

# **TENNIS AND BUSINESS**

**Success factors for women's professional tennis players in Central and Eastern Europe and OECD countries**

**Abstract of PhD Thesis**

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Budapest

2023

## **Introduction**

The popularity of tennis has grown significantly in recent decades, and its social status has changed at the same time. The sport of the elite, upper class has become accessible to all, an expression of a middle-class aspirational habitus with a focus on social appearance, ascendancy and status. Tennis is still seen as an elite sport because of the cost of buying expensive equipment and the expense of years of individual training. Of all the major global professional sports where women have broken ahead in terms of status, income and media attention, tennis stands out. For a long time, it was a more or less white, middle-class game, but the emergence of Venus and Serena Williams in the late 1990s turned tennis towards new markets. As a result, the best players became the most accepted and best paid professional women athletes. From the 1960s onwards, thanks to the so-called "open era", the business presence in the sport has changed significantly, and today tennis is an industry. Naturally, the number of players has also increased, which has changed the organisational side of the sport. International federations were formed. Men's professional tennis is governed by the ATP, while women's professional tennis is governed by the WTA. These organisations started as profit-oriented companies and tried to sell the tournaments they owned as products at the best price. The spectacular development over the years has not only been reflected in the growth in the number of players. Sponsorship spending in the sport has multiplied worldwide. The prizes that can be distributed among players have gradually increased. The money flowing into tournament systems through federations has increased, and more and more tournaments are being organised around the world. Companies that got in early on the tennis circuit were in the right place at the right time. They saw the potential in supporting tennis tournaments, signed contracts for years, invested huge sums of money and made serious up-front calculations. Their investments have generated millions of dollars for them. The managers of the world's companies are throwing more and more money at tennis because their decades of investment are bringing them ever greater profits and recognition on the world market, and the names of the biggest tournaments and stars are becoming linked to their products. They are therefore interested in the continuous renewal of their contracts. The processing of my research manifests itself in the three main parts of the dissertation. I take the achievements of Hungary's retired and still active elite women tennis players as a regional basis. Along five dimensions, I examine the players' satisfaction and the role of their prize money in their careers. Focusing on the sporting culture of post-socialist

countries, I examine the differential determinants of elite women tennis players' successful sporting performances.

With a full international perspective I analyse the best performing female players from 38 OECD countries in terms of three outcome variables based on their year-end world ranking results. I examine the overall scores of the competitors, their prize money in US dollars, and the win shares of individual matches played. Looking at prize money, scores and matches played, I look for the impact of these variables on the success of the top performers using 10 national economic indicators. In my dissertation, I further reflect on the results and theoretical conclusions of the existing literature to create my own theoretical model and formulate a functionalization of tennis as a life course.

My thesis is interdisciplinary in approach, incorporating concepts and methods from economics and sociology of sport. I use these to search for answers in relation to professional women's tennis and business opportunities.

## **Objectives**

The aim of this research is to empirically investigate the factors behind the success of the retired and still active elite tennis players of the former socialist Hungary; to examine the players' achievements and the role of their prize money in their careers; and to explore the relationships that most characterise and influence the performance factors of the players.

A key objective is to assess how the forces behind success impact on the business aspects of tennis and the career model associated with the sport.

The research will also address the differential motivational factors of elite women tennis players in former post-socialist countries.

The empirical research of my PhD dissertation aims to explore the economic values and welfare factors that explain success over time by examining top female players in OECD countries. Using these characteristics, the aim is to quantify the macroeconomic situation, the quality of services and the general standard of living in a given country, and to identify the most important variables with significant explanatory power as a result of a preliminary analysis.

The essay basically looks at the business drivers that have become the defining elements of the tennis industry, following a chronology of significant milestones. It analyses their impact on the tournament organisation, the media, investors and players.

The objectives can be interpreted from several angles, with analysis and research covering the facts that have made women's tennis one of the most profitable sports in a globalised world.

To achieve the objectives, I formulated the following research questions:

1. What are the dimensions of success of women professional players?
2. How much money do Hungarian retired and still active tennis players and elite tennis players from post-socialist countries aim to win during their careers?
3. Do Central and Eastern European sportswomen consider it feasible to continue working around the sport and pursue it after their tennis career?
4. Which performance factors determine absolute tennis success?
5. What is the relationship between the economic performance of OECD countries with different income levels and sport excellence?
6. Does the tennis performance of female players in OECD countries depend on different macroeconomic and welfare factors in the player's country?

Hypotheses related to the research questions:

**H1:** For women professional players, the work, money and energy invested is worth it in terms of the tennis successes achieved and achievable.

**H2:** Retired and still active in Hungary, as well as elite women tennis players from post-socialist countries, aim to win prize money of a magnitude that will sustain them for life after tennis.

**H3:** I assume that a large percentage of Central and Eastern European athletes stay close to the sport after their careers are over, and see tennis as a career.

**H4:** As the role of tennis has changed, macroeconomic indicators have become less important in explaining the success of female competitors in OECD countries, and have lost their explanatory power.

**H5:** I assume that female professional athletes from poorer countries achieve better results than players from richer countries.

## **Methods**

The population of 25 retired and 22 active Hungarian elite women tennis players consisted of two parts. For the retired players, I examined the entire "population". From the retired elite tennis players, I wanted to include in my research those who had been age-group or adult national team players during their careers, had participated in international cash prize tournaments and had retired from competition after the age of 18-25. Taking into account the existing database and records of the MTSZ, the total population of retired female tennis players was 43. Of the 43 former classics, with the help of my former coaching colleagues and social media, I was able to find 40.

I wanted to include women who are active players today, who have either competed in adult women's tournaments or are in the younger age group, but who have already qualified and some have competed in international cash prize tournaments. When analysing the MTSZ's records, 30 players met these criteria, making a total population of 30.

The sampling date for retired tennis players was between 07.01.2018 and 21.04.2018. All retired players received the questionnaire to their e-mail address. Out of the 40 sent out, 25 were returned (n1=25). The active competitors received the questionnaire in person with the assistance of their coaches, and 22 completed the questionnaire between 16.07.2019 and 03.12.2019 (n2=22). A total of 47 completed questionnaires were therefore returned. The questionnaire was self-administered in both populations.

In analysing 31 elite women tennis players from post-socialist countries, I examined one population, the entire population of active players from post-socialist countries. I wanted to include in my research those players who were ranked among the top 1200 in the world adult women's rankings. I used the Women's Tennis Association database and records as of 30 September 2019.

The total population of post-socialist women tennis players in the world rankings was 209. Out of the 209 tennis players from post-socialist countries, I was able to find 127 of them through social media, using their published contact information.

All of the women in the world rankings received the questionnaire through the social media platform they provided. The sampling date for the study of professional women tennis players in post-socialist countries was between 30.09.2019 and 22.11.2019. Of the 127 questionnaires

sent out, 31 were returned (n1=31). Thus, a total of 31 completed questionnaires were returned... The questionnaire was completed in the population using a self-completion method.

Data were collected in all three populations under study by expert sampling using a self-designed electronic questionnaire with retrospective data, with quantitative data collection on a cohort of retired and active Hungarian elite female tennis players. The questionnaire was compiled and finalised based on the experience of the pilot surveys. The questionnaire consisted of three question blocks. 1. on the players' career history, training and competition intensity, ranking positions 2. on the professional career of the players, examining the amount of their prize money. 3. analysing the satisfaction of women tennis players with their careers, their willingness to start again as children and their activities after the end of their careers.

I looked at the success of professional women players in 38 OECD countries along the following dimensions.

- Total prize money won in a given year.
- The prize money per match (the total prize money won in a given year divided by the number of matches played in that year, regardless of whether the competitor won the match or not.
- The total individual score for that year.

These data come from the WTA database, collected for the top 100 athletes for 2000, 2010 and 2020.

The following factors were analysed as explanatory variables, extracted from the World Bank database for the above periods:

- Central government debt, total (% of GDP)
- Current account balance (% of GDP)
- Expense (% of GDP)
- Exports of goods and services (% of GDP)
- GDP, PPP (current international \$)
- GDP per capita, PPP (current international \$)
- Inflation, consumer prices (annual %)
- Coverage of social insurance programs (% of population)
- Current education expenditure, primary (% of total expenditure in primary public institutions)

- Current education expenditure, total (% of total expenditure in public institutions)
- Current health expenditure (% of GDP)
- Current health expenditure per capita, PPP (current international \$)
- External health expenditure per capita, PPP (current international \$)
- Employment to population ratio, 15+, total (%) (modeled ILO estimate)
- Employment to population ratio, ages 15–24, total (%) (modeled ILO estimate)
- Insurance and financial services (% of commercial service exports)
- Life expectancy at birth, total (years)
- HDI (Human development index)
- GINI (World Bank estimate)

Using the results of the cross-sectional analyses, I also performed a panel regression analysis for the period 2005-2018, in which the following outcome variables were defined:

- Total prize money won in a given year.
- The prize money won per match.
- Normalised score for the given year.

Competitors' success is represented by their normalised score for the year, calculated as:

$$Score_{norm,x,y} = \frac{Score_{x,y} - Score_{min,y}}{Score_{max,y} - Score_{min,y}},$$

where  $Score_{norm,x,y} \in [0,1]$  is the normalized score of player  $X$  in year  $y$ ,  $Score_{x,y}$  is the absolute number of points for the same player in the same year listed on the WTA's official ranking,  $Score_{min,y}$  is the lowest score in year  $y$  on the WTA's official top 100 ranking, while  $Score_{max,y}$  is the highest score in year  $y$  on the WTA's official ranking.

In the panel regression, taking into account the countries for which macroeconomic data are available, the results of the best-performing female player in 36 OECD countries (excluding Costa Rica and Iceland, as their players are not included in the WTA rankings) in a given year were analysed using the following explanatory variables:

- Current health expenditure per capita, PPP (current international \$)
- Expense (% of GDP)
- GDP, PPP (current international \$)
- HDI (Human development index)
- GINI (World Bank estimate)

- Employment to population ratio, 15+, total (%) (modeled ILO estimate)
- Unemployment rate
- Inflation, consumer prices (annual %)
- GDP deflator
- Life expectancy at birth, total (years)

Using the above explanatory variables, I ran a panel regression model for each outcome variable, estimating the values of the regression coefficients using GLS (generalized least squares). Although several authors suggest logarithmization of the explanatory variable values, as they did not lead to models with significantly higher explanatory power, they are not discussed further. The results of the Durbin-Wu-Hausman test suggest the use of random-effects models for all three outcome variables, and their results are discussed below.

In the documentary analysis of the business aspects of tennis, I used literature data and my own empirical results in order to develop a conceptual framework for the 2020s. I paid particular attention to Grand Slam tournaments. I analysed in detail the dimensions of one of the most successful tournaments, the Australian Open. I used descriptive statistical methods.



## **Results**

On average, retired players started playing tennis at the age of 7, training 21 hours a week and playing 20 tournaments a year. They were the best of the best of the Hungarian junior circuit, 14 of them had at one time or another topped the age-group rankings and 10 of them managed to carry this good form over to the adult circuit, where they were considered the best Hungarian players at the time. Their overall world singles rankings were better overall and more of them had a world ranking, with one more top 100 in the doubles rankings - 6 - compared to 5 in the singles. With these rankings, 11 of them were able to play in the highest category Grand Slam tournaments, but 10 of them played in the lowest category WTA tournaments. With this knowledge, most respondents have played in more than 10 countries and on 4 continents.

On average, the women tennis players still active today were just over 6 years old when they first took to the court, spent nearly 10 hours training per week and played in more than 14 tournaments per year. 9 of them were ranked in their age group, so they were the best junior players at the time. Today's Hungarian women are also aiming to reach the 100th position in the WTA Women's Singles and Doubles World Rankings in the future. They plan to achieve these results in 9 countries on more than 3 continents.

The 25 former top Hungarian tennis players have won over 50% of their career prize money, with over 50,000 US dollars. A smaller percentage of them earned between 10-50 thousand, while 36% of those in the lowest category. Retired people - in their own time - could not have won much more, as their opportunities were limited in this respect.

The responses from the 22 women tennis players who are active today show that 68% expect their future prize money to exceed \$50,000 at the end of their careers. This is a difference of nearly 20% plus compared to retired players. In fact, 23% of those surveyed would be happy with between \$10-50,000 at the end of their career. In recent decades, the amounts won in prize money competitions have increased several-fold. Compared to retired players, today's active women tennis players look much further ahead in terms of their financial situation.

In terms of success, of the 25 former top Hungarian tennis players, 19 are satisfied with their careers, only 6 have opted out, and 22 have found the work, energy, training, time and money invested worthwhile. This is a very good ratio, which means that during their careers they gained experiences and learned qualities from tennis that have had and will have an impact on their lives. In fact, if they were kids today and went down on the court for the first time, 23 of them would be doing the same thing.

Of the 22 tennis players who are still active today, 16 are satisfied with their career so far, 6 are not. 20 responded that the work, energy and money invested over the years was worth the effort. 2 players are not sure, maybe they should have spent their time with other things. 21 would start building their tennis career again if they had children today.

In terms of post-career activity, 19 of the retired players have stayed close to the sport and tennis still plays a significant role in their lives today. 11 of them are coaches, passing on their experience to future generations. 4 of them run some kind of tennis club, two of them also give lessons and run training sessions in their own club. There are two former players who are active in all three categories, so they are also "tennis mums" compared to the previous ones, i.e. they help their own children with the tennis challenges they face.

The most varied responses from women tennis players who are still active today were on their thoughts after retirement. 8 would like to coach, 7 envisage some kind of managerial position, either as a sports or club manager, 1 would definitely be a tennis mum. 3 responded that they could imagine being a coach-manager-tennis-mom at the same time. 3 do not see their civil life around tennis.

The retired players played their first international professional tournament at the age of 15.5, competed for an average of nearly 7 and a half years, and finished their professional careers at just over 23. In most cases, the reason for their early retirement was the acceptance of opportunities that would help their studies, mainly at American universities. The playing skills they had already acquired at the age of 18 met the requirements to obtain several years of study and sports scholarships.

The majority of the elite Hungarian women tennis players included in the survey, who are still active players today, were born in the 2000s, and on average also played their first professional tournament at the age of 15.5. They plan to play in international professional tournaments for almost 13 years and would like to play tennis until they are at least 32 years old on average, 9 years longer than the retired players.

Elite women tennis players in post-socialist countries have been playing their first match at an average age of more than 6 years. They trained for an average of almost 11 hours a week and competed in more than 14 tournaments a year. 20 of them were ranked at some point in their countries' junior rankings and also held a prominent place among the adults. They played their first cash prize international tournament at just over 15 years old and plan to compete in the pros for more than 12 years. Their current singles and doubles world rankings are varied, but

their ambitions are far-reaching. They would be satisfied with a top 50 in the individual and top 80 in the doubles, which they would like to achieve in 18 countries on 4 continents.

61% of the 31 elite women tennis players from former post-socialist countries hope that by the end of their careers, the prize money they will have won will exceed US\$5 million. A smaller percentage would settle for earnings between US\$1 million and US\$5 million, while 16% are in the lowest bracket. Over the past decades, the prize money won in competitions has steadily increased. Today's players can claim several times the winnings of their predecessors, even if they are not specifically among the top players. Therefore, today's post-socialist players can look to the future with much more confidence than their predecessors in terms of their financial situation.

The responses from 31 former post-socialist women tennis players still playing today showed that 16 were satisfied with their career to date and only 8 said no. 7 have doubts about their achievements so far, they had hoped for more but their goals seem to be forward-looking. That is why they gave an 'also' answer to this question. 24 of the players voted yes, saying that the energy, training time, travel and money they have invested since childhood has been worth the effort. 3 disagreed with this statement, saying that they should perhaps have done something else. A very high percentage, 27, would start building their tennis careers again if they were children today. Elite women tennis players from the former socialist countries have different views on how they would like to end their careers. 6 would choose a career in coaching, 6 would like to run a sports centre or club. 7 would prefer to help their own children, passing on their own experience as a tennis mum. 4 think that they could combine coaching and management in their lives. 2 are the bravest, and would be able to achieve success in all three roles in their future civilian life. The satisfaction of the tennis players, from their childhood to the present day, is quite clear in their subjective judgement.

A review of the results of cross-sectional regression analyses between the indicators measuring the performance of the top 100 competitors in the WTA rankings in 2000, 2010 and 2020 and the macroeconomic indicators of the competitor's country leads to the conclusion that the explanatory power of each macroeconomic indicator has decreased significantly - to insignificant levels - from 2000 to 2020. While in 2000 there were 8 explanatory variables explaining the evolution of at least 1 outcome variable and 3 of these variables explaining the evolution of all 3 outcome variables at the 1% significance level, in 2020 there are only 2 explanatory variables in the data set and only 10% significant. It is interesting to note that there is a negative stochastic relationship between government spending and outcome variables

measuring the success of athletes: i.e., higher government spending - and the resulting presumably higher standard of living - leads to worse sport performance. Based on the values of the correlation coefficients, it appears that less than 10% of most macroeconomic indicators explain the variation in the country's competitive success. An interesting result, however, is the weakening of the explanatory power of these factors over time, suggesting that, although development gaps are not necessarily narrowing, the gap has not significantly widened in recent decades, i.e. there has in fact been growth in developing countries, which has gone from being socially and economically desperate to a rather poor but acceptable, even livable, level. Thus, there is not sufficient impetus to break out. The success of the post-socialist countries sends out another message in the light of my present research: the lack of economic prosperity alone is not sufficient to trigger an avalanche of search for a breakout, and in fact a still just acceptable level of economic prosperity is essential, but more important is the lack of 'social prosperity' and freedom.

The results of panel regression analyses between indicators of success of OECD competitor countries and macroeconomic indicators of the competitor country, carried out for the period 2005-2018, show that per capita health expenditure per purchasing power parity, the HDI index and the employment rate of the over-15 age group as explanatory variables are significant for all three outcome variables. The lowest  $R^2$  value is associated with the normalized scores for the model for the year in question, so their evolution is the least explained. The coefficients of determination for the prize money won in a given year and the prize money won in a given match are 30.84% and 35.45%, respectively. For these models, GDP, life expectancy at birth, employment rate and unemployment rate also have significant explanatory power, and the inflation rate has sufficient explanatory power at the 10% significance level. It is interesting to note that while in the cross-sectional analyses government expenditure still had significant explanatory power in the 2000 ranking, in the panel regression this explanatory variable does not have sufficient explanatory power in any case, nor does the GINI index, which is supposed to measure social inequality, have sufficient explanatory power. The latter is of particular interest because historically, the key to escaping poverty and social inequality may be good sport performance, so it is possible, but not proven on the basis of the sample data, that higher social inequalities lead to better sport performance. However, the negative stochastic relationship with GDP seems to support, to some extent, the hypothesis that athletes from poorer countries achieve better results. The negative correlation of outcomes with the employment rate also seems to support the hypothesis that competitors from poorer countries (with lower

employment rates) will outperform competitors from better-off countries (and hence with higher employment rates). This idea also seems to be supported by the negative regression coefficient of life expectancy at birth, which suggests that as life expectancy at birth increases, success in sport decreases. However, the stochastic relationship with the unemployment rate, which is also negative, seems to contradict this: increasing unemployment reduces sporting success. The 14-year period 2005-2018 is covered by two 7-year panel regression analyses between the normalised annual total number of points, total annual prize money and prize money per match of OECD countries' competitors and the macroeconomic indicators of the competitor's country, carried out for the period 2005-2011 and 2012-2018, and the values of the test statistic for the difference in the estimated regression coefficients between the two periods do not support the hypothesis that the regression coefficients of the individual macroeconomic indicators change significantly over time, in particular to the extent that they lose their significance. The three variables that best explain the performance of athletes - namely per capita health expenditure in purchasing power parity, the HDI index and the employment rate for the over-15 age group - have broadly similar p-values for both the 14-year period as a whole and the two seven-year periods, despite the fact that the absolute value of the regression coefficients differs significantly in some cases between the two periods.

My documentary analysis of the dimensions of the Australian Open found that, overall, there was a 351% increase in prize money from 2001 - from \$13.9 million at the time - to 2019.

The total prize money for 2020 reached A\$71 million. Following the trend, the prize pool has steadily increased, more than tripling from 20 million in 2007 to more than three times the amount of money that competitors can take home. Overall, the prize pool has increased by 412% over the last two decades. Players who lost in the first round of the 128 women's and men's main draws were awarded \$90,000. South Korean carmaker KIA has forecast an increase in its business results for 2021, thanks in part to the support of the Grand Slam competition. Sales based on a global wholesale base are projected to reach nearly 3 million units, thanks to an increase in average selling prices. This represents an increase of 12.1% compared to the previous year. KIA's expectations and forecasts for operating profit have also increased compared to the previous year. The target operating margin is 5.4 percent by 2021 and 7.9 percent by 2025. They are clearly realising a return on their investments. The company, as strategic partner since 2002, is the main sponsor, with a contract until 2023. Together with the ITF and Tennis Australia, it sees a huge business opportunity in the competition. This agreement is the largest sponsorship deal in the history of Australian sport.

In addition to KIA, other sponsors include Swiss watchmaker Rolex and New Zealand airline ANZ, to name but a few.

Rolex has a unique long history of contributing to global culture. In addition to the Australian Open, it is a major partner of other Grand Slam tournaments. It has been in the public eye for over 40 years, with the utmost respect for the traditions of tennis. The factory's products have a timeless aesthetic as well as precision. Dynamic and beautiful timekeepers reflect the spirit of competition.

The 2019 Australian Open has produced record revenues. During the two weeks of the tournament, 796,435 tickets were sold at the venue, 50,000 more than the previous year. On the Saturday of the first week, nearly 90,000,000 people watched the matches live, beating all previous records. Television coverage overseas reached more than 900 million homes, and the organisers generated 30.4 terabytes of internet traffic.

## Conclusions

Based on my research, my hypotheses have been confirmed or refuted as follows.

- The first hypothesis (**H1**) was confirmed, as retired and still active Hungarian elite women players, as well as professional women tennis players from the former socialist countries, confirmed my hypothesis that the work, money and energy invested by women in training and competitions is worth it in terms of the tennis successes achieved so far and the future successes that can be achieved.

**Thesis 1:** Women's professional tennis players in Central and Eastern European countries have made a worthwhile investment in tennis.

- The second hypothesis (**H2**) is clearly proven, because the successful women tennis players in Central and Eastern Europe that I studied aim to win prize money of a size that will allow them to build a civilian life after the end of their careers.

**Thesis 2:** Elite women professional players use their prize money to support their civilian lives.

- The third hypothesis (**H3**) is fully supported, because in the samples I examined, there was a tendency to find that female professional tennis players plan their activities around the sport even after their tennis careers are over. They have stayed close to tennis and plan to stay close to tennis, considering it as their life career.

**Thesis 3:** Women professional tennis players see the sport as a career path.

- The fourth hypothesis (**H4**), that the role of tennis has changed and that macroeconomic indicators are therefore playing a lesser role in explaining success because they are losing their explanatory power, has been accepted. While the macroeconomic environment of professional women players in a given country significantly influences their success, it is not clearly demonstrated that social inequalities are an evidence predictor of good sporting performance.

**Thesis 4:** With globalisation, the economic role of nation states has become irrelevant to success in tennis.

- The fifth hypothesis (**H5**) was only partially proven true, because it is not necessarily women from poorer countries who are more successful in tennis. However, the players from these countries achieve world-beating results thanks to their tennis backgrounds,

material and personal conditions and traditions, in addition to their own talent and diligence, compared with their modest financial resources.

**Thesis 5:** The success of elite women's tennis players has levelled out regardless of the financial situation of their countries.

Elite professional women's tennis players from Central and Eastern Europe and OECD countries compete day after day in a very fair and predictable tournament system of international tennis federations. Their victories take them higher up the world rankings and into even more prestigious tournaments. They train hard for many years and make their success their top priority. I see my hypotheses 1. and 2. as being fully justified, namely that women professional players are worth the effort it takes to be successful in their sport and to acquire the financial assets that will allow them to build a civilian life after the end of their careers.

My aim was to explore what makes world-class tennis players successful and what success factors dominate their performance.

My research results confirmed that the success factors and achievement factors of retired and still active Hungarian elite female tennis players were influenced by generational differences. Players with nearly identical tennis winning records shared similar principles in many aspects of their careers.

In the post-socialist countries, the social changes that took place allowed for an increase in the dominance of female players. By examining their motivational characteristics, I have come to the conclusion that today's competitors, looking up to the achievements of their superstar predecessors, have demonstrated the changed status of their sport in their homeland.

I tried to explore how the game becomes a profession, a career model.

My hypothesis 3. also held true, as all three samples proved that the global development of tennis provides a great opportunity to build a career. Players can, through their hard work and talent, gain material wealth that is worth the effort over 10-15 years.

The prize money they can win will enable them to pursue their activities professionally, which will also provide them with a livelihood after their careers are over.

The WTA's pension scheme provides long-term security for women professional tennis players. It is unique in the sport in providing an alternative for elite players in their civilian lives after retirement.



I also aimed to analyse the macroeconomic variables and economic aspects that play a role in the development of business-based competitive tennis. Hypothesis 4. was adopted because I concluded from my analysis of the macroeconomic factors behind the success of the best female players in OECD countries that the lack of social welfare is a very important inspiration for competitive tennis. I had to note, however, that a certain factor methodology derives social inequalities from economic measures rather than from social inequalities.

My hypothesis 5. was only partially accepted because since the 1990s the role of national economic indicators in tennis has declined, the link between macroeconomic performance and sporting results has become irrelevant, and macroeconomic values have played a smaller and smaller role in tennis success. With globalisation, the importance of nation-states has declined. Professional players of different nationalities are, in most cases, not living and preparing for competitions in their home countries.

In looking at the business drivers of tennis, I found that it represents a significant slice of the sports industry pie. The management of the world's biggest companies sign long-term sponsorship contracts with tournament organisers and players on the basis of appropriate cost-benefit calculations. The winnable and livable prize money for players increases year on year, ensuring the satisfaction of successful players.

The comparative analyses in my dissertation are of considerable help in the design of sport and sport policy plans, actions and funding. However, since the explanatory power ( $R^2$ ) of the models is rather modest, which indicates an incomplete set of explanatory variables for success. Alternatively, omitted variables may have a significant impact on success, so that policy decisions may even be at odds with the results.

## List of publications related

- Kincses G, Árva G, Ormos M. (2023) Makrogazdasági adatok által determinált tenisz sikerek 38 OECD ország elit női játékosának vizsgálatában. *Információs Társadalom*, 3. (forthcoming)
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- Bartha Zs, Kokai A, Kincses G. (2021) Új trendek a falmászásban, digitális rekreáció. *Recreation*, 1: 28-31.
- Kincses G, Ormos M, Bartha Zs. (2020) Retired and Active Hungarian Elite Women Tennis Players' Successfulness in the Light of Tennis Becoming a Business. *Magyar Sporttudományi Szemle*, 88: 37-44.