Extended Abstract on

Creating the Food Sovereignty Index for Measuring the Agricultural Production Equality and Resilience: Case of 2012 Metropolitan Law in Türkiye

In this master's thesis, I will propose a composite index for measuring Food Sovereignty. The problem of food insecurity and hunger is first iterated under the term Food Security, at the 1974 World Food Summit at Rome. However, its market-oriented approach lacked the capacity to maintain indigenous communities' resilience. In 1996, La Via Campesina supported the theory of Food Sovereignty and then joined the 1996 World Food Summit to emphasize the core principles. By this approach, food security is a part of food sovereignty, however, food sovereignty encompasses cultural preferences and self-reliance in addition to dietary sufficiency of food. Many indexes are proposed to measure food security, however, food sovereignty indexes are not yet mature. Due to its complicated structure, existing food sovereignty indexes are driven by theoretical conceptualizations and global indicator availability. To overcome this generalization, I have utilized a list of indicators manually extracted from nationally oriented social studies on agriculture and rural life. By relying on open data sources, the Food Sovereignty Index for Türkiye is proposed here.

Introduction

Food Security was first proposed in the 1974 World Food Summit. Nearly 20 years later, the international farmers organization, la Via Campesina, joined the 1996 World Food Summit, after their 2nd International Conference held 6 months before the World Food Summit. The issue was the emphasis on increasing global trade and agricultural production that has been put forth at the World Food Summit. According to La Via Campesina, food security is a part of food sovereignty, however, it is not the whole. La Via Campesina defended that, FAO's meeting resulted in neoliberal policies supporting high-scale production and export-oriented behaviors. In return, local communities and resources were negatively affected by global competition and

profit-oriented technologies. Protection of indigenous ways of living and gender equality is included in later iterations of World Food Summits, however, there has not been a substantial impact in line with these declarations.

The need for a food sovereignty index, thus, arises from the need to measure the shift in the indigenous communities. Since these shifts are seemingly invisible by production and consumption levels, there has not been an established index published by any institution. On the other hand, food security indexes are far more prevalent, which measure the sustainability of agricultural production by output volumes and sustainability of food affordability by household income metrics. In comparison, we can conclude the distinction between the focus of food security and food sovereignty as such, the first focuses on food production, distribution, and consumption in general, and the latter focuses on the protection of rural communities by increasing their security over the agrifood system. As a result, food sovereignty emphasizes where the food came from and produced by whom, while food security focuses on nutritional intake and market prices.

Literature review

Food Insecurity and Agroecology

Every human requires food to sustain their life. For this reason, food insecurity is a global concern, especially in developing countries where purchasing power is low[1](World Bank, 1986). Sufficiency of dietary intake can be interpreted in different ways, such as by caloric consumption or nutrient quality. Measuring the food consumption via aggregated national per-capita metric can be misleading since the inequalities differ in different levels.[2] (Mena-Vasconez et al., 2016).

Solving food insecurity requires supplying adequate food to people. For this reason, both production and distribution are necessary to have sufficient food at hand. If people cannot purchase food from the market due to economic constraints, producing more food at the same

[1] Poverty and hunger :issues and options for food security in developing countries. (1986). Washington, D.C. : World Bank,.
[2] Mena-Vásconez, P., Boelens, R., & Vos, J. (2016). Food or flowers? Contested transformations of community food security and water use priorities under new legal and market regimes in Ecuador's highlands. Journal of Rural Studies, 44, 227-238.

prices will go to waste[3](World Bank, 1986). On the other hand, excessive agrifood production might decrease the market prices. However, farmers' ability to sustain themselves for the next harvest in a competitive market will decline as well. Since there are multiple passage points between farm to fork, cautious distribution considering the market dynamics will be necessary.

Agricultural food prices are defined by multiple factors. Depending on the region, currency exchange rates and energy prices will be heavily volatile due to complex global interactions. Additionally, some of the basic materials to cultivate food, such as seeds and fertilizers, might be dependent on the external structure from where the crops have been grown. Future policy expectations on subsidies will alter crop selection. In return, all of the uncertainties that effect farmer decisions will destabilize the agricultural production[4] (Demirdöğen et al., 2022). As a result, the risk factor will either put farmers at risk of going out of business or force consumers to buy at a markup price relative to production costs.

Between the market structure where farmers sell and consumers buy, food sovereignty theory adds regional self-sufficiency and national control aspects to the food and agriculture discourse. The term was first mentioned by the Mexican Government program in the 1980s, however, similar usages have appeared in other countries of Central America[5] (Edelman, 2013). The appearance of the term, therefore, is important for the implication of tension between global markets and developing countries. The influence of foreign investment in these countries poses a topic of discussion for the interpretation of food security and indigenous people's resilience[6] (Cibils, 2021).

One of the biggest concerns over agriculture is climate change. Agricultural production both affects and is affected by environmental conditions. Issues such as drought, soil degradation, flooding, and air quality are related to the intensive use of natural resources[7] (FAO, 2016). The

[3] Poverty and hunger :issues and options for food security in developing countries. (1986). Washington, D.C. : World Bank,.
[4] Demirdöğen, A., Olhan, E., & Hasdemir, M., (2022). Heterogeneous impact of agricultural support policies: evidence from Türkiye. Environment Development and Sustainability , vol.24, no.10, 12203-12225.
[5] Edelman, M. (2014). Food sovereignty: forgotten genealogies and future regulatory challenges. The Journal of Peasant Studies, 41(6), 959–978. https://doi.org/10.1080/03066150.2013.876998
[6] Garcia-Arias, J., Cibils, A., Costantino, A., Fernandes, V. B., & Fernández-Huerga, E. (2021). When land meets finance in Latin America: Some intersections between financialization and land grabbing in Argentina and Brazil. Sustainability, 13(14), 8084.
[7] FAO (Ed.). (2016). Climate change, agriculture and food security. FAO.

life quality of rural residents is, therefore, sensitive to rural land use practices. Increasing agricultural production on its own would have detrimental effects without taking precautions against the climate change impacts of intensive land cultivation. The agroecological approach is a notion that considers the balance between ecological sustainability and agricultural practices. Yet, there are different interpretations of what agroecology means in different parts of the world[8] (Levidow, 2015).

International food trade opens new discussions about the national income-generating agricultural production. Intensive land cultivation, intensive water use, durable and high-yielding GMO crops, and reliance on chemical fertilizers and pesticides create a dichotomy between indigenous communities and national output[9](Ziegler, 2003). Such dichotomy would also indicate the preferences of agrobiodiversity, an issue related to Plant Variety Rights over reproduction and conservation of seeds[10] (Bowman, 2015). An agricultural output-oriented approach, using economic capital and natural resource-intensive methods, would lead to monoculture practices causing the degradation of local seed varieties. The agroecological approach, on the other hand, prioritizes the conservation of the environment by cultivating local seed diversity, polyculture farming, and indigenous application methods of fertilizers and pesticides[11] (Şişman, 2023).

In the 2023 report for food and agricultural indicators, FAO mentioned eight SDGs under this category. These are Goal 1 (No Poverty), Goal 2 (Zero Hunger), Goal 5 (Gender Equality), Goal 6 (Clean Water and Sanitation), Goal 10 (Reduced Inequalities), Goal 12 (Responsible Consumption and Production), Goal 14 (Life Below Water), Goal 15 (Life on Land)[12](FAO, 2023). The complete picture of the SDGs will vary from region to region, depending on the urban-rural division and types of economic activities. As a result, tracking the SDGs on a national level will lack the local nuances in a given country.

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[8] Levidow, L. (2015). European transitions towards a corporate-environmental food regime: Agroecological incorporation or contestation?. Journal of Rural Studies, 40, 76-89.

[9] Ziegler, J. (2003, October 31). *The right to food :report : addendum /*. Retrieved from https://digitallibrary.un.org/record/506617/files/E_CN.4_2004_10_Add.2-AR.pdf

[10] Bowman, A. (2015). Sovereignty, risk and biotechnology: Zambia's 2002 GM controversy in retrospect. Development and Change, 46(6), 1369-1391.

[11] Şişman, B. (2023). Ankara Kırsalında Tarımsal Gıda Sistemi Olarak Agroekolojinin Sosyolojik Analizi. Sosyoloji Araştırmaları Dergisi, 26(2), 230-253. https://doi.org/10.18490/sosars.1382530

[12] FAO. 2023. Tracking progress on food and agriculture-related SDG indicators 2023. Rome. https://doi.org/10.4060/cc7088en

Food Security

Food security is first mentioned as a collaborative framework to prevent hunger and famine by facilitating global trade and increasing the government budget for agriculture and food support. In 1974, the World Food Summit was held in Rome[13] (FAO, 1974), due to the ongoing food crisis at the time. Problems have arisen due to natural disasters, which as a result, countries' food stocks come into a crisis. As a response, the world's food stockholding and information-sharing systems have been proposed while facilitating international trade tariffs for a fast response to immediate and future food crises.

In 1996 World Food Summit, in which la Via Campesina was a participant, redefined food security as: "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[14] (FAO, 1996) Later in 2009, the four pillars of food security defined as "availability, access, utilization and stability"[15] (FAO, 2009). Food security agreements that were made at the World Food Summit were underinvested, as a result, the target of reducing world hunger levels to desired levels was unattainable[16](Ziegler, 2004).

To reduce hunger rates and feed the vulnerable populations, the first approach was to increase agricultural production at a rapid phase. Therefore, high-yielding crop varieties, chemical fertilizers, and pesticides were at the center of focus of research and development[17] (Furat, 2013). Mainly, industrial crop types such as cotton, corn, and soy were spread rapidly. Corn and soy were processed for utilization in packaged foods and animal feed[18] (FDA, 2024). As a result, providing caloric intake became cheaper and easier to sustain.

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[13] *Report of the World Food Conference, Rome, 5-16 November 1974*. (1975). Retrieved from http://digitallibrary.un.org/record/701143/files/E_CONF.65_20-AR.pdf

[14] *Rome Declaration on World Food Security and World Food Summit Plan of Action :World Food Summit, 13-17 November 1996, Rome, Italy*. (1996). Rome : FAO,.

[15] World Summit on Food Security Rome, 16-18 November 2009 Draft Declaration of the World Food Summit on Food Security. (2009). Retrieved from https://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Declaration/WSFS09_Draft_Declaration.pdf

[16] Ziegler, J. (2003, October 31). *The right to food :report : addendum /*. Retrieved from https://digitallibrary.un.org/record/506617/files/E_CN.4_2004_10_Add.2-AR.pdf

[17] Furat, M. (2013). Küresel Politika Değişimleri ve Türkiye'de Kırsal Kalkınma. Gaziantep University Journal of Social Sciences, 12(3).

[18] https://www.fda.gov/food/agricultural-biotechnology/gmo-crops-animal-food-and-beyond

Food Sovereignty

The concept of food sovereignty was first used in Central America during the 1980s[19] (Edelman, 2013). Earlier utilizations defined the term as national self-sufficiency. Later, an international farmer organization, la Via Campesina, expanded the term for covering indigenous communities' rights to agricultural food (agrifood) system over their own territory[20] (La Via Campesina, 1996). Agricultural aspects and food production cover more than the equation of supply and consumption volumes. Global competition and biotechnology drove indigenous communities out of business, leaving them landless and precarious in the agricultural sector.

Food security emphasized International trade and agricultural production with tariffs and biotechnology. Peasants' loss of control of agricultural production and dumping of imported subsidized agricultural products caused unfair competition and land accumulation[21] (Ünal, 2020). Food sovereignty set forth in 1990s by La Via Campesina for the protection of local communities against the neoliberal policies'development[22] (Claeys, 2018). In the food sovereignty approach, local communities should have the right to protect their own culturally inhabited areas, by using culturally appropriate agricultural practices[23] (Özkaya & Yıldız, 2024).

Although the usage increasingly employed since the iteration of la Via Campesina, the definition of food sovereignty varies by the scope of the interest. Because that the theory emphasizes the control of local groups over food production and distribution, the scope may be defined by political governance territories, different scale economies, or institutional settings of rights and responsibilities[24] (Schiavoni, 2015). As a result, theoretical discussions of food sovereignty can

[19] Edelman, M. (2014). Food sovereignty: forgotten genealogies and future regulatory challenges. The Journal of Peasant Studies, 41(6), 959–978. https://doi.org/10.1080/03066150.2013.876998
[20] Via Campesina. The Right to Produce and Access to Land - Food Sovereignty: A Future without Hunger. (1996). https://viacampesina.org/en/wp-content/uploads/sites/2/2021/11/1996-Rom-en.pdf
[21] Ünal, H. E. (2020). Türkiye'de Kırsal Değişme Süreçleri. Sosyal Ve Beşeri Bilimler Araştırmaları Dergisi, 21(47), 22-49.
[22] Claeys, P. (2018). The rise of new rights for peasants: from reliance on NGO intermediaries to direct representation. Transnational Legal Theory, 9 (3-4), 386-399.
[23] Yıldız, M., & Özkaya, T. (2024). Pioneering Communities in Dissemination of Local Wheat Varieties and Products in Türkiye. Tekirdağ Ziraat Fakültesi Dergisi, 21(2), 309-323. https://doi.org/10.33462/jotaf.1217580
[24] Christina M. Schiavoni (2015) Competing Sovereignties, Contested Processes: Insights from the Venezuelan Food Sovereignty Experiment, Globalizations, 12:4, 466-480,

get blurred in a combination of multiple definitions of sovereignty. In short, food sovereignty' conceptual usage has a flexible definition in an agrifood system from farm to fork.

Domestic and International Policies

Food security highlighted a more open agricultural food trade with lower prices and enhanced agricultural production in relation to the market demand[25](FAO, 1974). As a result, economies of scale favored capital-intensive and high-output agricultural corporations in production, trade, and technology. However, newer policies tend to be more inclusive towards small-scale farms [26](Demirtaş & Kaya., 2018). Policy framework played a role in choosing which initiatives would be favored, regarding production and consumption volume, and productive efficiency[27] (Aba et al., 2015). Consequently, governmental bodies facilitated the dumping of imported products, land consolidation practices for specialization in selected crop types, and utilization of genetically modified breeds, and chemical fertilizers and pesticides for intensive cultivation.

However, rural communities are affected negatively by the economies of scale. Capital-intensive, high-output cultivation created competitive food prices in domestic markets[28] (Dağdelen & Kızılaslan, 2023). High-value crop types became more prevalent, such as avocados, which disrupted regional accessibility to traditionally consumed food[29] (Karsak, 2024). Export and import subsidies increased the trade flow, which caused the fleeing of high-quality regional food and substituting with low-quality imported products. In the process, the farmer migration caused de-ruralization or also de-agrarization, by weakening the rural livelihood resilience in the highly competitive global economy[30] (Dunford, 2015).

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[25] *Report of the World Food Conference, Rome, 5-16 November 1974*. (1975). Retrieved from http://digitallibrary.un.org/record/701143/files/E_CONF.65_20-AR.pdf

[26] Demirtaş, B., & Kaya, A. (2018). Evaluation of Public Agricultural Extension Programs: The Case of Hatay Province (Türkiye). Türk Tarım Ve Doğa Bilimleri Dergisi, 5(2), 203-210. https://doi.org/10.30910/turkjans.421369

[27] Cihangir, H., Bilgiç, B., & Aba, T. (2015). IPARD Makine ve Ekipman Desteklerinin Mardin Tarımına Etkisi. Tarım Makinaları Bilimi Dergisi, 11(1), 25-31.

[28] Kızılaslan, N., & Dağdelen, K. (2023). Genç Çiftçi Projesinin Sürdürülebilirliğinin İncelenmesi: Tokat İli Turhal İlçesi Örneği. Gaziosmanpaşa Bilimsel Araştırma Dergisi, 12(2), 182-196.

[29] Karsak, B. (2024). Between 'moral economy'and 'social banditry': harvest theft in a peasant community. The Journal of Peasant Studies, 51(2), 512-532.

[30] Dunford, R. (2017). Peasant activism and the rise of food sovereignty: Decolonising and democratising norm diffusion? European Journal of International Relations, 23(1), 145-167. https://doi.org/10.1177/1354066115614382

Multinational corporations' revenues surpass some of the developing countries in which they operate. In the 2004 report of the UN, 10 organizations (including Aventis, Monsanto, Pioneer, and Syngenta) were controlling 80% of the global pesticide market and one-third of the commercial seed market. In South Africa, Monsanto alone was controlling 90% of the wheat market[31] (Ziegler, 2004). As a result, multinational corporations have a substantial impact on food preferences, as they have the power to monopolize the agricultural food chain from production to retailing.

Increasing the food trade and food production caused a shift in crop type selection for planting. Instead of locally grown food, farmers turn towards choosing export crops which may reduce regional food availability[32] (Louis, 2015). Additionally, global trade affected regional food preferences by eliminating local plant varieties by increasing imported food supply[33] (Robaey & Timmermann, 2016). In rural daily practices, what was before a labor-intensive sector can become capital-intensive sector, leaving rural households out of their traditional jobs and increasing inequalities between land-owner and non-land-owner rural households (Mühlenoff, 2021).

Short Chain and Global Chain Agrifood Systems

Agrifood systems encompass all stages of agricultural production from farm to fork and include fishery and aquaculture, livestock farming, and forestry activities as well[34] (FAO, 2024). In this paper, the term “agrifood system” will be limited to agricultural plant products for food markets. In this line, the agrifood system includes all aspects of production means and supply, storage and distribution facilities, and processing and marketing branches that connect the agricultural food product from the producer to the end consumer. Additionally, waste management is considered a part of the agrifood system, however, it has been left out of the scope of this paper.

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[31] Ziegler, J. (2003, October 31). *The right to food :report : addendum /*. Retrieved from https://digitallibrary.un.org/record/506617/files/E_CN.4_2004_10_Add.2-AR.pdf

[32] Louis, E. (2015). “We Plant Only Cotton to Maximize Our Earnings”: The Paradox of Food Sovereignty in Rural Telengana, India. The Professional Geographer, 67(4), 586-594.

[33] Timmermann, C., & Robaey, Z. (2016). Agrobiodiversity under different property regimes. Journal of Agricultural and Environmental Ethics, 29, 285-303.

[34] https://www.fao.org/evaluation/highlights/agri-food-systems/en, 07-Sep-2024

Alternative food networks (AFNs) are community-driven movements that are built with a bottom-up approach[35] (Dagnes & Barbera, 2016). In opposition to the commercialized agrifood system, AFNs aim to bridge the producer to the consumer via independently and locally organized short food networks. In this way, farmer members of AFNs can act collectively for conducting logistic steps such as storage, processing, distribution, and sales locations of agrifood products. In practice, collectives and cooperatives are the institutional bodies that aim to achieve such food networks. By establishing AFNs, consumers can buy directly from farmers via direct sales or from community-led intermediaries, and farmers become more resilient against cases of personal powerlessness in the absence of industrial facilities.

Additionally, AFNs can incorporate farmer education and social security benefits in their structure[36] (Aydogdu & Tüzün, 2019). In this way, local producers can cooperate for indigenous agroecological practices as an alternative to agricultural biotechnology practices provided by multinational enterprises. As a result, seed networks, and cultural practices of making fertilizers and pesticides can become possible to integrate for enhancing local knowledge on land and water protection. In the financial sector, it has been shown that members of the farmer cooperatives have a better chance to receive financial credit, and can become a part of the social security system provided by their cooperative.

Research Question:

An application of a ground-based Food Sovereignty Index on rural policy regarding land use administration:

Did Law 6360, Metropolitan Law, effected food sovereignty of Türkiye on city-level?

[35] Barbera, F., & Dagnes, J. (2016). Building alternatives from the bottom-up: the case of alternative food networks. *Agriculture and agricultural science procedia*, *8*, 324-331.
[36] Tüzün Rad, S., & Aydoğdu, C. (2019). Tarımsal Finansman: Mersin İlinde Tarımsal Kredi Kullanımı. Tarım Ekonomisi Araştırmaları Dergisi, 5(2), 58-67.

Methodology

Composite Indexes

Composite indices are tools to measure a social phenomenon in a defined boundary for supporting social policy decisions. The method consists of combining multiple indicators that are relevant to the situation and processing them in a relational manner to create an overall understanding[37] (Chand, 2019). This is mainly an aggregation method for considering multiples of indicators that are responsible for a social outcome. As a result, it will become possible to compare different regions side by side, either by the total index point or category points of the index. The six main steps to develop a composite index are: Selecting variables, imputation of missing data, multivariate analysis, normalization of data, weighting and aggregation, and robustness and sensitivity analysis[38] (OECD, 2008). Except for the first stage, selection of variables, all the steps involve statistical consideration of the data. In general, the statistical consideration requires the extensive application of selected variables in all possible statistical equations. As a result, analysis choices might provide equally viable results for different analytical expectations [39] (Baktybekova, 2024).

Composite indices are used for a variety of reasons [40](Ali et al., 2023). Firstly, interpreting single metrics such as national metrics of income per capita or agricultural production per capita would lack the sensitivity for understanding the disparities between different regions and income quartiles. For this reason, issues such as life quality or nutritional intake sufficiency require an in-depth look with carefully identified indicator combinations. Secondly, while multiple indicators are affecting a social phenomenon, composite indices facilitate assessing vulnerabilities between different focus groups. Lastly, composite indices are easy to

[37] Chand, P. Construction of Composite Index. Chapter 33, p.351-360, in Vinayak Nikam, A. J. (2019). Quantitative Methods for Social Science. New Delhi: ICAR - National Institute of AgriculturalEconomics and Policy Research
[38] OECD, European Union, & Joint Research Centre - European Commission. (2008). Handbook on Constructing Composite Indicators: Methodology and User Guide. OECD. https://doi.org/10.1787/9789264043466-en
[39] Baktybekova, Z. (2024). Constructing a composite indicator to measure quality of life in the selected region [Master's thesis, Czech University of Life Sciences Prague, Faculty of Economics and Management]. https://theses.cz/id/7gev2g/
[40] Manikas, I., Ali, B. M., & Sundarakani, B. (2023). A systematic literature review of indicators measuring food security. Agriculture & food security, 12(1), 10.

communicate between different areas and levels of expertise, which makes them a viable tool for scientific collaboration.

On the other hand, composite indices contain limitations and require updates. Limitations arise from indicator selection, data quality, and data processing methods. Construction of a composite index, therefore, is limited by available data and subject to alternative interpretations in weighting and aggregating indicators altogether[41] (Ruiz-Almeida, Rivera-Ferre, 2019). Consequently, the good performance of an indicator may substitute the bad performance of another indicator, which in return arrives at the same point with concealed vulnerabilities. A similar problem arises when there are group-wise differences in the collinearity of separate indicators. Moreover, including categorical data in a continuous composite index necessitates defining threshold values, which are subject to researcher preferences. In summary, there are trade-offs between predictive capacity and comprehensive complexity in the construction of a composite index [42] (Chen et al., 2021).

Variable Selection Method

Variable selection is the core of building a composite index. Usually, this process is done by experts' opinions considering the suitability and availability of data. In my research, I employed a variable extraction method by recording all variables mentioned in 33 Türkiye-based research papers. The list consists of articles found in Dergipark with keywords "tarımsal" (agricultural) and "kırsal" (rural), with one additional article on "agroekoloji" (agroecology) and one from my earlier literature research on social welfare policies. In the results, the final variable list includes more than 100 variables from nearly 20 defined categories. The final variable list is defined by the TURKSTAT's variable support. For example, the "Cultivated Land" variable is minutely detailed by different types of crops, which may increase the final number of total variable counts.

[41] Ruiz-Almeida, A., & Rivera-Ferre, M. G. (2019). Internationally-based indicators to measure Agri-food systems sustainability using food sovereignty as a conceptual framework. Food Security, 11(6), 1321-1337.
[42] Kaiser, M., Chen, A. T. Y., & Gluckman, P. (2021). Should policy makers trust composite indices? A commentary on the pitfalls of inappropriate indices for policy formation. Health research policy and systems, 19, 1-11.

Data Sources

The data is collected from national and foreign sources. The major part of the data, which includes economic and social variables regarding agrifood systems, is gathered from TURKSTAT. The data has city-level details for production volume, machinery use, and demographics. Foreign data is from NASA which includes geographic information for digital elevation and vegetation mapping. The main part of the analysis thus will be carried out by national data. Geographic information data will support the normalization factor for economic output variables.

On top of geographical and socio-economic variables, food security and food sovereignty theories comprise governmental support for regional farmer resilience and sustainability of agriculture. In GFSI, the policy support is ordinally indicated with 0-2 for the existence of policies. However, in Türkiye, policy support is fragmented by selected regions and crop types. For this reason, a detailed analysis will employ the Official Gazette of the Republic of Türkiye for maintaining the city-level analysis. Furthermore, the ratio between inputs such as oil and exchange rates will be used to understand the degree of agricultural monetary support. Since this part has no direct ordinal relationship with the existence of policy support level, it will be useful to understand the focus of the governmental support by regions and producer/consumer price index.