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Bachelor Thesis

Determinants of horse pricing

Author: Karolína Minhová

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Karolína Minhová

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Thesis title

Determinants of horse pricing

Objectives of thesis

The aim of this thesis is to investigate and identify the most important determinants, influencing the asking price of a horse. This thesis is focused on comparison to find out the most influencing determinant.

Methodology

The methodology that will be applied to this thesis is divided into two approaches. In the theoretical part will be applied in-depth analysis that will provide the deduction into the second practical part of the thesis. The second part will take the form of quantitative and qualtative research. The data which will be collected are going to be used in Hedonic pricing method.

The proposed extent of the thesis

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Recommended information sources

AIZCORBE, Ana. A practical guide to price index and hedonic techniques. pages cm. ISBN 9780198702429.
DUŠEK, Jaromír. Chov koní v Československu. 1. vyd. Praha: Brázda, 1992, s. Živočišná výroba (Brázda). ISBN 80-209-0168-x.
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SOPHIE JACKSON. The horse in myth and legend. Stroud, UK: Tempus, ISBN 9780752438306.

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The Bachelor Thesis Supervisor

Ing. Petr Procházka, Ph.D., MSc

Supervising department

Department of Economics

Electronic approval: 3. 3. 2016

prof. Ing. Miroslav Svatoš, CSc.

Head of department

Electronic approval: 3. 3. 2016

Ing. Martin Pelikán, Ph.D.

Dean

Prague on 08. 03. 2016

Declaration

I declare that I have worked on my bachelor thesis titled "Determinants of horse pricing" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any third person.

In Prague .....

Karolína Minhová

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I would like to thank Ing. Petr Procházka, MSc, Ph.D. for his supervision and co-operation with my bachelor thesis. To my very good friend who helped me with correction of the language and also to all owners of the horses that provided necessary data for the analysis.

DETERMINANTY OCEŇOVÁNÍ KONÍ

DETERMINANTS OF HORSE PRICING

SOUHRN

Oblíbenost koní v posledních dvou desetiletích stoupá a od roku 1993 kdy celkový počet evidovaných koní na území České republiky činil 18 792 je nyní evidováno 77 082 koní. Koně jsou v současné době využíváni především jako společníci pro volný čas z toho však více než 5000 koní odstartovalo v jezdeckých soutěžích a dle České jezdecké federace toto číslo rok od roku stoupá. V plemenitbě tvoří 28% český teplokrevník, který je i nejrozšířenějším plemenem v České republice. Na druhém místě je anglický plnokrevník, který je využíván na dostihový sport. Nejpočetnější skupinou u nás tvoří koně bez plemenné příslušnosti.

Tato bakalářká práce je dělena na dvě části, a to na část teoretickou, která byla vypracovaná na základě odborné literatury, zabývá se především historií koní, ekonomickou stránkou rekreačních, parkurových a drezurních koní a použití Hedonic price method ve smyslu oceňování koní. Poté na část praktickou jež se zaměřuje na hlavní determinanty, které mohou ovlivnit cenu daných koní.

Klíčová slova: jezdectví, kůň, hedonic price method, oceňování, ekonomika, determinanty, pořizovací cena, regrese

SUMMARY

The popularity of horses in past two decades is growing and from year 1993 in the Czech Republic were 18 792 registrated horses and now the number of registrated horses is 77 082. Horses are nowadays usually used for a leisure time but over than 5000 horses are involved in equestrian competitions and according to Czech Equestrian Federation the number is year from year higher. In breeding 28% of horses are constitute to be a Czech warm blooded horse and it is the most widespread breed in the Czech Republic. On the second place there is English full blooded horse, which is mainly used for races. The most widespread group in the Czech Republic are horses without breed jurisdiction.

This bachelor thesis is divided into two parts, theoretical part, which is based on practical literature that deals with history of horses, economic side of equestrian of recreational, show jumping and dressage horses, and usage of Hedonic price method in case of pricing horses. Practical part that is focused on the main determinants that can affect the price of a horse.

Keywords: equestrian, horse, hedonic price method, pricing, economics, determinants, purchase price, regression

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1 INTRODUCTION

Human and horse. Hardly any relationship in a mankind life has a deeper meaning then a yoke between human and horse. (Mahler, 1995) Claims, that the horse was one of the main factor that made up civilization. And that is what has to be realized nowadays, in a modern world full of technology and life rush.

Horse was the only creature that stood alongside human in good times as well as in bad times. It seems that horse had the best times at the very beginning of its existence, when the horse lived in a wild nature, and was developed through natural selection. However, the conditions for the existence of horses in our civilization are the most favorable in the last fifty years. (Jahoda, 2004).

While nowadays horses do not stay in wild nature, but they stay in stables and paddocks and they are under the supervision of top breeders and professionals. Horses don´t have experiences with terrifying wars, but they are part of human's everyday life, they are use in sports, they assist in hippotherapy, agrotourism and pharmaceutical research. But in inaccessible hillsidesthey are still pulling tree trunks, Horses us therefore accompany Fortunately, even in this advanced civilization (Jahoda, 2004). It is therefore our duty to create suitable conditions for them to live and raise professionalism and education of the people working with them.

In this very world human is looking for an oasis of peace, relax and fullfilling of emotional life. Human is returning to the horse, to that the animal, which significantly contributed to the development of human society, because it allowed to explore new lands, conquer them and defend them economically exploit, explore and expand new cultures.

The horse was and always will be part of our society even thought that the usage of horse changed from century to century. Usage of horse was very widespread. The most important was for agriculture, wars, transportation or at prehistoric times mainly as a food. The meaning of a horse can be found in legends and myths. Thus the tradition of breeding horses all around the world is long-standing. In a post-war age the breeding of a horses was decreasing due to industrialization, motorization and automatization. In the second half of 20th century the number of horses was increasing due to favorization of equestrian competitions that includes even jumping or non-jumping competitions or

races. Past two decades there was an increase of equestrian clubs and more and more people nowadays own a horse.

Due to this change horses are no more often visible to be as a part of an agriculture or transportation. Those usage can be seen only in the villages where the industrialization is not so developed. Nowadays the horse became the symbol of leisure time, sport tool or luxury. It is also consider to be a symbol of a life style. Because of the increase, the meaning of horse completely changed and the equestrian is becoming to be a business.

While increasing the number of horses that are recorded it is important to understand the economics of equestrian business, which involves also the pricing of horses. How horses are priced, which determinants are the most important will be the main topic of this bachaleor thesis.

2 OBJECTIVES AND METHODS

2.1 OBJECTIVES

The aim of this thesis is to investigate and identify the most important determinants, influencing the price of a horse. This thesis is focused on comparison to find out the most influencing determinant. Horses are divided into tree groups according to their usage such as recreational horses, show jumping horses and dressage horses. After indentification of the most influencing determinants, there will be comparison between those groups, to see how are the determonants different according to divison of horses.

The next aim is to inform generally about horses in broad sense of history of equestrian, recreational equestrian, show jumping equestrian, dressage equestrian, application of Hedodic price method on the base of literature that was used.

2.2 METHODS

The methodology that will be applied to this thesis is divided into two approaches. In the theoretical part will be applied in-depth analysis that will provide the literature that was study and the first part will help to deduct the information necessary for the second part of the thesis. The second part will take the form of quantitative and qualitative research. The data will be collected in form of personal interviews or questionnaires for forward analysis where will be applied the Hedonic price method.

3 THEORETICAL PART

Analysing the appropriate literature and internet sources for in-depth knowledge for further practical part. The first part of the thesis deals with the history of equestrian, how equestrian changed. Second part of literature review is focused on economics of the equestrian and on variables that will be used in analytical part.

3.1 HISTORY OF EQUESTRIEN

This chapter deals with history of the equestrian from Prehistoric time until Modern times. There is a description of how the meaning of a horse has changed during the Prehistoric time till Modern times.

3.1.1 THE PREHISTORIC TIME

Horses appeared on the Earth 60 million years ago in the Tertiary. The first contact between the horse and human Homo habilis was 2 million years ago in the Pliocene. (Koně: velká kniha o chovu a výcviku koní, 1995)

In the Prehistoric time horses lived in a wild nature and were not domesticated. They lived in a small herds of 10-15 horses. Several studies shown that horses were able to trap the land around 50-60 kilometres per day only because of food or water.[1]

In these times horse was used as a spoil, primary as a source of meet and leather. The way how horses were hunted and killed was very extraordinary. Horses were frightened off by fire and shout, they were forced away to steep slope, where horses were killed because of a fall on the ground. (Koně: velká kniha o chovu a výcviku koní, 1995)

In the Prehistoric time horses began to appear as a motive for art and literature. The first drawings are preserved from Quaternary Period primarily from Pleistocene. The prehistoric hunters displayed horses mainly because of a wish to conciliate the favour of gods and ensure a good hunt in the future. The most widespread drawings were in caves, drawed by various colours, which were preserved till nowadays. (Koně: velká kniha o chovu a výcviku koní, 1995)

[1]MARTINOVÁ, Zdena a Jiřina LINHARTOVÁ. Divocíkoně. *Časopis ABC* [online]. 2000 [cit. 2016-02-20]. Dostupné z: http://www.abicko.cz/clanek/casopis-abc/665/divoci-kone.html

3.1.2 THE ANCIENT TIME

The ancient Greeks believed that horse was created by the God of Sea, Poseidon. Greek myth believed in the mythical horse Pegasus, the son of Poseidon and Medusa. Well known mythical creature half-man – half-horse, Centaur was offended especially because of abductions of women. White horses were connected with the God of the Sun, they dragged the carriage and they shone on the road. Death was pictured as a rider on a horseback with a black hood. (Jackson, 2006)

One of the most famous horse of the Ancient time was mythical unicorn, whose horn was made up from gold. Unicorn was well known because of the beauty and imperious nature. In those times these were the human characteristics. The only possible way how the unicorn could be tamed was to get a naked virgin mermaid sat down under the tree. The unicorn came over and charmed by her grace and purity laid her head in her lap. (Jackson, 2006)

Opinions when horse became domesticated are different. Probably the oldest centre was in the Black Sea and Caspian steppes. The first evidence of the usage of a horse by human comes from the report of horses skulls from around the fifth millennium before Christ. The teeth's on those skulls bear the damage from the rope or strap. The first nations that were riding on horses were probably nomadic Barbarians. (Waran, 2002)

Horses were domesticated and they started to be used for military, tournament, ceremonial and transportation needs. The most important were horses in the military area primary in wars, which was the decisive for them. In the area of agriculture even in the Czech Republic or in the world is the use very low. At this time the horse breeding was focused mainly on Mongolian type of a horse. (Waran, 2002)

The first mention of horses on the region of Czech Republic is from 6th century, when the country was settled by Slovans. In this age horses were not used for fights because Slovans warriors were foot warriors. The main purpose of horses for Slovans tribe were because of meat, milk and leather. Important warriors were buried with horses. The meaning of horses for human increased during 7th and 8th century, where the horse was used as a mean of transportation and in agriculture. (Dušek, 1992)

3.1.3 THE MIDDLE AGE

In the Middle age the purpose of horses is changing in the rapid way. The emphasis is on the horse with a massive frame and that led to the application of a Western-style horse. Horses were used for political, economic and social needs. These requirements showed up the need for a certain types of horses. Even if horses worked in agriculture area, they had to be applicable, if necessary under the saddle. (Dimon, 1895)

This period is characterized mainly by the selectation of horses of different types for different needs. Primarily were selected horses with great performance, versatile talented characterized by extraordinary mobility, jumping talent and endurance. This age formed the basis of modern equestrian.

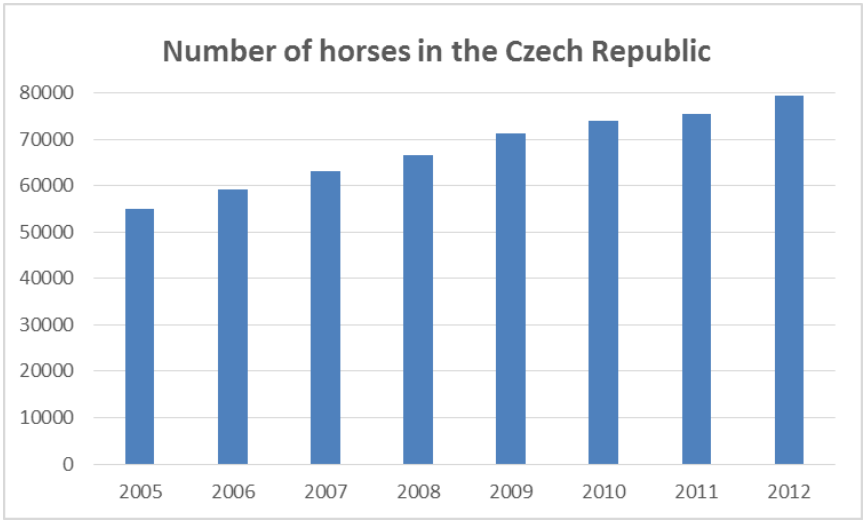
3.1.4 MODERN TIMES

At the beginning of the Modern Age the heavy cavalry lost efficiency, and so this manner of fighting ceased. With the development of technique it started to be necessary to increase the manuverability of troops. Thus, was established the cavalry, which required a horse of a different type. The main difference was at the gear of rider and horse that was much lighter than before. The other difference was that horse had to be easily handed to respond to all of the rider's orders, that were given especially only by shins and seat, while in the riders hands was usually firearm or cutting weapon.(DUŠEK J.,2011)

Gradually phasing out the use of horses for military purposes, as a cause of World War I. due to high loss, that negatively influenced breeding of horses both quantitatively and qualitatively.

Currently is breeding of horses focused rather on private sector. Horses are used primarily for recreational purposes, which has the highest proportional representation in the Czech Republic. For sport equestrian is proportional representation smaller, but in the Czech Republic are registrated more than 64,000 horses, according to Czech Equestrian Federation, which are used for sport equestrian.

Table 1. Number of horses in the Czech Republic from year 2005 to 2012



Source: For processing of the graph, were used data from Czech national evidention of horses[2]

The graph above shows the number of horses in the Czech Republic since 2005. In 2005 the Czech Republic were registered 54,956 horses and 2012 were registered 79,473 horses. It indicates a considerable rise in popularity of horses.

Some of the breeds such as Czech Kladruber, Bohemian-Moravian Belgian horse and Hucul pony are consider to be Czech cultural heritage, which is support by Czech Government via National Program, which is financed by Minister of Agriculture.[3]

The rarest cultural heritage is Czech Kladruber. Czech Kladruber is the oldest breed of horses that is bred in the Czech Republic. It is also the only breed bred specifically for ceremonial purposes of royal courts for ceremonial carriages. Due to and friendly nature of Kladruber horse is rising the usage for recreational purposes. Originally the Czech Kladruber was breed in all colour variations. From 18thcentury is Czech Kladruber horse bred only in black and white.[4]

[2]Czech national evidention of horses - http://www.uek.cz/
[3]Česká Jezdecká Federace [online]. Česká Jezdecká Federace [cit. 2015-12-31]. Dostupné z: www.cjf.cz
[4]Starokladrubský kůň jako součást českého dědictví [online]. Praha: Martina Šlejtrová, 2015, 23.8.2015 [cit. 2015-08-23]. Dostupné z:http://www.venilafi.cz/2-zvirata-a-rostliny/272-ctyrnoha-kulturni-pamatka-starokladrubsky-kun

3.2 ECONOMICS OF EQUESTRIAN

This chapter describes economics of equestrien. In contrast from another agriculture animals, horses are no longer primarly used for production of milk, meat and leather. Turning point is how to use horses power and movement in case of working in draught or under the saddle.

3.2.1 RECREATION EQUESTRIAN

The future of horses lean on recreation riding. Nowadays the horse riding is becoming one of the most widespread recreation sports in the world.

Developing of equestrian touristic is based on nowadays lifestyle. People are searching the way how to find psychological and physical relaxation and selection of right sport. (Mahler, 1995)

Recreational equestrian can be defined as a hobby or as lifestyle. Recreational rider can be member of an equestrian club, where they ride a horse, that belong to the equestrian club and they just want to blame it on the horseback and they don't spent so much time with horses. Other recreational riders can own a horse and they pay attention to them. Those riders spent in the club much more time they attend trainings, hang out in the nature, attend hobby competitions or they are doing horsemanship. Mostly those riders take a horse as a beloved pet or family member.

Specification of recreational horse is not that difficult usually depends on the owner what are the requirements for certain recreational horse. Determinants that affecting the price of a horse are: color, age, breed, pedigree, carrier and injuries.

- Colour – depends on owner of the certain horse, usually owners care about the appearance of the horse.

- Age – depends on the preferences of the owner, young horses are wilder than the old once so it depends who will own a horse, but younger horses are more willingness to learn new staff.

- Breed – for recreational equestrian is usually Czech warm blooded horse. Thus, if the horse is different breed from Czech warm blooded it can have the effect on the horse.

- Gender – an important factor because as research shown usually the horses for recreational purposes are mares or geldings because they are easier to ride. So in the further research no stallions are included in the further database. Most favorable are geldings because their character is tame, they are easy for riding and their performance is nearly the same.

- Pedigree – it is not a condition for recreational equestrian but can have the effect on the price of the horse.

- Training – depends if the owner want a horse that is trained, usually price is higher

- Career – connected with injuries, higher probability of past injuries, but horse with sport career are tend to be more attractive for younger population

- Injuries – is a common important factor for owners, some owner's don´t mind a horse with past injury.

Horse for recreational purposes is not a specific type of horse. For owners is the most important character and health of the horse. May not have any pedigree or any sport proportions. Thanks to this the final price is not high.

The price range for recreational horses is from ten thousand to sixty thousand CZK.[5]Owners of recreational horses have usually horses near their houses so they are looking for stabling that is close at the price for stabling is affordable. Stables that are characterized as a recreational, have very familial atmosphere, although those stables do not excel in good riding hall or excellent facilities. Such stables are located around the fields, forests or meadows in purpose for owners to ride their horses into the countryside. Stabling is divided into box stabling, bound stabling, free stabling and pasture stabling. (Vejčík, 2001).

The cost for stabling, feeding and treating of horses for one day is in range from 100 on villages or small towns up to 250 CZK in larger cities. Some of the farmers

[5]CZK – Czech crown, currency in the Czech Republic since 1993

estimate the net cost around 1 500 to 2 000 CZK per month. In case of pasture stabling costs are roughly half. The main items that affect the cost of stabling are: feed, bedding, muck collection, stables amortization, salaries and social insurance, water and sewerage and electricity consumption. While the lowest cost will have farmers that have their own hay, straw and grains (Vejčík, 2001).

Farms that arrange horse trainings, in case of recreational riding, they must have already equipped their stable with riding hall, jumping materials and with operating horses. To the variable and fixed cost items must be added therefore added blacksmith, veterinary acts, the cost of saddles and harnesses, insurance riding and depreciation, cost of restoration and maintenance of carriages and harnesses. (Vejčík, 2001).

Table 2.Approximate percentage ratio of separate items

Feeding	30%
Wages and Insurance	28%
Depreciation	10%
Blacksmith	9%
Bedding	7%
Saddle material	6%
Veterinary acts	3%
Water and sewerage	3%
Electricity	2%
Overheads	2%
Total	100%

Source: Vejčík, 2001

From these costs can be derive the requirement for cost of the stabling and training lecture that ranges from 150 CZK to 400 CZK depending on skills of a trainer. Of these cost items then derive requirements for the award equestrian training that ranges from 150 CZK to 400 CZK depending on experience of a trainer, riding and

training quality, comfort, up-to date equipment and of course the balance between supply and demand. (Vejčík, 2001).

3.2.2 SHOW-JUMPING EQUESTRIAN

Show-jumping is a quiet new idea of equestrian, it means that it is a new innovation in equestrian world. Up to the second half of the 18st the show-jumping started to achieve appreciation at their level and began to rise slowly. The first mention of jumping appeared in France in year 1788 in the riding instruction. Although British hunter of foxes imagined how his predecessors always been crisscrossing the country, it was up to the law on occupation land in the 18th century, which increased the number of fences, which protested fields. And it was this law that forced hunters to jump. (Peplowová, 1999)

Show-jumping equestrian is one of the most wide-spread and most popular equestrian discipline. In this discipline the pair has to overcome course, which consists of eight to thirteen obstacles (according to level of difficulty). The aim is to overcome the track without penalties, usually in the shortest time. Penalty points are credited for dropping barriers to stop or yaw and timeout. In some competitions, no matter about the time or mistakes, but the performance of riding is credited. There are many different variations of jumping competitions, attractive for riders and spectators as well. As an example can be mentioned relay jumping, jumping into the first error, mini-maxi and many others.[6]

Show-jumping take place in the arena using barriers built up of painted or roughly shaped timbers , which often have padding and ornaments , such as color blocks and potted plants. For this discipline is the foundation of good training and the basics of dressage, because the rider must be able to ride a horse and adequately balanced with lots of impulsion to securely track with obstacles mastered.[7]

For show-jumping equestrian is characteristic lightweight seat. The rider must constantly adapt to moves of horse. Rider is always trying not to impede horse, there are significant changes in center of gravity. The greatest burden for rider are continuously

[6]*Česká Jezdecká Federace* [online]. Česká Jezdecká Federace [cit. 2015-12-31]. Dostupné z: www.cjf.cz

[7]*Česká Jezdecká Federace* [online]. Česká Jezdecká Federace [cit. 2015-12-31]. Dostupné z: www.cjf.cz

and actively involved hips and knees, which are relocating the weight during each jump to make the most lighten horse back. The knee is permanently fixed in the saddle, and his position is unchangeable. Location of shins would be during the jump even more stable even during hurdling should be more or less stable. Many times on the competitions, rider's shins are more in the back position. This may be caused by a poorly chosen length of the stirrups (stirrups too long, the knee is not fixed), or poorly attached knee and shin and lifting the heel. Shins are firmly pressed to the horse, but always heels must be pressed down. The first show-jumping competition were held in Dublin (Ireland) in year 1864 and they soon gained popularity. In the year 1912 they were subdued on the Olympic Games. (Paalman, 1998)

Show-jumping is divided into several levels of difficulty according to Czech Equestrian Federation.

Table 3. Levels of difficulties in show jumping

Indication	***Height in cm***	***Description***
ZZ	80	SMALL
ZM	90	BASIC SMALL
Z	100	BASIC
ZL	110	BASIC EASY
L*	150	EASY
L**	120	EASY
S*	125	MEDIUM
S**	130	MEDIUM
ST*	135	MEDIUM HARD
T*	140	HARD
T**	145	VERY HARD
T***	150	VERY HARD

Source: data were used from web pages[8]

[8]CANICOVÁ, Petra. *Podstata závodů v parkurovém skákání a typy parkurových soutěží* [online]. 2012 [cit. 2016-02-20]. Dostupné z: http://www.magazinpegas.cz/podstata-zavodu-v-parkurovem-skakani-a-typy-parkurovych-soutezi/

Specification of show-jumping horse is more complicated than in recreational equestrian. Determinants that affecting the price of a horse are: color, age, breed, pedigree, carrier, injuries and for this branch of equestrian was added the condition that means if the horse has the conditions to pass competitions from level L** to level T***.

- Color – for show jumping horses the color is not standardized, it means that color is something that can have effect only in choosing horse by the owner, but usually the color is bay[9](Paalman, 1998)
- Age –show-jumping horses are the best in the age of 7 to 10 years, they are mature but still have enough ardor for competitions (Paalman, 1998).
- Breed –the typical breed is Czech warm blooded horse.
- Gender – the best gender for show-jumping are mares or geldings (Paalman, 1998).
- Pedigree –every show-jumping horse has to have a pedigree, then it maters how the pedigree is good and which proportions for competition has (Paalman, 1998). After collection of the data the variable pedigree was removed from the database because every horse have a pedigree.
- Training – basically trained horses are more valuable.
- Proportion – is a variable that measure how the horse pedigrees influences the proportion of a horse for the futures competitions. (Paalman, 1998).
- Career – connected with injuries, higher probability of past injuries, but here it depends on the other factors. If the horse has a past sport carrier and it doesn't has a past injury it is a significantly valuable. (Paalman, 1998).

[9]Color bay – it is a brown color of the horse with black mane

- Injuries – show jumping horse is a horse without injuries, if so the horse is removed from selected competition and horse is sell as a recreational horse (Paalman, 1998). After collection of the data the variable injuries was removed from the database because none of the horse in the data base has an injury

Stabling for show-jumping horse can be different. Some of the horses that are focusing on show-jumping from level L* to level T** have usually special stabling and care and they are in stables that are focused on show-jumping. Most of the time those horses have box stabling with their own paddock, because of injuries. The price of stabling is in rank from 7 000 CZK to 15 000 CZK, depends on a quality and reputation, the amount of services that are included in a price. In each show-jumping farm there is an experience trainer, who is specialized on show-jumping. The price of a training lecture is in the rank from 600 CZK to 1 500 CZK, depends on experiences of each trainer.

3.2.3 DRESSAGE EQUESTRIAN

In a broader sense, dressage is sum of all principles, methods and techniques that are used to optimize the ability of the horse. (Karl, 2008)

The original meaning of dressage and training of dressage horse was already in times when horses were used in wars and military campaigns, where officers demanded from the horse dexterity, absolute obedience and immediate response to aids, where some of the figures had protective importance of the enemy and should facilitate drivers handling with a gun and evasive maneuvers. These figures were pirouettes and jumps off the ground. (Brázda, 2011).

The immediate obedience and response could save the life of a warrior. Among other things, the purpose was to convert the weight of the horses from the front of the body, where it based 2.3 on its hind limbs to be adept used his driving and bearing forces, which consists of the rear and hind limbs.(Brázda, 2011).

Nowadays, horse is no longer used in battles, however, dressage was preserved in the form of dressage riding till today, whether as a modern sports equestrian, the

purest form of the Spanish Riding School in Vienna, or a way to keep horses in good physical condition, obedient and healthy.(Hermsen, 1998b).

Dressage is clearly one of the most difficult discipline in terms of demands on the skills of the rider. It is the basic of all other equestrian disciplines. When dressage rider controls the horse with almost imperceptible incentives. The horse must be controllable and willing to work. The goal of dressage is the most perfect horse movement (Hermsen, 1998b).

Dressage is now divided into several currents of thought from which unfolds itself to work with the horse and his training, and later use. We have the opportunity to see modern dressage sport or high school dressage. The aim is to achieve harmony between horse and rider, make docile horses, elastic athlete who retains good physical and mental condition for many years, especially in the best interest of the welfare, health and satisfaction of the horse as a partner. (Knopfhart, 2003).

The performance is based on the so-called demonstration of dressage task. Dressage task is either officially prescribed by rules, or for the highest competition are only prescribed compulsory exercises and choreography and rider has to prepare. Very difficult is so-called. Kür, which is a loose assembly of artistic riding to the music. (Knopfhart, 2003).

Dressage task is performed in the designated area, the so-called dressage rectangle whose dimensions are for less difficult competition restricted for the 20x40 and for more difficult competition it is restricted for 20x60. Jury decides, number of judges varies depending on the particular importance of the competition (at national competitions 3 or 5), there is always an odd number. Jury marks pair with values from 0 to 10, where 0 means that the exercise has not been shown, and 10 indicates that the presentation was excellent performed. All exercises and transitions from one exercise to another, are evaluated by the judges, it is numerically recorded in the list of referees. It assesses primarily obedience of the horse, its relaxation and proper execution of exercises.[10]

[10]Česká Jezdecká Federace [online]. Česká Jezdecká Federace [cit. 2015-12-31]. Dostupné z: www.cjf.cz

Table 4. Levels of difficulties in dressage

Indication	*Description*
"Z"	BASIC TASKS
"L"	EASY TASKS
"S"	MEDIUM TASKS
"ST"	MEDIUM HARD TASKS
"T"	HARD TASKS
"TT"	VERY HARD TASKS

Source: data were used from web pages[11]

Dressage is all about the perfect harmony between horse and rider. Born dressage horse is attentive, sensitive, intelligent, docile, and steady nerves. Has the energy so-called "brio"is associated with inner peace and meekness. Important features of dressage horses are: stainless, easily mounted head with the neck with, flexible scruff, nicely set neck, with comb mane muscled more than at the bottom, tapered shoulder, not too long, slightly arched, sufficiently broad chest, what best built and bent aft, regularly built limbs, naturally enclosed, flexible, lightweight trot.(Knopfhart, 2003).

Specification of dressage horse is very strict. Determinants that affecting the price of a horse are: color, age, breed, pedigree, carrier, injuries and for this branch of equestrian was added the condition, which means if the horse has the condition to pass competitions from level L to level TT.

- Color – black horse is most desirable color for dressage horses. Dressage is all about how the horse looks, and black is the most spectacular color (Beran, 2009).

[11]Drezurní pravidla 2015. *ČJF* [online]. 2015, , 1-73 [cit. 2016-02-20]. Dostupné z: http://www.cjf.cz/files/stranky/dokumenty/pravidla/Drezurn%C3%AD%20pravidla%20-%20platn%C3%A1%20od%2001.04.%202015.pdf

- Age – the best age for a dressage horse is from 5 to 8 years old (Beran, 2009).
- Breed – the set up breed for a dressage that was breed specifically for this discipline of equestrian is Oldenburger horse (Beran, 2009).
- Gender –has an important significance. Mares are unstable in performance due to their sexual cycle. In contrast, the stallions are simply destined for high dressage competition. Their impressive appearance makes them very aesthetic dressage horses (Beran, 2009).
- Pedigree – every dressage horse has to have a pedigree, depend on the proportion of a pedigree if the significance is high or not.After collection of the data the variable pedigree was removed from the database because every horse had a pedigree.
- Training – basically trained horses are more valuable.
- Proportion – is a variable that measure how the horse pedigrees influences the proportion of a horse for the futures competitions.
- Career – connected with injuries, higher probability of past injuries, but here it depends on the other factors. If the horse has a past sport carrier and it doesn't has a past injury it is a significantly valuable. (Beran, 2009).
- Injuries – for dressage horses, injuries are still unexplained, some horses that had injury are kept as a dressage horse and some of them are removed and sold as a recreational horse. (Beran, 2009). In the database of horses, variable injury is not included.

Stabling for dressage horses is not that different from the stabling of show-jumping horses level L to level TT. The only difference is that the stable is focused on dressage that means that trainer is specialized on dressage and also the stable is equated

differentially. The price of stabling is in rank from 7000 CZK to 15000 CZK, depends on a quality and reputation, the amount of services that are included in a price. In each dressage farm there is an experience trainer, who is specialized on dressage. The price of a training lecture is in the rank from 800 CZK to 2 000 CZK, depends on experiences of each trainer.

3.3 HEDONIC PRICE METHOD

A Hedonic price method is a common method used for estimation of economics values influencing the the price of a lifestock or horses. As an example of a analysis focusing on horse segment can be for instance research about quarter horse yearlings (Lansford, 1998), about thoroughbred broodmares (Maynard & Stoeppel, 2007) and (Stoeppel & Maynard, 2006) and show quality of quarter horse (Taylor M. R., 2004). Numerous articles have been published about the throughbreds breeding (Smith, 1999). But there weren't found any analysis of warmblooded breed which quite makes sense because warmbloded breed are not the pure breeds. There was published a study about an analysis of recreational horses (Freeborn, 2009), and wild horses (Elizondo, Fitygerald, & Rucker, 2011).

(Taylor M. R., 2004) wrote in article about quality of Quarter horses sold in public auction, that the the Hedonic price method where a price is a function of genetic and phenotypic (physical) characteristics, that the variables pedigree, gender, age, performance, economics conditions, sale order and colour (except a Bay) has a significant impact on a price.

"The hedonic value approach is based on the assumption that the value of an animal is a function of the phenotype (and genotype) characteristics embedded in this animal" (Roosen, 2004).

The main phenotype (and genotype) characteristic were gender, age and colour, that were in the articles mentioned above. In evaluation of a purchase price of a pure breeds, the characteristics that influences price are connected with races, awards from competiotions and number of winnings.

In the article from (Stoeppel & Maynard, 2006). were factors divided into independent variables such as marketing, breeding, genetics and racing factors.

- Marketing factors – when the horse was sold.
- Breeding factors – racing results of foals
- Genetic factors – speed with foal, number of attempt with foal, age
- Racing factors – racing records of certain horse

In the article from (Elizondo, Fitygerald, & Rucker, 2011), authors were focusing primarly about wild horses and non pure breed in a sense of recreational horses. Results that were found are characterized by interesting factors for each variable.

- Age – horses between 4-7 are easier to trained so thereid highest probability of buying a horse.
- Injury – horses with a past or current injuries are less
- Gender - horse that thei gender are mares or geldings make price higher in comparision with geldings.
- Colour – horses that are differet colour that bay are more attractive and the willingness of buying them is higher

4 ANALYTICAL PART

This chapter is focused mainly on investigation of the data that were collected during visits of the farms with horses. Furthermore, the classification of the data was the necessary thing for correct creation of the table. Analysis of the collected data were ran with the computer program called SAS Enterprise Guide. In each group of horses were done regressions to identify the significant determinant that affect the price of the horse. Collinearity analysis in this chapter is presented to determine the connection between observed variables. The results of the regression had to be applicable in to the real life, to determine if the results fits into the practice.

4.1 DATA COLLECTION

The data collection were done personally by visiting farms that are focused on that certain field of equestrian. In a rank of month, it was visited more than 7 farms, that are in the Czech Republic near the capital city of Prague, near Pardubice and Hradec Králové. Interviews were done with appropriate person such as owner of the horse or owner of the farm. The interview took about 4 to 5 hours in each farm. Each horse that is in the database was seen personaly. Persons were interviewed with questionare that is attached in appendixies, Appendix 1 – Questionnare.

During the interviews, there was a very calm and friendly atmosmphere, interviewed persons were open-minded, and they provided the necessary information and documentation that was needed. For reability and validity, horses were check in breeding books[12] that are avalaible in each farm were horse is and also for the next check on the internet.

For validity and reliability of the purchase price, owners provided the certain documentation that was neccesary such as contracts, bills or invoices. Because owners didnť want to publish names of the horses, farms or owners so for the confidentiality, names of the horses are recorded as Horse xy, no names are inculed.

[12] Breeding book – form of registration of horses, books are avaliable in the stables where the certain horse is or online breeding books are avaliable here http://www.aschk.cz/pk

4.2 VARIABLES

To evaluate determinants affecting the price of the horses were chosen 50 horses from each branch of equestrian. In total 150 horses were included in the thesis. Price that was launched in the database is the purchasing price that the owner or farm paid when buying a certain horse. Price was set up as a dependent variable and as a significant independant variables were set up color, gender, age, breed, gender, pedigree, previous sport carrier, training, proportions and injuries. Those variables are aplicable into every 3 branches that is study but only in some of them are presented. Deaper meaning of those variables was explained in the chapter *2.2 ECONOMICS OF EQUESTRIAN* and in the chapter *3.3 HEDONIC PRICE METHOD* will be explained the meaning of aplication in the program. Variables that were chosen was because they are possible to measure.

4.3 HEDONIC PRICE METHOD

In consideration of the most common analysis in economics of evaluation the determinants that are significant and affecting the price of a horse, was chosen the Hedonic price method. Linear regressions were run through matematical function BOX-COX[13], which was consider, after studiing lietrature, to be the best method to use. The assumption for this model is that observated factors (color, age, gender, breed, sport carrier, pedigree, injuries and proportions) have significant infuence on the price of a horse.

4.3.1 RECREATIONAL EQUSTRIAN

$$P = f(A, A^2, C, B, G, P, T, S, I) + \varepsilon$$

- whereas age (A), age squared (A^2), color (C), breed (B), gender (G), pedigree (P), trainning (T), previous sports career (S), injuries (I)

- A = age of a horse

[13] BOX-COX - The aim of the Box-Cox is to transform usual assumptions into linear model. Source: *http://www.ime.usp.br/~abe/lista/pdfm9cJKUmFZp.pdf*

- A^2 = age of a horse powerd by 2
- C = to 0 if bay or 1 if the color is differnt
- B = to 0 if it is pure Czech warm blooded horse or 1 for different breed
- G = to 0 if it is mare or 1 is it is gelding, no saillons are included in the database
- P = to 1 for horses which have a pedigree or 0 if they don´t have a pedigree
- T = to 1 if horseis basically trained or 0 if the horse is not trainned
- S = to 1 if horse had a previous sports carrier (show-jumping carrer, dressage carrier, race carrier) or 0 if horse is without sports carrier
- I = to 1 if horse had an injury in the past or 0if the horse is without injury

4.3.1.1 RESULTS FOR RECREATIONAL EQUESTRIAN

Number of observated variables were 50. From the results of linear model was estabilished an R-squared value of 0.55 and an adjusted R-squared value 0.4448 that means 48% of the linear model was explained by variables in the model. The F-value of 5,43 demonstrates that the model is statistically significant.

The average price for a recreational horse is estimated for 39 931 CZK. The minimum price is 7 500 CZK and maximum price is 85 000 CZK. The average age of a recreational horse is 11,36 years. The oldest horse in the database is 28 years old and the youngest is 3 years old. The database of a recreational horses conains 20 mares and 30 geldings.

The most significant determinant that affect the price with the highest value is variable injury. Thus, if the horse had an injury, it is less valuable for 17 650 CZK than the horse without any past injury. Pedigree of a horse is also a determinant that has to be consider. Horses that had at least any pedigree are higher priced for 8 607 than horses without pedigree. The other slightly significant determinant is breed. If the horse is with a breed of Czech warm blooded horse is valuable for 7 468 than the horse that is different breed. Another determinant that we can take into consideration is a sport carrier. Horses that had any sport carrier are more valuable for 6 927 CZK. Results also shown that mares are higher priced that the geldings. Mares are valued for 7 442 CZK than geldings. There are two explanation about determinants that are not significant. The first one could be with the lack of data. With higher number of observations there

could be different results or the second one is that just simply they are not important for the horses with recreational purposes. These results are shown in the Figure 1.

Figure 1. Results of regression of recreational equestrian

Linear model results of recreational equestrian				
N	***R-Squared***	***Adj R-Sq***	***F-Value***	***Pr>F***
50	0,5479	0,4448	5,43	<,0001
Variables	***Coefficient***	***Standard Error***	***t-statistic***	***P-value***
Intercept	61 327	10573	5,8	<,0001
Colour	2186,18	4914,5344	0,44	0,6588
Age	-217,84	1717,4859	0,27	0,2131
Age-Sq	0,6533	63,6052	0,01	0,9988
Breed	-7 468	5542,3214	-1,35	0,1854
Gender	7 442,54	5420,5367	1,37	0,1774
Pedigree	8 607,11	5149,0206	1,67	0,1024
Training	268,45	6772,6745	0,04	0,9686
Carrier	6 927,44	5395,2832	1,28	0,2056
Injury	-17650	5059,9358	-3,49	0,0012

Source: Minhová, Determinants of horse pricing, 2016

The Figure 2 was modified to consider just the most influecing factors. Price as a dependent variable and injuries, carrier, pedigree and breed as explanatory variables. As a resutlt it shown that the most significant determinant affecting the price is injury. Horse without the injury costs 19 840 CZK more than horse with a past injury. Horse that has a pedigree is valuable for 6 155 CZK more than a horse without a pedigree. Next variabe is a breed and it shown that if the horse is different breed than a Czech warm blood horse costs less for 10 819 CZK. The Figure 2 showed that a horse without a sprort carrier is more valuable than a horse with a sport carrier, and that coud be that the sport carrier is connected with an injury, so it is less probabble that a horse without previous sport carrie could have less injuries than a horse with a previous sport carrier.

Figure 2. Results of modified regression of recreational equestrian

N	R-Squared	Adj R-Sq	F-Value	Pr>F
50	0,3125	0,2504	5,09	0,0018
Variables	**Coefficient**	**Standard Error**	**t-statistic**	**P-value**
Intercept	49 093	5333,2939	9,2	<,0001
Breed	10 819	6127,8844	1,77	0,0847
Pedigree	6 155,81	5784,3347	1,06	0,8711
Carrier	-948,88	5809,8717	0,16	0,2968
Injury	-19 840	5582,2954	-3,55	0,009

Source: Minhová, Determinants of horse pricing, 2016

In the Figure 3 are analyzed relationships between observetated variables. The results of correlation analysis shown that the highest correlation at the level 0,66 is between injuries and carrier. Another high correlation is between carrier and age at the level 0,37. And the last one is a correlation between training and age at the level of 0,36.

Figure 3. Correlation analysis[14] of recreation equestrian

Correlation analysis										
	Color	**Age**	**Age-Sq**	**Breed**	**Gender**	**Pedigree**	**Training**	**Career**	**Injuriues**	**Price**
Color	1									
Age	0,077696	1								
Age-Sq	0,016544	0,096181	1							
Breed	-0,13093	0,089398	0,16022	1						
Gender	-0,12361	0,26077	0,210257	-0,11689	1					
Pedigree	-0,04052	0,211516	0,233708	-0,15032	0,168638	1				
Training	0,04828	0,366255	0,292337	-0,07375	0,379968	0,232814	1			
Career	0,041204	0,372238	0,088367	0,026975	0,103565	0,248783	0,21684	1		
Injuriues	-0,12039	0,13265	0,173408	0,183892	0,143852	0,053661	0,199555	0,661178	1	
Price	0,053373	-0,47694	-0,4877	-0,33024	0,024206	0,143048	-0,12424	0,034952	-0,48352	1

Source: Minhová, Determinants of horse pricing, 2016

[14]Correlation analysis were done in the Microsoft Excel

4.3.2 SHOW-JUMPING EQUESTRIAN

$$P = f(A, A^2, C, B, G, T, P, S) + \varepsilon$$

- whereas age (A), age squared (A^2), color (C), breed (B), gender (G), trainning (T), proportions (P), previous sport career (S)

- A = age of a horse
- A^2 = age of a horse powerd by 2
- C = to 0 if the color isbay or 1 if the color is differnt
- B = to 0 if it is pure Czech warm blooded horse or 1 for different breed
- G = to 0 if it is mare or 1 is it is gelding, no saillons are included in the database
- T = to 1 if horse is basically trained or1 if the horse is not trainned
- P = to 1 if horse has a proportion for a competitions from levelof difficulty T*to T***
- S = to 1 if horse had a previous sports carrier (show-jumping carrer) or 1 if horse is without sports carrier

4.3.2.1 Results for show-jumping equestrien

Number od variables that were observated was 50. From the results of linear model was estabilished an R-squared value of 0,6353 and an adjusted R-squared value 0,4647 that means 46,47% of the linear model was explained by variables of the model. The F-value of 3,94 demonstrates that the model is statistically significant.

The average price for a show-jumping horse is estimated for 1 347 697 CZK. The minimum price is 106 890 CZK and maximum price is 24 300 000 CZK. The average age for show-jumping horse is 8,6 years. The oldest horse in the database is 16 years old and the youngest is 1 years old. The database of a show-jumping horses conains 26 mares and 24 geldings.

The most significant determinant is gender. Thus, mares are in show-jumping valuable than geldings for 1 569 709 CZK, which in comparision into the real life is very true. The performance of a mare in show-jumping competitions is much more better. The other factor that affect the price is a training. The purchase price of a horse

that has a training is for 566 820 CZK higher. Next significant derminant is breed. When the horse is Czech bloodes horse is more valuable for 1 518 709 CZK than the other breed. The other factors are not seems to be signicant that means that the affect on the price is very low. See Figure 4 with resutls.

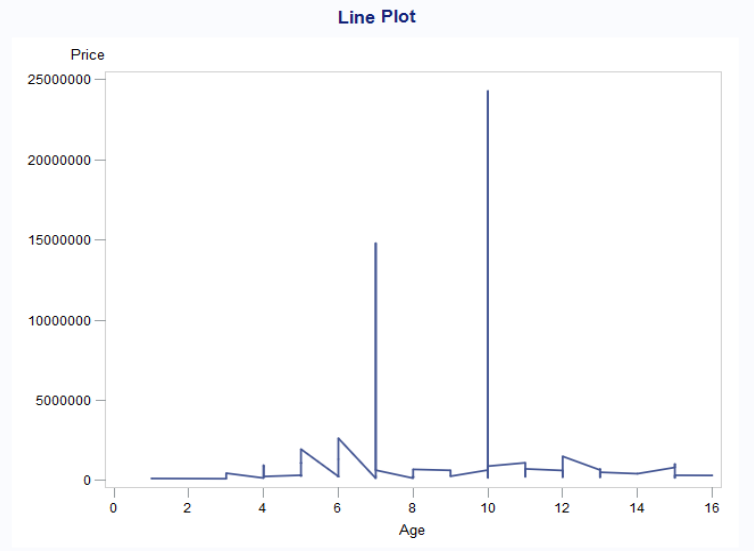
Figure 4. Results of regression of show-jumping equestrian

Linear model results of show-jumping equestrian				
N	***R-Squared***	***Adj R-Sq***	***F-Value***	***Pr>F***
50	0,6353	0,4647	3,94	0,49
Variables	***Coefficient***	***Standard Error***	***t-statistic***	***P-value***
Intercept	2 945 130	3252587	0,91	0,3705
Colour	223074,00	1168033	0,19	0,8495
Age	470 600,00	835255	0,56	0,5762
Age-Sq	-36265	44146	-0,12	0,2161
Breed	1 518 035	1178620	1,29	0,205
Gender	1 596 709,00	1164133	1,37	0,7777
Training	566 825,00	1816364	1,31	0,7565
Proportions	1 419 520	1224210	0,16	0,2529
Carrier	11 927,00	1224210	0,16	0,25

Source: Minhová, Determinants of horse pricing, 2016

The Figure 4 shown that the age is not affecting the price of the horse at all but in all studies about application of Hedonic price method was one of thr main factor that affect price the varable age. To see the impact of the age to the price was created a line plot to see how old horse must be to be the most valuable. The Figure 5. had shown that the most valuable horses are at the average age of 6 to 10 years.

Figure 5. Line plot of age of a show-jumping horse



Source: Minhová, Determinants of horse pricing, 2016

The Figure 5 was modified to consider just the most influecing factors. Price as a dependent variable and gender, breed and proportions as explanatory variables. The most influencing factor is breed. It means that if the breed is Czech warm blooded horse, tha value of a horse is 3 630 233 CZK higher than the other breeds. Gender seems to be the second very important factor. Mares are to be consider valuable then gelding for more than 2 794 600 CZK. The last factor is consider to be proportions and horses with proportions are valuable for more than 1 012 844 CZK.

Figure 6. Results of modified regression of show-jumping equestrian

Linear model results of show-jumping equestrian				
N	***R-Squared***	***Adj R-Sq***	***F-Value***	***Pr>F***
50	0,3687	0,41193	2,77	0,1773
Variables	***Coefficient***	***Standard Error***	***t-statistic***	***P-value***
Intercept	608 926	1204909	0,51	0,6157
Gender	1 748 294	1092338	1,6	0,1163
Breed	1 660 942,00	1131750	1,47	0,149
Training	449 559,00	126093	0,36	0,7233

Source: Minhová, Determinants of horse pricing, 2016

In the Figure 7 are analyzed the relationships between observetated variables. The results of correlation analysis shown that the highest correlation at the level 0,66 is between age and carrier, nearly at the same level of correlation (0,62) is relationship between training and age. Next significant correlation at the level 0,53 is training and carrier.

Figure 7. Correlation analysis of show-jumping equestrian

Correlation analysis									
	Color	Age	Age 2	Breed	Gender	Training	Proportions	Career	Price
Color	1								
Age	0,11952253	1							
Age 2	0,14183102	0,97826809	1						
Breed	0,00648872	0,02420901	0,0205223	1					
Gender	-0,0195922	-0,00554736	-0,0486783	-0,0354846	1				
Training	-0,1010797	0,62790801	0,56543958	0,2924397	-0,075378	1			
Proportions	0,02652791	-0,01271119	0,01001415	0,0698857	-0,035169	-0,01944	1		
Career	0,09688013	0,66670828	0,68274672	0,1687067	-0,019592	0,5306686	0,02652791	1	
Price	0,0000548	0,00745281	-0,03011207	0,221924	0,2129049	0,0980518	0,16563517	0,0759044	1

Source: Minhová, Determinants of horse pricing, 2016

4.3.3 DRESSAGE EQUESTRIAN

$$P = f(A, A^2, C, B, G, T, P, S,) + \varepsilon$$

- whereas age (A), age squared (A^2), color (C), breed (B), gender (G), trainning (T), proportions (P), previous sport career (S)

- A = age of a horse
- A^2 = age of a horse powered by 2
- C = to 0 if the color is black or 1 if the color is differnt
- B = to 0 if it is pure Oldenburger horse or 1 for different breed
- G = to 0 if it is mare or 1 is it is staillon, no geldings are included in the database
- T = to 1 if horse is basically trained or1 if the horse is not trainned
- P = to 1 if horse has a proportion for a competitions from level of difficulty ST to TT
- S = to 1 if horse had a previous sports carrier (dressage carrier) or 1 if horse is without sports carrier

4.3.3.1 Results for dressage equestrian

Number of variables that were observated was 50. From the results of linear model was estabilished an R-squared value of 0,6353 and an adjusted R-squared value 0,4647 that means 46,47% of the linear model was explained by variables of the model. The F-value of 3,94 demonstrates that the model is statistically significant.

The average price for a dressage horse is estimated for 2 279 980 CZK. The minimum price is 135 000 CZK and maximum price is 40 500 000 CZK. The average age for dressage horse is 6,95 years. The oldest horse in the database is 15 years old and the youngest is 2 years old. The database of a dressage horses conains 26 mares and 24 stailons.

The most significant determinant is colour. Thus, if the dressage horse is black than the price is higher for 200 739 CZK then when the horse has different colour. Another significant variable is proportions, horese with proportions have the purcase price is for 2 312 766 CZK higher. The other significant variable is gender. Thus, stailons are in dressage valuable than geldings for 1 569 709 CZK, which in comparision into the real life is very true. The performance of a stailon in dressage competitions is much more better. The other factor that affect the price is a previous sport carrier. The purchase price of a horse that has a previous sport carrier is for 1 929 091 CZK lower. The other factors are not seems to be signicant that means that the affect on the price is very low. See Figure 8 with resutls.

Figure 8. Results of regression of dressage equestrian

Linear model results of show-jumping equestrian				
N	***R-Squared***	***Adj R-Sq***	***F-Value***	***Pr>F***
50	0,4139	0,6953	3,95	0,4435
Variables	***Coefficient***	***Standard Error***	***t-statistic***	***P-value***
Intercept	6 645 611	7904431	0,84	0,4054
Colour	200 739	1851699	1,12	0,2692
Age	-3 807	4579187	-0,01	0,9934
Age-Sq	-1 102	93989	-0,17	0,8956
Breed	-10 875	939897	-0,36	0,64879
Gender	-1 747 015	23195707	-0,75	0,4556
Training	-28 048	3675847	-0,06	0,9434
Proportions	2 312 766	4661092	1,5	0,6224
Carrier	-1 929 091	2784312	-0,69	0,4923

Source: Minhová, Determinants of horse pricing, 2016

The Figure 5 was modified to consider just the most influecing determinants. Price as a dependent variable and gender, colour, proportions and previous sport carrier as explanatory variables. The most influencing factor is proportions. It means that if the horse has a proportions for competitions is valuable for 1 879 644 CZK higher than the hrse without. Gender seems to be the second very important factor. Stailons are to be consider valuable then mares for more than 1 195 640 CZK. The last factor is consider to be colour and horses, that are black are valuable for more than 17 127 CZK. The variable carrier in the modified table seems to be not important.

Figure 9. Results of regression of dressage equestrian

Linear model results of show-jumping equestrian				
N	***R-Squared***	***Adj R-Sq***	***F-Value***	***Pr>F***
50	0,3975	0,5471	1,71	0,1646
Variables	***Coefficient***	***Standard Error***	***t-statistic***	***P-value***
Intercept	612 426	4479216	0,14	0,8919
Gender	-1 195 640	2215159	-0,9	0,3724
Colour	17 127	4223371	0,78	0,2657
Carrier	19 718	4187996	0,17	0,7916
Proportions	1 879 644	1627600	1,15	0,2549

Source: Minhová, Determinants of horse pricing, 2016

In the Figure 10 are analyzed the relationships between observetated variables. The results of correlation analysis shown that the highest correlation at the level 0,74 is between age and carrier, nearly at the same level of correlation (0,72) is relationship between training and age. Next significant correlation at the level 0,68 is between gender and proportions.

Figure 10. Correlation analysis of dressage equestrian

Correlation analysis									
	Color	*Age*	*Age-Sq*	*Breed*	*Gender*	*Training*	*Proportions*	*Career*	*Price*
Color	1								
Age	-0,000516	1							
Age-Sq	0,0226789	0,973909	1						
Breed	0,0693615	0,125131	0,088792	1					
Gender	-0,682692	-0,0263	-0,04439	-0,20443	1				
Training	-0,196824	0,728494	0,609151	0,159586	0,136776	1			
Proportions	-0,919872	-0,05106	-0,07259	-0,16063	0,682692	0,196824	1		
Career	-0,121795	0,747366	0,679338	0,069362	0,038462	0,720577	0,04166667	1	
Price	0,7962563	0,093029	0,050049	-0,1142	0,697531	0,152772	0,29704108	0,058489	1

Source: Minhová, Determinants of horse pricing, 2016

5 CONCLUSION AND RECOMENDATION

The results shown that in the recreational equestrian the most significant determinants that influenced the purchase price of a horse are: injuries, pedigree, carrier and breed. Even that the age was not significant, in the correlation analysis was demonstrate that the variable age was influencing other variables such as training and previous sport carrier. According to the results the best horse is a horse that is Czech warm blooded, mare, without injuries, with a pedigree and with a previous sport carrier. The age of a recreation horse was estimated on 11 years with a price of 39 931 CZK. If we apply those results in to the real life, usually recreational owners want a horse that is under 11 years yold and uner 55 000 CZK. So it fits int the reality. But recreational rider are choosing horses because of their character but the variable character is not possible to measure.

In the branch of show-jumping equestrian the most statisticaly significant variable was gender. Thus, maresare valuable then geldings because of the performance that is better than the performance of geldings. Other determinant was training, proportions and breed. In this case again the age was not statistically significant so it had to be done the correlation analysis and it show that age is affecting training and previous sport carrier. The best horse for show-jumping equestrian is a Czech blooded horse, in the age of 8 years, mare with previous sport carrier, proportions and training that the purchase price is about 1 347 697 CZK.

The last branch that was analysed was dressage. Here was the most significant determinant that affect price colour. So basiccaly dressage horse has to be black. Another significant variables were proportions, gender and sport carrier. The variable age was again not proved to be statisticaly significant. Thus, was run the correlation analyis and that show that the relationship that highly correlate with age is carrier and training. So as a result the best horse for dressage equestrian is a black stailon, with proportions to competitions from level ST to TT, without sport carrier in the age of 6 with the purchase price of 2 279 980 CZK.

The stastistical analysis shown very interesting results. In comparison the most expencive horses are horses that are focused on the dressage equstrian, that is true in application into the real life.

My recomendation is that we have to keep in mind that a horse is still a life creature not a thing. Every single horse has a unique character, that is not possible to measure that’s why horse has to be chosen by heart and by eyes not only with a statistical data,which are useful to have them but not as an the main factor.

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7 APPENDIX

Appendix 1 - Questionnare

QUESTIONNARE

Q1 – Can You tell me the breed of the horse?

Q2 – How old was that horse, when You bought it?

Q3 – Did the horse have any injury in the past? (before purchasing)

Q4 – Did you buy the horse with or without the previous sport carrier? If yes, what and which results were achieved?

Q5 – When purchasing a horse, did the horse have a basic training?

Q6 – Just for check of the information and for further more analysis, can you tell me the name of the horse and precise pedigree, if it has any? (the name will not be included in the database, it is just for me, for the check of the data)

Q5 – What was the purchase price of the horse?

Appendix 2 - collected data for recreational equestrian

Recreational horses - collected data										
	Color	Age	Age 2	Breed	Gender	Pedigree	Training	Career	Injuriues	Price
Horse 1	1	4	16	0	0	1	0	0	0	50 000
Horse 2	1	6	36	0	0	0	1	1	1	45 000
Horse 3	0	15	225	0	1	1	1	1	1	12 000
Horse 4	0	9	81	0	1	1	1	0	1	80 000
Horse 5	0	4	16	1	0	0	1	0	1	40 000
Horse 6	1	4	16	1	1	1	1	0	1	35 000
Horse 7	1	17	289	0	1	1	1	0	1	15 000
Horse 8	1	6	36	0	0	1	0	0	1	65 000
Horse 9	0	7	49	1	1	1	1	1	1	30 000
Horse 10	0	8	64	0	1	1	1	1	1	38 000
Horse 11	0	4	16	0	0	0	1	0	0	50 000
Horse 12	1	19	361	0	0	1	1	1	0	19 000
Horse 13	0	11	121	1	0	1	1	0	0	40 000
Horse 14	0	6	36	0	1	1	1	1	0	80 000
Horse 15	1	20	400	0	1	1	1	1	0	20 000
Horse 16	1	11	121	0	1	0	1	0	0	25 000
Horse 17	1	10	100	0	0	0	1	0	0	35 000
Horse 18	1	13	169	0	0	1	1	1	0	80 000
Horse 19	1	11	121	0	0	0	1	0	0	26 000
Horse 20	1	17	289	0	1	1	1	1	0	25 000
Horse 21	0	11	121	0	1	1	1	0	0	60 000
Horse 22	0	6	36	0	0	1	1	0	1	30 000
Horse 23	1	18	324	0	1	1	1	1	0	85 000
Horse 24	1	3	9	0	0	1	0	0	0	69 000
Horse 25	1	14	196	0	0	1	1	0	1	19 000
Horse 26	0	24	576	1	0	1	1	1	1	8 100
Horse 27	0	4	16	0	1	1	0	0	0	78 000
Horse 28	0	11	121	0	1	1	1	0	0	70 000
Horse 29	1	7	49	1	1	0	1	0	0	63 500
Horse 30	1	18	324	1	1	0	1	1	1	20 600
Horse 31	0	17	289	1	1	1	1	1	1	9 300
Horse 32	0	14	196	0	1	1	1	0	0	36 800
Horse 33	0	15	225	0	1	1	1	0	1	16 500
Horse 34	0	5	25	1	0	0	0	0	0	25 300
Horse 35	1	8	64	0	1	0	1	0	1	29 600
Horse 36	0	28	784	1	1	1	1	1	1	7 500
Horse 37	0	10	100	0	1	0	1	0	1	41 000
Horse 38	0	10	100	0	0	0	0	1	0	52 000
Horse 39	0	3	9	0	1	0	0	0	1	33 000
Horse 40	0	5	25	1	0	0	0	1	0	40 800
Horse 41	1	14	196	0	1	0	1	1	0	68 000
Horse 42	1	9	81	0	1	1	1	1	0	72 000
Horse 43	1	16	256	1	1	1	1	0	1	20 250
Horse 44	0	18	324	0	1	0	1	0	1	18 700
Horse 45	0	11	121	1	1	0	1	0	0	41 000
Horse 46	1	12	144	0	1	0	1	0	1	24 000
Horse 47	0	17	289	0	1	0	0	0	0	31 000
Horse 48	1	13	169	0	1	1	1	1	0	65 000
Horse 49	1	15	225	1	0	0	0	0	1	16 500
Horse 50	1	10	100	1	0	0	0	0	0	35 100

Appendix 3 - collected data for show-jumping equestrian

Show-jumping horses - collected data									
	Color	Age	Age 2	Breed	Gender	Training	Proportions	Career	Price
Horse 1	1	7	49	0	0	1	0	0	135 000
Horse 2	1	3	9	0	1	0	0	0	106 890
Horse 3	0	1	1	0	0	0	1	0	120 000
Horse 4	0	10	100	1	1	1	1	0	648 000
Horse 5	0	7	49	0	1	1	0	1	230 000
Horse 6	0	6	36	1	0	1	1	0	250 000
Horse 7	1	7	49	0	1	0	1	0	260 000
Horse 8	0	4	16	0	0	0	1	0	150 000
Horse 9	1	6	36	0	1	0	1	0	245 000
Horse 10	0	5	25	0	0	1	1	1	323 000
Horse 11	1	5	25	0	0	1	1	0	305 000
Horse 12	0	10	100	0	0	1	1	0	162 000
Horse 13	0	3	9	1	1	1	1	0	450 000
Horse 14	0	8	64	0	1	0	0	0	140 000
Horse 15	0	5	25	0	1	0	1	0	270 000
Horse 16	0	10	100	1	0	1	1	1	540 000
Horse 17	1	12	144	1	0	1	1	0	620 000
Horse 18	1	13	169	1	0	1	1	1	650 000
Horse 19	0	15	225	1	1	1	1	1	810 000
Horse 20	1	5	25	1	0	1	1	1	1 080 000
Horse 21	0	11	121	1	1	1	1	1	1 100 000
Horse 22	0	15	225	0	0	1	1	1	1 030 000
Horse 23	1	5	25	1	0	0	0	0	1 100 000
Horse 24	1	7	49	1	1	1	1	0	14 800 000
Horse 25	0	10	100	1	1	1	1	1	24 300 000
Horse 26	0	9	81	1	0	1	1	0	630 000
Horse 27	0	8	64	1	0	1	0	0	245 000
Horse 28	1	13	169	1	0	1	0	1	720 000
Horse 29	0	15	225	0	0	1	1	1	160 000
Horse 30	1	4	16	0	0	0	1	0	870 000
Horse 31	1	6	36	1	1	0	1	0	1 320 000
Horse 32	0	8	64	0	0	1	0	1	220 000
Horse 33	1	13	169	0	1	1	0	1	185 000
Horse 34	1	15	225	0	0	1	1	1	320 000
Horse 35	1	11	121	1	1	1	1	1	220 000
Horse 36	0	12	144	1	1	1	0	1	196 000
Horse 37	0	4	16	0	1	0	1	0	950 000
Horse 38	0	7	49	0	0	1	1	0	640 000
Horse 39	0	11	121	1	0	1	1	1	720 000
Horse 40	1	16	256	1	0	1	0	1	310 000
Horse 41	0	5	25	1	0	0	1	0	1 950 000
Horse 42	0	9	81	0	1	1	0	0	260 000
Horse 43	1	13	169	0	1	1	1	1	510 000
Horse 44	1	14	196	1	0	1	1	1	420 000
Horse 45	0	8	64	0	1	1	0	0	689 000
Horse 46	0	10	100	1	0	1	0	0	760 000
Horse 47	0	10	100	1	1	1	1	0	890 000
Horse 48	1	12	144	1	1	1	1	1	1 500 000
Horse 49	1	6	36	0	0	0	1	0	2 630 000
Horse 50	0	4	16	1	0	0	0	0	245 000

Appendix 4 - collected data for dressage equestrian

Dressage horses - collected data									
	Color	Age	Age-Sq	Breed	Gender	Training	Proportions	Career	Price
Horse 1	0	4	16	0	1	0	1	0	810 000
Horse 2	1	4	16	0	0	0	0	0	780 000
Horse 3	0	4	16	0	0	0	1	0	1 350 000
Horse 4	0	7	49	0	1	1	1	1	2 350 000
Horse 5	0	8	64	0	1	1	1	1	2 060 000
Horse 6	0	7	49	0	1	1	1	1	9 300 000
Horse 7	1	6	36	0	0	1	0	1	740 000
Horse 8	0	5	25	0	0	1	1	1	890 000
Horse 9	0	5	25	0	1	1	1	0	2 530 000
Horse 10	0	8	64	0	1	1	1	0	2 960 000
Horse 11	1	11	121	0	0	1	0	1	432 000
Horse 12	0	10	100	1	0	1	0	1	648 000
Horse 13	1	10	100	1	0	1	0	1	162 000
Horse 14	1	3	9	1	0	0	0	0	532 000
Horse 15	1	5	25	0	0	0	0	0	408 000
Horse 16	1	4	16	0	0	0	0	0	135 000
Horse 17	0	9	81	0	1	1	1	1	40 500 000
Horse 18	0	6	36	0	1	1	1	1	2 025 000
Horse 19	0	3	9	0	1	0	1	0	1 070 000
Horse 20	1	4	16	0	1	0	0	0	890 000
Horse 21	0	2	4	0	1	0	1	0	985 000
Horse 22	1	7	49	1	0	1	0	0	540 000
Horse 23	1	13	169	0	0	1	0	1	650 000
Horse 24	1	15	225	0	0	1	0	1	165 000
Horse 25	0	10	100	0	1	1	1	1	3 510 000
Horse 26	1	3	9	0	1	0	0	0	890 000
Horse 27	0	7	49	0	1	1	1	1	1 500 000
Horse 28	0	8	64	1	1	1	1	1	2 630 000
Horse 29	1	4	16	0	0	0	0	0	245 000
Horse 30	0	10	100	0	0	1	1	1	1 200 000
Horse 31	1	6	36	0	0	0	0	0	648 000
Horse 32	0	5	25	0	1	0	1	0	2 300 000
Horse 33	1	12	144	1	0	1	0	1	250 000
Horse 34	1	9	81	0	0	1	0	1	260 000
Horse 35	0	6	36	0	1	1	1	0	1 620 000
Horse 36	0	4	16	0	1	0	1	0	4 500 000
Horse 37	0	7	49	1	1	1	1	0	950 000
Horse 38	0	3	9	1	0	0	1	0	2 700 000
Horse 39	1	8	64	1	0	1	0	1	540 000
Horse 40	1	4	16	1	0	0	0	0	620 000
Horse 41	0	10	100	0	1	1	1	1	6 500 000
Horse 42	1	9	81	0	1	1	0	1	630 000
Horse 43	1	6	36	0	0	1	0	0	245 000
Horse 44	1	5	25	0	0	0	0	0	720 000
Horse 45	0	15	225	0	1	1	1	1	1 600 000
Horse 46	0	11	121	1	1	1	1	1	870 000
Horse 47	1	4	16	0	0	0	0	0	510 000
Horse 48	0	7	49	1	1	1	1	0	4 200 000
Horse 49	1	9	81	1	0	1	0	1	689 000
Horse 50	1	6	36	0	0	1	1	0	760 000