


MEASURING THE COMPARATIVE AND COMPETITIVE ADVANTAGE OF IRAQI DATES PRODUCTION USING THE POLICY ANALYSIS MATRIX

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 31 January 2023</p> <p>Accepted 06 April 2023</p>	<p>Purpose: This study came to analyze the impact of government intervention in the production of this important crop and to determine the extent of its global competition and whether it has a comparative advantage in its production or not.</p>
<p>Keywords:</p> <p>Profitability; Nominal Protection; Factor; Special Cost Ratio; Urea fertilizer.</p>	<p>Theoretical framework: Dates are the most prominent representative of Iraq's foreign trade of commodities and agricultural products, which requires attention to that identity of Iraqi agriculture abroad. Interest in producing dates and improving their performance at the local and international levels is a necessity to revive the national economy and the agricultural economy alike.</p>
	<p>Design/Methodology/Approach: The research aimed to measure the impact of agricultural government intervention in the production and export of Iraqi dates through the study of the Policy Analysis Matrix (PAM) and protection coefficients, and some macro policies related to the subject of the study.</p> <p>Findings: The key finding of this research was the results of the policy analysis matrix for one acre of dates both showed that the selling prices of dates at the local level are lower than their prices at the global level, and this is what prompts farmers to export dates. It appeared through the commodity system has the ability to compete locally, but at lower levels than what is achieved at the level of social prices.</p> <p>Research, practical and social implications: This study contributes to analysis the impact of government intervention in the production of IRAQI DATES crop and to determine the extent of its global competition.</p> <p>Originality/Value: The study recommends that the state should support the producers of dates and provides them with the necessary production requirements such as fertilizers, pesticides, fuel and others, and encourage the cultivation of high-quality and abundantly produced varieties and the introduction of modern technologies in this field. This maintains price stability.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i4.898</p>

MEDIR A VANTAGEM COMPARATIVA E COMPETITIVA DA PRODUÇÃO DE TÂMARAS DO IRAQUE USANDO A MATRIZ DE ANÁLISE DE POLÍTICAS

RESUMO

Objetivo: Este estudo veio analisar o impacto da intervenção governamental na produção desta importante cultura e determinar o grau de sua competição global e se possui vantagem comparativa em sua produção ou não.

Referencial teórico: As tâmaras são o representante mais proeminente do comércio exterior de commodities e produtos agrícolas do Iraque, o que requer atenção a essa identidade da agricultura iraquiana no exterior. O interesse em produzir tâmaras e melhorar seu desempenho em nível local e internacional é uma necessidade para reativar a economia nacional e também a economia agrícola.

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Desenho/Metodologia/Abordagem: A pesquisa teve como objetivo medir o impacto da intervenção do governo agrícola na produção e exportação de tâmaras iraquianas por meio do estudo da Matriz de Análise de Políticas (PAM) e coeficientes de proteção, e algumas macropolíticas relacionadas ao tema da estudar.

Descobertas: A principal descoberta desta pesquisa foi que os resultados da matriz de análise de políticas para um acre de tâmaras mostraram que os preços de venda das tâmaras no nível local são mais baixos do que seus preços no nível global, e é isso que leva os agricultores a datas de exportação. Surgiu através do sistema mercantil que tem capacidade de competir localmente, mas em níveis inferiores ao que se consegue ao nível dos preços sociais. Pesquisa, implicações práticas e sociais: Este estudo contribui para a análise do impacto da intervenção do governo na produção da safra IRAQUIA DATES e para determinar a extensão de sua competição global.

Originalidade/Valor: O estudo recomenda que o estado apoie os produtores de tâmaras e forneça-lhes os requisitos de produção necessários, como fertilizantes, pesticidas, combustível e outros, e incentive o cultivo de variedades de alta qualidade e produção abundante e a introdução de modernas tecnologias neste campo. Isso mantém a estabilidade de preços.

Palavras-chave: Rentabilidade, Proteção Nominal, Fator, Relação de Custo Especial, Fertilizante de Ureia.

MEDICIÓN DE LA VENTAJA COMPETITIVA Y COMPARATIVA DE LA PRODUCCIÓN DE DÁTILES IRAQUÍES UTILIZANDO LA MATRIZ DE ANÁLISIS DE POLÍTICAS

RESUMEN

Propósito: Este estudio vino a analizar el impacto de la intervención del gobierno en la producción de este importante cultivo y determinar el alcance de su competencia global y si tiene una ventaja comparativa en su producción o no.

Marco teórico: Los dátiles son el representante más destacado del comercio exterior de materias primas y productos agrícolas de Irak, lo que requiere prestar atención a esa identidad de la agricultura iraquí en el extranjero. El interés en producir dátiles y mejorar su desempeño a nivel local e internacional es una necesidad para reactivar la economía nacional y la economía agrícola por igual.

Diseño/Metodología/Enfoque: La investigación tuvo como objetivo medir el impacto de la intervención gubernamental agrícola en la producción y exportación de dátiles iraquíes a través del estudio de la Matriz de Análisis de Políticas (PAM) y coeficientes de protección, y algunas políticas macro relacionadas con el tema de la estudiar.

Hallazgos: El hallazgo clave de esta investigación fue que los resultados de la matriz de análisis de políticas para un acre de dátiles mostraron que los precios de venta de los dátiles a nivel local son más bajos que sus precios a nivel mundial, y esto es lo que impulsa a los agricultores a fechas de exportación. Apareció a través del sistema mercantil tiene la capacidad de competir localmente, pero a niveles más bajos que lo que se logra a nivel de precios sociales.

Implicaciones de investigación, prácticas y sociales: Este estudio contribuye al análisis del impacto de la intervención del gobierno en la producción del cultivo de DÁTILES IRAQUÍES y para determinar el alcance de su competencia global.

Originalidad/Valor: El estudio recomienda que el estado apoye a los productores de dátiles y les proporcione los requisitos de producción necesarios, como fertilizantes, pesticidas, combustible y otros, y fomente el cultivo de variedades de alta calidad y producción abundante y la introducción de tecnologías modernas en este campo. Esto mantiene la estabilidad de precios.

Palabras clave: Rentabilidad, Protección Nominal, Factor, Relación de Costes Especiales, Fertilizante de Urea.

INTRODUCTION

The Iraqi environment is the ideal climate for palm cultivation and the production of dates of all kinds and varieties, as dates have economic importance, whether in terms of their direct use as a food item or their use in many manufacturing industries, as well as for being one of the Iraqi wealth that must be given an economic value that matches that importance and raise

production levels. Dates, as a fruit with flexible demand, are highly affected by high prices and low per capita income. The production of dates is subjected to many restrictions, most notably import and international competition after the success of planting palm trees in many countries where it was impossible to grow and produce dates as a result of the spread of modern technologies in the propagation and development of varieties suitable for the environment of those countries, including the techniques of tissue culture.

Dates are foods sensitive to storage conditions, especially wet varieties, which are often subject to a range of chemical and microbial damages and spoilage factors that negatively affect their consumption and their sensory and nutritional quality, and this in turn leads to affecting their marketing value in terms of market price fluctuations (Younes, 2021). The study aims to measure the impact of agricultural government intervention in the production and export of Iraqi dates by studying protection factors, and some macro policies related to the subject of the study, through the policy analysis matrix. The study indicates a hypothesis that there is a decline in the competitiveness and profitability of the dates sector at the local and global levels, in addition to the existence of real production, marketing and agricultural institutional problems facing the date palm sector in Iraq.

On the subject of the policy analysis matrix, he has dealt with many studies, including the study (Muhammad, et al, 2020; Abdullah and Abdul-Momen, et al, 2020; Al-Jubouri, 2019; Jado, 2017) as well as the publication of (Abdul-Wahhab and Al-Abtan, 2016) in search of The comparative advantage of producing the field pistachio crop in Anbar Governorate, in the district of Hit, as an applied model. Where this study adopted the primary data, represented by the data that will be obtained by designing a questionnaire prepared for this purpose of the study and filling it in the direct field interview method for a representative sample of date producers. As for the method of analysis, the study will adopt the method of quantitative analysis to reach the achievement of the objectives of the study through the use of the method of analysis of the total agricultural policy (Policy analysis Matrix) (Rahim and Mudhahi, 2016).

LITERATURE REVIEW

Policy Analysis Matrix

It is a mathematical analysis method and uses two types of calculations for the commodity system (starting from the production stage through the transportation and manufacturing processes to the wholesaler and retailer). The first account is known as the profitability account, which is the difference between revenues and costs, and the second

account is a measure of differences Or measuring the effects of distorted policy and market failure, which gives indications about government policy interventions and market failure and its impact on the commodity system, and this effect shows whether it is in favor of the consumer or in favor of the government balance (Monke and Pearson, 1989). Or the policy analysis matrix is an algorithmic framework that helps in dividing the commodity system into its basic parts or components, which are private profitability, measured at private prices, and social profitability (Huong, 2023), as measured by social prices or shadow prices. (Shadow prices), the difference between private and social prices is caused by the effect of interventional policy.

MATERIAL AND METHODOLOGY

Elements of a Policy Analysis Matrix

The policy analysis matrix is designed on the basis of the profit or net income formula

$$\text{Profit} = \text{Revenue} - \text{Cost}$$

$$\text{Profit} = e (P q) Q - e (P t) It - (P n) In - x \dots (1)$$

Whereas:

e = the equilibrium exchange rate of the local currency.

Pq = price of output.

Pt = the price of traded inputs.

Pn = price of non-traded inputs (domestic resources).

Q = Quantity of output.

It = Quantity of inputs traded.

In = Quantity of untrade inputs.

X = the costs of the impact of some indirect factors such as (lack of information, monopoly of government institutions, risk, production methods)

These variables are calculated at two prices, the first is private prices, and the second is social or shadow prices, and the difference between the two prices is called remittances.

Uses of Policy Analysis Matrix (PAM):-

The Policy Analysis Matrix is used in the following areas: (Al-Zobaie, 2014).

1. Analysis of the effects on prices: - As one of the main objectives of using the policy analysis matrix is to show the extent of the impact of price policies as well as the failure of the market on the levels of returns and costs directed by producers in the relevant years. Also, through the matrix work mechanism, policy makers can seek the impact of policies Agricultural and macroeconomic policies (exchange rate policy, foreign trade

policy...etc).

2. Analysis of agricultural research policy: - The policy analysis matrix can be used to analyze public expenditures for agricultural research.

All of these expenditures are intended to improve crop productivity or reduce the cost of inputs and thus increase the profits of current agricultural systems. The decisive factor is to know the relative social profitability of all systems in which it is the use of technical improvements is possible.

3. Investment Policy Analysis: If the planning authority in the country concerned creates policy analysis matrices for the main agricultural systems, these matrices can provide results that help in the decision-making process of allocating public investment in the agricultural sector, as the matrix helps in showing the levels of efficiency (social profitability) for each system. One of the studied agricultural sector systems by calculating the local resource cost (DRC), which helps in comparing systems that produce different products and also provides information for investment planners and the purpose is to reduce social costs in different agricultural systems.

The data required to create the Policy Analysis Matrix (PAM):-

To form the policy analysis matrix, it is necessary to obtain the required data and put it in the form of tables as follows: - (Al-Zobaie, 2014).

1. Inventory budget schedule, a chart should be drawn up for the inventory budget for the commodity system, and this consists of an inventory of the quantities of inputs and outputs for each stage of the commodity system with their actual and social prices. At the producer level, the budget is the regular farm budget, and budgets are needed for both marketing and manufacturing activities.

2. Input segmentation table. Input segmentation table must be created. This table includes all goods, services, and production elements that are inputs to the commodity system. They are classified into traded inputs, local primary production elements, and intermediate inputs. This table contains various inputs assessed at actual prices and social prices. .

3. The commodity system budget table. The commodity system budget table can be formed by merging the inventory budget table with the input segmentation table. It contains total returns assessed at actual and social prices, as well as traded inputs and local resources assessed at their actual and social prices.

4. The Policy Analysis Matrix (PAM) table, which can be created by collecting data on the actual and social costs of all inputs, as well as the total return as measured by the actual and social price, from the commodity system table.

Policy Analysis Matrix (PAM) Structure:

The matrix structure consists of three rows and four columns, as shown in the following table: (Monke and Scott, 1989)

Table 1. represents the structure of the policy analysis matrix.

particularly	Revenue	Costs		Profits
		Tradable Inputs	Domestic Resources	
Private price	A	B	C	D
Social price	E	F	G	H
Divergences	I	J	K	L

Source: Monke, Eric, A. and Scott, R., Pearson, (1989), p.15.

The first row of the matrix represents the private market prices of the commodity system (domestic prices) for each of the total revenue (A), traded inputs (B), the cost of domestic resources (C) and private profits (D), and the second row of the matrix represents social prices (shadow prices). For each of the total revenue (E), the cost of traded inputs (F), the cost of domestic resources (G) and social profits (H), the third row represents the transformations of the impact of intervention policy and market failure on each of:

1. Output Transformations (I):

It is the difference between the domestic market price and the social price of the output.

$$I = A - E \dots \dots (2)$$

2. Traded Input Cost Conversions (J):

It is the difference between the cost of traded inputs at the local market price and their cost at the social price.

$$J = B - F \dots \dots (3)$$

3. Domestic Resource Transfers (K):

It is the difference between the prices of domestic resources at the domestic market price and their social price.

$$K = C - G \dots\dots (4)$$

4. Net Transfers (L):

They represent the effects of government intervention and market failure on the commodity system.

$$L = D - H \dots\dots (5)$$

OR

$$L = I - J - K \dots\dots (6)$$

1. The most important indicators of the policy analysis matrix

Indicators for policy analysis can also be created directly from the elements in the matrix that enable us to measure the impact of the interventionist policy on prices and the efficiency of resource use. The most important of these indicators are the following: -

Nominal protection coefficient (NPC): This is divided into two parts of the protection coefficients, which are as follows:

A. Nominal Protection Coefficient of Output (NPCO)

It refers to price distortions or the actual deviation between private (actual) and social (shadow) prices for the goods produced.

$$NPCO = A/(E) \dots\dots (7)$$

If the nominal protection coefficient for the final products is greater than the correct one ($NPCO > 1$), this means that there is protection and this protection is positive for the product as a result of the policy followed, and the producers' profits in this case will become greater than if the prices were on international prices, but if the protection coefficient was less than one Correct ($NPCO < 1$) This means that the profits of the commodity system will become less in

the absence of government intervention policy, but if the protection coefficient is equal to the right one (NPCO = 1) This means that there is no government intervention in the product market, in this case the profits of producers will be equal as If the prices are world prices.

B. Nominal Protection Coefficient for Tradable Inputs

This coefficient measures the actual deviation or distortions between the domestic prices of tradable inputs and their frontier or world prices. It is measured by dividing the value of tradable inputs at private real prices (B) by the cost of these inputs at their social prices (F).

$$\text{NPCI} = \text{B/F} \dots \dots (8)$$

If the nominal protection coefficient of the tradable inputs is greater than one (NPCI >1), this means that there are taxes on the producers, and this means that the commodity system bears the costs of purchasing the tradable inputs at prices higher than the shadow prices, and if it is less than the correct one (NPCI < 1) This means that there is a subsidy for tradable production inputs, but if (NPCI = 1) this means the absence of any intervention in the market for tradable inputs, where the costs that producers will pay to buy these inputs are equal to their purchase prices from the global market.

2. Effective protection coefficient (EPC)

EPC is always considered better than NPC as an indicator of incentives when incentive policies change in the output and input markets (Muhammad, et al, 2017). EPC can be defined as the total level of protection directed to the commodity system, taking into account the effect of subsidy policies on the private and social value of traded products and production inputs. It can be calculated by the following formula:

$$\text{EPC} = (\text{A-B}) / (\text{E-F}) \dots \dots (9)$$

This formula represents the value added at the private price to the value added at the social price, if the value of EPC (>1) This means that local producers receive more returns when investing their resources in the case of a subsidy policy than in the absence of this subsidy, but if the value of the EPC coefficient (<1) means that the local subsidy policy causes returns to producers less than if the prices were social prices, but if the effective protection factor equals

the right one (EPC = 1) this means that there is no intervention that would affect the combined effect of transfers on Revenues and inputs of tradable goods (The Harvard, 1991).

3. Profitability coefficient (PC)

It refers to the total level of protection directed to the commodity system, taking into account the effect of intervention policies on the private and social value of the traded products and production inputs. If the value of (PC <1), the economy benefits from the net transfers of the system, that is, the commodity system loses its profits in favor of other sectors in the economy, and it can be calculated according to the following formula: (Pearson, 1989 & Monke).

$$PC = \frac{D}{H} = \frac{A-B-C}{E-F-G} \dots \dots (10)$$

4. Domestic resource cost coefficient (D.R.C)

It is an indicator of the comparative advantage of the commodity system. It measures the efficiency of local production in relation to global markets. This criterion shows the fact whether the production of the commodity locally is better than importing it. If DRC (>1), the commodity system does not have a comparative advantage in the use of local resources and social profitability is negative. In this case, it is preferable to transfer resources from the production of this commodity to another commodity or commodities with high production efficiency, greater profitability and a productive comparative advantage that qualifies it to compete in global markets, but if the value of DRC (<1), the system has a comparative advantage in the production of the commodity. Compared to the costs of importing the same commodity that exceeds the cost of its local production, the added value represents the difference between the value of production and the value of production inputs (V.A.=E-F), and it reflects the amount added by the production process to the raw materials and semi-finished materials used in production, which increases their value and ability to Satisfaction is the result of using the efforts of the workers with the help of the means of labor and the organization of production within the economic unit (Rashad and Nassuri, 2012). And therefore it is better to expand the production of this commodity, which means that it uses local resources of capital and labor (with a value less than the added value), but if its value is equal to the right one (DRC = 1), then this It means reaching the break-even point and then the possibility of continuing production, as the distribution of productive resources has reached the optimum point to some

extent, and the DRC can be calculated according to the following formula: (Hassan, 2005; Al-Falluji, 2011).

$$DRC = \frac{G}{E-F} \dots \dots (11)$$

G = the cost of the domestic resource at social prices.

E = return at social prices.

F = the cost of traded goods at social prices.

5. Private Cost Ratio

It is one of the criteria used to measure the competitiveness of the commodity system, and it can be measured by reference to the policy analysis matrix, which is the ratio of domestic resource costs (C) to value added (A-B) measured at private prices. Interpretation of the result of the ratio of private costs is if the result is less than The correct one (PCR <1) This means that the added value (A-B) is greater than the costs of the local resources (C) used in the production process, and this means that the commodity system has the ability to compete, but if the result is greater than the correct one (PCR >1) This means that the commodity system is not competitive, and PCR is calculated in the policy analysis matrix according to the following formula:

$$PCR = \frac{C}{A-B} \dots \dots (12)$$

Whereas:

(C): Represents the costs of local resources.

(A-B): Value added as measured by special prices.

6. Producer subsidy ratio (PSR)

It is an indication of the reflection of distortions in the intervention policy and market failure on the increase or decrease in the total revenues of the commodity system at social prices (E), and it can be calculated according to the following formula:

$$PSR = \frac{L}{E} = \frac{D-H}{E} \times 100 \dots \dots (13)$$

The elements of the policy analysis matrix are also concerned with studying the impact of various economic variables on the profitability of the commodity system. For the overall

economic framework, there is a need (two values, one at the private price and the other at the social price) or the need for an indicator of distortion that exists between the situation at private prices (the reality of current policies) and the situation in which it can prevail in the light of social prices (the absence of distortions at the macroeconomic level due to government policies or the imperfection of the market), but with regard to social evaluation, international prices are the basis for social evaluation and efficiency analysis of agricultural systems (Little and Mirrless, 1974).

Social (Shadow) Assessment and Actual (Private) Assessment of PAM Elements

Because world prices are measured in foreign currency, knowing the value of the exchange rate will be necessary to estimate international prices in local currency, and because data about returns and costs at special prices are collected at the current domestic price and therefore must be adjusted by taking into account distortions in the exchange rate and in order to estimate the elements of the policy analysis matrix in prices social we need to know the exchange rate of the local currency against foreign currencies, here we must take into account whether the exchange rate is affected by market forces or is it previously determined by government decisions issued by the central bank, that government intervention in the exchange rate may cause profits for producers and these profits may pay to An increase in production and an increase in the use of traded inputs and local resources, which causes an increase in the prices of production factors and output until they reach shadow prices in the long run. Its world price and the prices of productive resources are the same at private and shadow prices. (Monke and Pearson, 1989), also can Correcting and adjusting the amount of distortion in the value of an exchange rate by using the Standard conversion factor (SCF). It is possible to convert foreign prices directly in the local currency, and then adjust the border prices in the local currency by using the standard conversion factor (Al-Zoba'i, 1995; 5. Al-Janabi, 2013), as the import parity price is calculated through several methods, including the standard conversion factor method according to the following formula: (Isabella Tsakok, 1990).

$$S.C.F = \frac{OER}{EER} \dots\dots(14)$$

$$S.C.F = \frac{1}{Pr} \dots\dots(15)$$

$$p.r = \frac{V}{W} \dots \dots \dots (16)$$

Whereas:

SCF: Standard Conversion Factor

OER: official (government) exchange rate.

EER: Equilibrium exchange rate (for shadow)

Pr: premium

V: the value of exports and imports at special (domestic) prices.

W: the value of exports and imports at (social) border prices.

The value can be calculated in local currency after the traded input prices are converted from foreign currency using the equilibrium exchange rate, and there was a difference between the official exchange rate and the equilibrium exchange rate (for shadow), as well as adding transportation costs (calculated according to the equilibrium exchange rate) from the border to the stores Home within the country to get the social price of traded goods (Little and Mirrlees, 1974).

RESULTS AND DISCUSSION

Analysis of field data to estimate and build a policy analysis matrix for the date crop system in Iraq for the year 2020-2021.

Calculate the Technical Coefficients of the Policy Analysis Matrix for the Quotient of Dates

From the observation of Table (2), which shows the technical parameters of the yield of dates, where they represent the production elements and requirements with regard to the technical parameters of one ton, which were calculated through the questionnaire form, it became clear that one ton of dates consumed 19.75 of urea fertilizer, and the average use of dab fertilizer per ton The average number of pesticides (dubas, Humira, spiders and other pesticides) recorded rates of about 0.18, 0.15, 0.15 and 0.25 kg/dunum, respectively, while the rate of fuel use was 18.86 liters per ton of dates. The number of manual labor hours was 13.16 hours, while one ton needed 8.22 hours of watering, and harvested 20.84 hours. As for the fertilization and concentrating operations, it amounted (14.53, 9.05) hours, respectively, with regard to fertilization, it amounted to 17.00 hours per ton, and for the head of The money amounted to 170099.4 dinars / ton, organic fertilizer 329.1 kg / ton of dates, and the land was 274 square meters, while packaging came in the amount of 35 bags per ton of dates, and therefore the average productivity per ton is 1000 kg.

Table 2. Coefficient Technical parameters of palm orchards for the year 2021.

Input	Production Elements	Quantity/Ton Of Dates
Input Stores Out	Urea Fertilizer	19.75 Kg / Ton Of Dates
	Compost Dab	12.07 Kg / Ton Dates
	Dubas Pesticide	0.18 L/Ton Dates
	Donkey Exterminator	0.15 L/Ton Dates
	Spider Repellent	0.15 L/Ton Dates
	Other Pesticides	0.25 Liters / Ton Dates
	Fuel	18.86 Liters / Ton Of Dates
Local Resources	First: Manual Work	13.16 Hours / Ton Of Dates
	1. Palm Pollination	8.22 Hours / Ton Of Dates
	2. Watering	20.84 Hours / Ton Of Dates
	3. Genie	14.53 Hours / Ton Of Dates
	4. Substitution	9.05 Hours / Ton Of Dates
	5. Focus	17.00 Hours / Ton Of Dates
	6. Fertilization	170099.4 Dinars/Ton
	Second: Capital	0.87 Hours / Ton Of Dates
	Third: Mechanization	329.1 Kg / Ton Dates
	Fourth: Organic Fertilizer	247 M2
	Fifthly: The Earth	35 Bags
	Sixth: Packing	1000 Kg
	Average Productivity	

Source: Calculated by the researcher based on the results of the field study.

Prepare Field Budget

Calculation of the first row of the policy analysis matrix (special prices):

The budget is the main and main part of the farm, as Table (3) shows the farm budget at the production level of the commodity system for the dates crop, which included both costs and revenues on a per ton basis for the production of the dates crop in Iraq for the governorates of Baghdad and Babil for the productive season 2020-2021, and it was estimated in Iraqi dinars.

The process of calculating the elements and items of the policy analysis matrix for the first row at special prices (market prices), which included both costs for tradable inputs, non-tradable inputs, returns and profits for the total sample, and as shown in Table (3) with regard to field budget costs at special prices, i.e. cost The production elements per ton, the total traded inputs (B) amounted to (59,566.200) dinars / ton, and it was possible to determine the costs of local resources (C) about (181,806.09) dinars / ton, and the total return (A) per ton (422) dinars / ton, and the profitability (D) was (180,626.71) dinars / ton of dates.

It should be noted that the profitability was calculated at the level of one ton of dates to help make comparisons with the profitability achieved from one ton of dates in other countries.

Table 3. Costs of return, production and return (field budget) at special prices.

	Production Elements	Price Per Unit	The Cost Of Production Factors, Dinars / Ton
Tradable Input B	Urea Fertilizer	875.20 Dinars/Kg	17285.2
	Compost Dab	1291.70 Dinars/Kg	15590.8
	Dubas Pesticide	28458.3 JOD/L	5122.4
	Donkey Exterminator	25576.92 Dinars/Liter	3836.5
	Spider Repellent	20225.8 JOD/L	3033.8
	Other Pesticides	24842.11 JOD/L	6210.5
	Fuel	450 Dinars / Liter	8487
Total B			59566.2
Local Resources C	First: Manual Work		
	1. Palm Pollination	953.7 Dinars/Hour	12550.6
	2. Watering	1171 Dinars/Hour	9625.6
	3. Genie	2282 Dinars/Hour	47556.8
	4. Inclusion	1500 Dinars/Hour	21792
	5. Focus	1500 Dinars/Hour	13575
	6. Fertilization	300 Dinars/Hour	5100
	Second: Capital	620000	13600
	Third: Mechanization	16000 Dinars / Acres	1392
	Fourth: Organic Fertilizer	98 Dinars / Kg	32254.5
Fifthly, Renting The Land	15000 Dinars / Dunum	4114.09	
Sixth: Packing	1500 Dinars / Bag	52500	
Total C			181806.09
Special Yield A	3646.2	422	422000
Special Profit D			180627.71

Source: Calculated by the researcher based on the results of the field study.

Calculation of the second row of the policy analysis matrix (social prices)

Social prices reflect the price of the commodity in the local currency in the absence of distortions in the exchange rates of the local currency against the foreign currency, as well as if the markets are in a state of perfect and complete competition and the economy is in a state of general equilibrium, the prevailing prices represent social prices, and due to the lack of these conditions in the Iraqi economy Because of the continuation of government intervention policies in the agricultural sector, market prices do not represent equilibrium prices (shadow prices) (Al-Saidi, 2008).

Table 4. Adjusting the world prices of dates to the equal value of export at the farm gate.

International price per ton of dates CIF \$	813.6
- The cost of transportation and insurance up to the port (border) dollars / ton	42.4
= FOB . country's export price	771.2
xEquilibrium exchange rate (JD/USD)	1444
= FOB export price in Iraqi dinars	1113612.8
The cost of transportation and loading from the port to the main warehouses	40000
Marketing and packaging costs	52500
= equal value of export	1021112.8
Transportation costs from the farm gate to the main stores	34000

= the equal value of export at the farm gate per ton EPP	987112.8
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Source: Prepared by the researcher based on the two tables (), ().

Table (4) shows the adjustment of the world prices of dates to the equal value for export for the year 2021 at the farm gate, and since Iraq is a source country for dates, the price per ton of Iranian dates has been adopted as a border price on the basis that Iran is the main competitor to Iraq in the production and export of dates in Region. The border price per ton of dates was estimated at about (813.6) US dollars, equivalent to (1,174,838.4) Iraqi dinars / ton, where the equilibrium exchange rate of the Iraqi dinar reached approximately (1444) dinars / dollars for the year 2021 according to the public auction of currencies managed by the Central Bank Iraqi. After taking into account the costs of transportation, shipping, insurance costs and packaging costs, it was possible to calculate the equal value of export at Bab al-Mazraa (EPP), which is about (987112.8) thousand dinars / ton, which represents the social return (E) per ton of Iraqi dates. After calculating the social value of one ton of Iraqi dates, the field budget can be calculated at social prices as in the following table (5):

Table 5. costs of production factors and revenue (field budget) at social prices.

	Production Elements	Average Unit Price	Dinar The Cost Of Production Factors, Dinar / Ton
Tradable Input F	Urea	757.52 Dinars/Kg	14961.02
	Dab	906.18 Dinars/Kg	10937.6
	Dubas Pesticide	15884	2859.12
	Donkey Exterminator	47652	7147.8
	Spider Repellent	41876	6281.4
	Other Pesticides	21660	5415
	Fuel	594.9	11219.8
	Total F		
Local Resources G	First: Manual Work		
	1. Palm Pollination	953.7 Dinars/Hour	12550.6
	2. Watering	1171 Dinars/Hour	9625.62
	3. Genie	2282 Dinars/Hour	47556.88
	4. Inclusion	1500 Dinars/Hour	21795
	5. Focus	1500 Dinars/Hour	13675
	6. Fertilization	300 Dinars/Hour	5100
	Second: Capital	620000 * 0.10 = 62000	13600
	Third: Mechanization	Dinars / Dunam	
	Fourth: Organic Fertilizers	16000 Dinars / Acres	13920
	98 Dinars/Kg	32254.5	
	Fifthly, Renting The Land	15000 Dinars / Dunum	4114.1
	Sixth: Packing	1500 Dinars / Bag	52500
Total G			226691.7
Social Return E	3646.2 Kg	987.1	987100
Social Profitability H			701586.56

Source: Calculated by the researcher based on the results of the field study, table (3), import indicators, and the daily bulletin of the Central Bank of Iraq of currency exchange rates and appendices..

Tradeable Input

The cost of tradable inputs was calculated by calculating the border prices according to the import prices for those inputs, since Iraq depends on foreign import to provide them, as the total cost of traded inputs amounted to about (58821.74) thousand dinars / ton, and it included the following paragraphs:

Urea fertilizer: The border price per ton of urea fertilizer amounted to about (524.6) dollars / ton, including transportation and insurance costs, and by adjusting them to the price of the local currency using the equilibrium exchange rate of the local currency (1444) dinars / dollar, the price of one unit was (757.52) dinars / kg. The cost of urea fertilizer per ton, calculated at social prices, reached (149.61) thousand dinars / ton.

Dab fertilizer: Among the traded inputs, the import price of Dab fertilizer was calculated, as the import price amounted to about (627.55) dollars / ton, including transportation and insurance costs, and by adjusting this price using the equilibrium exchange rate to the local currency, which amounted to (1444) dinars / dollar, and based on that The price of one unit of dab fertilizer has become (906.18) dinars / kg, and the cost of dab fertilizer per ton is (109.37) thousand dinars / ton, calculated at social prices.

Dubas pesticide: The border price of Dubas pesticide amounted to (11) dollars / liter, including transportation and insurance costs, and by adjusting it to the price of the local currency using the equilibrium exchange rate of the local currency (1444) dinars / dollar, the price became (15884) dinars / liter, then the cost of the pesticide (285.9) thousand dinars / ton.

Humira pesticide: The border price per liter of Humira pesticide amounted to (33) dollars / liter, including transportation and insurance costs, and adjusted to the price of the local currency using the equilibrium exchange rate of the local currency (1444) dinars / dollar, as the price of one unit amounted to (47652) dinars / liter and amounted to The cost of the Humira pesticide at social prices per ton is (714.7) thousand dinars / ton.

Spider exterminator: The border price of spider repellent reached about (29) dollars / liter, including transportation and insurance costs, and by adjusting it to the price of the local currency, the price of one unit became (41876) dinars / liter, and the value of the spider repellent per ton amounted to (6281.4) dinars / ton.

Other pesticides: The border price of other pesticides reached (15) dollars / liter, including the cost of transportation and insurance, and by adjusting it to the price of the local currency using the equilibrium exchange rate of the currency (1444) dinars / dollar, the price of one unit became (21660) dinars / liter, and the value of one ton of pesticides The other used

about (5415) thousand dinars / ton.

Fuel: The international price of fuel, which amounts to (82.4) dollars/barrel, including transportation and insurance costs inside the country, has been relied upon. (1444) dinars / dollar, the price of a liter becomes (594.92) dinars / liter, and the cost of one ton is about (112.19) thousand dinars / ton.

Non-trade inputs (local resources):

Since local resources are not tradable, their prices under the budget at social prices will be the same under private prices in terms of prices and costs, except for the cost of capital, in which the opportunity cost of capital investment is taken, represented by the value of the interest resulting from saving these amounts in agricultural banks With an interest rate of about (10%), which amounted to about (13,600) dinars / ton, and the total cost of local resources (G) at social prices per ton was about (226691.7) dinars / ton.

Policy Analysis Matrix Results

After the costs and returns were calculated at private (domestic) and social prices, it became possible to estimate the elements of the Policy Analysis Matrix (PAM) by filling in the rows and columns, estimating the matrix elements, extracting the special profitability indicators (D and social profitability (H) and the transformations of each of Revenue (I) and costs of traded inputs (J) and local resources (K) as well as net transfers (L) and based on tables (3) and (5), where the policy analysis matrix was built for the production of one ton and it is calculated in thousand dinars / ton for the yield of dates , and Table (6) shows the following policy analysis matrix:

Table 6. Policy analysis matrix per ton of palm orchards.

Specifics	Revenue	Costs		Profits
		Tradable Inputs	Domestic Resources	
Private price	422,000.000 A	59,566.200 B	181,806.09 C	180,627.71 D
Social price	987,100.000 E	58,821.740 F	226,691.70 G	701,586.56 H
Divergences	-565,100.00 I	744.460 J	-44,885.61 K	-520,958.85 L

Source: Prepared by the researcher based on the two tables (), ().

Table (6) shows the results of the policy analysis matrix for the production of one ton of dates, which showed that the value of the return at special prices A (real prices) amounted to

about (422,000.00) dinars / ton, while the returns at shadow prices reached about (987,100.00) dinars / ton. And through the difference between them, the value of transfers (I) was reached, which came with a negative value of about (565,100.00-) thousand dinars / ton, indicating that local producers receive returns at special prices less than in the case of social prices, which explains the farmers' tendency to export Dates instead of marketing them locally to achieve the highest possible return. As for the costs through traded cost values, which represent the costs of production inputs that can be traded and transferred between one country to another, their value at special prices B reached about (59,566.200) dinars / ton, as for social prices F, it amounted to about (58,821.740) dinars / ton, and the difference between them showed the value of transfers (J), which amounted to about (744.460) dinars / ton, which indicates that the private prices of tradable inputs are greater than the social prices for them, and the other type of costs is represented by the cost of inputs The Local, which represent production inputs that cannot be traded internationally or on which there are restrictions for their movement outside the borders of the state, such as land, labor, capital, and others. (226,691.70) dinars / ton, and that the value of transfers (K) amounting to about (-44,885.61) thousand dinars / dunam showed the existence of a subsidy for local production resources in a proportion resulting from the subsidy of the capital resource. While the results of private profitability (D), which amounted to approximately (180,627.71) dinars / ton, which indicates that the production of dates locally achieves special profitable profits at the local level, in order to exceed the returns achieved from selling dates in local markets the cost of production per ton, while Social profits (H) amounted to about (701,586.56) dinars / ton, indicating that the product achieves rewarding profits in the case of the dominance of shadow prices, outweighing the profits achieved in the case of profits achieved under special prices, and the net transfers (L) came with a negative value (520,958.85 -) dinars / dunum, which indicates that the overall effect of the policy adopted by the state is not in the interest of local date producers in the short term, that is, it adversely affects the production of dates locally.

Measuring the impact of the country's interventional policy (protection coefficients and comparative advantage)

After the elements of the Policy Analysis Matrix (PAM) have been estimated and calculated, we can extract some economic transactions and indicators through which the impact of government intervention policy in the agricultural (Majeed, et al 2022) commodity system can be measured, which are the protection coefficients for inputs, protection coefficients for

outputs, competitiveness coefficients and profitability coefficients, which are shown in Table (7), which are as follows:

Table 7. Protection factors and comparative advantage of Iraqi dates for the year 2021.

Coefficient	Mathematical Formula	The absolute value of the ton
Nominal Protection Coefficient of Output (NPCO)	$NPCO = \frac{A}{E}$	0.42
Nominal Protection Coefficient for Tradable Inputs	$NPCI = B/F$	1.01
Effective protection (EPC) coefficient	$EPC = \frac{A-B}{E-F}$	0.39
Profitability coefficient(PC)	$PC = \frac{D}{H} = \frac{A-B-C}{E-F-G}$	0.26
Producer subsidy ratio: (PSR)	$PSR = \frac{L}{E} = \frac{D-H}{E} \times 100$	-52.78
Private cost ratio (P.C.R)	$PCR = \frac{C}{A-B}$	0.50
Domestic resource cost (D.R.C) coefficient	$DRC = \frac{G}{E-F}$	0.24

Source: Calculated by the researcher based on the data of Table (6).

First: the nominal protection factor of the NPC outputs

The value of the nominal protection factor for the outputs per ton was (0.42), which is a positive value and less than the correct one, meaning that the private prices of the outputs are less than the border prices, i.e. the presence of taxes on dates, which leads to farmers getting less profit.

Second: the nominal protection factor of the input NPCI

The value of the nominal protection coefficient of inputs per ton indicated a value of (1.01), which is positive and greater than the correct one, which indicates that the state imposes taxes on materials and this confirms that there is no subsidy from the state for these inputs, and then the producers pay a price for those materials with a greater value if their trade was free.

Third: Effective Protection Factor EPC

As for the effective protection factor, it appeared with a positive value per ton and its value was (0.39), which is less than the correct one. This means that local producers receive returns in the case of the price intervention policy less than the returns in the absence of it, meaning that the value added at private prices is less than the value Added to social prices, (that

is, there are taxes imposed) and this means the absence of government support for the production of dates.

Fourth: Social Profitability Coefficient PC

The value of the profitability coefficient, which came with a positive sign and a value of (0.26), which is less than the correct one, indicates that the commodity system in Iraq loses its profits in favor of other sectors due to the effect of the state's interventional policy in the commodity system.

Fifth: Producer Subsidy Ratio PSR

It is possible to explain the producer subsidy ratio in the light of the indication of this ratio and its value, as its sign was negative and at a value of (-52.78%) per ton. This means that there are taxes imposed on the local product resulting from the interventionist policy of the state, meaning that there is no support for the production of dates from the state.

Sixth: P.C.R . Special Cost Ratio

The value of the proportion of private costs per ton appeared with a positive value and less than the correct one (0.50), meaning that the commodity system has the ability to compete locally, but at levels lower than what is achieved at the level of social prices, and this was confirmed by private and social profitability, and this was confirmed by the value of its profitability per ton (180,627.71) dinars / ton.

Seventh: The cost of the local supplier DRC

The coefficient of the cost of the local resource, whose value is (0.24), is less than the correct one. This means that Iraq in general, and the governorate of Baghdad and Babylon in particular, have a global comparative advantage in the production of dates and the efficiency in the use of local resources. This indicates a lower cost of using local resources at international prices than the added value. For the production of dates at international prices and that this production is socially profitable and provides foreign currencies for the benefit of Iraq's trade balance.

CONCLUSION

The cost of traded inputs (B) is greater than their cost at social prices (F), meaning that

these inputs do not receive support, and the results of the policy analysis matrix for the production of one ton of dates both showed that the private profitability (D) per acre came with a positive value But it was less than the social profitability (H), which indicates that the production of dates does not achieve profits for the farmer if the prevailing prices were the social prices, as well as through the transfers of the return (I) it appeared that the return at private prices (A) is less than the return at social prices (E), which indicates that the selling prices of dates at the local level are lower than their prices at the international level, and this is what prompts farmers to export dates, and the value of net transfers (L) has a negative value indicating that the overall effect of the government intervention policy is not in the interest of Domestic producer in the short term. Through the social profitability coefficient (PC), which came with a positive value and less than the correct one, it appeared that the local product does not achieve remunerative or high private profits. PCR) that the net value added of the money invested to cover the costs of producing dates is greater than those costs, and then the investment in these projects achieves simple private profits compared to social profits, through the value of the effective protection factor (EPC). It is noted that the overall (general) effect of the policy results The price of the government indicates that there is no positive incentive for producers because they do not achieve any profitable returns from selling the product. The Nominal Protection Coefficient of Output (NPCO) indicates that there is no real subsidy for production, and the Nominal Protection Coefficient of Traded Inputs (NPCI) is greater than the correct one than It indicates that the cost of inputs traded at special prices is greater than their cost at social prices, and this indicates that there is no subsidy for inputs producing dates.

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