Evaluating Agricultural Price Policy through Positive Information in Iran

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Abstract:

Supplying food to a growing population has always been a concern for authorities in Iran. In this regard, agricultural sector plays an important role in food supply and food's security by increasing agricultural production. But the most important concern in Iranian agricultural sector are the scarcity and resource constraints. Therefore, it seems that only way to increase food supply along with food security purpose is to increase productivity. One of the policy used to increase productivity is the output price policy, in particular for those strategic products that provided Iran's political security. The aim of this paper is to assess the effect of output price policy for Iranian agriculture. This latter is represented by a regional agricultural model, based on PMP, that groups the agriculture supply of 30 Iranian regions. The assessment of IAP presented in this paper confirms the biggest effects regions. It means that the effect of new IAP scenario is different in each region and each region has special cropping pattern. In this regard, policy makers should implement different sustaining policies at regional level. Also, if Iran wants to join WTO, it should be reduced or removed the amount of payments for inefficient crops.

Acknowledegment:

JEL Codes: D21, O21

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Keywords: *Regional agricultural model, Positive Mathematical Programing (PMP), Production Price Policy, Iran.*

JEL: E64, D21, O21, O53, Q18.

Introduction

Reviewing the process of economic development in different countries of the world over time shows that most of developed countries have been able to use domestic economic capacity for developing appropriate domestic agricultural and rural policy. (Fan et.al, 2008, Zhu and Lansink, 2010; Baltzer and Hansen 2011 Li X and Wang W, 2008; Aksoy, 2005; Trienekens, 2011; Wiggins, 2010).

Developing countries are not excluded from this process but they have great difficulties to achieve the same goal due the lack economic resources from other sectors. Since the most share of GDP is related to agricultural sector, agriculture is still an urgent and vital problem for developing countries to solve. (SOFA, 2016). Also, in these countries, supplying food to a growing population has always been a concern for authorities that face the problem of how guarantee food security to their citizen. (Clapp, 2015; Clay, 2002; Pinstrup, 2009; EIU, 2012; Van Den Brooeck and Maertens, 2016). Supplying food and food security in developing countries depends directly on agricultural production and any disturbance in the production process due internal or external conditions can directly threaten the security of food and even the political situation in those country. In other hand, to achieve a better food security developing countries can increase the total production of food (by means of using more fixed factors, i.e. land) or increase productivity. But the most important issue

in the agricultural sector of developing countries are input scarcity and resource constraints for small holders (Ramasamy, 2004; Bruinsma, 2009; Alston et al, 1997). In this framework the major problem of world agricultural policy is to increase food security minimizing environmental degradation natural resources (Fan et.al, 2008, Zhu and Lansink, 2010; Baltzer and Hansen 2011).

In Iran, the agricultural sector has an important place in the economy of the country. About 15% of the country's GDP is produced in the agricultural sector and accounts for about 25% of employment. Under the embargo condition, Iran is almost an autarchic Country, since 99 % of food demand is satisfied by domestic production (Ministry of agriculture in Iran, 2016). According to the geographic position and climate diversity, the availability of suitable workforces in villages and production centers, the existence of sufficient educated forces in agricultural field, Iran shows many advantages in the process of economic development in the agricultural sector. Furthermore, the cultivated land is reducing while the country's population is tripling over the past 40 years. In these years, the food security was guarantee by increasing productivity and the ecological pressure in rural areas. This latter suffer of several problems commons in all the rural areas of the world: incorrect use of inputs, and bad use of water resources, aging population in the agricultural sector and the reluctance of young people to work in agriculture.

Food security and the increase in the vitality of rural areas and rural economy are two of the most important concerns of the Iranian government. In Iran, before the victory of the Islamic Revolution, the main focus of economic policy during the development plans was industrialization. After the Islamic Revolution the national policy was changed and agricultural sector was prioritized in the process of economic development.

The main purpose of this study is evaluating agricultural production pricing policy through positive information in Iran. In particular, we want to answer: how we can use Positive Mathematical Programming (PMP) as agricultural regional model to assess the impact of production pricing policy in Iran, and how simulations can demonstrate a capability differential of regions in reacting to price change policy scenario? To achieve goals of this study and answered questions above, some steps considered has to follow which will be discussed further: I) development of theoretical regional model of Iranian agriculture based on PMP; II) data set organization of in regions according to information facts (price, cost, yields, land use, etc.); III) reproduction of baseline scenario according to the ongoing policy and technologies; and IV) impact assessment of new policy to find the efficient point of price for each crops in different regions.

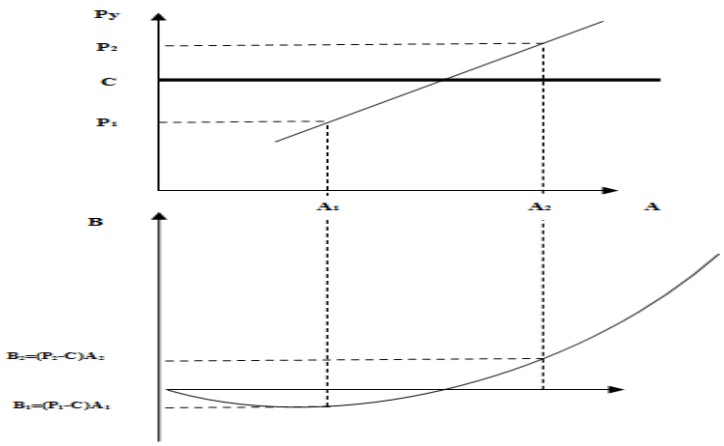
Structure of policies and development program in Iran

In the structure of the planning and executive governing system in Iran, five-year development plans at macro and national levels shape the flow of policies and operational programs and the tendency to implement approaches such as food security linked to sustainable development. What is important about the history of Iran's economic development is to evaluate adopted and ongoing policies in the agricultural sector (Gilanpour, 2006).

In all economic systems, it has been accepted that the market mechanism alone cannot succeed in solving economic problems in agriculture. In particular, the optimal allocation of resources and the fair distribution of incomes is the major concern of worldwide agricultural policies. For this reason, National governments intervenes in various ways to compensate for market failure. In general, the goal of policy can be redistribution of social surplus based on the policy maker goals. Given the importance of the agricultural sector in production, employment and food security, especially in developing countries, the Iranian government supports this sector in many ways. Therefore, the evaluation of agricultural support policies has always been an issue also for economists in Iran.

The main feature of Iranian government from 1980 has always tried to keep down food prices to protect consumers in order to guarantee food security and government stability. To this aim the Iranian government has used a barriers trade policies and direct intervention in the price of foodstuff and inputs (Gilanpour, 2006).

It is possible to sum up the Iranian Agricultural Policy (IAP) use the following levy: stimulation of the food supply by a coupled model (by means of subsidies to agricultural outputs for some specific crops) and decoupled model by means subsidies to agricultural inputs. Agricultural production policy then affects the allocation of factors of production, the combination of agricultural products and incentives to invest in agriculture. Strategic products such as cereals (wheat, barley) for Iranian government are very important and for these commodities the government provides a specific support price. Considering that the bi-directional pricing policy aims to increase the income of farmers and increase the welfare of consumer, its success depends on the output price level and in the past some contradiction were emerged specially if international price has lower. Because Iran is a net importer of foodstuff pricing policy should be managed very carefully by the government in order to avoid market inefficiency and food security problems (Graph.1). In graph 1, vertical axis in first part refers to price of product and in second part refers to the total amount of budget that government should pay for each product as subsidy and horizontal axis refers to area under cultivation per hectare.



Graph 1. The relationship between price of product, area under cultivation and payment of subsidy

Source: Own elaborations.

From producer' point of view, when the price of product increased (fromP_1 to P_y), the motivation to cultivate land is increased (fromA_1 to A_2.). If the goal of policy maker is to increase the cultivated land, the producer should be given motivation, because the producer is ready to produce in the size of area under cultivation that policy maker wants, when he can sell his products in the market in higher price than market price(C). Therefore, policy maker gives subsidies to the producers to attain their goal. Amount of subsidy paid is equal to difference between actual price of product (C) and price at which producers are ready to sell their product (P). On the other hand, if the goal of policy maker is to decrease area under cultivation, then amount of production area is decreased. Because, the producers are ready to decrease their land under cultivation, when they can sell their products in the market at a lower price than price in market. Whereas the actual price of product in the market is more than this price. Therefore, the policy maker should limit the producer, so the tax is taken from producer. The determination of the output price is proportional to the production cost and maintaining the consumer price at an acceptable level. The lower of price, the lower of incentive for production, but the cost of government subsidies decreases. On the contrary, increasing in prices, the incentive for production will increase with the increase in government subsidy spending.

World Trade Organization (WTO) and Iran Commitments

According to the price scenario, the IAP will change if Iran will open to WTO accepting the WTO agreement on agriculture and the implementation of the green, the amber and the red box.

According to World Trade Organization (WTO) agreement on agriculture, developing countries will only have the opportunity to maintain their high level of agricultural support for the next 15 years, than they have to implement a new national agricultural policies based on decoupled payment and a new tariff for trade policies. The effect of these two important levy can be very heavy for Iranian agriculture system and for the political stability of the country. A soft landing strategy can implemented and several studies were conducted in order to avoid food security problems. (Gilanpour, 2006).

Methodology

The PMP model applied in this study is a region model. The IAP effect in a very different way regions food supply according to their climate and fertility conditions. For this reason a regional assessment is particular useful to evaluate region by region the contribution to national food security. Moreover, regional models allowed the assessment of the

The structure of the Iranian agricultural model suitable to assess IAP for each Iranian region (by means of regional agricultural system) consider regional farm type linked together in one model. Moreover, each Iranian region is represented by one "regional farm type" which include the most relevant crops observed in the region by National Minister of Agriculture. The model is built based on farm models. These latter have the undoubted advantage to provide easily the technical and economic information for farm typology. Although these models do not represent the whole region because the figures available

from the minister of agriculture, do not allow to a statistical inference of the results to the whole universe of farms.

To consider the implementation of regional models for policy analysis, some of the theoretical and methodological aspects of mathematical programming were already developed to provide greater capacity to analysis. As a result of the stimuli from the development of EU agricultural policy problems, from 1995 in Europe was used mathematical programming model based on Positive Mathematical Programming (PMP). Since 1995 many works using PMP have been available, analyzing the effects of the Agricultural Policy at regional level. (Howitt, 1995; Paris and Arfini, 1995; Paris and Howitt, 1998; Arfini and et al, .2003; Heckely, 2002).

According to the Paris and Howitt (1998); Paris and Arfini(1995); and Arfini Donati(2013), one important feature of PMP is to consider the farmer's behavior with respect the possibility to use latent information about new crops and to implement a self-selection farm strategy. These two feature are relevant in order to assess the likely responses to market and policy scenarios by farmers. It means that, farmers make decisions in to account not just the activities in the production plan but also they consider all those activities present in other farms (or regions) (Donati and Arfini, 2013).

For all these aims, in this study, Iranian agricultural model is based on PMP and groups in the same model 30 regional models where each model represents the regional farm type. Each farm type considers the most relevant observed activities and considers the self-selection rule that allow to "activate" latent information when market or policy condition will be economical.

The PMP model is implemented according to the seminal papers of Howitt, Paris and Heckelei) (Howitt 1995a, Howitt 1995b, Heckelei, 2002). And cost function was estimated for all the crops in each farm type by Cholesky decomposition and maximum entropy (Table 1).

Table 1. Q Matrix Estimated Through PMP Model or 30 Regions in Iran

	wheat	barley	corn	bean	pea	lentil	onion	potato	cucumber	watermelon
wheat	0.027231	0.000069	0.000030	-0.000024	0.000035	-0.000096	-0.000002	-0.000037	-0.000026	-0.000062
barley	0.000069	4.994085	-1.841477	-1.902680	-1.813222	2.536930	-0.124790	0.002252	-0.714500	0.633208
Corn	0.000030	-1.841477	0.894755	0.690381	0.709072	-0.981713	0.062667	0.028964	0.282275	-0.205691
bean	-0.000024	-1.902680	0.690381	1.136694	0.861220	-1.137405	0.137969	0.089228	0.308891	-0.251664
pea	0.000035	-1.813222	0.709072	0.861220	0.743909	-1.002462	0.086729	0.043213	0.278742	-0.228452
lentil	-0.000096	2.536930	-0.981713	-1.137405	-1.002462	1.372083	-0.105429	-0.043856	-0.382857	0.319483
onion	-0.000002	-0.124790	0.062667	0.137969	0.086729	-0.105429	0.878076	0.217615	0.299702	-0.345460
potato	-0.000037	0.002252	0.028964	0.089228	0.043213	-0.043856	0.217615	0.069704	0.072835	-0.073245
cucumber	-0.000026	-0.714500	0.282275	0.308891	0.278742	-0.382857	0.299702	0.072835	0.206180	-0.194203
watermelon	-0.000062	0.633208	-0.205691	-0.251664	-0.228452	0.319483	-0.345460	-0.073245	-0.194203	0.213295

Source: Own elaborations.

The Iranian agriculture model is calibrated according to the observed production level by Minister of agriculture in 2013.

Information and Data

The assessment of the agricultural production pricing policy at regional level is based on 10 crops in 30 provinces located in Iran. All these regions are specialized agricultural areas for cropping such as cereals (wheat, barley, and corn), legumes (bean, pea, and lentil), melon (watermelon and cucumber) and vegetables (onion and potato) in Iran.

Data for all provinces were collected from the Statistical Center of Iran (SCI) and Iranian Ministry of Agriculture - Jihad (MAJ) for the accounting year 2013 and describe the following variables: land use, yield, output prices and variable costs per activity at region level.

Scenarios

The modelling approach entails a series of scenarios to evaluate the effect of the Iranian agricultural market opening to the world market and the related national agricultural policy to absorb the negative effects for those crops characterized by domestic prices higher than the world prices. The first scenario (S1) introduces a price shock for all the crops changing the current price in Iran with the world market prices. According to the results achieved in S1, we test the model through a series of 101 scenarios (IAP scenarios), where the price of the most negatively affected crop is increased step-by-step for evaluating the price threshold for obtaining the hectares as in the observed situation (S0). These simulations in prices provide the level of coupled payment the Iranian government should consider to sustain the supply chain based on the crop most affected by the world market opening hypothesis.

Results

All the regions in Iran were selected to represent the diversity of the Iranian rural regions. Characteristics of each region according to area under cultivation and amount of production are illustrated in Table 2.

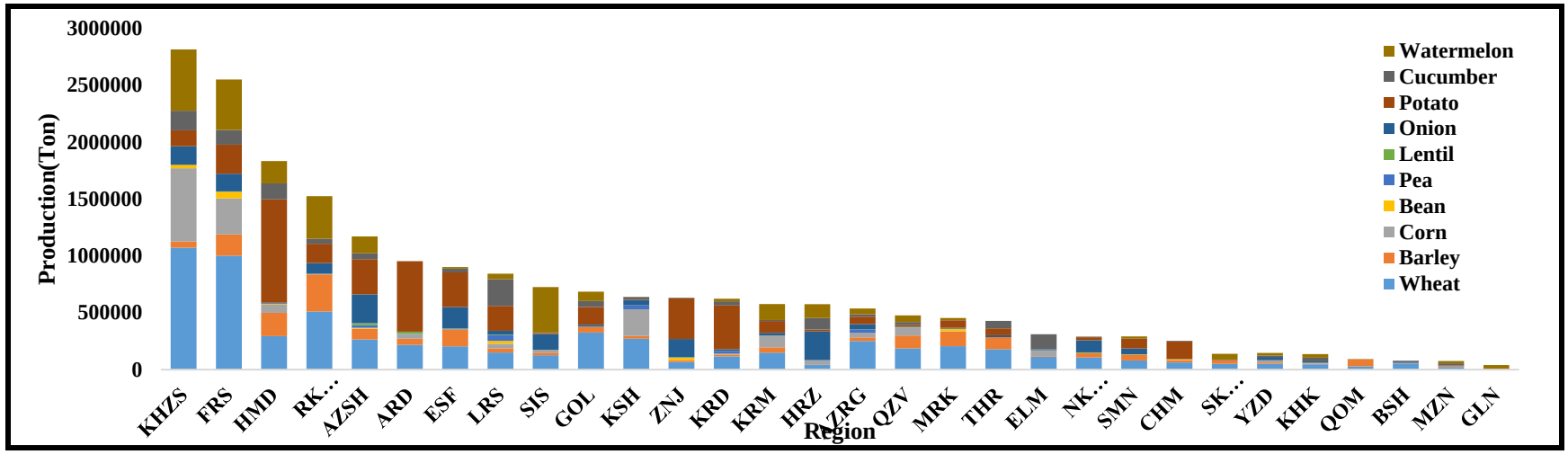
These regions are relatively in different extension and internally diverse, representing different types of rural conditions. The main differences, identifying regions, include: a growing population; a high percentage of employment in agriculture and semi-arid production conditions and a shortage of water resources.

Table 2 shows production and area under cultivation for different crops in different regions. The highest amount of crop cultivated in 2013 in Iran, was wheat, with production amount of almost equal 62.58 million ton in 2.347 million hectares. After wheat, potato and watermelon as production amount and barley and pea as hectares under cultivation are placed in the rank of second and third respectively. Graph 2 and graph 3 show more information about the cropping patterns in each region.

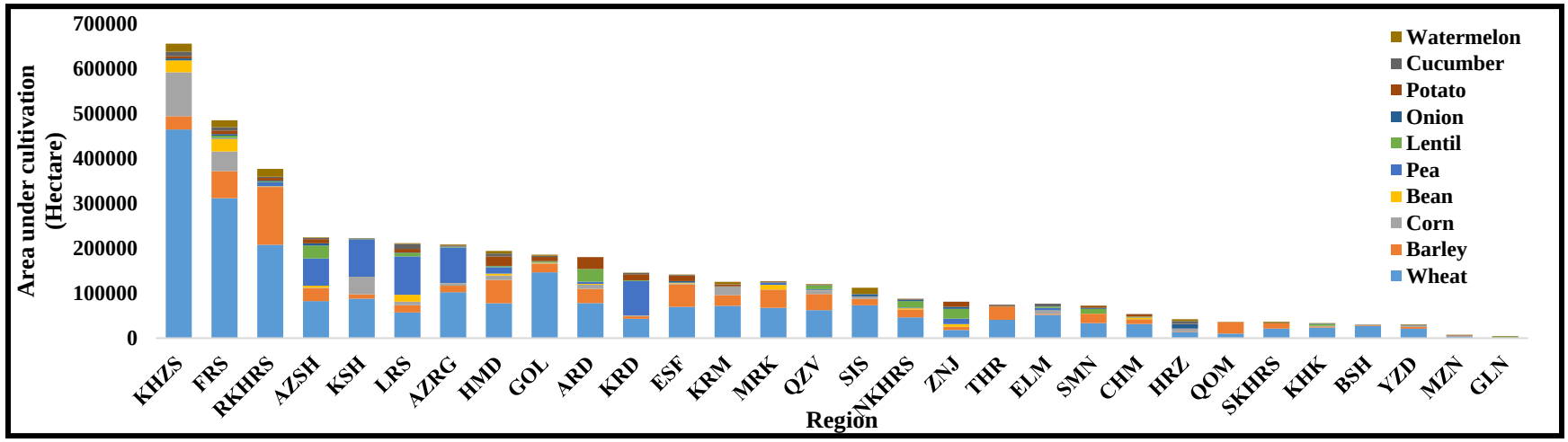
Table 2. The Production Amount (per Ton)and Area Under Cultivation (per Hectare) for Different Crops and Regions in 2013 in Iran

	wheat		barley		corn		bean		pea		lentil		onion		potato		cucumber		watermelon	
	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)	(Ton)	(Ha)
Ardabil	217369	77950	54822	31839	40216	9299	1409	1966	2032	4661	17362	28021	-	-	620692	26636	-	-	-	-
Boshehr	54698	27391	2273	1544	2232	266	25	17	-	-	-	-	11586	389	937	50	6164	371	-	-
Charmahal	63400	31541	20624	10532	484	126	6523	3480	353	653	1479	1758	-	-	155435	5280	6262	280	-	-
East Azarbayjan	265776	82340	92300	29408	2702	414	7306	4628	22855	60893	17533	28478	252593	4878	310663	9267	51710	2779	147758	1125
Elam	113719	51758	5231	2148	47635	8028	89	109	3403	5103	2258	3027	7241	168	-	-	130953	6539	-	-
Esfahan	204798	69822	143634	50199	11125	1867	2268	1533	82	166	140	308	187481	3193	304737	12314	33322	1800	14348	522
Fars	1001317	311585	186966	60219	318111	43984	56666	27855	1369	2029	2611	5075	155842	3566	254285	8082	129786	7432	443929	15139
Gilan	267	188	169	110	138	59	192	134	-		1644	2515	1150	58	2393	121	593	115	33344	1248
Golestan	326694	146517	46470	19518	2697	770	900	1162	74	206	1229	2365	16513	829	156151	9259	52525	2546	82025	2780
Hormozgan	294271	77791	204770	51867	73096	9910	4553	4173	6945	14174	1194	2344	2570	585	910274	21037	139474	6456	196208	5880
Hamedan	40144	13713	2062	1044	41757	6704	-	-	-	-	-	-	251940	9869	16595	494	101359	6051	120908	4454
Kerman	148617	71825	47502	24035	103151	18529	158	157	-	-	-	-	23982	1065	103495	3921	9405	827	139775	4973
Kashan	272014	87890	23893	9616	232492	38990	22	11	38047	82951	331	521	42735	788	4487	123	24199	1070	805	21
Khuzestan	1072018	464580	54621	29449	643768	97804	29790	26343	-	-	95	367	163816	4029	140013	5454	171991	9679	539004	17840
Kohkiloyeh o Boyer Ahmad	47154	23546	4393	2539	6158	799	998	401	205	319	2289	3824	11377	476	-	-	31819	948	31982	700
Kordestan	115717	43034	15482	5524	11346	1520	611	390	22922	76428	507	1535	13251	626	383991	13404	36892	2612	23200	901
Lorestan	150441	57221	36091	15946	40819	7915	25665	15463	49272	85570	5496	7667	33460	823	219046	7994	234962	11188	48800	1521
Markazi	205996	67390	129848	40581	1523	272	21033	10521	1496	5084	72	513	8456	185	65881	1849	990	51	18499	539
Mazandaran	22747	3939	3996	873	2420	399	1002	454	63	36	-	-	-	-	7666	845	17197	483	21175	727
North of Khorasan	107389	46376	38193	17530	-	-	1311	2506	346	1628	4606	14404	106646	3656	25652	1083	5282	451	212	10
Qazvin	187210	62238	111918	36009	71313	8280	1202	721	693	1891	2082	7992	3633	132	14783	858	25201	1183	58893	1429
Qom	28488	10187	60398	25727	-	-	100	93	-	-	0		705	39	-	-	-	-	2125	134
Razavi Khorasan	510575	208041	326965	128644	2624	469	903	962	1773	8936	640	1904	93130	2044	170066	5603	44690	2810	373898	17652
Semnan	80648	33483	51214	20720	323	56	79	273	-	-	3262	10752	50081	2021	87399	4331	667	55	18308	1064
Sistan	126031	73328	23323	14113	25207	5521	33	124	-	-	-		137787	4804	10520	310	2713	146	399755	14011
South of Khorasan	50350	21319	32924	12304	-	-	-	-	6	47	-	-	2551	95	1476	58	651	41	51479	2558
Tehran	179566	40832	106337	29534	-	-	44	13	-	-	-	-	16702	182	60713	1578	64837	2465	0	-
West Azarbayjan	251822	102368	31466	14355	41560	5343	575	429	26062	79244	795	1640	47765	887	65228	1831	21283	1108	50904	1548
Yazd	52135	21206	11574	3994	19449	3209	80	46	1	8	-	-	27911	488	653	38	10786	596	23875	970
Zanjan	66775	18216	16430	6897	-	-	20744	6280	2374	12128	4196	21817	159360	4495	357481	10992	4642	426	-	-
Total	6258145	2347613	1885887	696814	1742346	270531	184281	110244	180375	442153	69822	146825	1830263	50367	4450713	152807	1360354	70507	2841210	97745

Source : Ministry of Agriculture in Iran



Graph 2. The production amount for different crops in different regions in Iran in 2013



Graph 3. The area under cultivation for different crops in different regions in Iran in 2013

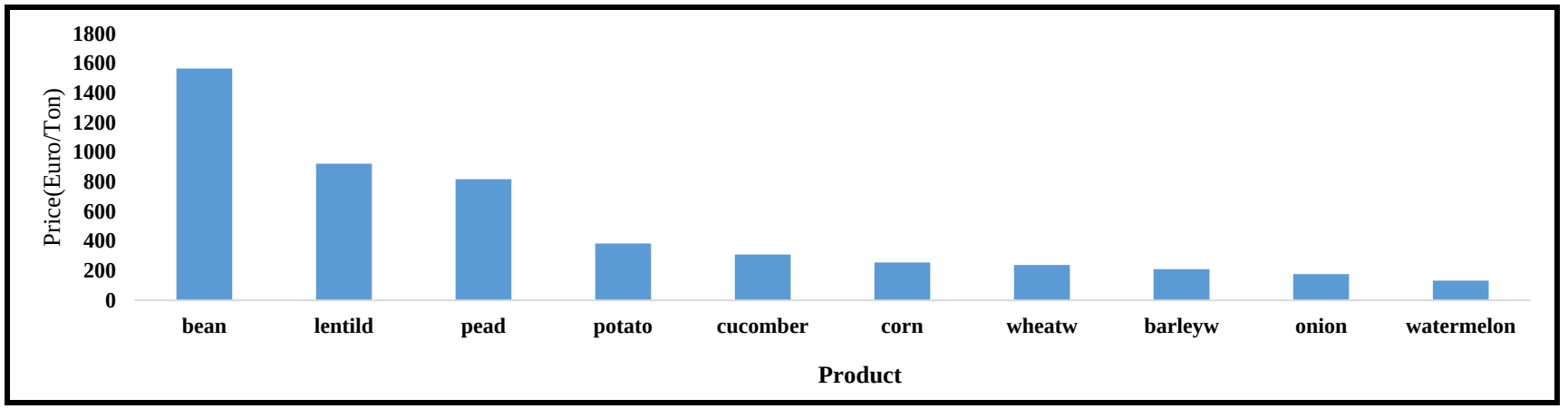
Source: Own elaborations.

After calibrating model, the scenario S1 is implemented to assess the effect of global price in Iran at regional level. Table 3 shows for each Iranian regions variation of crop production according to the S1 scenario. A new IAP is implemented afterwards in the model. This new policy adapted according to some assumptions. According to this scenario all the couple and decouple payment for input and output were ignored. This policy implemented for all the crops in all the regions. This new scenario considered by increasing domestic price of one crop from cropping pattern and then compete with amount of price changes for other crops. Increasing in domestic price of one product, has been changed production amount of cropping pattern in all the regions.

According to these assumptions, the basis of price increase is very important. Given that, Iran still now, cannot be one of the member of WTO and government support the most of the products by paying couple and decouple subsidies, global price of products can be good criteria to adapted new IAP scenario. It means that global price chosen as threshold price level of product. In this regard, if Iran open borders, it should be compete with other countries according to the global price. Under the new IAP scenario in Iran, the cropping pattern of products change in different regions. Some product that are not efficient are removed from cropping pattern and the share of other crops that remain will change, according to the base situation (It means that the substitution effect happen in cropping pattern of regions). Initial price analysis shows, for some crops, except legumes (pea, lentil and bean), global prices are more than domestic price. It means that, opening borders, help farmer to gain profit from cultivating these crops (Graph. 4). On the contrary, for other crops (legumes), policy makers should support these crops with specific (coupled) payments to farmers for keeping these crops in their cropping pattern in different regions and, thus, compete with others countries.

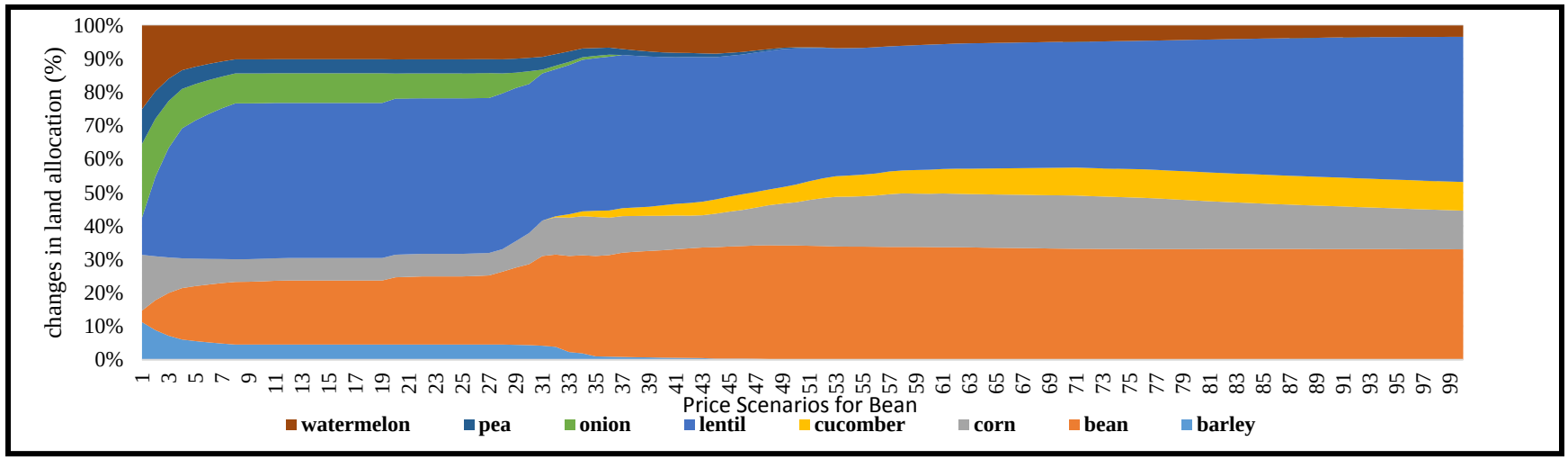
The results of new IAP scenario in Iran by using PMP model shows a change in cropping pattern due to an increase in price of bean (i.e. the most affected crop by the world market price). The increase in the price of bean entails a reduction in the share of barley, onion, pea and watermelon and an increase in beans, corn, lentils and cucumbers.

The results provided by the analysis of the all the regions in Iran show different consequences with respect to the capability to react to policy scenario. In all the regions, the introduction of regionalization on a regional basis will produce significant changes in production. Considering all the regions, the biggest changes of production has happened in Boshehr, Qom and Hamedan for bean and lentil. Amount of production for barley, cucumber and onion would decrease and lentil would increase in all the regions. It is also interesting to note how the same crops have different evolutions in regions. Bean would increase in Boshehr, Qom and Yazd and would decrease in Hamedan, Fars and Markazi. As well, corn would increase in Markazi, but decrease in Elam; while watermelon would increase in Qazvin and Kashan and Kordestan but reduce in Razavi Khorasan. For pea also, production would increase in Zanjan, Kordestan and Lorestan but would decrease in East Azarbayjan. (Table 3).



Graph 4. The different between global and domestic prices for different crops in regions in Iran in 2013

Source: Own elaborations.



Graph 5. The total share of crops according to increasing domestic price of bean

Source: Own elaborations.

Table 3. The Impact of Production Price Scenario on Production Amount

	Baseline (2013)	Production price scenario		Baseline (2013)	Production price scenario
	production	% change with regard to baseline		production	% change with regard to baseline
	Ardabil			**Elam**	
Barley	54.82	-0.03	Barley	5.23	0.0
Bean	1.41	3.64	Bean	0.09	15.39
Corn	40.22	-0.04	Corn	47.64	-0.94
Cucumber	-	-	Cucumber	130.95	0.0
Lentil	17.36	0.0	Lentil	2.26	0.0
Pea	2.03	0.0	Onion	7.24	0.0
Potato	620.69	0.0	Pea	3.40	0.0
Wheat	217.37	0.0	Watermelon	147.76	0.0
	Boshehr		Wheat	113.72	0.0
Barley	2.27	0.0		**Esfahan**	
Bean	0.02	88.43	Barley	143.63	0.0
Corn	2.23	0.0	Bean	2.27	12.83
Cucumber	6.16	0.0	Corn	11.13	-0.74
Lentil	-	-	Cucumber	33.32	0.0
Onion	11.59	0.0	Lentil	0.14	0.0
Potato	0.94	0.0	Onion	187.48	-0.42
Watermelon	46.08	0.0	Pea	0.08	0.0
Wheat	54.70	0.0	Potato	304.74	0.0
	Charmahal		Watermelon	14.35	0.0
Barley	20.62	-0.06	Wheat	204.80	0.0
Bean	6.52	-0.51		**Fars**	
Corn	0.48	24.48	Barley	186.97	0.0
Cucumber	6.26	0.0	Bean	56.67	-0.98
Lentil	1.48	0.0	Corn	318.11	-0.84
Pea	0.35	0.0	Cucumber	129.79	-0.74
Potato	155.44	0.0	Lentil	2.61	12.08
Wheat	63.40	0.0	Onion	155.84	0.0
	East Azarbayjan		Pea	1.37	0.0
Barley	92.30	0.0	Potato	254.29	0.0
Bean	7.31	1.06	Watermelon	443.93	0.0
Corn	2.70	3.61	Wheat	1001.32	0.0
Cucumber	51.71	-0.90		**Gilan**	
Lentil	17.53	0.0	Barley	0.17	0.0
Onion	252.59	-0.45	Bean	0.19	5.82
Pea	22.86	-0.81	Corn	0.14	0.0
Potato	310.66	0.0	Cucumber	0.59	0.0
Watermelon	40.56	0.0	Lentil	1.64	0.0
Wheat	265.78	0.0	Onion	1.15	0.0

Source: Own elaborations.

Table 3. The Impact of Production Price Scenario on Production Amount

	Baseline (2013) production	Production price scenario % change with regard to baseline		Baseline (2013) production	Production price scenario % change with regard to baseline
Potato	2.39	0.0	Watermelon	120.91	0.0
Watermelon	33.34	0.0	Wheat	40.14	0.0
Wheat	0.27	0.0	**Kerman**		
Golestan			Barley	47.50	-0.02
Barley	46.47	0.0	Bean	0.16	0.0
Bean	0.90	4.85	Corn	103.15	0.0
Corn	2.70	5.84	Cucumber	9.41	0.0
Cucumber	52.53	-0.97	Lentil	-	-
Lentil	1.23	0.0	Onion	23.98	0.0
Onion	16.51	0.0	Potato	103.49	0.0
Pea	0.07	0.0	Watermelon	139.78	0.0
Potato	156.15	0.0	Wheat	148.62	0.0
Watermelon	82.03	0.0	**Kashan**		
Wheat	326.69	0.0	Barley	23.89	0.0
Hamedan			Bean	0.02	0.0
Barley	204.77	0.0	Corn	232.49	-0.84
Bean	4.55	-0.99	Cucumber	24.20	-0.82
Corn	73.10	0.0	Lentil	0.33	0.0
Cucumber	139.47	-0.79	Onion	42.73	0.0
Lentil	1.19	72.97	Pea	38.05	0.0
Onion	2.57	0.0	Potato	4.49	0.0
Pea	6.94	0.47	Watermelon	0.80	2.32
Potato	910.27	0.0	Wheat	272.01	0.0
Watermelon	196.21	-0.81	**Khozestan**		
Wheat	294.27	0.0	Barley	54.62	0.0
Hormozgan			Bean	-	-
Barley	2.06	0.0	Corn	643.77	-0.59
Bean	-	-	Cucumber	171.99	-0.91
Corn	41.76	-0.35	Lentil	0.09	0.0
Cucumber	101.36	0.0	Onion	163.82	0.0
Lentil	-	-	Potato	140.01	0.0
Onion	251.94	0.0	Watermelon	539.00	-0.96
Potato	16.60	0.0	Wheat	1072.02	0.0

Source: Own elaborations.

Table 3. The Impact of Production Price Scenario on Production Amount					
	Baseline (2013) production	Production price scenario % change with regard to baseline		Baseline (2013) production	Production price scenario % change with regard to baseline
Kohkiloyeh o Boyer Ahmad			Cucumber	0.99	0.0
Barley	4.39	-0.58	Lentil	0.07	0.0
Bean	1.00	6.35	Onion	8.46	0.0
Corn	6.16	0.0	Pea	1.50	0.0
Cucumber	31.82	0.0	Potato	65.88	0.0
Lentil	2.29	0.20	Watermelon	18.50	0.0
Onion	11.38	0.0	Wheat	206.00	0.0
Pea	0.21	0.0	**Mazandaran**		
Watermelon	31.98	0.0	Barley	4.00	0.0
Wheat	47.15	0.0	Bean	1.00	0.04
Kordestan			Corn	2.42	0.0
Barley	15.48	0.0	Cucumber	17.20	0.0
Bean	0.61	4.95	Pea	0.06	0.0
Corn	11.35	1.73	Potato	7.67	0.0
Cucumber	36.89	0.0	Watermelon	21.18	0.0
Lentil	0.51	0.0	Wheat	22.75	0.0
Onion	13.25	0.0	**North of Khorasan**		
Pea	22.92	0.91	Barley	38.19	0.0
Potato	383.99	0.0	Bean	1.31	23.58
Watermelon	23.20	1.41	Cucumber	5.28	0.0
Wheat	115.72	0.0	Lentil	4.61	0.0
Lorestan			Onion	106.65	-0.46
Barley	36.09	0.0	Pea	0.35	0.0
Bean	25.67	-0.75	Potato	25.65	0.0
Corn	40.82	-0.59	Watermelon	0.21	0.0
Cucumber	234.96	-0.99	Wheat	107.39	0.0
Lentil	5.50	3.75	**Qazvin**		
Onion	33.46	0.0	Barley	111.92	0.0
Pea	49.27	0.90	Bean	1.20	14.86
Potato	219.05	0.0	Corn	71.31	0.0
Watermelon	48.80	-0.68	Cucumber	25.20	0.0
Wheat	150.44	0.0	Lentil	2.08	11.36
Markazi			Onion	3.63	0.0
Barley	129.85	0.0	Pea	781.15	0.0
Bean	21.03	-0.86	Potato	14.78	0.0
Corn	1.52	37.63	Watermelon	58.89	5.82

Source: Own elaborations.

Table 3. The Impact of Production Price Scenario on Production Amount					
	Baseline (2013) production	Production price scenario % change with regard to baseline		Baseline (2013) production	Production price scenario % change with regard to baseline
Wheat	187.21	0.0	Cucumber	3.57	0.0
Qom			Lentil	-	-
Barley	60.40	-0.01	Onion	139.84	0.0
Bean	0.10	87.69	Potato	10.56	0.0
Lentil	-	-	Watermelon	399.63	0.0
Onion	0.71	0.0	Wheat	125.95	0.0
Watermelon	2.12	0.0	**South of Khorasan**		
Wheat	28.49	0.0	Barley	32.92	0.0
Razavi Khorasan			Bean	-	-
Barley	326.96	0.0	Corn	-	-
Bean	3.60	0.11	Cucumber	0.65	0.0
Corn	2.62	24.48	Lentil	-	-
Cucumber	44.69	-0.83	Onion	2.55	0.0
Lentil	0.64	0.0	Pea	0.01	0.0
Onion	93.13	0.0	Potato	1.48	0.0
Pea	1.77	0.0	Watermelon	51.48	-0.84
Potato	170.07	0.0	Wheat	50.35	0.0
Watermelon	373.90	-0.99	**Tehran**		
Wheat	510.57	0.0	Barley	106.33	0.0
Semnan			Bean	-	-
Barley	51.21	0.0	Cucumber	64.86	0.0
Bean	0.08	16.34	Lentil	-	-
Corn	0.32	0.0	Onion	16.79	0.0
Cucumber	0.67	0.0	Potato	60.80	0.0
Lentil	3.26	0.0	Wheat	179.61	0.0
Onion	50.08	0.0	**West Azarbayjan**		
Potato	87.40	0.0	Barley	31.47	0.0
Watermelon	18.31	0.0	Bean	0.57	8.83
Wheat	80.65	0.0	Corn	41.56	-0.31
Sistan			Cucumber	21.28	-0.52
Barley	23.24	0.0	Lentil	0.80	0.0
Bean	18.43	18.25	Onion	47.77	0.0
Corn	25.69	0.0	Pea	26.06	0.0

Source: Own elaborations.

Table 3. The Impact of Production Price Scenario on Production Amount		
	Baseline (2013)	**Production price scenario**
	production	**% change with regard to baseline**
Potato	65.23	0.0
Watermelon	50.90	0.0
Wheat	251.82	0.0
Zanjan		
Barley	11.57	0.0
Bean	0.08	49.06
Corn	19.45	0.0
Cucumber	10.79	0.0
Lentil	-	-
Onion	27.91	0.0
Pea	-	-
Potato	0.65	0.0
Watermelon	23.88	0.0
Wheat	52.14	0.0
Yazd		
Barley	16.43	0.0
Bean	20.74	0.48
Corn	-	-
Cucumber	4.64	0.0
Lentil	4.20	0.0
Onion	159.36	-0.69
Pea	2.37	5.58
Potato	357.48	0.0
Wheat	66.78	0.0

Source: Own elaborations.

Conclusion

Iran is the second largest of the Middle East countries and its political and geographic location has made it a core for agriculture among the countries of the region. Therefore, an important part of the government's policies is to support this sector. According to the structure of policies and development program in Iran these support should be along to achieve economic goals such as join and respect to commitments of World Trade Organization (WTO).

In order to achieve this aim, the paper presents an assessing analysis at regional level of the new IAP scenario by increasing domestic price of one crop impacts on production of other crops. The analysis is carried out on regions located in Iran. Despite of principles and conditions by the World Trade Organization, the IAP will still support most of products in all the regions by paying couple or decouple subsidies.

The assessment of IAP presented in this paper confirms the strong impact that price policy would have had, and considers the changes in this scenario proposed. It finds that the

biggest effects of the new IAP will be mainly due to regions. It means that the effect of new IAP scenario is different in each regions and each region has special cropping pattern. In this regard, policy makers should implement different supportive policies according to region not country. Also, if Iran wants to join WTO, it should be reduce or remove the amount of payment of inefficient crops.

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