Ekonomi Bisnis
Volume 29, Nomor 1, Maret 2024 (011-10)
ISSN 0853-7283 (Print), 2528-0503 (Online)
Available on-line at: http://journal2.um.ac.id/index.php/ekobis

Social Capital and its Impact on Food Security in Indonesia

Adi Sofiyan Octananda[1], I Dewa Gede Karma Wisana, Ph.D[2]

[1]Fakultas Ekonomi dan Bisnis, Universitas Indonesia, Indonesia
[2] Fakultas Ekonomi dan Bisnis, Universitas Indonesia, Indonesia

Info Article

History Article:
Submitted: 01 Januari 2024
Revised: 15 Maret 2024
Accepted: 20 Maret 2024

Keywords:
Social capital; food security; instrument variable; food consumption score; food consumption group

Abstract

This study examines the impact of social capital on food security in Indonesia using Indonesian Family Life Survey (IFLS5) data. In previous studies, the impact of social capital on food security did not consider the endogeneity of social capital. This study uses two-stage least squares (2SLS) and conditional mixed process (CMP) estimation methods using trust in villages as instruments to estimate social capital and examine its impact on food security as measured by food consumption scores and food consumption groups. The results show that social capital positively affects food security, as measured by food consumption scores and food consumption groups.

Modal Sosial dan Dampaknya Terhadap Ketahanan Pangan di Indonesia

Abstrak

Studi ini meneliti dampak modal sosial terhadap ketahanan pangan di Indonesia dengan menggunakan data Indonesian Family Life Survey (IFLS5). Dalam studi sebelumnya, dampak modal sosial terhadap ketahanan pangan tidak mempertimbangkan endogenitas dari modal sosial. Studi ini menggunakan metode estimasi two-stage least squares (2SLS) dan Conditional Mixed Proceess (CMP) dengan menggunakan kepercayaan di desa/kelurahan sebagai instrumen untuk mengestimasi modal sosial dan melihat dampaknya terhadap ketahanan pangan yang diukur dengan skor konsumsi pangan dan grup konsumsi pangan. Dalam hasilnya, modal sosial berpengaruh positif terhadap ketahanan pangan baik yang diukur dengan skor konsumsi pangan maupun grup konsumsi pangan.

How to Cite: Octananda, A.S. & Wisana, I. D. G. K. (2024). Social Capital and its Impact on Food Security in Indonesia. *Ekonomi Bisnis*, *Vol. 29 (No 1)*, 01-10

correspondence Address
Institutional address: Jl. Prof. Dr. Sumitro Djojohadikusumo UI Depok 16424, Indonesia
E-mail: adiadisofiyan@gmail.com

ISSN
0853-7283 (print) 2528-0503 (online)

According to the Global Food Security Index data, the score for Indonesian food security in 2022 is 60,2 points, and the rank position of 63rd among 113 countries decreased by 3,4 points from 2018 (Economist Impact, 2022). Indonesia's score in the 2022 Global Food Security Index with four pillars that build Indonesia's food security score, which are affordability, availability, quality and safety, and sustainability and adaptation. That report shows that Indonesia's position is still below that of neighboring countries. Malaysia has a score of 69,9 and is ranked 41st, while Singapore has a score of 73,1 and is ranked 28th. That situation contrasts Indonesia's status as an agricultural and maritime country. Under that condition, Indonesia should have good food security, but from that report, Indonesia's position is far under the neighboring countries such as Malaysia and Singapore.

Social capital is currently used in many studies and as a part of the other economic models, cultural capital, and human capital (Kharisma, 2022). Cultural capital could influence food security through cooperation created from relationships in a community at every stage of the food supply chain, from production to consumption. In that cooperation, each individual gets their own benefit through social support, trust, exchange of information, resources, and support (Nosratabadi et al., 2020). Smith et al. (2017) found the determinants in food security from 143 countries, and one of those determinants is social capital. From that research, social capital is the first rank that influences food security, which has a high social capital status and reduces a person's possibility of being in a food insecure by 6,7%.

Increasing social capital in society can be used to address access to resources and information, which can ultimately increase food security. One way to implement social capital in society is through a community-driven development program. The Coopérative d'utilisation de matériel agricole (CUMA) movement in France is an association of farmers sharing economic, social, and knowledge resources for mutual prosperity. With this association, there is an exchange of information, access to more modern agricultural equipment, and access to credit sources to increase production results (Herbel et al., 2015). Based on the Indonesian context, sub-district development programs could improve community welfare and increase the participation of women and minorities (Woolcock et al., 2006). Apart from that, the role of the community in which the mother lives in collaborating, such as creating a village garden and sharing knowledge, is considered to be a solution to reduce food insecure in the household (Satzinger et al., 2009). Based on this background, researchers want to examine the impact of social capital on food security in Indonesia. This research aims to determine the impact of social capital on household food security in Indonesia. Specifically, this research wants to determine whether high social capital conditions positively impact household food security. This research uses IFLS (Indonesian Family Live Survey) survey data, and there is a questionnaire regarding participation in society as a measure of social capital and household food expenditure. The variable instrument method is expected to reduce endogeneity problems in previous research.

LITERATURE REVIEW

One of the capital forms in neocapital theory is social capital. It is based on the premise that investment in social relationships yields certain returns. That motivates individuals to participate in social interactions and relationships to gain benefits. As the concept, social capital is rooted in social networks and relationships. It can be defined as an investment made by individuals in social relationships. Individuals access resources embedded in social structures through these relationships to improve expected outcomes. These outcomes can be instrumental, like wealth, influence, and reputation, or expressive, like physical and mental health and life satisfaction (Lin et al., 2017). The main idea of social capital has three key elements are resources embedded in social structures, individual access to resources, and individual use of resources for specific purposes to achieve desired outcomes. In another definition, Grootaert & Bastelaer (2002) generally define social capital as institutions, relationships, attitudes, and values that govern interactions between people and contribute to economic and social development. Putnam (2020) defines social capital as networks, norms, and trust that enable group or organization members to act more effectively to achieve common goals. It provides benefits such as mutual support, cooperation, trust, and institutional effectiveness.

Social capital is a form of intangible capital, which the accumulation of capital is obtained when individuals engage in social relationships. This kind of investment allows individuals to obtain benefits that are difficult to achieve if working alone so that it can provide participants with benefits based on membership or participation in social networks or other social activity structures (Olarinde et al., 2020). The use of resources embedded in social structures (embedded resources), which are equipped with network locations, is one of the main elements of social capital. In his approach, these resources can be represented in the form of wealth, influence, and status, so one way to measure an individual's level of social capital is through how many direct or indirect relationships the individual has with other individuals (Lin et al., 2017). In some cases, using resources can provide results in an instrumental form, such as using contacts in social networks in the job search. The use of contacts in job searches can improve results in the job search process (Obukhova & Lan, 2016). In simple terms, the theoretical model of the concept of social capital by (Lin et al., 2017) is in Figure 1.

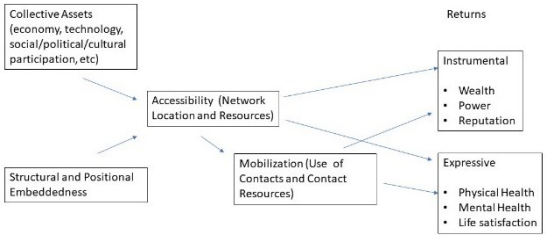

Figure 1. the concept of social capital

The diagram regarding the social capital theoretical model is divided into three parts. First, factors in the social structure and the individual's position in the social structure that help or limit the investment of social capital; second, the elements of social capital; and third, the results obtained from social capital. The first part describes the inequality of social capital, where the distribution of embedded, accessible, and mobilized resources differs between individuals depending on variations in structure and the individual's position in that structure. These structures

can be economic, technological, and participation in the social, cultural, and political realms. Meanwhile, individual positions can be described by differences in individual positions in the social structure. The second part is the process that connects the two elements of social capital are access to resources and use. The easier it is for individuals to access embedded resources, the more resources they will use. The third part is the outcome, which describes how social capital produces results. In this case, the results could be instrumental, namely wealth, influence, and reputation, or expressive, such as life satisfaction, physical, and mental health.

RESEARCH METHOD

This research uses data from IFLS-5 (Indonesian Family Life Survey), a household survey data in Indonesia in 2014-2015, with a multistage sampling design and a sample representing 83% of the Indonesian population. The variables measured are social capital, socio-demographic profile, socio-economic profile, and food security status. The social capital variable is measured using the number of participants in the community, where community membership includes community meetings, cooperatives, routine work, village improvement programs, youth group activities, and religious activities. The selection of this variable is done because there is already a structural dimension in community participation, so indicators of social capital can be assessed. In book 3B, the section on community participation from the IFLS household survey module, there are questions about community activities and government programs that involve the community. These are held in the last 12 months in the village/sub-district. In addition, trust will be used to estimate the social capital variable to reduce bias. In book 3A, section TR (Trust) from the IFLS household survey module, there are questions about the level of trust in the village/sub-district.

Trust is used as an instrument variable because trust is the initial form in every form of social interaction, and in general, trust is the "lubricant" of social life (Cherti, 2008). When someone has trust in their surroundings, the tendency to interact and carry out reciprocal relationships will increase. In this case, the researcher uses the question, "Are you willing to help the residents in this village/sub-district if needed?" to measure trust. The researcher argues that when an individual is willing to use their leisure time to help others, the level of trust in their surroundings is higher, so the tendency for that individual to participate in community participation is also more likely. So conceptually, trust influences individuals to participate in community participation but does not directly affect food security.

The measurement of food insecure in this study follows the World Food Programme (WFP) concept. The definition of food security is related to the failure of individuals to meet their needs for nutritious food in terms of frequency and diversity of food. Based on the WFP concept, the first step is for the researcher to analyze food consumption, producing the food consumption score. The researcher uses the food frequency questionnaire in the IFLS5 questionnaire for food consumption analysis as in table 3.2. The food frequency questionnaire asks about the types of food eaten and the frequency of food consumption in the last week. After being grouped, the types of

food in the same group are added up, and then the value of each type of food is multiplied by its weight. For food types with a score of more than seven, the score is changed to seven. The total of each food group is called the Food Consumption Score (FCS), then categorized based on the limits of three food consumption groups (Food Consumption Groups). FCS is continuous data, while FCG is categorical data from the categorization of FCS. All three FCGs are said to be "poor" if the FCS value is less than 21, "borderline" if the FCS value ranges from 21 to 35, and "acceptable" if the value is more than 35. Then, this study defines food insecure people as those who are in the "poor and borderline" FCG group, while food secure people are defined as those who are in the "acceptable" FCG group (World Food Programme, 2008; Isaura et al., 2018). In the weighting, the researcher determines the food group for several types of food not mentioned in the food group set by the WFP, including instant noodles, fast food, and fried foods. The researcher argues that instant noodles and fast food are substitutes for staple foods, placing them in the main staples group. Fried foods in daily consumption in Indonesia are generally used as side dishes or snacks, so placing them in the oil category is less appropriate because the use of oil is only used for frying, and the consumption of this oil is only a residue that sticks to the fried foods so the quantity is only tiny (Wiesmann et al., 2009). Therefore, the researcher categorizes fried foods as vegetable/fruit because most fried foods in Indonesia are made from plant-based materials such as tempeh, tofu, bakwan, fried bananas, and fried cassava. The control variables use socio-demographic and socio-economic status such as gender, marital status, education, location of residence, house occupied, farming, poultry and non-poultry livestock, vehicles, electronics, savings, jewelry, location of individual residence (Nugroho et al., 2022).

RESULT

The following model will be used to estimate the impact of social capital on food security (FS_i). Assuming that food security is a function of social capital (SC_i), a vector of control variables (X_i) and (ε_i) is an error term, the model is as follows:

$$FS_i = \alpha_0 + \alpha_1 SC_i + \alpha_3 X_i + \varepsilon_i \qquad (1)$$

From that model, the estimation methods used in this study are Ordinary Least Square (OLS) and Two-stage Least Square (2SLS) with a post-test for 2SLS to estimate between a social model with FCS and FCG.

In its estimation, social capital and food security have endogeneity problems. Individuals with good food security support are active in social activities in the community. This social participation is another form of leisure, which individuals with food insecure status will tend to work longer to meet their needs. It shows that the higher a person's food security status, the more likely they are to participate in social participation (Nugroho et al., 2022). In addition, using surveys also has measurement error problems that can lead to bias, in this case the independent variables used for estimation produce downward bias (Bound et al., 2001).

Wright, in his study on agricultural markets. The assumptions used in this method are:

1. The instrument variable must be exogenous, which means it is not

correlated with the error term of the main equation.
2. The relationship between the dependent and instrument variables can only occur through the independent variable (exclusion restriction).
3. The instrument must be relevant to the endogenous independent variable.

In 2SLS, there are two equations where the endogenous independent variable in the main equation is constructed by another equation that estimates the relationship between the independent variable and the instrument variable (Angrist & Pischke, 2009).

The 2SLS method is divided into two stages. First, the researcher estimates the social capital model and uses the results to create predicted variable values. Individuals are more likely to participate in the community if it provides benefits to them in the form of social capital, such as access or information to obtain food sources, in the case of food security. Therefore, the researcher hypothesizes that the level of food security is higher if individuals participate in the community. To address the endogeneity problem, the instrument variable used is trust in the village/sub-district (trust). Howley (2015) and Arezzo & Giudici (2017) also took a similar approach to address endogeneity, where the capital variable was instrumented with the level of trust as the instrument variable. In this case, the instrument variable vector must have a significant relationship with the social capital variable but does not affect the outcome variable, namely food security.

There are three estimation models in this study, the first is the 2SLS model in equation (3) with the estimation between FCS and community participation with the trust instrument with FCS_i is the dependent variable, $SCpred$ is the independent variable estimated by equation (2) by IV and Cov is a vector of the control variable.

$$SC_i = \varphi Cov_i + \sigma IV_i + u_i \quad (2)$$

$$FCS_i = \alpha_0 + \alpha_1 SCpred_i + \alpha_3 Cov_i + \varepsilon_i \quad (3)$$

The second model is the 2SLS model in equation (5) which estimates FCG and community participation with the trust instrument. FCG_i is the dependent variable, $SCpred$ is the independent variable estimated by equation (4) by IV and Cov is a vector of the control variable. Therefore, the models used in this study are as follows:

$$SC_i = \gamma Cov_i + \delta IV_i + u_i \quad (4)$$

$$FCG_i = \beta_0 + \beta_1 SCpred_i + \beta_3 Cov_i + \varepsilon_i \quad (5)$$

In general, the model that uses the CMP estimation technique is as follows:

$$SC_i = \gamma Cov_i + \eta IV_i + u_i \quad (6)$$

$$FCG_i = \beta_0 + \beta_1 SCpred_i + \beta_3 Cov_i + \varepsilon_i \quad (7)$$

$$FCG_i = 1 \; if \; FCG_i^* \leq \boldsymbol{\delta_1}$$

In equation (6), which is the first stage, the variable FCS is estimated with the instrument variable is IV_i. In equation (7), FCG_i is estimated with the predicted value of $SCpred_i$ with Cov_i is a vector of the control variable. In equation (7) uses the ordered probit method then the estimation results can be interpreted correctly.

Table 1. Statistic Descriptive

Variable	Obs	Mean	Std. Dev.	Min	Max
FCS	31184	49.421	14.991	0	87.5
FCG21	31184	2.811	.437	1	3
Total PM	31184	1.318	1.287	0	6
trust	.	.	.	.	.
1: Strongly agree	31184	.263	.44	0	1
2: Agree	31184	.726	.446	0	1
3: Disagree	31184	.01	.097	0	1
4: Strongly disagree	31184	.001	.033	0	1
gender	31184	.467	.499	0	1
age	31184	37.304	14.911	14	101
marital	.	.	.	.	.
1: Belum Kawin	31184	.198	.399	0	1
2: Pernah Kawin	31184	.076	.266	0	1
3: Kawin	31184	.726	.446	0	1
educ	.	.	.	.	.
1: Tidak/Belum sekolah	31184	.04	.195	0	1
2: SD	31184	.295	.456	0	1
3: SMP	31184	.194	.396	0	1
4: SMA	31184	.334	.472	0	1
5: Perguruan Tinggi	31184	.137	.344	0	1
urban	31184	.59	.492	0	1
UsahaTani	31184	.359	.48	0	1
RumahDitempati	31184	.748	.434	0	1
seluler	31184	.736	.441	0	1
TernakUnggas	31184	.204	.403	0	1
TernakNonUnggas	31184	.054	.226	0	1
Kendaraan	31184	.759	.428	0	1
Elektronik	31184	.975	.155	0	1
Tabungan	31184	.297	.457	0	1
Perhiasan	31184	.475	.499	0	1

Source: IFLS 5 has processed

Based on table 1, the average food consumption score is 49 or categorized in the food consumption group as acceptable. That is also supported by the average value of the food consumption group variable, which is 2,8 or above the borderline. The average community participation variable is 1.32, which means the average individual participates in 1 type of community activity. The average value of the gender variable is 0,467, which means it is dominated by women, while the distribution of food consumption groups by gender.

Table 2 Comparison regression results, Source IFLS5

	(1) **OLS FCS**	**(2)** **IV FCS**	**(3)** **OLSFCG**	**(4)** **IV FCG**	**(5)** **CMP FCG**
Total PM	0.613***	2.559***	0.011***	0.088***	0.296***
	(0.068)	(0.739)	(0.002)	(0.022)	(0.068)
gender	-0.661***	-1.906***	-0.013**	-0.062***	-0.204***
	(0.175)	(0.501)	(0.005)	(0.015)	(0.047)
age	0.081***	0.049***	0.001***	-0.000	-0.001
	(0.008)	(0.015)	(0.000)	(0.000)	(0.001)
marital					
Single	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Divorced	-1.636***	-1.783***	-0.030**	-0.036**	-0.097**
	(0.444)	(0.453)	(0.014)	(0.014)	(0.043)
Married	-1.511***	-1.878***	-0.012*	-0.026***	-0.066**
	(0.253)	(0.291)	(0.007)	(0.008)	(0.029)
Tidak/Belum sekolah					
	0.000	0.000	0.000	0.000	0.000
Education	(.)	(.)	(.)	(.)	(.)
Elementary School	2.099***	1.387**	0.060***	0.032	0.019

	(0.460)	(0.539)	(0.019)	(0.020)	(0.050)
Junior High School	3.739***	2.783***	0.107***	0.069***	0.118*
	(0.497)	(0.621)	(0.019)	(0.022)	(0.061)
Senior High School	6.523***	5.483***	0.169***	0.128***	0.335***
	(0.494)	(0.638)	(0.019)	(0.022)	(0.068)
University	10.297***	9.234***	0.218***	0.176***	0.693***
	(0.525)	(0.665)	(0.019)	(0.023)	(0.082)
City/Village	1.201***	1.409***	0.036***	0.044***	0.140***
	(0.194)	(0.211)	(0.006)	(0.007)	(0.020)
UsahaTani	-0.218	-0.571**	0.008	-0.006	-0.032
	(0.199)	(0.242)	(0.006)	(0.008)	(0.024)
RumahDitempati	0.412**	-0.059	0.004	-0.015*	-0.038
	(0.199)	(0.266)	(0.006)	(0.008)	(0.027)
seluler	2.560***	2.298***	0.053***	0.042***	0.122***
	(0.224)	(0.247)	(0.008)	(0.008)	(0.025)
TernakUnggas	-0.384*	-0.539**	-0.007	-0.013**	-0.048**
	(0.207)	(0.218)	(0.006)	(0.007)	(0.021)
TernakNonUnggas	-0.817**	-0.890**	-0.028**	-0.031***	-0.087**
	(0.360)	(0.364)	(0.011)	(0.011)	(0.037)
Kendaraan	1.165***	1.063***	0.035***	0.031***	0.091***
	(0.202)	(0.208)	(0.007)	(0.007)	(0.021)
Elektronik	4.184***	3.876***	0.181***	0.169***	0.299***
	(0.581)	(0.597)	(0.025)	(0.025)	(0.052)
Tabungan	2.302***	2.058***	0.043***	0.033***	0.146***
	(0.191)	(0.213)	(0.005)	(0.006)	(0.025)
Perhiasan	2.340***	2.321***	0.059***	0.058***	0.200***
	(0.173)	(0.175)	(0.005)	(0.005)	(0.019)
Constant	32.740***	34.166***	2.347***	2.403***	
	(0.767)	(0.942)	(0.031)	(0.035)	
cut_1_1					
Constant					-1.065***
					(0.074)
cut_1_2					
Constant					0.076
					(0.090)
lnsig_2					
Constant					0.177***
					(0.004)
atanhrho_12					
Constant					-0.317***
					(0.092)
N	31,184	31,184	31,184	31,184	31,184
r2	0.101	0.077	0.064	0.020	
F	187.987	176.390	110.787	101.366	

Sumber: Data diolah peneliti (2019)

Table 2 compares estimates of social capital to food security. In columns (1) and (3) use Ordinary Least Squares (OLS), columns (2) and (4) use 2SLS, and column (5) is the estimation result of CMP. For columns (1) and (2) use Food Consumption Score to measure food security and columns (3), (4), and (5) use Food Consumption Group to measure food security. In general, all variables are consistent in the direction of the coefficient, whether using the OLS, 2SLS, or CMP methods. The coefficient of social capital is positive, which is in line with previous literature on the impact of social capital on food security.

CONCLUSION

This study aims to analyze the impact of social capital on food security in Indonesia. It utilizes cross-sectional data from the Indonesian Family Life Survey 5 (IFLS5) and employs the food consumption score (FCS)

and food consumption group (FCG) methods to measure food security levels. Social capital is prone to endogeneity issues, and this research uses community participation as an instrument mediated in trust to mitigate bias. The estimated result shows that community participation positively influences food security. That caused the exchange of information and resources within social networks, which can enhance food security. Trust, as a driver of community participation, indicates that it acts as a "lubricant" for social relationships (Cherti, 2008). The results consistently demonstrate that social capital positively impacts food security. The 2SLS estimates indicate that trust adequately captures the social capital variable in a good way, which could mitigate bias in the results.

REFERENCES

Angrist, J. D., & Pischke, J.-S. (2009). Mostly Harmless Econometrics. Princeton University Press.

Arezzo, M. F., & Giudici, C. (2017). The Effect of Social Capital on Health Among European Older Adults: An Instrumental Variable Approach. Social Indicators Research, 134(1), 153–166. https://doi.org/10.1007/s11205-016-1411-5

Bound, J., Brown, C., & Mathiowetz, N. (2001). Chapter 59 Measurement error in survey data. In Handbook of Econometrics (Vol. 5, pp. 3705–3843). Elsevier B.V. https://doi.org/10.1016/S1573-4412(01)05012-7

Cherti, M. (2008). Paradoxes of Social Capital: A Multi-Generational Study of Moroccans in London. Amsterdam University Press.

Economist Impact. (2022). Country report: Indonesia. https://impact.economist.com/sustainability/project/food-security-index/reports/Economist_Impact_GFSI_2022_Indonesia_country_report_Sep_2022.pdf

Grootaert, C., & Bastelaer. (2002). Understanding and Measuring Social Capital. World Bank.

Herbel, D., Rocchigiani, M., & Ferrier, C. (2015). The role of the social and organisational capital in agricultural co-operatives' development Practical lessons from the CUMA movement. Journal of Co-Operative Organization and Management, 3(1), 24–31. https://doi.org/10.1016/j.jcom.2015.02.003

Howley, P. (2015). Addressing Endogeneity in estimating the effect of social capital on psychological health. Applied Economics, 76–79.

Kharisma, B. (2022). Surfing alone? The Internet and social Capital: Evidence From Indonesia. Journal of Economic Structures.

Lin, N., Cook, K., & Burt, R. S. (2017). Social Capital: Theory and Research. Routledge.

Nosratabadi, S., Khazami, N., Abdallah, M. ben, Lackner, Z., Band, S. S., Mosavi, A., & Mako, C. (2020). Social capital contributions to food security: a comprehensive literature review. AgriRxiv. agriRxiv;Wallingford.

Nugroho, T. W., Hanani, N., Toiba, H., & Sujarwo, S. (2022). Does Social Capital Improve Food Security? Evidence From The Indonesian Family Life Survey. Asian Journal of Agriculture and Rural Development, 138–147.

Obukhova, E., & Lan, G. (2016). Do Job Seekers Benefit from Contacts? A Direct Test with Contemporaneous Searches. Management Science.

Putnam, R. D. (2020). Bowling Alone: The Collapse and Revival of American Community Revised and Updated. Simon & Schuster Paperbacks.

Satzinger, F., Bezner Kerr, R., & Shumba, L. (2009). Intergenerational participatory discussion groups foster knowledge exchange to improve child nutrition and food security in northern Malawi. Ecology of Food and Nutrition, 48(5), 369–382. https://doi.org/10.1080/03670240903170483

Smith, M. D., Rabbitt, M. P., & Coleman-Jensen, A. (2017). Who are the World's Food Insecure? New Evidence from the Food and Agriculture Organization's Food Insecurity Experience Scale. World Development, 93, 402–412. https://doi.org/10.1016/j.worlddev.2017.01.006

Wiesmann, D., Bassett, L., Benson, T., Hoddinott, J., & Authors, W. B. (2009). Validation of the World Food Programme's Food Consumption Score and Alternative Indicators of Household Food Security. www.ifpri.org/pubs/otherpubs.htm#dp.

Woolcock, M., Bank, W., & Chase, R. (2006). Social capital and the micro-institutional foundations of CDD approaches in East Asia: evidence, theory, and policy implications. https://www.researchgate.net/publication/228494659

World Food Programme. (2008). Food Consumption Analysis, Calculation and use of the food consumption score in food security analysis. World Food Programme.