1	ACCEPTED ARTICLE
2 E	Estimating the Share of Agribusinesses in Iran's Gross Domestic Product and
3	Aanalyzing the Reasons for Changes in Its Components
4	
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Running Title: Estimating the Share of Agribusinesses in Iran

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ABSTRACT

8 By reducing the share of the agricultural sector in GDP in different countries, based on extensive 9 forward and backward linkages of the agricultural sector, since the 1960s the concept of 10 agribusiness has been introduced to explain the valuable contribution of agriculture to the national 11 economy. This paper estimates the share of agribusiness in gross domestic product using input-12 output tables for 1986, 1991, 2001 and 2016. The results showed that the contribution of 13 agribusinesses to GDP was about 2.5 times that of agricultural production (the average share of 14 agribusinesses in 1986-2016 was about 23%, while the corresponding figure for agricultural value 15 added was 9.25%). In a similar trend to developing and developed countries, the share of agribusinesses in GDP had decreased from 27.2 to 17 percent in 1986-2016. However, the 16 17 examination of the components of agribusinesses in Iran compared to other countries shows 18 significant differences, which can be attributed to Iran's arid and semi-arid climate, low rate of 19 capital formation, low productivity of production factors, as well as lack of participation in 20 regional and global chains due to long-term sanctions imposed on the economy.

21 Key Words: Agribusiness, Input-Output Table, Economic growth, Iran.

22 **JEL Classification:** Q13, R15, F43.

24 INTRODUCTION

Despite a consensus on the role of agriculture in the development process in developed countries, its role in the economic development path has been at the center of heated debate in developing countries. Of course, attitudes towards the contribution of agriculture to economic development have changed over time. In the 1950s and 1960s, it was believed that agriculture played a minor role in development because labor could be transferred to the industrial sector at no cost (Lewis,

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30 1954) and savings had to be channeled mainly into industrial investment (Hirschman, 1958). Since 31 the 1980s, however, the need for agricultural growth has become a fundamental part of the 32 economic development literature (World Bank, 1982A), (World Bank, 1982B). An empirical study 33 of 85 developing countries found overwhelming evidence that agricultural value added is the 34 causal variable in developing countries, while the direction of causality is unclear in developed 35 countries (Tiffin & Irz, 2006). They show that agricultural value added per worker causes GDP 36 per capita growth.

37 However, the downward trend in the share of agriculture in GDP continues to challenge its position in the development path. Considering the extensive forward and backward linkages as the 38 39 distinguishing feature of the agricultural sector, Davis & Goldberg, 1957 defined the concept of 40 agribusiness and extended its scope to activities related to the supply of agricultural inputs, 41 agricultural production and processing, and their distribution, which includes trade. Agribusiness 42 is therefore a concept that goes beyond what is covered for the agricultural sector in the System of 43 National Accounts (SNA). Accurately quantifying the size of agribusiness, and explaining the 44 relationship between its evolution and the share of agriculture in national output not only helps to 45 disseminate the concept of agribusiness, but can also highlight the role of agriculture in national 46 development. Based on this insight, we try to explain the methodology of deriving the share of 47 agribusinesses in the national economy using the input-output table. In addition, the size of 48 agribusiness is calculated in five years over three decades. Finally, the possible causes of variation 49 in the share of agribusinesses within this period are discussed in detail.

50 A review of studies conducted in Iran shows that the role of agriculture in Iran's economic 51 development has been investigated both quantitatively and substantively. Momeni, et al. (2018) studied the agricultural sector and proposed three different viewpoints on the role of the 52 53 agricultural sector in Iran's economy using the Social Accounting Matrix (SAM) model. The first 54 viewpoint is the 'structural change' theory, which considers the agriculture sector as a provider of 55 food security. The second viewpoint focuses on the backward and forward linkages of the impact 56 of the agricultural sector on a country's economic transition, while the third viewpoint considers 57 the agricultural sector as a provider of economic-social balance. Without quantifying the size of 58 agribusiness, Momeni, et al. (2018) showed that agricultural production and related industries not 59 only have a greater multiplier than other economic sectors, but also a more stable position. In

addition, the agricultural sector ranks first in terms of job creation and can therefore be considered
as a sector that contributes to socio-economic balance (third viewpoint).

Sadatbarikani & Irannejad (2013) ranked the economic sectors of Iran on the basis of input-output tables for the years 1973, 1986, 1991 and 2001. The results showed that the agricultural sector is one of the two most important economic sectors and has a good potential to stimulate production in other sectors, while the industrial sector is better at driving economic growth due to its stronger inter-sectoral linkages. Zand & Mosavi (2022) also found similar results by calculating backward and forward linkages using the 2011 version of the social accounting matrix and showed that the industry and agriculture sectors have more backward and forward linkages than other sectors.

69 Banouei, et.al. (2003) showed that the results can vary depending on the choice of multiplier 70 calculation method. While the multiplier calculation using the Leontief and Miyazawa models 71 favors the development and expansion of the industrial sector over the agricultural and service 72 sectors, the social accounting matrix model favors the agricultural sector over the industrial and 73 service sectors. Banouei, et.al, (2012), using the framework of a supply-driven social accounting 74 matrix (2015 version), showed that a 25 percent reduction in agricultural production reduces the 75 value added of other sectors by 3.2 percent. The worth note is that all of the above studies limited 76 agriculture to activities related to agricultural production, without addressing the broader concept 77 of agribusiness. While various quantitative methods have been introduced to measure the share of 78 agribusiness in the national economy following Davis & Goldberg, 1957, in the first attempt to 79 measure the share of agribusiness in Iran's economy, Khaledi, et.al. (2019) used the share of 80 agricultural value-added and the economic growth coefficient of the direct effect in an analytical-81 descriptive approach. They estimated the total direct and indirect share of agriculture-in Iran's 82 economy during 2004-2014 at 22.5 percent.

83 Xianhui & Yingheng (2010) use the input-output table to calculate the share of agribusiness in the 84 Chinese economy during 1987-2002, and compare the results with the American and Japanese 85 economies. They show that the share of agribusinesses in GDP is 26%, 10% and 12% in China, the US and Japan respectively, while the share of agriculture in GDP is 8.91%, 1.34% and 1.44%. 86 87 In order to explain the relationship between economic growth and structural change of 88 agribusinesses based on the concept of Davis & Goldberg (1957), Yan, et.al. (2011) presented a 89 comprehensive framework of the agribusinesses system by dividing the value added of 90 agribusinesses into four groups named agricultural inputs, production, processing, and distribution.

91 They showed that as economic development progresses, the share of agribusinesses and 92 agricultural production in GDP decreases, while the share of agricultural processing and 93 distribution in GDP increases. Kamińska & Nawrocka (2016) used input-output tables to 94 determine the share of agribusiness in GDP in EU member states. As expected, the results showed 95 that the share of agriculture and agribusiness in GDP is much higher in less developed countries 96 than in developed countries. The results of the correlation between gross value added per capita 97 and the share of agribusiness in national income also showed that although the share of agribusiness in GDP has been decreasing in all countries during the period under study, the 98 99 decreasing trend of the share of agribusiness begins to stop as countries reach a higher level of 100 development.

Bajan & Kamińska (2019) showed that the size of agribusinesses in China decreased from 18.9 to 14.5 percent during the period 2000-2014, while at the same time the share of the agricultural sector in the Chinese economy fluctuated between 5 and 6 percent. Cepea (2020) states that in 2020, the share of the agricultural sector in the Brazilian economy will be around 7%, while the share of agribusinesses will be more than 3.8 times higher, or around 26.7%.

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Tabl	e I. Methodology	used and results	obtained in pre	vious studies.
Study	Objectives	Methodology	The share of agribusinesses calculation	Results
<u>Momeni et al., 2018</u>	Defining the role of the agricultural sector in Iran's economy	The social accounting matrix	Not done	The agriculture sector provides the socio-economic balance
Sadatbarikani and Irannejad, 2013	Identifying the key sectors of Iran's economy	The input-output tables	Not done	Agriculture is one of the two key sectors of Iran's economy, but the industrial sector has greater growth potential due to stronger inter-sectoral linkages.
Zand and Mosavi, 2022	Comparison of backward linkages and linkages between different sectors of the Iran's economy	The social accounting matrix	Not done	Industry and agriculture have more forward and backward linkages than other sectors.
Banouei et al., 2003	Examining the chain effects of demand on production in different sectors in Iran's economy	The social accounting matrix	Not done	The multiplier calculation method affects the obtained results, and the Social Accounting Matrix model prioritizes the economic and social effects of agricultural development over the industrial and services sectors.
Banouei et al., 2012	Assessing the impact and consequences of declining agricultural production on Iran's economy	The social accounting matrix	Not done	A decline in agricultural production reduces value added in other sectors of Iran's economy.
Khaledi et al., 2019	Measuring the share of agribusinesses in Iran's economy	Analytical- Descriptive	Done	The share of agribusiness is estimated to be around 22.5%.
Xianhui and Yingheng, 2010	Comparing the structure of Chinese agribusiness with that of the US and Japan	The input-output tables	Done	Agricultural output accounts for 8.91%, 1.34% and 1.44% of total sector output in China, the US and Japan respectively.
<u>Yan <i>et al.</i>, 2011</u>	Comparing the structure of Chinese agribusiness with that of the US and Japan	The input-output tables	Done	As economic development progresses, the share of agribusiness in GDP decreases, while the share of agricultural processing and distribution in GDP increases.
Kamińska and Nawrocka, 2016	Determining the share of agribusiness in EU Member States	The input-output tables	Done	The correlation between gross value added per capita and the share of agribusiness in national income shows that the sector's contribution to national income ceases to decline when economic development is high.
Bajan and Kamińska, 2019	Determining the contribution of agribusiness to the Chinese economy	The input-output tables	Done	Between 2000 and 2014, the share of these businesses fell from 18.9% to 14.5%, while the agricultural sector's share of the Chinese economy fluctuated between 5% and 6% of GDP.
<u>Cruz, 2022</u>			Done	In 2020, agribusiness as a whole was responsible for 26.7% of Brazil's GDP, while the agricultural sector represented 7% of national GDP.

Table 1. Methodology used and results obtained in previous studies.

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Table 1 clearly shows that although many attempts have been made in recent years to estimate the share of agribusiness in different countries, and even efforts have been made to explain the factors affecting its changes, no methodological work has been carried out in Iran. Therefore, based on the Kamińska & Nawrocka (2016) method, this article attempts to determine the real impact of the agricultural sector on Iran's economy by calculating the share of agribusinesses in GDP. The reason for the choice of the method is explained in the materials and methods section.

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139 Materials and methods

140 The input-output model is commonly used in agribusiness study. So far, it is the only method used 141 to analyze the volume and structure of material flows in the agri-food sector. Woś (1979) states 142 that a complete and sufficiently detailed input-output table in terms of value makes it possible to 143 determine the material flows between the spheres of agribusiness, which in turn makes it possible 144 to determine the share of individual spheres in agribusiness output. Czyżewski and Grzelak (2012) 145 emphasize that the assessments made with the use of input-output balances enable and expand the 146 research perspective, taking into account the importance of the studied sectors (product groups) in 147 the economy, their macroeconomic efficiency and interdependencies in the development process 148 (Rolnej, 2021).

149 Input-output tables are considered to be one of the most appropriate methods for measuring the 150 importance of agribusiness in the national economy, as they allow the most complex inter-sectoral 151 flows to be tracked (Miller & Blair, 2009). Two general methods can be distinguished in the 152 literature on input-output tables. The first is the method presented by Davis & Goldberg (1957), 153 which is explained in detail in an article by Leones, et.al. (1994). Since input-output tables are not 154 published for certain periods, this method estimates the share of agribusiness in GDP by assuming 155 the stability of the technical coefficients in the input-output tables; this method does not give a 156 correct estimate because of this limiting assumption. Another method proposed by Furtuoso, et.al. 157 (1998) estimates the share of agribusiness in GDP directly from input-output tables without 158 assuming the stability of technical coefficients. They divided the agribusinesses into the following 159 four subcategories:

1. Agricultural inputs, which includes sectors that supply agricultural inputs;

2. Agricultural production;

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162 3. Agriculture-based industries (processing industries): related to agriculture in terms of163 demand for products;

164 4. Distribution, which estimates the share of agricultural products in the value added of the165 transport, trade and services sectors.

Following the methodology of Kamińska & Nawrocka (2016) and Kamińska & Bajan (2019), this article uses the tripartite classification of Woś (1979) to estimate the share of agribusiness in GDP. It is worth noting that both recent studies also used the methodology of Furtuoso et.al. (1998) to estimate the share of agribusinesses in GDP. In this method, agribusinesses include activities related to agricultural production, the food industries that provide support services to the agricultural sector. The first two parts of this classification are defined by codes A01-A03 and C10-C12 in the fourth revision of ISIC.

173 $GDP_{Agribusiness} = GDP_I + GDP_{II} + GDP_{III}$ (1)

where GDP Agribusiness, GDP_I, GDP_{II} and GDP_{III} denote the gross domestic product of agribusiness and the gross domestic product of the three activities respectively (Woś, 1979).

The first step in calculating Gross Domestic Product (GDP) is to determine the value added at producer prices in the I/O table. According to the system of national accounts, value added at producer prices is total value added at basic prices plus net taxes on products:

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$$VA_{PP} = VA_{EP} + NT_{OP}$$

(2)

180 Where VAPP, VAEP and NTOP are value added at producer prices, value added at basic prices and 181 net of tax (tax less subsidies) respectively. To determine the GDP of the activities of the I group, 182 the ratio of the GDP of the different sectors contributing to the agricultural and food industries is 183 calculated. For this purpose, the coefficients of the value-added flows of the different sectors 184 (CVAi) are determined and multiplied by the value of the products and services (inputs) supplied by the sectors related to agriculture (zia) and the food industry (zif). The flow of value added 185 186 (resulting from the supply of the agricultural and food industries) is deducted from the amount 187 calculated above in order to avoid double counting. The value-added flow coefficients for each 188 sector are calculated by dividing the value added by the producer prices in the relevant for the 189 respective production, that is:

$$CVA_i = \frac{VA_{ppi}}{X_i}$$
(3)

Where CVA_i, VA_{PPi} and X_i denote the value-added coefficient of sector i, the value added of sector
i at basic producer price and the output of sector i respectively. According to the above equations,
the gross domestic product of the activities of group I will be as follows:

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$$GDP_i = \sum_{i=1}^n (z_{ia} * CVA_i) + \sum_{i=1}^n (z_{if} * CVA_i) - (z_{aa} * CVA_a) - (z_{ff} * CVA_f)$$
(4)

where z_{ia} , z_{if} and z_{aa} are respectively the value of the inputs supplied by the sector to the first stage activities of the agribusiness, the activities of the food industry and the value of the inputs of the first stage activities of agribusiness, and CVA_i, VA_a and CVA_f are respectively the value-added coefficients of the sector, the value added of the agricultural sector and the value added of the food industry.

The calculation of the gross domestic product of the activities of the group **II** involves the determination of the value added of agriculture at producer prices. In order to avoid double counting, the value added of agriculture supplied to the food industry (included in the GDP of the activities of group **I**) is deducted from the total GDP of this stage:

$$204 \quad GDP_{\rm II} = VA_{ppa} - z_{af} * CVA_a \tag{5}$$

Where VA_{PPa} is the value added of the agricultural sector at producer prices, z_{af} is the value of the inputs supplied by the sector to the food industry and CVA_a is the value-added coefficient of the agricultural sector.

The gross product of group three activities is also calculated in the same way; the value added of the food industry at producer prices is deducted from the value added supplied by the food industry to the agricultural sector (gross domestic product of group one activities):

$$211 \quad GDP_{\text{PP}} = VA_{ppf} - z_{fa} * CVA_f$$

Where VAPPf is the value added of the food industry at producer prices, z_{fa} is the value of the inputs supplied by the food industry to the agricultural sector and CVA_f is the value-added coefficient of the food industry.

(6)

216 **Results**

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In order to obtain an accurate figure for the changes in the size of agricultural businesses in Iran, the value added of each of the activities of the three groups was calculated at current prices using different input-output tables for the years 1986, 1991, 2001 and 2016. The results are presented in Table 2.

Table 2. Comparison of gross domestic product and value added of agribusinesses at current prices

223	by three groups for the period 1986-2016.							
		1986	1991	2001	2016	Growth rate		
	Agribusiness value added	1305	5228	60033	759599	23.8		
	Agribusiness value added 🗆 🗆	1735	7350	71091	1176841	24.27		
	Agribusiness value added 🗆 🗆 🗆	435	748	6330	138345	21.19		
	Value added of all agribusinesses	3474	13326	137454	2104785	23.81		
	Gross Domestic Product	12795	49598	642823	12074549	25.62		

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Due to the inflationary nature of the Iran's economy and the compilation of input-output tables based on current prices, the values in Table 2 have grown rapidly. In order to provide a clear picture of the changes in the value added of the agricultural sector, agribusinesses and its components as well as its share in GDP are calculated for the period under review and the results are presented in Figure 1.

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Figure 1. Share of the agricultural sector and agribusiness value added in Iran's GDP for the period
1986-2016.

Figure 1 highlights several key points. First, as expected, the share of agribusinesses in GDP is much higher than the corresponding figure for the agricultural sector. Therefore, the share of agriculture in GDP does not fully reflect the importance of the sector and should be complemented by the share of agribusinesses to establish its position in the national economy. Based on the results, the share of the value added of the agribusinesses is on average 2.5 times higher than the agriculture sector value added in the period under review. This ratio is the smallest value reported by Xianhui & Yingheng (2010), Kamińska & Nawrocka (2016) and Cruz (2022). Moreover, the share of agribusiness in GDP has fallen sharply from 27.2% in 1986 to 17% in 2016. This result is comparable to Khaledi et al. (2019), who estimated the share of agribusinesses in the Iran's economy as a constant. The share of the agricultural sector in GDP has declined at a similar pace, but with a different trend. Both of the above findings are consistent with the results of studies conducted in different regions of the world.





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Figure 2. Changes in the share of agribusiness components in Iran's GDP: 1986-2016.

The changes in the share of agribusiness components in the Iran's economy (Figure 2) imply that the food industry and agricultural services are the largest and smallest components of agribusiness in Iran, respectively. Also, the share of all three components of agribusiness decreased during the period 1986-95, but the pace of decline and the associated trend were different among the components. The changes in the components of agribusinesses can be better understood by looking at the share of each of these three stages in agribusinesses (Figure 3). The main points of the above figure can be summarized as follows:

1) The share of agricultural production in gross domestic product, consisting of agricultural and horticultural products, livestock and poultry products, forestry and fisheries, has experienced a sharp decline, falling from 10.3% in 1986 to about 6.5% in 2016. This result seems to be completely contrary to the results of Kamińska & Nawrocka (2016) and Kamińska & Bajan (2019). This could be attributed to the nature of agricultural production in Iran (agriculture in arid and semi-arid regions), insufficient investment, low productivity as well as Dutch disease.



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Figure 3. Shares of the three stages of agribusiness in Iran: 1986-2016

265 The slow and inadequate trend of capital formation in Iran's agricultural sector, which has been 266 detected before (Gilanpour, 2013), can be easily verified in Figures 4 and 5. The gross capital formation and the estimation of the sector's net capital formation in Figure 4 clearly show the slow 267 268 rate of capital formation in the agricultural sector, the pace of which has continued to slow down 269 since 2013. It should be borne in mind that the Rial depreciated against other world currencies 270 during the period under review, and the actual rate of capital formation in the agricultural sector is 271 even slower than that shown in Figure 4. In addition, capital depreciation has also accelerated to a great extent during this period. 272



Figure 4. Gross fixed capital formation in the agricultural sector in Iran: 1986-2016 at constant
2004 prices (billion Rials).

275 276 Given that the lack of sufficient investment in the Iran's economy is one of the main reasons for 277 its slow economic growth, a comparison of the share of the agricultural sector in GDP and gross 278 capital formation (Figure 5) reveals that the degree of backwardness of the agricultural sector in 279 terms of capital formation is much greater than in other sectors of the Iran's economy. More 280 specifically, the share of the agricultural sector in gross capital formation was less than half of its 281 share in GDP during the period under review. This feature deters building technological innovation 282 capabilities, which is one of the most important driving factors for the development of 283 agribusinesses.





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Figure 5. Share of the agricultural sector in gross fixed capital formation and share of the agricultural sector in GDP 1986-2016. 287

289 The slow and constantly fluctuating trend of total factor productivity (Figure 6) is another 290 important factor that can explain the declining share of agricultural activities in Iran's 291 agribusinesses (a trend contrary to international experience). It should be noted that in an effort to 292 address these constraints and binding opportunities, UNIDO recognizes improving productivity in 293 the agricultural sector as the first key driver (out of 7 requirements) to turn challenges into 294 opportunities for agribusiness development (Yumkella, et al. 2011).





Figure 6. Total factor productivity growth in Iran's agricultural sector: 1986-2016.

299 2) The food industry in agribusinesses has the largest share in GDP (12.35% of GDP on average 300 over the period). This is despite the fact that the share of this sector showed an upward trend (from 301 13.6% in 1986 to 15% in 1991) before falling to 9.8% in 2016. Although this is completely 302 consistent with the result of Kamińska and Nawrocka (2016) and Kamińska and Bajan (2019), 303 which were conducted for the 24 member states of the European Union and China, respectively, 304 considering the slow pace of economic growth in Iran during the study period, a greater 305 contribution of the food industry to Iran's economy was expected, which did not materialize. As 306 mentioned above, the agricultural sector has also failed to provide sufficient inputs to the 307 agricultural and processing industries. This may explain the unrealized growth of the agricultural 308 and food processing industries. On the other hand, due to the resource-oriented nature of the Iran's 309 economy (dependence on oil and mineral resources), public policies are mostly aimed at 310 supporting related industries. In addition, the small scale of the food industry (of the approximately 311 11,200 food industry units in the country, about 56% are small-scale) makes access to new 312 technologies to improve productivity virtually impossible. Furthermore, surging inflation in the 313 Iran's economy has dampened the purchasing power of households, reducing per capita 314 consumption, and has led to a steady increase in production costs, reducing competitiveness in 315 export markets. It's worth noting that, according to UNIDO, exploitation of local, regional and 316 global demand is one of the key requirements for strengthening agribusiness.

318 3) The share of agribusiness support services in GDP fell from about 3.4% in 1986 to about 1.2% 319 in 2016. This is contrary to the findings of Kamińska and Nawrocka (2016) and Kamińska and 320 Bajan (2019), but it's behaviorally consistent with their findings given the downward trend of the 321 agricultural sector value added. Kamińska and Nawrocka (2016) show that the share of support 322 services in agribusinesses has a different trend in European economies. In the leading agricultural 323 producing countries of Europe, such as France, England, Spain and the Netherlands, this share has 324 an increasing trend, which is consistent with Kamińska and Bajan (2019) in the case of China. 325 That is, the activities of the first stage of agribusiness, while dependent on the share of support 326 services, has stimulated the growth of support services in the agricultural sector.

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328 Discussion

As shown above, the value added of agribusinesses is on average 2.5 times greater than that of the agricultural sector. Although this figure is the smallest among previous foreign studies, it indicates that the value added of the agricultural sector does not fully reflect the sector's position in the national economy. Therefore, it's necessary to consider the value added of agribusinesses as a macro-sectoral index in the national accounts.

334 Surveys have shown that the activities of the first group of agribusinesses (agricultural production) 335 are the most important part of these businesses and act as the driving force for other agribusiness 336 sectors. However, the agricultural sector in Iran has not been able to fulfil this role for a relatively 337 long period of time, so that not only the share of agribusinesses has been declining in Iran's 338 economy, but also the share of agricultural activities in all businesses has been descending. This 339 phenomenon is partly due to insufficient investment in the agricultural sector. This not only 340 dampens the share of agricultural value added in the national economy, but also leads to a faster 341 decline in the share of agribusinesses in Iran's economy.

The share of agricultural food industry, the largest sector of Iran's agribusinesses, has been constantly declining, which is noteworthy for two reasons. First, although this trend is in line with international evidence, given the slow economic growth in Iran during the period under review, it was expected that the food and agriculture industries would grow faster than other industries. However, this has not been the case as the initial activities of agribusinesses (agricultural production) have not been able to provide the necessary resources. As a result, the lack of investment in agriculture has further limited the share of agribusiness in Iran's economy. Meanwhile, the failure to join the global value chains of agribusinesses, not to mention the significant role of sanctions in this scenario. Despite Iran's arid and semi-arid climate and insufficient investment as two major factors hindering the provision of all inputs for the food and processing industry, Iran could have taken advantage of its geographical location to participate in global value chains, which would not only have expanded the size of domestic agribusinesses but also helped Iran to gain a larger share of the international food trade.

It should be noted that, according to Yumkella, et al. (2011), the promotion of value chains (regional and global) is the second requirement for agribusiness development. The processing of agricultural raw materials into agricultural and industrial products to supply global, regional and national value chains will lead to the production of products in compliance with specific standards, volumes and packaging requirements, at specific times and under precise procurement and timing, thereby improving agribusinesses while facilitating technology transfer and private-public cooperation.

Changes in the share of support services in Iran's agribusinesses have been a major cause of the declining trend in Iran's agricultural value added, as well as being affected by this phenomenon. The consequences of underinvestment in the agricultural sector are far deeper than what can be deduced from the value added of Iran's agriculture and can shrink the value added of the agricultural sector and its related agribusinesses, thereby jeopardizing Iran's food security.

367 However, this study serves as a first step in redefining the position of the agricultural sector in 368 Iran's development path. The hypotheses proposed in this article can be challenged by a deeper 369 look at Iran's economic development. In order to achieve this goal, it is necessary to measure 370 agribusinesses in more detail.

371 Based on the issues discussed, the following policy recommendations are offered:

 It's necessary to consider the value added of agribusinesses as a macro-sectoral index in the national accounts.

2- This requires a more accurate compilation of national I/O tables, including a more detailed breakdown of agricultural activities, horticulture, livestock and agricultural industries and, perhaps more importantly, activities related to domestic and foreign trade in related products and inputs. In addition, one of the main challenges in estimating agribusinesses with this methodology is the delayed publication of input-output tables. Agricultural policy makers could therefore urge statistical centers to publish these tables at regular intervals.

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380 3- Lessons from countries such as Brazil, Malaysia and Thailand, which have pursued 381 sustainable economic development through agribusiness development, imply that policy 382 options are important to promote economic prosperity through agribusiness development 383 as well as agricultural and industrial development. To this end, it is necessary to improve 384 productivity by directing investment towards technology and innovation, expanding the 385 use of fertilizers, introducing new crop varieties, and acquiring agricultural equipment 386 consistent with Iran's climate. Promoting agribusiness through participation in national, 387 regional and global value chains; meeting national, regional and international demand; 388 strengthening technological innovation capabilities; gaining access to effective and 389 innovative sources of finance; providing incentives for private sector participation; and 390 rebuilding infrastructure are also key steps to facilitate agribusiness in Iran.

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