stress the relevance of oil in the new nutrition transition, whose consumption stands out more than the others items. Hawkes' scholarly work points out to the fact that world oil crop production has increased of over 60% between 1990 and 2003; mainly in the form of 3 types of oil: soybean oil, palm oil and canola/rape oil. Furthermore, she suggests that between 1982 and 2002, vegetable oil has contributed more than any other food item to the increase of the caloric availability worldwide.[49] Popkin et al., on their behalf, make reference to the "*vegetable oil revolution*"; as by 2010, cheap vegetable oils were available throughout the developing world[50], which created a huge demand. Following this line, between 1985 and 2010, individual intakes of vegetable oils had increased between three and sixfold in the developing world.

Vast academic work agrees on the fact that rural and urban areas in any country present clear differentiated consumption patterns; and it is mutually agreed that the contrast between these two spheres is more marked in lower income than in higher income countries. Concretely, Popkin et al. mention in their work that in higher income countries, market penetration into rural areas is more common; and thus they tend to have a national integrated food distribution system that provides the same items in every region.[51]

Literature converges on the fact that urbanization plays a fundamental role in shaping citizen's lifestyle and health. For instance, Sorensen et al. have pointed out

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[47] Corinna Hawkes; *op.cit*; page 2

[48] Barry M Popkin et al.; *op.cit*; page 9

[49] Corinna Hawkes; *op.cit*; page 4

[50] Barry M Popkin et al.; *op.cit;* page 8

[51] Barry M.Popkin (1999) "Urbanization, Lifestyle Changes and the Nutrition Transition". World Development Vol. 27, No.11; page 1908

that urban areas are "*extremely complex environments in which a large number of environmental, social, cultural and economic factors have an impact on individual and population health.*"[52] More concretely, several studies mention how lifestyle patterns in urban spheres affect health habits and make it easier for obesity to rise. Again, Sorensen et al. have pointed out: "*one of the most prominent features of urbanization is how it impacts on lifestyle. Changes in food habits, physical activity, work patterns, smoking, alcohol consumption, leisure-time activities and travelling patterns all impact on health*"[53]; and thus, many of these factors are linked with an increased risk of obesity. Following this line, others point out at cities as places prone for the formation of an obesogenic environment. The concept of obesogenic environment was defined as an environment leading to an excessive calorie intake and sedentary lifestyle of an individual[54]. Scholarly literature agree on the fact that urban spheres; particularly in the developing world, tend to have inadequate social environments and infrastructures; which therefore limit energetic expenditure through physical activity, and thus pushes its citizens towards sedentarization. Based on this theory, Özgür mentions urban planning as a crucial measure for cities in order to offer an environment that takes public health and the risk of obesity into account; particularly in the developing world.[55] For instance, the World Health Organization introduced a project in 1987 entitled "*Healthy Cities*";[56] which led to the recognition of the importance of social areas in urban spheres and of organizing an environment suitable for physical activity, particularly in European countries.

On the other hand, literature converges on the view that the urban sphere provides an easier exposure towards food processing technologies, as well as marketing a distribution systems that clearly promote the consumption of fast food, thus a transition to westernized diets. Furthermore, technological advancement has been

[52] Lars Rebien Sorensen et al. (2015) "Urban Diabetes. Understanding the Challenges and Opportunities". Cities Changing Diabetes; page 13
[53] ibid; page 13
[54] Hill JO et al. (2003)"Obesity and the environment: Where do we go from here?" Science 2003; in Özgür Pirgon et al. (2015) "The Role of Urbanization in Childhood Obesity". J Clin Res Pediatr Endocrinol 2015, 7(3), page 164
[55] Ibid, page 164
[56] Norris T, Pittman M. The healthy communities movement and the coalition for healthier cities and communities. Public Health Rep 2000; 115; in Özgür Pirgon et al. (2015) "The Role of Urbanization in Childhood Obesity". J Clin Res Pediatr Endocrinol 2015, 7(3), page 165

mentioned as a clear engine towards the reduction of physical activity in the urban sphere. Goryakin work highlights that the effect that urban residence has on obesity is weaker in higher income countries.[57] Therefore, there is a lower association between urban residence and obesity prevalence in higher income countries than in lower income countries.

These last decades, several countries have experienced remarkable variations concerning their overweight and underweight rates; and such shifts have been really present in developing and emerging countries. For instance, the OECD launched a report on countries' obesity rates; with data from 2015. Following this report, some countries with remarkable increases in obesity rates are Qatar (33% obesity rate); Mexico (32,4% obesity rate); Egypt (35% obesity rate); Turkey (22,3% obesity rate); Chile (25,1% obesity rate); Brazil (20,8% obesity rate); South Africa (26,5% obesity rate); and Costa Rica (24,4% obesity rate). [58] At the opposite side, there are countries that have gone through trade liberalization processes but however they have incredibly low obesity rates; such as the case of Vietnam (2,1% obesity rate); and Laos (5,3% obesity rate). [59] In order to make the case selection; I will proceed at selecting 3 different developing countries that are really open to trade; but however that are different in terms of obesity rates and in terms of urbanization rates. The chosen countries are Egypt, which has high obesity rates and low urbanization rates; Mexico, which has high obesity rates and high urbanization rates; and Vietnam, which has low obesity rates and low urbanization rates. My interest in choosing such three case studies is, firstly, to contrast how countries with different urbanization rates can have similar obesity rates; such as the case of Egypt and Mexico; and second; to analyse how a country that is highly liberalized and is highly engaged in international trade has nevertheless a remarkably low obesity rate, which is the case of Vietnam.

[57] Yevgeniy Goryakin et al.; *op. cit*, page 111
[58] OECD (2017), OECD Health Statistics 2017; in OECD(2017); "Obesity Update", page 3
[59] Central Intelligence Agency (US) (2018) Obesity-Adult Prevalence Rate: Available at: https://www.cia.gov/library/publications/the-world-factbook/fields/print_2228.html

3. Case studies

3.1.Mexico:

Mexico is nowadays going through a public health emergency; that mostly stems out from the food consumption patterns and tendencies of its nationals. The country is being hit by a double burden of malnutrition and obesity that walk hand in hand; accompanied by a rise in diabetes and other non-communicable dietary illnesses that pose a huge burden. For instance, there are around 78,5 million nationals who still suffer from different forms of food insecurity; while on the other hand; around 48,6 million nationals are considered overweight or obese; with 22,1 million adults hit by obesity alone.[60] For instance, the Ministry of Health valued the cost for treating obesity in 2015 at around 80 billion pesos (6 billion dollars).[61] Such devastating rankings catapults Mexico at the forefront of adult and child obesity worldwide.

However, this health emergency has not lasted forever; and it can be tracked during the trade liberalization policies hat Mexico embraced during the 1980s and 1990s. For instance, Mexico was struck by an economic crisis with an unpayable debt in 1982; which forced the country into the reorientation of their economic policy towards structural adjustment and trade liberalization.[62] Moreover, during this period the government embraced a change in the land ownership system; from collective ownership under the "*ejido*" system; to one where individuals could hold ownership of the land; including foreigners.[63]However, the culmination of such liberalization process was the signing of the North American Free Trade Agreement (NAFTA), in 1994. The NAFTA was signed by Canada, the United States and Mexico; with the aim of bringing economic integration; through the implementation of trade liberalization measures between such countries. Some of the agreement's measures for propelling trade liberalization include the promotion of food trade and global production sourcing; direct investment in food processing and a change in the retail structure (mostly trough the advent of supermarkets and convenience stores); the emergence

[60] Grain (2015) "Free Trade and Mexico's Junk Food Epidemic", Against the Grain; page 2
[61] ibid, page 3
[62] Felipe Torres et al. (2017) "Obesity and Public Health in Mexico: Transforming the Hegemonic Food Supply and Demand Pattern". Problemas del Desarrollo, Vol.49, Num.193; page 4
[63] Sarah E.Clark et al. ; *op. cit;* page 55

of global agribusiness and transnational food companies; and a deepening of the global food advertising, among others. [64]

Concerning the promotion of investment flows; NAFTA has created really favourable conditions for private foreign investors in Mexico. For instance, NAFTA has added provisions for the equal treatment of foreign and domestic investors; with the elimination of rules preventing foreign investors from owning more than 49% of a Mexican company.[65]Such provisions have provoked a huge increase in Foreign Direct Investment (FDI) from the US into the Mexican food processing industry. For instance, in 1987, US companies invested around 210 million dollars into Mexico's food processing industry; and 5,3 billion dollars in 1999.[66] Concretely, three-quarters of the Foreign Direct Investment (FDI) coming from the US has been invested into the production of processed foods; with a consequent increase on the sales of junk food and particularly soft drinks. Nowadays; Mexico is the third largest recipient of US Foreign Direct Investment in processed foods and beverages industries. [67]

Another effect of NAFTA on Mexico's food system is the arrival of a "*supermarket revolution*"; or an explosive growth of chain supermarkets, discounters and convenience stores; which went from 3.850 in 1997, to 5.729 in 2004.[68] The arrival of supermarkets proves to be crucial, as they concentrate most of the goods; and because they replace corner shops, also known as "*tiendas*"; therefore invading domestically independent forms of trade. Food corporations are, on the one hand, colonizing the dominant distribution networks of small-vendors; "*tiendas*". Such selling points therefore become the means through which transnational and domestic food companies sell and promote their foods to the citizens living in small towns; and therefore where plenty of processed and highly sugared food can be purchased. For instance, 90% of Coca-Cola and PepsiCo sales comes from "*tiendas*".[69] On the other hand, "*tiendas*" are being replaced by corporate retailers and convenience

[64] Corinna Hawkes (2016) "Globalization and Health, Uneven dietary development: linking the policies and processes of globalization with the nutrition transition, obesity and diet-related chronic diseases, International Food Policy Research Institute, Washington DC, in Grain; *op.cit*; page 4

[65] Sarah E.Clark et al.; *op.cit;* page 56

[66] Grain; *op.cit;* page 4

[67] Sarah E.Clark et al.; *op.cit*; page 60

[68] Grain ; *op.cit;* page 6

[69] ibid; page 6

stores. According to the Mexican Chamber of Commerce, five "*tiendas*" close for every convenience store that opens.[70]As mentioned, transnational food companies (TFC) have thrived through Mexico since the approval of NAFTA, particularly US-fast food companies. For instance, Mexico is nowadays Yum! Brand Inc.'s (owner of KFC, Taco Bell) largest regional market. [71]

Furthermore, the NAFTA agreement has promoted food trade within nations; which impacts Mexico's rate of food imports and exports. On overall trends, since the passage of NAFTA, trade flows between the U.S and Mexico have trended towards an increase in the amount of seasonal fruits and vegetables exported to the U.S and an increase in the amount of commodity crops and livestock products exported to Mexico.[72] For instance; before the passing of NAFTA, Mexico used to spend around 1,8 billion dollars per year on food imports. On the other hand, as of 2011, Mexico spent around 24 billion dollars per year on food imports[73]; most of them being extremely obesogenic and unhealthy. The increase in the import rates has a lot of implications in terms of the affordability and availability of food items for Mexican nationals; which therefore influences what they consume. Some of the most imported items since the passing of NAFTA has been corn; soybeans; livestock products and packaged products; among others. [74]To begin with; corn has always been a really important element in Mexican culture; however, the amount of corn exported from the US to Mexico has increased dramatically since the passage of NAFTA. If we compare the average annual level of corn exports from the US to Mexico during the decade before NAFTA, corn exports have quadrupled. Particularly, in 2008, the U.S export of corn to Mexico totalled 9,3 million metric tons, equivalent to about 40 percent of Mexican production.[75] Concerning soybeans; its imports have rocketed since the passage of NAFTA, despite not being typical from the traditional Mexican diet. The soybean trade was intensified by the passage of NAFTA and the removal of

[70] USDA, Foreign Agriculture Service, Gain Report, Mexico's Retail Food Sector, in Grain; *op.cit*; page 6
[71] Sarah E.Clark et al.; *op cit.* page 60
[72] K Hansen-Kuhn et al. (2012) "Exporting Obesity. How U.S. Farm and Trade policy is transforming the Mexican Food Environment". Institute For Agriculture and Trade Policy; page 2
[73] Alana D. Siegel; *op. cit*; page 203
[74] Sarah E.Clark et al.; *op cit.* page 62
[75] ibid; page 57

Mexican tariffs on US soybeans in 2003.[76] Nowadays, nearly all imports of soybeans into Mexico originate in the USA; and such imports have largely displaced domestic soybean production. Concerning livestock products; there has been a huge increase in the amount of livestock products exported to Mexico from the United States. According to the USDA Foreign Agricultural Service, the quantities of beef/veal, chickens and pork exported increased 234, 307 and 687 percent respectively from 1991 to 2007. [77]On the other hand, NAFTA has come along with a huge increase in the amount of "consumer-oriented" products from the US to Mexico; and a huge growth in the Mexican import of snack foods. The U.S possesses more than 98% share of the import market for snacks foods in Mexico[78]; products containing refined sugars with high-energy intake. Finally, since NAFTA, Mexico has become one of the largest and fastest growing markets for US dairy production.

Concerning the global food advertising and marketing, NAFTA has proved crucial for its expansion into Mexico. A bright example is the huge amount of money that transnational food companies invest on public relations and visibility; in order to cover the problems and controversy that their food and presence generate. For instance, such companies invest on advertisement campaigns that associate their presence and production with family values, sustainability and health, among others. Concretely, big corporations seek visibility in government campaigns. As an example, in 2013, the Ministry of Social Development signed agreements with Nestlé and PepsiCo in order to implement a "National Crusade Against Hunger" [79]campaign around Mexico.

The mentioned measures that has come along the passage of NAFTA has had immeasurable impacts on the food system and nutritional landscape in Mexico, with a consequent astonishing impacts on the food consumption trends of its nationals; that have changed beyond recognition over the last 2 decades. For instance, the consumption patterns before the liberalization trends were based on domestic

[76] ibid; page 57
[77] K Hansen-Kuhn et al.; *op.cit*; page 3
[78] Alana D. Siegel; *op. cit*; page 213
[79] Grain ; *op.cit;* page 7

factors; such as the local endowment in natural resources and the climate.[80] The food came from basic primary activities such as fishing, agriculture and hunting; and therefore such led towards a really heterogeneous food availability and consumption depending on the region.[81] However, Mexican consumption patterns have shifted away from such regional traditional food trends towards homogeneous, energy-dense, processed and animal-source foods; with a really different nutritional composition and subsequent health implications. For instance, since the passage of NAFTA, the national percentage of energy deriving from fat and refined carbohydrates has skyrocketed in Mexico. However, the most remarkable trends are the exponential increases in processed dairy products; snack foods; soft drinks and processed meats.[82] Concerning dairy products; there has been a significant increase in its consumption between 1989 and 2002; particularly ice cream and frozen desserts; whose consumption tripled.[83] The snack food consumption has increased from 1,54 billion dollars in 1999 to around 1.750 billion dollars in 2001.[84] The consumption of soft drinks skyrocketed, which also constitute the major contributor to the increased sugar intake. For instance, between 1999 and 2006, the consumption of high-energy beverages more than doubled for adolescents. [85] Least but not last, there has been an increase in meat consumption. When data is observed, fresh meat consumption has increased really modestly; but the intake of processed meats such as sausages and prepared meats has increased a lot compared to other kinds of meat.

Overall, since the passing of NAFTA, Mexico has been receiving a big flow of investment in agribusiness, and an important flow of imports from the U.S such as corn, snack foods and processed meats.[86] Such measures have completely modified the Mexican food system; from one more domestic and heterogeneous towards an homogeneous system with overabundance of obesogenic foods. In particular, one of NAFTA's drawbacks has been its ambiguity on allowing its parties to regulate

[80] Felipe Torres et al. ,*op. cit*, page 5
[81] ibid, page 5
[82] K Hansen-Kuhn et al. , *op.cit,* page 4
[83] ibid, page 3
[84] ibid, page 3
[85] ibid, page 3
[86] Sarah E.Clark et al.; *op cit.* page 62

against the emergence of non-communicable diseases propelled by the agreement.[87] Therefore, governments struggle in implementing measures to fight this tendency within the legacy of the treaty, as illustrated by Mexico. The shift in the food landscape has meant a change in the national consumption patters, particularly in the last 2 decades. Nowadays, Mexicans from all geographical regions and socioeconomic status are consuming more added fats and sugars, mostly coming from the newly introduced foods from the US; and the obesity epidemic is growing exponentially and becoming a public health concern.

On the other hand, Mexico has experienced a constant process of urbanization during the whole 20th century, at different paces. For instance, from 1970 to 2000, the total Mexican population doubled to reach 97,5 million people; attaining a degree or urbanization of 67,3%.[88] Nowadays, Mexico's urban population attains an 80% rate[89], with a third of its population living in Mexico City. At the present day, there is no doubt that Mexico is one of the most highly urbanized nations in Latin America; whose current rate of urban growth is among the three highest in the region. [90]Thus, urban transition in Mexico is a really rapid phenomenon; which at the same time goes in hand with many mobility, environmental and public challenges; that influence public health and the spread of obesity. For instance, it has been proven that urban areas in Mexico are the ones with the highest prevalence of obesity rates, with a sharp difference with rural areas. Nowadays, the metropolis of Mexico City has a prevalence of obesity of 35%. [91]Some challenges and drivers might be, in the first place, the extremely dense urban space; which is clearly linked to a lack of facilities and outdoor areas to exercise and walk. As an example, Mexico City has around 9.700 people per km2. [92]On the other hand, a big challenge is the increased use of transports for commuting, therefore with a decrease in walking. For instance, more than 200.000 cars are added to Mexico City street's every year; and its metro is

[87] Alana D. Siegel; *op. cit*; page 197
[88] Gustavo Garza (2002) "The Transformation of the Urban System in Mexico". New Forms of Urbanization: Conceptualizing and Measuring Human Settlement in the Twenty-first Century'; page 4
[89] Populationof.net (2018) "Mexico Population" Available at: https://www.populationof.net/mexico/
[90] Wayne A. Cornelius, Jr. (1969) "Urbanization as an Agent in Latin American Political Instability: The case of Mexico". Latin American Political Instability, Vol.63; page 837
[91] Lars Rebien Sorensen et al.; *op.cit;* page 28
[92] ibid, page 26

one of the world's busiest, with more than 4 daily million users.[93] As mentioned, urban work demands less physical exercise than rural work; as it's more focused on the industrial and service sector and therefore requires less physical activity. Therefore, the exponential increase in Mexico's urbanization rates is a subject worth considering when valuing the factors behind the obesity spread.

3.2. Egypt:

In Egypt, the obesity epidemic has achieved remarkably high levels, and is at the forefront of the obesity rankings worldwide. Following a 2014 report, men's obesity rate in Egypt is of 22%; and women's obesity rate achieved 42%; therefore with a national rate of approximately 33%.[94] It has been argued that the outstanding women obesity rate in Egypt is partly due to the cultural preference towards female plumpness, coupled with cultural barriers to physical activity.[95] On the other hand, Egypt is being hit with a burden of under nutrition paralleled with the obesity epidemic; therefore being affected by a double burden of malnutrition. The most feasible explanation for this public health crisis is the rapid nutrition transition that Egypt is experiencing; which reached its peak around the 1980s. The nutrition transition has been defined as a shift in the dietary patterns and physical activity levels that emerges from economic growth and transformation in combination with technological advances, especially in communications and transportation.[96] It has been mentioned that the nutritional transition in Egypt was set in a context of abundant dietary energy availability, the process of rapid urbanization and an increase on the national fat intake.[97] In order to understand where the nutrition transition in Egypt takes its roots; we need to assess the main socio-economic and political changes that Egypt has been going through since the World War II. Such changes originate from a series of policy initiatives that have therefore affected the food supply and the dietary patterns of its nationals. The main changes include the

[93] ibid, page 26
[94] Global Nutrition Report (2017) "Egypt. Nutrition Country Profile". Development Initiatives Poverty Research Ltd., page 1
[95] Osman M. Galal (2002) "The nutrition transition in Egypt: obesity, undernutrition and the food consumption context". Public Health Nutrition: 5(1A), page 147
[96] Olivier Ecker et al. (2016) "Exploring Egypt's Exceptionalism and the Role of Food Subsidies", Nutrition and Economic Development, page 2
[97] Osman M. Galal, *op. cit*, page 146

food subsidy policy implemented in the 1960s; the "open-door" economic policy introduced in 1974; and the economic restructuring set by the International Monetary Fund (IMF) in the 1990s; which encouraged the privatization of the economy[98], among others.

To begin with, the food subsidy program was established by the government after World War 2.[99] The aim of such initiative was to guarantee the basic food items to its nationals and to reduce the burden of undernutrition, through offering subsidies to certain food items. Particularly, since 1981, the mentioned program has been providing bread, wheat flour, sugar and cooking oil at really cheap prices[100]; which by the way have a really high caloric content. The policy is therefore reducing the price of really energy-dense and nutrient-poor food items, in comparison with other healthier options. This, in turn, incentives individuals to consume these products and stop consuming more healthier but more expensive items; which in turn motivates an increase in the caloric consumption.[101] This policy has therefore influenced the relative food prices, the quality of the diet and the household consumption patterns; towards an excessive consumption of fat and sugar; linked to the obesity spread.

Another measure that has influenced the Egyptian food supply and patterns has been the implementation of an open-door policy (Infitah); in 1974. Such initiative had, as main goals; to attract Arab investment capital to Egypt from the Gulf States; to attract western technology and investment through public and private enterprises; to promote Egyptian exports and stimulate its private sector, and to promote the rejuvenation and the competitiveness of public sector enterprises, among others.[102] The open-door policy is therefore strongly linked to an economic liberalization process; and is perceived as a major instrument for western penetration of the Egyptian economy and for the deepening of external dependency. [103]Since the implementation of this policy, the Egyptian economy has been more and more

[98] Ibid, page 141
[99] Abay Asfaw (2006) "Do Government Food Price Policies Affect the Prevalence of Obesity? Empirical Evidence from Egypt". World Development Vol. 35, No.4, page 688
[100] ibid, page 688
[101] ibid, page 695
[102] John Waterbury (1985) "The "Soft State" and the Open Door: Egypt's Experience with Economic Liberalization, 1974-1984". Comparative Politics, Vol. 18, No.1, page 70
[103] ibid, page 70

integrated to the western economy system; which in turn has come along with the introduction of western imports of food and foreign direct investment, with subsequent introduction of western consumer patterns. [104]For instance, such policy has induced the liberalization of imports, including food, which therefore has skyrocketed the volume of imports entering Egypt, particularly food and consumer foods. Therefore, such policy has been provoked a huge amount of food importation and the beginning on the gradual decline in the tradition of food self-sufficiency[105]; which has therefore lead to the lost in the essential elements of the Egyptian diet. As an example, following the 5 years after the implementation of the plan, the value of Egyptian imports rose by 89%.[106] However, it has been argued that the country does not enjoy freedom in deciding what kind of foreign imports and investment flows should enter its territory. For instance, the liberalization of the market through the "open door" policy has paved the path to an indiscriminate and uncontrolled consumer desire for imported foods and western lifestyles; which has come along and facilitated by an increase in the per capita gross domestic product over the same period.[107] Finally, it is worth mentioning that, along with the trade openness policies; the government has been doing efforts to expand the global food advertising and the public broadcasting service (such as radio and TV access) to all areas of the country.[108] Such expanded global food advertising has allowed for modern processed foods to target citizens and interfere in their diets; and has permitted the modern lifestyle and products to penetrate into the most remote and isolated areas. Therefore, rural areas have also experienced dietary shifts during the last decades.

Overall, the mentioned political initiatives have led to shifts in the availability of foods and in the consumption patterns in Egypt; therefore provoking the acceleration of the Egyptian diet. Before the implementation of the mentioned policies, in the 1960s, Egypt was essentially self-sufficient in terms of food.[109] However, since the implementation of the open-door policy during the 1970s, the consumption of food

[104] Galal A. Amin (1981) "Some Economic and Cultural Aspects of Economic Liberalization in Egypt". Social Problems , Vol. 28, No.4, Development Processes and Problems; page 430
[105] H.Hassan-Wassef (2004) "Food habits of the Egyptians: newly emerging trends". La Revue de Santé de la Méditerranée orientale, Vol. 10, nº6, page 911
[106] Galal. A. Amin, *op. cit,* page 431
[107] H.Hassan-Wassef, *op. cit,* page 910
[108] ibid, page 910
[109] Osman M. Galal, *op. cit,* page 142

items such as wheat flour, maize, lentils, sugar, cooking oil, red meat, poultry, dairy products and fish increased dramatically.[110]As mentioned, the open-door policy; coupled with the gap between agricultural production and food consumption in Egypt; drove to high levels of food imports[111]; which therefore increased enormously the availability of food items and introduced non-traditional foods into the marketplace. Some of these food products, such as pasta and processed cheese are fully integrated nowadays in the dietary patterns of Egyptians, although not being traditional.[112] On the other hand, due to the mentioned policies, there has been a sharp increase in the per capita grain availability and a shift from a dependence and consumption on mixed grains (like corn and rice) towards a total dependence on wheat[113] since the implementation of the food subsidy program. Moreover, the open-door policy has led to a sustained increase in the availability and consumption of sugars, oils, fats, and meat, poultry and fish; whose availability have more than doubled,[114] particularly fats and oils. For instance, since the 1970s til nowadays, the total food consumption has increased, especially carbohydrates and animal protein sources. Since the 1970s, the per capita availability of protein increased by 67%; and that of fat by 39%. [115]

Concerning the urbanization levels in Egypt; we could assess that such process is rather slow; as the urbanization rate doesn't vary much between years. For instance; the urbanization rate was of 42,8% in 1995; and it is of 43,5% in 2018.[116] Such data indicates, firstly, that Egypt is nowadays considered a rural country in its majority; and second, that the urban growth rate is really slow between years. When it comes to Egypt's urban sphere, there is undoubtedly higher prevalence of obesity rates, as the main dietary patterns are happening in urban areas. For instance, urban citizens are more driven by a desire for modernization; they have easier accessibility to junk food and soft drinks[117], and they are easier exposed to the mentioned aggressive food

[110] ibid, page 142
[111] ibid, page 142
[112] ibid, page 142
[113] Abay Asfaw, *op. cit*, page 688.
[114] Osman M. Galal, *op. cit,* page 143
[115] Olivier Ecker et al. *Op.cit*, page 35
[116] Populationof.net(2018) "Egypt Population". Available at: https://www.populationof.net/egypt/
[117] H.Hassan-Wassef, *op. cit*, page 911

advertising campaigns. Furthermore, there is an important limitation in terms of space and infrastructure, which doesn't allow the practice of physical activity. For instance, there is a recent predominance in urban areas to build apartment buildings that are higher than six floors[118]; which therefore leads families living in such buildings to use the elevator instead of climbing the stairs. On the other hand, physical activity in Egypt tends to be restricted by cultural or socioeconomic means; as the sport clubs are reserved to higher-socioeconomic classes[119]; and this tendency is stronger in urban areas. Overall, despite urban areas in Egypt being more prone to weight gain; urbanization doesn't seem like having the same importance in the obesity spread as it does in the case of Mexico; particularly because urban population's rate is rather low and it doesn't evolve much over time.

3.3.Vietnam

Vietnam has been experiencing a lot of demographic and socioeconomic changes these last decades. To begin with, the country has experienced a remarkable increase in its population's rate. For instance, indicators prove that the total population in Vietnam has gone from around 70,8 million people in 1994 to 91,7 million people in 2015. [120]On the other hand, Vietnam is nowadays considered as one of the countries with the lowest obesity rates worldwide, which reaches a 2% percentage. Nevertheless, studies point out at the rising phenomenon of double burden of malnutrition that Vietnam is facing. For instance, undernutrition is a very solid element in the Vietnamese society; and nowadays its rate is still high and mostly present in rural and underdeveloped regions of the country. [121]However, there has been a rapid and sustained reduction of the undernutrition rates during the last decades, thanks to national improvements and policies. At the other end of the spectrum, patterns of obesity and overweight are growing and becoming a health problem; however, such problem was not perceived before 1995.[122] Furthermore,

[118] Osman M. Galal, *op. cit,* page 147
[119] ibid, page 147
[120] Marieke Meeske (2018) "Rural-Urban Migration, Food Consumption Patterns and Trends in the Local Food System: A Case Study for Vietnam". Wageningen University – Department of Social Sciences; page 1
[121] Nguyen Cong Khan et al. (2008) "Double burden of malnutrition: the Vietnamese perspective"; Asian Pac J Clin Nutr 2008, 17(S1) ; page 116
[122] ibid, page 117

Vietnam has undergone an economic restructuring the last 3 decades that has completely shifted its economic structure, and has brought huge growth. For instance, some of the measures that have caused a completely transformation of the Vietnamese economy have been the lifting of the US embargo on Vietnam in 1994; the implementation of the social and economic policy of the "Doi Moi" in 1986; and Vietnam's accession at the World Trade Organization (WTO) in 2007.[123]

Primarily, the US imposed an embargo on Vietnam in 1975 due to the victory of the communist party of North Vietnam[124]; and such restricted the economic exchanges between Vietnam and the US and other free-market countries until 1994. Such means that Vietnam used to be a closed economy due to the embargo, and mostly inactive in world trade. However, in 1994, the US lifted its embargo on Vietnam, and their bilateral relations were retaken progressively[125]. Following this line, on December 2001, Vietnam and the US entered a bilateral agreement, which allowed for a 100% US invested capital into wholesale and retail services in Vietnam, and unlimited capital contributions on US joint ventures in advertising and market research services[126]. The passage of such agreement has brought important consequences; as by December 2008, services linked to the US beverage companies were fully liberalized in Vietnam. For instance, the liberalization of US beverage companies has directly provoked an increase in the per capita sales of Sugar-Sweetened Carbonated Beverages (SSCBs) in Vietnam; which rose from 1,9 litres to 3,9 litres per capita before and after the sector's liberalization.[127] The biggest gains in the sales of SSCBs have been captured by foreign companies, mostly Coca-Cola and PepsiCo; that nowadays forecast Vietnam as one of the largest growing markets in the region for their operations. [128]

Another important measure was the implementation of the "Doi Moi" policy in 1986. Such economic measure changed Vietnam from a centrally planned to an open, free

[123] Ashley Schram et al. (2015) " The role of trade and investment liberalization in the sugar-sweetened carbonated beverages market: a natural experiment contrasting Vietnam and the Philippines". Globalization and Health (2015) 11:41, page 3
[124] ibid, page 4
[125] Helen L Walls et al. (2009) "Prevalence of underweight, overweight and obesity in urban Hanoi, Vietnam"; Asia Pac J Clin Nutr 2009;18 (2); page 234
[126] Ashley Schram et al. , *op.cit*, page 4
[127] ibid, page 6
[128] ibid, page 11

market economy[129]; and it set the base for the industrialization of the country. Specifically, the "Doi Moi" comprises a wide range of policy measures, such as the removal of administered prices of goods and services; the removal of governmental controls on the foreign exchange market and international trade, the acceptance of non-socialist forms of business management; and the promotion of foreign investment, among others[130]. Such measure has brought remarkable economic growth since 1990. For instance, since its implementation, the annual gross domestic product (GDP) has increased from 4,4% in the late 1980s to more than 7% in the 2000s.[131] Some of the changes the measure has brought are the specialization and growth on the industrial and service sector, and a progressive decrease on the agricultural sector.[132] Thus, citizens working on the industrial and service sector have increased exponentially. Broadly speaking, such measure has transformed Vietnam from a country with a lot of famine towards a country with food surplus; and from a country with staple-based diets towards a country having more diverse and nutritious diets. [133]Finally, such policy has directly brought a expanding urbanization everywhere in the country.

Vietnam's accession at the World Trade Organization (WTO) in 2007 constitutes another pillar of Vietnam's economic transformation. The membership in such organization pushed Vietnam to go through several changes in its legislation; particularly it urged it at implementing laws that made domestic and foreign investors subject to the same laws and placed them in equal terms of rights.[134] Therefore, since its accession, Vietnam began a process of liberalizing its markets in order to allow a greater entry of foreign owned companies through foreign direct investment (FDI). For instance, Vietnam liberalized more than 105 service sectors[135]; and a more progressive liberalization was set in other sectors. The impact of

[129] Loan Minh Do et al. (2017) "Prevalence and incidence of overweight and obesity among Vietnamese preschool children: a longitudinal cohort study". BMC Pediatrics, 17:150; page 2
[130] Le Thanh Nghiep et al. (2000) "Measuring the Impact of Doi Moi on Vietnam's Gross Domestic Product"; Asian Economic Journal, Vol.14, No.3; page 318
[131] NT Tuan et al. (2008) "Body Mass Index (BMI) dynamics in Vietnam"; European Journal of Clinical Nutrition (2000) 62, page 78
[132] Nguyen Cong Khan et al. (2008) "Vietnam Recommended Dietary Allowances 2007"; Asia Pac J Clin Nutr;17 (S2); page 409
[133] NT Tuan et al., *op. cit*, page 78
[134] Ashley Schram et al. , *op.cit*, page 4
[135] ibid, page 4

Vietnam's accession to the WTO was partly enhanced by the mentioned bilateral agreement that Vietnam entered with the US by 2001[136]; as they both implemented the same commitments. For instance, both measures forced Vietnam to permit US companies to access its service sectors; and to allow a 100% foreign invested capital into wholesales and retail services[137], for instance. As data shows, Vietnam's accession at the WTO has meant a substantial entry of FDI. Before its accession, the FDI flows averaged about US$ 37 per capita annually; and post accession, the average FDI flow was about US$ 110,6 per capita annually[138].

The mentioned political and economic measures that Vietnam has gone through have had a striking impact on their food system; in terms of its diversity, availability, and relative cost, among others. For instance, there has been a general increase of income per capita; and a renewed access to new food items, through the enlargement of supermarkets (that have gone from 386 in 2008 to 869 in 2016)[139]; of restaurants and street food parades; and an increase in the food import flows. This, in turn, has notably paved the transformation of consumption patterns and lifestyle in the overall society; which could lead us to guess that Vietnam is experiencing a nutrition transition as well. Its is indubitable that, due to the economic measures and progress, there has been a general increase in the food supply and its quality; and thus Vietnamese diet is nowadays way more diverse and abundant that it used to be. It is clear that since the 1990s, energy intake and diet quality among Vietnamese citizens has largely improved[140]. On the other hand, such measures have been pushing towards the consumption of high-energy foods, processed foods, and foods consumed away from home, which are linked to the emergence of obesity. As mentioned, the economic reforms have come along with a high increase in the total number of exports and imports. Since 2004, both exports and imports have been increasing, although imports clearly outnumber exports both in quantity and value.[141] Particularly since 2001, imports of all kind of food groups into Vietnam have

[136] ibid, page 3
[137] ibid, page 4
[138] ibid, page 3
[139] Marieke Meeske, *op.cit*, page 1
[140] NT Tuan et al., *op. cit*, page 84
[141] Marieke Meeske, *op.cit*, page 35

largely grown.[142] Cereals constitute the most imported food group; particularly wheat and maize; which is sometimes used as animal feed. Nevertheless, after 2004, meat imports began increasing rapidly, with poultry and bovine meat being the largest contributors to this growth.[143] Furthermore, milk and cheese imports are considerable, as well as fish and seafood imports. The availability of new food items and a general growth in productivity and income has therefore led to a nutrition transition in Vietnam. Concerning the shift of food consumption patterns; the most remarkable aspect has been the increased intake of animal sourced foods, fat, oil and fruits,[144] particularly in urban households. So, the Vietnamese diet, which is mostly based on cereal, rice and vegetables, has expanded to include meat, eggs, milk, fat and sugar as new consumer goods both in urban and rural areas. For instance, compared with 1990; the consumption of both meat and total fat have doubled in 2000; the consumption of egg has tripled and the consumption of fruit has increased 10-fold in the overall society.[145] When observing the intake share of each food group from 1992 to 2014; we can assess that the average share of calories coming from fats and proteins have largely increased; whereas the carbohydrates share (particularly rice) has largely decreased[146]; and such tendency is even more evident in urban areas. For instance, the largest proportion of calories consumed keeps coming from cereals and other starches, even if their consumption decreased. Secondly, meat is the second largest food expenditure group for both rural and urban households; whose most consumed type is pork.[147] From 2010 onwards, Food Away From Home (FAFH); which mostly covers meals and snacks supplied by commercial food service establishments, has been the group with the largest expenditure share for both rural and urban households. [148]

Despite the growing changes in the food consumption patterns in Vietnam and its nutrition transition process, the prevalence of obesity and the dual burden of malnutrition are really low if compared with other Asian countries in the region. For

[142] ibid, page 36
[143] ibid, page 36
[144] Nguyen Cong Khan et al., op cit, page 116
[145] NT Tuan et al., *op. cit,* page 78
[146] Marieke Meeske, *op.cit*, page 37
[147] ibid, page 37
[148] ibid, page 37

instance, although all countries in East Asia and South East Asia are all going through a nutrition transition process; they are all at different stages in this process. For example, differences in the speed of economic change, the rate of dietary change, the underlying traditional diets; and environmental changes leading to a reduced physical activity are factors that might explain the different rates of nutrition transition that Asian countries experience[149], as well as the different prevalence of obesity rates. Evidence demonstrates that further the nutrition transition has progressed at a country, the higher the prevalence of obesity rates. [150]When looking at the speed of economic growth, in 2003, Vietnam's GDP per capita reached about $2500 USD, similar to those of Indonesia and China in the early 1990s.[151] Moreover, Vietnam has been a closed economy for a long time that has been left apart in most world trade flows and global finance; and its opening and liberalization has taken place relatively late in comparison with countries from the same region. Such indicates that Vietnam's economic growth still lags behind most Asian countries that are at a most evolved point at the nutrition transition and obesity rates. In conclusion, the low obesity rates and the low dual burden of malnutrition that Vietnam is experiencing mostly indicate that the country is still at a really early stage of the nutrition transition. However, the rapid increase of Vietnamese GDP per capita over time raises the possible concern of a remarkable growth of the obesity rate and a sharpened double burden of malnutrition.

On the other hand, the rapid urbanization process in Vietnam has been a really highlighted feature these last decades. Vietnam scores an urbanization rate of 35,5% in 2018[152]; which therefore indicates that the country is rural in its majority. Nevertheless, this last decade, rural to urban migration flows has increased enormously, and nowadays account for the largest flow of internal migration within the country; reaching a 49,8% rate nowadays.[153] The proportion of rural to urban

[149] TQ Cuong et al. (2007) "Obesity in adults: an emerging problem in urban areas of Ho Chi Minh City, Vietnam" ; European Journal of Clinical Nutrition 61; page 678
[150] Ibid, page 680
[151] NT Tuan et al., *op.cit*, page 84
[152] Populationof.net(2018) "Vietnam Population". Available at: https://www.populationof.net/vietnam/
[153] Marieke Meeske, *op.cit*, page 1

migration flows has largely increased over time, as it equalled 27,1% in 1994.[154] The increase of the rural to urban migratory flows can be mostly explained by economic reasons; such as the attractiveness of well-paid employment, and other opportunities that urban areas offer more abundantly.[155] Another important factor is that more and more people are being employed in the industrial and service sector instead of the agricultural one; which therefore pushes the urbanization tendency. The migratory flow towards urban centres, coupled with the increase in the population's rate in Vietnam, is provoking the increase of the population's density in cities over the years; as it reached 300 people per square km of land in 2016; while this number was only of 185 people per square km of land in 1986.[156] The increase in population's density in cities is a trigger of decreased mobility, and therefore limited physical activity and sedentarization.

Another matter is the large differences in terms of consumption patterns among urban and rural areas in Vietnam. The rapid economic growth and the economic measures that Vietnam has implemented have created an exacerbated inequality in terms of health, nutrition and economic opportunities between urban and rural areas.[157] For instance, during the economic processes that the country has gone through, urban areas have experienced an outstanding economic growth in recent decades in comparison with rural areas; and most dynamic sectors are mostly located in urban centres. The different impacts of economic measures on rural and urban areas imply the existence of large differences between those areas in many aspects related with the food system and working conditions. For instance, there are large differences concerning the available jobs and their wages; differences in terms of food prices, the availability of food items, lifestyles, food consumption patterns, and difference towards the exposure of global eating patterns.[158] Such differences

[154] ibid, page 1
[155] ibid, page 1
[156] ibid, page 25
[157] NT Tuan et al., *op.cit*, page 84
[158] Marieke Meeske, *op.cit*, page 2

dictate different food consumption; as urban residents consume greater amounts of animal products, fats, fruits, sweets and drinks than their rural counterparts. [159]

To sum up, despite Vietnam still being considered a largely rural country; it is going through a urbanization process; as cities are growing, and as there is increasingly more and more people living in urban centres. Urban centres are dictated my more processed and calorie rich food consumption; as urban citizens possess more income per capita to consume richer foods; as they are easier influenced by global food advertising campaigns; and as they have easier accessibility to processed food restaurants and supermarket chains. Furthermore, the most dynamic growing sectors are located in urban spheres, which are the industrial and the service sectors, which are characterized by less physical activity if compared with the agricultural sector. The sedentarization of jobs is coupled with the increased population density found in cities, which clearly affects the mobility of its citizens and it leads to less physical activity. Overall, cities in Vietnam present obesogenic features that promote the prevalence of obesity easier; due to the consumption of certain food and the limited physical mobility. Therefore, the urbanization process keeps advancing in Vietnam and more people move to cities, the obesity spread will probably aggravate over time.

4. Conclusions

The obesity epidemic is a clear modern global threat that hits with emphasis developing countries and societies' poorest sectors. Trade liberalization is undoubtedly one of its main triggers, as there is an astonishing difference between the era before and after openness to trade, concerning food consumption patterns and the subsequent increase in Body Mass Index (BMI), among other factors. Such evidence has been illustrated in the case studies chosen for this research.

Nevertheless, it is worth mentioning that trade liberalization is not the only phenomenon to blame in the obesity expansion. For instance, governmental programs that seek at reducing undernutrition and food insecurity among its

[159] Le Ngoc Dien et al. (2004) "Food consumption patterns in the economic transition in Vietnam"; Asia Pacific J Clin Nutr; 13(1); page 46

citizens, particularly in developing countries, have proven to possess adverse effects that incentives the consumption of high-caloric foods. Such evidence has been illustrated in Egypt, where the food subsidy program is one of the critical factors to blame in the obesity spread. Therefore, policy makers should envision the side effects that such governmental programs generate; and take this into account when formulating new nutrition policies.

Besides, the urbanization factor doesn't seem to play a major role in the spread of obesity, as does trade liberalization. It is indubitable that a greater level of urbanization brings about important shifts in population's lifestyle linked to weight gain, such as a higher exposure towards fast-food outlets and global food advertising, greater levels of sedentarization due to the automatization of daily tasks, among others. Nonetheless, there are countries with really low urbanization rates but with skyrocketing levels of obesity, whose rates are comparable with countries with a high urbanization percentage. This has been illustrated by Egypt and Mexico; which present comparable obesity rates but completely different urbanization rates. Notwithstanding, as developing countries are becoming more and more urban, it is important for policy makers to focus on urban planning processes that make health a priority. Such is particularly relevant in the developing world, as urban spheres tend to lack from adequate environments and infrastructures, which push towards the adoption of unhealthy patterns.

Finally, the fact that developing countries that are highly engaged in global trade present low obesity rates can be largely explained by their early stage in the nutrition transition process. As discussed, the advancement in the nutrition transition is dictated by factors such as the speed of economic growth, the earliness in trade liberalization, the rate of dietary change, etc. For instance, countries whose economic growth is still relatively modest and who have opened to trade relatively late are therefore at an initial phase in the nutrition transition process, as it has been illustrated by the case of Vietnam. Nevertheless, as economic growth and free trade agreements are spreading over time, the risk of obesity expansion becomes more imminent for such countries. That's the reason why policy makers should prevent in

advance the imminent obesity threat by implementing obesity prevention strategies; such as taxing specific food groups, and proper nutrition labelling, among others.

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