

**ECONOMIC VALUATION OF CASPIAN HORSE RISING IN THE NORTHERN  
PASTURES OF IRAN  
(A Case Study of Caspian Horse)**

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**ABSTRACT**

*Caspian horse an ancient small breed, was lost for centuries, and only depicted on the walls of the ancient palace of Persepolis, It was rediscovered almost 35 years ago in the northern part of Iran. These few petite wild horses were the remnants of the Royal horses that had once pulled the chariots of Persian Kings and were beloved of the Royal families. This breed with many unique economic characteristics has been popular and beloved around the world in a very short time. This paper is concerned with the economic analysis of Caspian horse breeding and raising in the northern pastures of Iran, using Domestic Resource Cost (DRC) index. The DRC was evaluated for horses in different ages such as six month, twelve month and three years. The DRC was evaluated to be 0.16, 0.2, and 0.34 respectively. Since (DRC) values less than one indicates a significant comparative advantage for trade, therefore a relatively high advantage has been calculated. Sensitivity analysis with respect to price and exchange rate shows that given the fixed exchange rate, any price higher than \$ 688.2 and assuming fixed price, any exchange rate higher than 1928 Rials, breeding and raising Caspian horse would be a profitable businesses.*

**Keywords:** *Caspian Horse, Domestic Resource Cost index (DRCI), northern pastures of Iran, Sensitivity analysis, racial characteristics*

**HISTORY<sup>1</sup>**

It is only the last twenty years that Iran has not been an exporter of horses. From 2000 B.C. Iran has been sending Caspian, Turkoman and later Arab and Kurdish horse around the world. First the little Caspian horse was exported from the Zagros Mountains to what is now Iraq. Shortly after the Turkoman was exported to Europe, and northern Africa. These two breeds, along with the Scythian horse, also native to northern Iran formed the basis of all the modern light, hot – blooded horses. No other country in the world has contributed so much to the development of the modern light horse. From a mixture of Turkoman and Caspian came the Arab and Kurdish horse. From the Turkoman came all of Europe's light breeds including the Thoroughbred. Because there was a thriving export market for these horses, Iranian breeds were able to maintain large herds of mares.

In recent times, 27 Caspian horses have been exported to England. From These 27, Breeders in England, Australia, New Zealand, Norway, Sweden, Belgium, France and the U.S. have bred over 600 Caspian's. In those countries the Caspian's are sold for as much as \$50,000. In Iran, because there is no market, the Caspian sells for 50,000 toumans. For the last 20 years Iran has had a policy of denying exports of horses. As a result

<sup>1</sup>-This article is the result of a fieldwork, which was conducted on the economic aspects of horse-raising in Iran in 2000. Although the figures pertain to previous years, lack of attention to this profit-making industry in recent years on one hand, and the significance of giving attention to horse industry particularly Caspian horse-due to its undeniable potential in attracting foreign currencies to the country- on the other hand, led to the present investigation into the capability of exporting the industry. This study uses the available statistical data and employs Domestic Revenue Collection (DRC) as a useful index in economic evaluation.

breeders have disbanded their herds and no longer produce horses. Instead of being an exporter of horse, Iran has become an importer of inferior breeds. You may well ask why inferior, for four thousand years Europeans imported Turkomans to improve their horses. Are we now to import these mixed mongrels to improve the Turkoman. This situation is a disgrace. While we extol the virtues of the Achamaenians, will we deny them one of their greatest achievements their horses? Alexander the Great, who conquered the known world on a Turkoman, horse, would he recognize us with our pathetic efforts to deny our own horse? This is our last chance to save our horses. Let us do it and do it with the love and gratitude we owe these magnificent animals.

## INTRODUCTION

Agricultural products can play a crucial role in promotion of trade and development of an open economy. From the dawn of history the Iranian plateau has hosted an early civilization based on agriculture and animal husbandry. The primary sector still constitutes a major role in the economy of modern Iran. Programs in science and technology have been instrumental in general view that animals are raised for the purpose of providing food (i. e. meat protein). Therefore certain animals have not been of economic interest, if they did not play a role in supply of food. Horses are an exception; various breeds of horse have always been attractive for economic or other reasons for many centuries. There are few countries in the world with comparable historical experience of horses like that of Iran. Yet there is a particular breed of these beautiful animals in northern Iran which has to be better introduced. Caspian horse has been welcomed in Australia, North America and most western European countries. Since most of the Caspian horses bred and raised around the world, have their origin in Iran, there is an ever increasing demand for new stocks from Iran, in order to avoid inbreeding of the existing herds. This paper focuses on the feasibility of exporting the Caspian horses by using the index of Domestic Resource Cost (DRC).

## BACKGROUND

The Caspian or miniature horse which has been living on the shores of Caspian Sea, in natural plains and forests of northern Iran for many centuries, is in fact a miniature (petite type) of the world famous Arab and Kurdish horses. The Caspian is considered the oldest domesticated horse in existence. It is the modern "reincarnation" of the ancient horse ancestor known as Horse Type 4, often referred to as the prototype Arab. Engravings of this beautifully gentle petite horse have been identified in the Triangular Royal Seal of King Darius (presently kept in the Royal British Museum's collections). King Darius is also depicted as hunting for lion. Riding a carriage drawn by a couple of petite horses. Although these engravings go back to some 500 B.C., they are very similar to present Caspian horses of Iran. These horses are also depicted in masonries of Persepolis palace (Darius's royal residence). These rather short horses are found in Caspian regions of Iran as well as northern & western provinces of Kurdistan & Kermanshah. The Caspian horse is known in Latin as the "Caspian Pony", has attracted a great deal of attention in recent years in most western countries, and many of its enthusiasts have invested lots of time and effort in raising and breeding of it all around the world. Iranian department of agriculture and rural development has also launched valuable programs for preservation and protection of the breed. The export of these horses; however seems to be the only significant activity that if properly supported may in fact save this breed from extinction.

## RACIAL CHARACTERISTICS

The Caspian horse with an average height of 100 – 130 cm has a well proportionate body, a gentle head and face with rather large eyes, and short ears. They come in various bay, gray, brown and chestnut colors with spots of white or dark in their face or feet.

Their particular behavioral properties are intelligence, kindness, heartiness and power. Veterinarians are of the opinion that this breed can reproduce once a year, and is not known to suffer from birth complications. etc. It also is known to need minimal after birth care and attention. They require very little of grass for food. And have proven as the best of pets for children. They are trained and tamed to a great extent, and are always loved as such.

Considering their unique qualities, the Caspian horses are always in great demand, in a price range of 10 – 30 thousand USD. With most smart ponies selling for as high as 50 thousand USD. While the domestic selling price in Iran is usually below five thousand dollars, there is a great profit margin for dealers and traders.

The total stock of this horse is estimated at around 600 for the world where 150 or so is kept in Iranian farms. Though their numbers in the wild is not quite clear. Despite its size the Caspian can keep up with a race horse at all gaits other than the full gallop. It is natural jumper of exceptional and extraordinary ability. With the movement for dressage, a scope jump, plus speed, agility and endurance, the Caspian is ideal as a performance horse for young riders. The Caspian stallions are ideal for crossing with other breeds. Successful crosses include Thoroughbreds and Arabs, and also pony breeds such as Welsh.

### Theoretical Background and Research Methodology

Adam Smith first proposed the principle of Absolute Advantage in 1776. Based on the hypothesis of productions' lack of mobility at the international level and regarding labor force as the main factor of production, Smith's target was global task division and efficient allocation of production resources.

Ricardo later corrected Smith's Absolute Advantage by proposing the Law of Comparative Advantage and relying on the comparative costs when a country exists free trade due to lack of absolute advantage and thus considered the difference in comparative costs a reason for continuation of production activities by countries that have absolute disadvantage. Therefore, based on these theories, countries continue their activities as long as they are able to use the work force in the present conditions of production and global economy, thus enhancing the well-fare in each country as well as in the world. Many criticisms have been leveled against the above-mentioned theories due to their mere reliance of work force as the only factor of production. Such economists as Eli Heckscher and Bertil Ohlin, Friedrich List, Hans Singer, Raul Perbush, Gunnar Myrdal, and Gond. Frank et al. criticized, investigated and built on these initial theories of international trade.

In contrast to classic and neo-classic theories which were based on in immobility of work force and capital, modern theories of international trade construe that capital is highly mobile and productions can be exchanged as mediatory or even final products at each stage of production. In international trade theories different factors have been introduced that lead to comparative advantage. For instance access to such production factors as work force, capital, and natural resources have been considered the reason behind cheaper prices of products in some countries in comparison to others and thus the decrease in the total costs of produced goods.

Use of comparative advantage indexes has a long history. Economic texts indicate that it has been used in some country's planning since 1950s. Measuring comparative advantage was first performed in 1963 by Bruno. He used DRC index to investigate the comparative advantage of clothing industry, evaluation of projects, and analysis of social, and economic cost-benefits of alternative policies of import and encouragement of export in Israel. After Bruno, other researchers such as Anne Krueger (1996), Scott Pierson and Ronald Meyer (1974), John McIntire and Christopher Delgado (1985), Nelson (1991), Leonardo Gonzales et al. (1993), William Master and Alex Winter Nelson (1995), Shoujie Yao (1997) investigated comparative advantage of some industrial or agricultural products in different countries.

Some studies have also been conducted in Iran, which examined comparative advantage of production and export of various products, among them one can mention Tizhoosh Taban (1980), Moosanezhad et al. (1992), Moosanezhad (1996), Noorbakhsh (1996), Joolayi (1997), Roohbakhsh Amoli (1998), Ghanbari (2001).

### DRC CALCULATIONS

This index is calculated for Caspian horse under two different bases (I, e. ex – Ante and ex – Post). Using the first basis, the real shadow price of resources (inputs) are considered and price distortions (due to taxes, subsidies, etc) are excluded. Findings of this method could be utilized for the evaluation of investment projects for breeding these horses, based on its political comparative advantages.

The second method (ex – Post. DRC) refers to the current market prices, and calculates the DRC based on observed facts in the past.

In the present study we consider the potential DRC for breeding and raising Caspian horses in Iranian farms. Our calculations are based on the following formulations:

$$DRC = \frac{C_D}{e.P_B - e.C_I}$$

Where the notations are as follows:

DRC: Domestic Resource Cost index

$C_D$ : Shadow Cost of domestic inputs

$C_I$ : Cost of other inputs (foreign)

e: Shadow Exchange Rate

$P_B$ : FOB Prices.

For calculations of DRC we used the shadow cost of a herd (20 mares and a stallion), rent of the farm; salary of a Shepherd (guard), veterinarian service costs, transportation and insurance costs, and other costs, all calculated as shadow prices by using the shadow rate of exchange for the domestic currency (Rial) and Shadow price of Caspian horse. The local selling price of the horse in northern Iran is estimated at around 400,000 Rials

to 1000,000 Rials. Since these prices are not set in an organized market conditions, they can't be quoted for DRC calculations. Instead we tend to refer to the average annual cost of feeding horse as an alternative basis for the price. Our studies indicate that the price of feeding a Caspian pony is almost one half of feeding a Turkoman, Arab or Kurdish horse. These calculations indicate the shadow price of a horse based on the highest quotation for food costs at around 830,000 Rials in 1998.

Shadow cost of Farm Rent: As mentioned, our calculations are done for a herd of 21. Northern Pastures of Iran which is estimated to cover an area of 1.5 million Hectares including a variety of farms (high, medium, and low quality farms). According to expert opinion a farm of two square Hectares could provide sufficient food for a horse for a six month period. Therefore, a herd of 21 horses would require a farm with an area of 84 Hectares at least. The average grass taken from these farms is estimated at around 92 Kg per Hectare. Therefore using the highest price index for animal food (corresponding to corn) as 1200 Rials per Kg, we can sum up the total value of grass taken from these farms at 110,400 Rials as the shadow price of Rent for each Hectare of farmland.

Shadow price of labor: Based on the official Rate of the Department of Labor is calculated at 458,100 Rials for the wage of a guard, (Shepherd). Shadow price of imported input prices are used for imported vaccines and medical supply, as quoted in Trade Statistics. The following table presents the details of costs for breeding a herd of 21 Caspian Horses:

**Table (1): Cost of raising a herd of 21 Horses**

Cost Breakdown		Quantity	Cost	Total Costs (Rials)			
				Carrying period 9 month	6 month old	1 year old	3 years old
Fixed cost	Acquisition a Mare	20 head	830,375	16,607,500	16,607,500	16,607,500	16,607,500
	Acquisition a Mare	1 head	830,375	830,375	830,375	830,375	830,375
Pasture Rent		84 Ha	110,400	6,955,200	11,592,000	16,008,000	33,672,000
Shepherd		1	5,497,200	4,122,900	6,871,500	9,620,100	20,614,500
Vet service cost	Medicine	1400 grs.	127767.78	96,017,49	220,768,12	281,622.8	525,037.96
	Vaccine	350 grs.	31,941.9	23,956.5	54,377.4	54,377.4	115,219.2
	Vets	Once /month	105,000	945,000	217,500	2,775,000	5,175,000
Grand Total				29580948.99	38351520.52	46176974.8	77539632.16

Calculated by the author on the basis of data from:

- Dept. of agriculture and rural development of Iran. -
- Association of Caspian horse breeders of northern Iran -
- Proceeding of Conference on horses and culture, 1999, Tehran. -

Since the exported horses in recent years included mostly those at three years of age the DRC is calculated for that age of horses.

$$DRC_1 = 0.16 \quad \text{at six month of age}$$

$$DRC_2 = 0.20 \quad \text{at one year of age}$$

$$DRC_3 = 0.34 \quad \text{at three years of age}$$

These calculations indicate DRC Figures less than unity for various ages of horses, presenting a case of potential Comparative Advantage for export.

## SENSITIVITY ANALYSIS

### a) Sensitivity analysis with regards to variation in the price of horses:

In order to avoid any miscalculations, we analyzed the sensitivity of comparative advantage for a three year old horse as to variations in the price of horses, Table (2).

**Table (2): Sensitivity Analysis with regards, to the price of horses**

Price	0	688.2	2000	Infinity
DRC	Infinity	1	0.34	0
Advantage	None	Break – Even Point	Positive	Positive

As it is indicated if the price of a horse is given at 688.2 USD the DRC index would be equal to unity. Which is the point of indifference for its Trade. And at any price above that, it would be beneficial to export the horse from Iran. At a given price of 2000 USD per Horse, the DRC is calculated as 0.34 which indicates an acceptable level of trade advantage.

#### **b) Sensitivity analysis with regard of Exchange Rate:**

Table (3) indicates various levels of comparative advantage for a given level of DRC, at different Exchange Rates. As is shown in table (3) the DRC is calculated as Unity at 1928 rials per dollars (the Exchange Rate) which is the indifference point. And thus, at any Rate of Exchange higher than 1928 the export of Caspian horses are advantage for Iran.

**Table (3): Sensitivity Analysis with regards to exchange Rate**

Exchange rate (e)	0	1928	5633.5	Infinity
DRC	Infinity	1	0.34	0
Advantage	None	Break – Even Point	Positive	Positive

Considering the natural advantages of Iran in raising and breeding of these horses, there are additional justifications beyond simple favorable DRC for Iran to invest in raising and breeding of Caspian horses for export. An ever increasing world demand for this breed is a reassuring factor for promotion of its exports.

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