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WHY "RICH FARMERS" DEMAND FINANCIAL SUPPORT?[1]

DLACZEGO „BOGACI ROLNICY'' DOMAGAJĄ SIĘ WSPARCIA FINANSOWEGO?

Key words: assistance to agriculture, relative deprivation, agricultural income
Słowa kluczowe: wsparcie dla rolnictwa, relatywna deprywacja, dochód rolniczy

Abstract. People tend to compare themselves with other people from their surroundings. This leads to a situation, in which even a rich person in absolute terms, can feel poor in relative terms, if people from surroundings are richer. We call it relative deprivation. Farmers in developed economies claim to be poor, because they compare themselves not with farmers in poor economies, but rather with other members of their own society who work outside the agriculture and whose incomes are usually higher. Feeling relatively deprived, farmers in developed economies demand stronger financial support and act intensively to convince policymakers to support them. Hence, the main aim of this paper is to analyze the relation between the relative deprivation of an average farmer in countries with different development level and the level of support for farmers. Results of this study prove that the level of relative deprivation of famers is strongly and positively correlated with the level of support for farmers. Hence the idea of relative deprivation might provide additional political explanation of different level of support for farmers in countries with different development level.

Introduction

Farmers are a subject to government's support in numerous countries, however the character of such actions is different in countries with different development level. Rich economies usually support farmers, whereas poor economies typically or often tax them. When an economy is developing, its economic structure changes and the relative size of its agricultural sector (share in GDP, employment, trade) is declining, but at the same time, the level of agricultural protection is rising. Such patterns of agricultural policies make little sense from a classic economics point of view. However in the reviewed literature several explanations of this phenomenon are provided by political economy theories [Swinnen et al. 2000, Olper 2001, Swinnen 2008, Anderson 2013]. The negative relation between the share of farmers in the economy and agricultural support can be explained by the argument of reduced per unit cost of agricultural protection. Another set of arguments is related to the effectiveness of political organization and the power of farmers' lobbying. Olson [1965] argues that incentives to act collectively increase as the interest groups get relatively smaller and gather more political power. In order to act collectively, a group requires measures of organization, communication and coordination among its members and transaction costs of organizing a lobby are lower in smaller groups. Additionally, potential gains per capita are higher in smaller larger groups.

However, there might be another explanation why farmers in developed countries have stronger incentive to act collectively and lobby for greater financial support. Farmers in developed economies claim to be poor, even though in absolute terms their incomes (even without subsidies) are much higher than the incomes of farmers in developing countries. It looks however different in relative terms. Farmers in rich economies compare themselves not with farmers in poor economies, but rather with other members of their own society who work outside the agriculture and whose incomes are usually higher. Moreover, because in developed countries the share of people employed in agriculture is small, the fraction of those who are richer than the farmers is significant. Such situation refers to sociological concept of relative deprivation. One way to measure this phenomenon is to use the index of relative deprivation proposed by Oded Stark in several of his papers [Stark et al. 2009,

Stark 2013]. Feeling relatively deprived, farmers in developed economies demand stronger financial support and act intensively to convince policymakers to support them. As a result, the average level of support for farmers in developed countries is higher than in other parts of the world.

This paper assumes the following research hypothesis: the average level of a country's support for farmers is positively correlated with the level of relative deprivation of these farmers. Hence the main aim of this paper is to calculate the relative deprivation of an average farmer in countries with different development level and to compare it with average level of support for farmers.

Author of this research is aware of the limitations of the approach. This paper includes just a narrow focus and ignores the issues of owned assets such as land. Author plans to further widen the research with panel data analysis based on the World Bank data base on estimates of distortions to agricultural incentives and also to analyze groups of countries with similar solutions to support agriculture.

Material and research methods

In this paper I modified the index of relative deprivation proposed by Oded Stark [2013], according to whom relative deprivation of an individual (RD_i) earning income x_i in population P with an income vector $x = (x_1,...,x_n)$ is equal to the fraction of those whose incomes are higher than x_i times their mean excess income ($E(x_j – x_i)$) [Stark 2013]:

$$RD_i = [1 – F(x_i)] \times E(x_j – x_i \mid x_j > x_i)$$

Because it was hard to find comparable and reliable data about incomes in and outside agricultural sector in counties with different development level, I decided to use gross value added data available in the World Bank database. In case of agricultural sector gross value added is even a better measure, since it does not include income subsidies. Hence the value added can be seen as an approximation of what a farmer would earn if there was no government support. Suppose that GV(ag) is a gross value added produced in agricultural sector in a single country, GV(nonag) is a gross value added produced in the rest of the economy (non-agricultural sectors) of a single country and GV_i is a gross value added per economically active individual. Having available only data on mean gross value added per worker in agricultural sector $\overline{GV}$(ag) and mean gross value added per worker in the rest of the economy $\overline{GV}$(nonag), I simplified the following equation:

$$E(GV_i(nonag) – GV_i(ag)) = E(GV_i(nonag)) – E(GV_i(ag)) = \overline{GV}(nonag) – \overline{GV}(ag)$$

Hence the relative deprivation of an average farmer in a single country can be calculated as a fraction of work force in non-agricultural sectors multiplied by a difference between mean gross value added per worker in non-agricultural sectors and mean gross value added per worker in agricultural sector:

$$RD_i(ag) = [1 – F(GV_i(ag))] \cdot (\overline{GV}(nonag) – \overline{GV}(ag)) \mid (\overline{GV}(nonag) > \overline{GV}(ag))$$

A positive result means that farmers are relatively deprived in comparison to other members of the society, but if a result is negative, then the relative deprivation equals zero.

Level of support for farmers was measured with the use of the NRA_{totd} (nominal rate of assistance) calculated by the World Bank, which is available in the World Bank database on estimates of distortions to agricultural incentives 1955-2007, updated in June 2013 [Anderson, Valenzuela 2008, Anderson, Nelgen 2013]. The NRA for a single product indicates how many percent agricultural producer's income is higher (or lower) from the one he would obtain in the absence of any interference from the state. NRA for the sector is calculated as a weighted average, where the weights are based on the value of production measured in world prices. NRA_{totd} includes also non-product specific support and decoupled payments. The final dataset for this research includes 67 countries. Calculations have been made for the year 2005 because of the highest number of available data.

Research results

In most countries, especially in all well-developed ones, gross value added per worker is higher in non-agricultural sectors than in agricultural sector (Tab. 1). There are however some exemptions, mostly among developing and least developed countries like Argentina, Bulgaria, Nigeria and others[2], where value added per worker in agricultural sector is higher than in other sectors of the economy.

Table 1. Data used in the analysis: mean gross value added per worker in agricultural sector and in non-agricultural sectors in USD, fraction of work force in non-agricultural sector, relative deprivation of farmer, nominal rate of assistance for farmer, NRA rank (2005)
Tabela 1. Dane wykorzystane w analizie: wartość dodana na jednego zatrudnionego w rolnictwie i poza rolnictwem w USD, odsetek siły roboczej zatrudnionej poza rolnictwem, relatywna deprywacja rolników, wskaźnik wsparcia dla rolników ranga wskaźnika RNA (rok 2005)

Country/*Kraj*	Gross value added per worker in non-agricultural sectors/*Wartość dodana brutto na zatrudnionego poza rolnictwem [USD]*	Mean gross value added per worker in agricultural sector/ *Wartość dodana brutto na zatrudnionego w rolnictwie [USD]*	Fraction of work force in non-agricultural sectors/ *Odsetek siły roboczej zatrudnionej poza rolnictwem*	Relative deprivation of a farmer/ *Relatywna deprywacja rolników*	Nominal rate of assistance for farmer/ *Wskaźnik nominal-nego wsparcia dla rolników*	NRA rank/ *ranga NRA*
	$\overline{GV}(nonag)$	$\overline{GV}(ag)$	$1-F(GV_i(ag))$	$RD_i(ag)$	NRA_{totd}	
Ireland/*Irlandia*	97 892	15 454	0,92	75 924	0,68	6
Switzerland/*Szwajcaria*	97 303	23 313	0,96	71 292	2,09	1
Norway/*Norwegia*	112 176	43 645	0,96	65 843	2,06	2
Austria/*Austria*	70 044	23 266	0,96	44 829	0,44	12
Denmark/*Dania*	79 465	33 665	0,97	44 369	0,39	20
United Kingdom/ *Wielka Brytania*	70 606	26 916	0,98	42 983	0,46	10
Sweden/*Szwecja*	72 087	30 278	0,97	40 691	0,43	14
Japan/*Japonia*	69 808	27 861	0,97	40 688	0,93	4
Germany/*Niemcy*	62 387	24 195	0,98	37 433	0,40	18
Bel-Lux/*Beneluks*	118 788	45 606	0,99	31 942	0,46	11
USA/*Stany Zjednoczone*	86 494	51 517	0,90	31 591	0,23	34
Italy/*Włochy*	69 195	36 673	0,96	31 169	0,32	29
Greece/*Grecja*	48 823	14 804	0,86	29 160	0,36	24
Finland/*Finlandia*	68 997	39 880	0,96	27 825	0,43	15
Portugal/*Portugalia*	33 915	7 548	0,89	23 496	0,35	28
Spain/*Hiszpania*	50 664	26 068	0,94	23 190	0,36	25
Netherlands/*Holandia*	72 275	50 758	0,97	20 900	0,44	13
New Zealand/*Nowa Zelandia*	50 074	28 294	0,92	19 947	0,04	45
France/*Francja*	71 518	51 150	0,97	19 838	0,37	23
Korea Rep./*Korea*	36015	15 015	0,93	19 482	1,23	3
Cyprus/*Cypr*	31 219	12 178	0,93	17 737	0,40	19
Czech Rep./*Czechy*	24 995	8 078	0,93	15 698	0,41	16

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[2] Value added in agricultural sector is higher also in Armenia, Bosnia and Herzegovina, Guyana, Kyrgyz Republic, Lebanon, Macedonia, Micronesia, Moldova, Mongolia, Tonga and Uzbekistan. These countries were however excluded from analysis because NRA data were not available.

Table 1. Cont./*Tabela 1. Cd.*

Australia/*Australia*	60 452	44 820	0,96	14 973	0,03	48
Mexico/*Meksyk*	21 352	3 276	0,81	14 728	0,14	37
Poland/*Polska*	18 298	2 628	0,81	12 654	0,47	8
Turkey/*Turcja*	25 226	5 258	0,63	12 633	0,31	30
Estonia/*Estonia*	19 976	6 481	0,90	12 138	0,38	22
Slovak Rep./*Słowacja*	21 892	9 221	0,92	11 648	0,41	17
Chile/*Chile*	18 742	5 348	0,86	11 461	0,03	49
Hungary/*Węgry*	23 404	10 843	0,91	11 443	0,36	26
South Africa/*RPA*	13 352	4 370	0,92	8 288	0,13	39
Latvia/*Łotwa*	13 655	4 778	0,89	7 940	0,36	27
Lithuania/*Litwa*	16 165	7 389	0,90	7 906	0,39	21
Brazil/*Brazylia*	8 794	3 474	0,87	4 613	0,04	46
Russian Fed./*Rosja*	9 142	4 725	0,91	4 012	0,13	40
Ecuador/*Ekwador*	7 455	3 101	0,79	3 433	-0,24	67
Dominicana/*Dominikana*	8 352	4 568	0,87	3 298	0,28	32
Colombia/*Kolumbia*	7 009	3 161	0,83	3 195	0,20	35
Morocco/*Maroko*	5 903	2 468	0,71	2 434	0,60	7
Sri Lanka/*Sri Lanka*	4 406	751	0,56	2 046	0,00	54
Egypt/*Egipt*	4 460	1 971	0,72	1 784	-0,03	59
Philippines/*Filipiny*	3 705	1 008	0,63	1 711	-0,13	63
Romania/*Rumunia*	8 911	6 981	0,88	1 702	0,82	5
Sudan/*Sudan*	4 396	1 408	0,49	1 476	0,47	9
Cameroon/*Kamerun*	3 877	859	0,46	1 390	0,01	52
Zambia/*Zambia*	4 314	421	0,34	1 310	0,31	31
Senegal/*Senegal*	4 692	369	0,28	1 211	0,16	36
India/*Indie*	3 239	571	0,43	1 153	0,07	41
Pakistan/*Pakistan*	2 633	1 023	0,59	945	-0,01	58
Mali/*Mali*	4 480	189	0,19	826	0,00	55
Zimbabwe/*Zimbabwe*	1 991	307	0,40	679	-0,22	65
Kenya/*Kenia*	2 728	375	0,27	633	0,06	42
Bangladesh/*Bangladesz*	1 388	350	0,50	519	-0,18	64
Ukraine/*Ukraina*	3 335	2 771	0,88	494	0,06	43
Burkina Faso/*Burkina Faso*	6 367	348	0,08	473	0,01	53
Uganda/*Uganda*	2 216	233	0,22	444	0,02	51
Mozambique/*Mozambik*	2 519	202	0,18	425	0,14	38
Tanzania/*Tanzania*	2 130	274	0,22	402	-0,07	61
Chad/*Czad*	2 539	1 259	0,29	371	0,00	56
Benin/*Benin*	1 503	872	0,51	321	0,00	57
Madagascar/*Madagaskar*	1 348	200	0,27	314	0,24	33
Ghana/*Ghana*	1 381	762	0,44	274	0,05	44
Ethiopia/*Etiopia*	878	178	0,20	140	-0,03	60
Nicaragua/*Nikaragua*	2 806	2 735	0,82	57	-0,08	62
Argentina/*Argentyna*	11 118	11 505	0,92	0	-0,23	66
Bulgaria/*Bułgaria*	7 159	12 558	0,95	0	0,04	47
Nigeria/*Nigeria*	2 461	2 955	0,71	0	0,03	50

Source: own calculations based on [http://data.worldbank.org/indicator]
Źródło: obliczenia własne na podstawie [http://data.worldbank.org/indicator]

Gross value added per worker in agriculture in high-income economies is of course much higher than in middle and low-income economies, however farmers in rich countries do not compare themselves with farmers from poor countries, but rather with other members of their own society. A crucial role in this comparison plays the fraction of work force hired in non-agricultural sectors, so basically fraction of people with higher earnings. In high-income economies this fraction equals usually over 90%, but in least developed countries it is much lower. For example in Zambia, Senegal, Mali, Burkina Faso, Uganda and Mozambique gross value added per worker in non-agricultural sectors is over 10 times higher than in agricultural sector, however share of people working outside agriculture is less than 30%, and in Burkina Faso only 8%. Hence, farmers in high-income economies, even though globally their incomes are high, see that most of the society earns more and feel relatively poor. Such subjective perception is called relative deprivation. Feeling relatively deprived farmers in developed countries have stronger incentives to act collectively and demand stronger support from policymakers. On the other hand, farmers from low-income economies see most of the society to be equally poor and their relative deprivation and political pressure is lower. As a result, support for farmers in developed countries is higher than in other parts of the world, which is represented by the higher level of NRA_{totd} estimate (Tab. 1). In developing countries, NRA_{totd} is much lower or sometimes (in Ecuador, Egypt, Philippines, Pakistan, Zimbabwe, Bangladesh, Tanzania, Ethiopia and Argentina) even negative, which means that these countries tax farmers.

Above considerations can be confirmed by the empirical analysis, which proves that level of relative deprivation of famers is strongly and positively correlated with the level of support for farmers. The Pearson's liner correlation coefficient couldn't be calculated here, because there is no liner relation between variables (few outliers and one large concentration of objects). Alternatively I used the Spearmann's rank correlation coefficient. Calculated correlation coefficient between the rank of the level of support for farmers (NRAtotd) and the rank of the level of relative deprivation of farmers *RDi(ag)* in 67 individual countries is statistically significant and amounts to 0,72, which confirms the assumed hypothesis.

Conclusions

1. Empirical analysis confirms a positive relation between the level of support for farmers and level of relative deprivation of farmers. Since farmers in high-income economies compare themselves with other members of their own society and not with farmers in less developed countries, they fell relatively worse off. This effect is strengthened by significant fraction of those working outside agriculture and having higher incomes. Feeling relatively deprived, farmers in rich countries claim to be poor and act intensively to gain a support from policymakers.
2. The idea of relative deprivation seems to provide a political explanation of different level of support for farmers in countries with different development level and might be a contribution to the Olson's theory of interest groups.
3. However author of this paper see the need for further deepening of this considerations, since there are some countries, like New Zealand and Australia, where though high level of relative deprivation of farmers, level of support for agricultural producers is low. It might be also useful to analyze groups of countries with similar solutions to support agriculture. Another issue would be including data on owned assets such as land.
4. The next step in the research would be a panel data analysis based on the World Bank data base on estimates of distortions to agricultural incentives, which might show some more interesting relations, since correlation coefficient is only a measure of association and not causality.

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Streszczenie

Celem badań było określenie relacji pomiędzy poziomem relatywnej deprywacji rolników w krajach o różnym poziomie rozwoju a poziomem wsparcia finansowego dla rolników. Ludzie porównują się zazwyczaj z innymi osobami ze swojego otoczenia, co może prowadzić do sytuacji, w której osoba bogata w ujęciu absolutnym będzie czuła się biedna w ujęciu relatywnym, jeżeli osoby z jej otoczenia będą bogatsze. Zjawisko to nazywa się relatywną deprywacją. Rolnicy krajów rozwiniętych uważają, że są biedni, ponieważ nie porównują się z rolnikami z biedniejszych gospodarek, tylko z innymi członkami własnego społeczeństwa, którzy pracują poza rolnictwem i których dochody są zazwyczaj wyższe. W takiej sytuacji rolnicy z krajów rozwiniętych domagają się większej pomocy finansowej i aktywnie działają, aby przekonać polityków do wspierania ich.

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