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# EXPLORATORY ANALYSIS OF COURT EFFICENCY: THE CASE OF FIRST INSTANCE COURTS IN NORTH MACEDONIA

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## Abstract

This paper explores the performance and efficiency of first instance courts in North Macedonia by assessing the key performance indicators: clearance rate and disposition time. Our work contributes to a better understanding of court efficiency in North Macedonia by analyzing geographical disparities between first-instance courts. The study encompasses data for 27 first-instance courts organized into four groups based on which appellate area they belong to. The analysis covers the period from 2015 to 2023. The primary goal of our study is to ascertain whether a disparity exists in the efficiency of courts. Our empirical strategy includes the utilization of the Kruskal-Wallis non-parametric test; thus, we do not aim to explore which courts exhibit superior or inferior performance. The results suggest that both clearance rates and disposition time did not differ substantially from 2015 to 2022 in civil cases. However, in 2023, there were statistically significant differences among the observed indicators. Concerning criminal cases, until 2021, the clearing rates and disposition times did not significantly differ among various court groups; however, findings from 2022 and 2023 revealed statistically significant disparities. We propose conducting further research at a first-instance court level to evaluate individual courts' efficacy and determine the underlying

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reasons for divergence of the key performance indicators between the different appellate areas.

***Keywords:*** *clearance rates; disposition time; Kruskal- Wallis test; court efficiency; North Macedonia*

## 1. Introduction

In recent years, the judiciary's performance and efficiency have been the focus of scholars, policymakers, and law practitioners. A country's judicial system and efficiency can significantly impact society, the economy and the welfare of citizens. Judicial efficiency can have a substantial positive impact on economic growth and development (Acemoglu, Johnson, & Robinson, 2001; North, 1990; Weder, 1995). The duration of litigation cases, for instance, can impact the expectations of economic agents concerning contract enforceability and contract rights protection (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2003). Protection and enforcement of the contracts are crucial for market economies (Williamson, 1985). Inefficient justice impedes access to courts and weakens democracy, the rule of law and human rights enforcement (Dakolias, 1999).

Improving court efficiency has long been a focus of the policymakers in the judicial system in North Macedonia. The first comprehensive and targeted policies to address the system's inefficiency were introduced in the mid-00s with the adoption the of the first *Strategy for Reform of the Judicial System 2004 – 2007* (Ministry of Justice, 2004). The need to take decisive action to address the efficiency issue was primarily instigated by the significant number of cases decided by the European Court of Human Rights, where the Court found a violation of the right to a fair trial. In the first ten years after the ratification of the European Convention of Human Rights, more than 75% of the admissible cases concerned the length of proceedings (Lazarova-Trajkovska and Trajkovski, 2016, p. 273). The excessively long court procedures, even for non-complex cases, were the norm in the 1990s and the early 2000s. These delays undermined public confidence in the judiciary. The courts in that period also handled a variety of different competencies that could be considered as non-judicial matters, such as registering legal entities, validation of deeds, enforcement, as well as minor misdemeanor cases (Lance, 2000, p. 34).

*The first judicial strategy* employed three specific approaches for improving court efficiency (Ministry of Justice, 2004). The first approach was to reduce the court's overall workload by transferring some non-judicial competencies or specific types of cases outside the basic courts. In 2005, the enforcement of judicial decisions was entrusted to private bailiffs, and the company register was removed from the courts and entrusted to a specialized agency. In 2006, a specialized Administrative Court was established to relieve the Supreme Court

of administrative disputes, and the legislation introduced mediation as an Alternate Dispute Resolution mechanism. The same year, a process for assigning specific misdemeanor cases to a specialized administrative committee was initiated. This process aimed to alleviate the court of the large number of such cases and use its resources to process more serious criminal and civil cases. In 2007, with the adoption of the new Law on Notaries and its subsequent amendments, payment orders for unpaid bills/invoices and some of the inheritance proceedings were delegated to the notaries.

The second approach was to reform court procedures from predominantly inquisitorial to a more adversarial criminal and civil procedure. One of the key objectives of the Law on Litigation Procedure from 2005 and its amendments from 2011 and 2015 was to speed up and increase the efficiency of the courts in handling civil cases (Chavdar and Chavdar, 2016). Similarly, Law on Criminal Procedure from 2010 replaced the lengthy and expensive inquisitorial procedure with a “mixed type" adversarial procedure that will take into account both the efficiency and the right of the defendant (Lazetic-Buzarovska and Kalajdziev, 2010, p. 1). Moreover, with the simplification of some of the procedural institutes such as sentence bargaining, mediation, and issuing penal order, the new Law on Criminal Procedure should contribute to the improvement of the efficiency of the criminal procedure (Kalajdjiev et al., 2018). These legal reforms in 2005 and 2006 contributed towards an improvement of the courts’ efficiency and performance (Gjuzelov, 2020, p. 95).

The third approach was introducing IT tools into the everyday work of the courts. The Automated Court Case Management Information System (ACCMIS) became operational in all 33 courts in North Macedonia in 2010. It has replaced manual case processing, thus enabling the courts to become more efficient and transparent. By focusing entirely on the flow management of court cases and the automation of court administration tasks, ACCMIS has significantly improved the country’s judicial system. According to Hristoski et al. (2019, p. 149), the ACCMIS's effect on Macedonian court efficiency is significant, especially on the Primary courts. After the deployment of the ACCMIS in 2010, a dramatic increase in the percentage of solved cases occurred, and the number of solved cases prevailed over the unsolved cases.

However, notwithstanding the increase in court efficiency, some problems remained unaddressed, such as the insufficient budget, the lack of adequate strategic planning of human, technical, and material resources, and the lack of consistent methodology for collecting data (Ministry of Justice, 2017, p. 15). The key priorities of the second Strategy for Reform of the Judicial Sector 2017 and 2022 were to monitor judicial efficiency using the indicators defined in EU Justice Scoreboard and European Commission for the Efficiency of Justice (CEPEJ), to consistently implement the Action Plan for adjudicating the old cases, to harmonize the number of judges in the country with the European average per capita through the natural drain of judges, as well as to reinforce the capacities of the judicial and public prosecutorial service as well as to

develop human resource strategies for the judiciary and the public prosecution (Ministry of Justice 2017, p. 16). The key priorities were not implemented. The system for monitoring of the efficiency was not established, the budget for the judiciary remained insufficient and though HR strategies[3] were prepared they were not implemented in practice (Abazi Imeri et al., 2022, pp. 16–32).

Since 2022 the positive trend to maintain a high clearance rate was affected by the reduced number of judges due to the retirement of judges and the inability to train new judges in the Academy of Judges and Public Prosecutors, and the lack of implementation of the HR strategy (European Commission, 2023, p. 20). The lack of a system for long-term planning of human resources was particularly evident in 2022 when, due to the amendment in the labor legislation, the previously allowed continuation of work beyond the age of retirement was revoked. This ruling entered into force on June 30, 2022 and resulted with 42 early retirements (Judicial Council, 2023, p. 10). Additionally, there is an uneven distribution of cases within the courts and, thus, to judges at the level of primary and appellate courts (Center for Legal Research and Analysys, 2021).

The third Developmental Strategy for the Judiciary 2024 – 2028 adopted in 2023 continues to prioritise efficiency (Ministry of Justice, 2023). This document acknowledged that the implementation of two key special strategic documents on human resources that are essential for an efficient justice system (Human Resources Strategy for the Judicial Network and the Human Resource Strategy for the Public Prosecution Network) is going worrisomely slowly and is overrunning the deadlines in the action plans. The key measures planned to increase the efficiency included reorganization and optimization of the judicial network, timely filling of judge and prosecutor positions among candidates from Academy for Judges and Public Prosecutors and in higher courts by legal criteria, adopting a new methodology for judicial statistics according to CEPEJ standards, and improving the system of judicial statistics (Ministry of Justice, 2023, p. 13).

We offer a modest contribution towards a better understanding of the court efficiency in North Macedonia by examining the existence of geographical disparities in the key performance efficiency indicators: clearance rates and disposition time. We analyzed these indicators only for the first instance courts in the country. Our analysis includes the 27 first-instance courts and refers to the period from 2015 to 2023. Our primary aim is to determine if the analyzed courts in the abovementioned period demonstrated different efficiency. However, we do not delve into answering the question of which courts perform better or worse. We employ a Kruskal – Wallis test, a non-parametric statistical technique, to test if the clearance rates and disposition times of civil and criminal cases differ significantly between the courts from different appellate

[3]Human Resources Management Strategy for the Judicial Network, 2020. Human Resources Management Strategy for the Public Prosecution Network, 2020.

areas in the country. The main research questions that we aim to answer are the following:

- Is there a statistically significant disparity in the clearance rates of civil cases throughout the country's first-instance courts?
- Is there a statistically significant disparity in the clearance rates of criminal cases throughout the country's first-instance courts?
- Do the disposition times of civil cases differ significantly between the courts in the country?
- Do the disposition times of criminal cases differ significantly between the courts in the country?

The rest of the paper is structured as follows. Section 2 offers a concise overview of the legal system in North Macedonia, emphasizing the structure and distribution of the first-instance courts. Sections 3 and 4 delineate the data, data sources, and methodologies employed, respectively. Section 5 presents empirical results. Section 6 summarizes the conclusions and recommendations. Supplementary to the primary text, five appendices are included.

## 2. Organization of the court system in North Macedonia

The Constitution of North Macedonia vests the exercise of judicial power in the courts and guarantees their independence and autonomy (Constitution, art. 98). The Supreme Court is the highest court tasked with securing uniformity in the application of laws by the lower courts (Constitution, art. 101). The Constitution also sets the foundations of the judicial system. It introduces safeguards for judicial independence (Constitution, art .98 – 105). In contrast, the organization of the judicial system, the jurisdiction of the courts, and the judicial procedures are regulated by legislation adopted with a qualified two-thirds majority.

Under the Law on Courts, the judicial system of North Macedonia is composed of basic courts, appellate courts, the Administrative Court, the Higher Administrative Court, and the Supreme Court of the Republic of Macedonia (Law on Courts, art. 22). The basic courts are established on the territory of one or more local government units. They decide in the first instance in both criminal and civil cases. Depending on the scope of their subject-matter jurisdiction, the law establishes two types of basic courts in North Macedonia: courts with basic jurisdiction and courts with expanded jurisdiction. There are 27 basic courts in the country, of which 14 have expanded jurisdiction (Law on Courts, art. 28, art. 31 – 30).

**Table 1.** Overview of the subject-matter jurisdiction of the basic courts in North Macedonia

| | Criminal cases | Civil cases |
|---|---|---|
| Basic jurisdiction | - crimes for which the law requires an imprisonment sentence of up to five years<br>- crimes for which a special law establishes jurisdiction of a court with basic competence,<br>- misdemeanors (except misdemeanors which by law are within the competence of a state administrative body)<br>- procedural appeals and complaints | - disputes concerning property and other civil relations between natural persons and legal entities, the value of which does not exceed Euro 50,000<br>- disputes in family matters,<br>- disturbance of possession,<br>- lifelong support agreements,<br>- compensation for a damage that does not exceed the amount of Euro 50,000<br>- securing and enforcement procedure,<br>- labor relations,<br>- inheritance disputes,<br>- non-contentious and inheritance matters and<br>- other matters defined by law. |
| Expanded jurisdiction *In addition to the basic jurisdiction* | - crimes for which the law requires an imprisonment sentence of more than five years<br>- criminal cases and misdemeanors committed by children<br>- extradition cases, transfer of sentenced persons, recognition and enforcement of foreign judgments,<br>- procedures related to international legal assistance are determined by law. | - property and other civil disputes of natural persons and legal entities, the value of which exceeds Euro 50,000<br>- commercial disputes in which both parties are legal entities or state bodies, as well as disputes on copyrights and other related rights and industrial property rights,<br>- bankruptcy and liquidation procedure,<br>- disputes for determination and securing coercive enforcement, and<br>- disputes between domestic legal and foreign entities |

| | | |
|---|---|---|
| | | that arise from their mutual commercial trade relations |

A specialized court department competent to try organized crime and corruption cases for the country's whole territory is established in the Basic Criminal Court in Skopje. The Basic Courts in Bitola, Tetovo, Shtip, and the Civil Court in Skopje are also responsible for keeping a court register of political parties (Law on Courts, art. 32).

The four appellate courts in Bitola, Gostivar, Skopje, and Shtip decide on appeals against the decisions of the basic courts on their territory, resolve conflicts of jurisdiction between the courts of first instance on their territory, and carry out other activities defined by law (Law on Courts, art. 33). The Supreme Court decides, as the highest judicial instance where provided by law, in both appeals and extraordinary legal remedies. It decides upon a request to protect the right to a trial in a reasonable time. It plays a significant role in unifying the implementation of laws by harmonizing case law through issuing principal legal stances and principles (Law on Courts, art. 35 – 37).

A peculiarity of the judicial system in North Macedonia is the administrative judiciary. Introduced in 2006 as a specialized court tasked to conduct judicial review of administrative acts, the Administrative Court performs its functions as a first-instance court, while the Higher Administrative Court decides on appeals of decisions of the Administrative Court. Key subject-matter jurisdiction includes deciding on administrative disputes, a form of direct judicial control over the legality of individual administrative acts (Law on Courts, art. 34 - 34a).

The judicial function is exercised by judges who, in specific cases, sit on a panel with lay judges. The judges are elected for a term of office that is not limited in duration. The judges and court presidents are elected and dismissed by the Judicial Council. Only a person who has completed the training at the Academy for Judges and Public Prosecutors may be elected as a judge of a basic court. Promotion to higher judicial functions requires prior minimum judicial experience in a lower court.

## 3. Data

The assessment of courts' efficiency is generally carried out through key performance indicators. CEPEJ has developed several indicators for assessing the court's performance. The primary indicators used to measure the efficiency of the judiciary are the clearance rate and the disposition time. CEPEJ calculates clearance rates with the following formula (European Commission for the Efficiency of Justice [CEPEJ], 2023):

$$Clearence\ rate\ (\%) = \frac{Resolved\ cases\ in\ a\ period}{Incoming\ cases\ in\ a\ period} * 100 \qquad \ldots(1)$$

Disposition time, on the other hand, is understood as a theoretical estimate of the time needed to process the estimate cases and is calculated in the following manner (European Commission for the Efficiency of Justice [CEPEJ], 2023):

$$Disposition\ time\ = \frac{Pending\ cases\ on\ December\ 31st}{Resolved\ cases} * 365 \quad \ldots(2)$$

In our work, we use four metrics for court performance: clearance rate of civil cases, clearance rate of criminal cases, disposition time of civil cases and disposition time of criminal cases. All the metrics are calculated by using the CEPEJ's formulas for clearance rate and disposition time. The data for pending cases, incoming cases and resolved civil and criminal cases were provided by the Judicial Council of the Republic of North Macedonia for the period 2015 to 2023.

The formulas for clearance rates of civil cases and clearance rate of criminal cases are the following:

$$CRcivil_t = \frac{(Resolved\ civil\ cases)_t}{(Incoming\ civil\ cases)_t} \times 100 \quad \ldots(3)$$

$$CRcriminal_t = \frac{(Resolved\ criminal\ cases)_t}{(Incoming\ criminal\ cases)_t} \times 100 \quad \ldots(4)$$

where,

$CRcivil_t$ is the clearance rate of the civil cases at period t,

$CRcriminal_t$ is the clearance rate of the criminal cases at period t.

Regarding disposition time, we use the following formulas for civil and criminal cases, respectively:

$$DTcivil_t = \frac{Pending\ civil\ cases\ at\ December\ 31st_t}{Resolved\ civil\ cases_t} \times 365 \quad \ldots(5)$$

$$DTcriminal_t = \frac{Pending\ criminal\ cases\ at\ December\ 31st_t}{Resolved\ criminal\ cases_t} \times 365 \quad \ldots(6)$$

where,

$DTcivil_t$ is the disposition time of the civil cases at a period t, and

$DTcriminal_t$ is the disposition time of the criminal cases at a period t.

In this work we are interested in examining the geographical disparities of the key performance indicators of the court performance in the country. For this purpose, we have organized the data about the first instant courts into four groups. Each of the groups corresponds to the appellate area to which the courthouse belongs. The organization of the groups of courts and appellate areas is provided in Table 2.

**Table 2.** Groups of first – instance courts in North Macedonia

| Group 1:<br>AA Bitola<br><br>*(Courts that belong to appellate area Bitola)* | Group 2:<br>AA Gostivar<br><br>*(Courts that belong to appellate area Gostivar)* | Group 3:<br>AA Skopje<br><br>*(Courts that belong to appellate area Skopje)* | Group 4:<br>AA Shtip<br><br>*(Courts that belong to appellate area Shtip)* |
|---|---|---|---|
| Bitola<br>Krushevo<br>Ohrid<br>Prilep<br>Resen<br>Struga | Debar,<br>Gostivar<br>Kratovo<br>Tetovo | Gevgelija<br>Kavadarci<br>Kratovo<br>Kriva Palanka<br>Kumanovo<br>Negotino<br>Skopje I<br>Skopje II<br>Veles | Berovo<br>Delchevo<br>Kochani<br>Radovish<br>Shtip<br>Strumica<br>Sveti Nikole<br>Vinica. |

## 4. Method

The main research questions that we aim to answer in our work are to examine if there is significant difference in the performance of the courts that belong in the four different appellate areas in North Macedonia (AA Bitola, AA Gostivar, AA Skopje and AA Shtip) regarding the solving and backlogging of civil and criminal cases. Courts' performance is captured by four separate indicators described in the previous section: clearance rate of civil cases, clearance rate of criminal cases, disposition time of civil cases and disposition time of criminal cases. We formulate four separate sets of null and alternative hypotheses for each of the variables:

$H_{0,A}$: There is no significant difference in the medians of the clearance rates of the civil cases between the court groups being compared.

$H_{1,A}$: There is significant difference in the medians of the clearance rates of the civil cases between the court groups being compared.

$H_{0,B}$: There is no significant difference in the medians of the clearance rates of the criminal cases between the court groups being compared.

$H_{1,B}$: There is significant difference in the medians of the clearance rates of the criminal cases between the court groups being compared.

$H_{0,C}$: There is no significant difference in the medians of the disposition time of the criminal cases between the court groups being compared.

$H_{1,C}$: There is significant difference in the medians of the disposition time of the civil cases between the court groups being compared.

$H_{0,D}$: There is no significant difference in the medians of the disposition time of the civil cases between the court groups being compared.

$H_{1,D}$: There is significant difference in the medians of the disposition time of the criminal cases between the court groups being compared.

We test the formulated hypothesis each separate year in the period from 2015 to 2023.

We decided to test the hypothesis using the Kruskal-Wallis non-parametric test (Kruskal & Wallis, 1952). This is a non-parametric statistical method, that is primarily used to assess differences among three or more independent groups when the assumptions of normality and homogeneity of variance are not met (Senić & Marinković, 2013). Kruskal - Wallis test is an alternative to the parametric ANOVA test.

We have chosen this estimation technique for several reasons. First, the courts in the country were organized in four independent groups, representing the appellate areas in which they belong to. This fulfills the necessary condition of Kruskal Wallis test that the number of groups is higher than two. Next, the number of observations in three of these groups (AA Bitola, AA Skopje and AA Shtip) is 6, 9 and 8, accordingly, that met the precondition of Kruskal – Wallis test of groups' sample size to be above 5. The only borderline case is the group AA Gostivar with sample size of 4. However, bearing in mind that the group represents the actual number of first instance courts operating in a given appellate area, the sample size cannot be changed. Previous body of research suggest that if the sample size of one group is 4, it should not be an obstacle to proceed with the Kruskal – Wallis non-parametric test (Daniel, 1990; Siegel & Castellan, 1988).

Next, we proceeded with examination of normality and homogeneity of the variance. We used the Shapiro – Wilk test (Shapiro & Wilk, 1965) for normality and Levene's test (Levene, 1960) to check for the homogeneity of the variance. The results from this test are provided in the Appendix section.

The results from the Shapiro – Wilk test and the Levene's test are summarized in Table 3. If the data are normally distributed and the variances are

homogeneous, we recommend ANOVA testing. If one of these conditions is not met, we recommend Kruskal-Wallis test.

**Table 3**. Results from test of the adequacy of Kruskal – Walis test

| **Year** | **Clearance rates** | | | | | |
|---|---|---|---|---|---|---|
| | ***CR civil*** | | | ***CR criminal*** | | |
| | Normality assumption | Homogeneity of Variance | Recommended test | Normality assumption | Homogeneity of Variance | Recommended test |
| 2015 | Normally distributed | Homogeneity | ANOVA | Not normally distributed | Homogeneity | Kruskal Wallis |
| 2016 | Not normally distributed | Homogeneity | Kruskal Wallis | Not normally distributed | Homogeneity | Kruskal Wallis |
| 2017 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2018 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2019 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2020 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2021 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2022 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2023 | Normally distributed | Homogeneity | ANOVA | Normally distributed | Homogeneity | ANOVA |
| **Year** | **Disposition time** | | | | | |
| | ***DT civil*** | | | ***DT criminal*** | | |
| | Normality assumption | Homogeneity of Variance | Recommended test | Normality assumption | Homogeneity of Variance | Recommended test |
| 2015 | Not normally distributed | Homogeneity | Kruskal Wallis | Not normally distributed | Homogeneity | Kruskal Wallis |
| 2016 | Normally distributed | Homogeneity | ANOVA | Not normally distributed | Homogeneity | Kruskal Wallis |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2017 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2018 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Homogeneity | ANOVA |
| 2019 | Not normally distributed | Homogeneity | Kruskal Wallis | Not normally distributed | Homogeneity | Kruskal Wallis |
| 2020 | Normally distributed | Homogeneity | ANOVA | Normally distributed | Homogeneity | ANOVA |
| 2021 | Normally distributed | Homogeneity | ANOVA | Normally distributed | Homogeneity | ANOVA |
| 2022 | Not normally distributed | Homogeneity | Kruskal Wallis | Normally distributed | Heterogeneity | Kruskal Wallis |
| 2023 | Not normally distributed | Homogeneity | Kruskal Wallis | Not normally distributed | Homogeneity | Kruskal Wallis |

Note: Alpha = 0.05. Source: Authors' calculations.

The results in Table 3 suggest that ANOVA testing is not recommended in more than half of the observed years in each of the used variables, because of the violation of the normality and the homogeneity assumptions. For this reason, we proceed with the non-parametric alternative to ANOVA test – the Kruskal – Wallis test, to analyze the differences between the clearance rates and the disposition time of civil and criminal cases of courts from different appellate areas in the period from 2015 to 2023.

## 5. Results

The results from the Kruskal-Wallis analysis of the clearance rates of the civil cases between the court that belong to different appellate areas are provided in the Table 4. Rule of the thumb for this test is to reject the null hypothesis if the p-value is lower than 0.05 ($p<0.05$). We interpret the rejection of the null hypothesis as there not being statistically significant evidence that at least one group differs significantly.

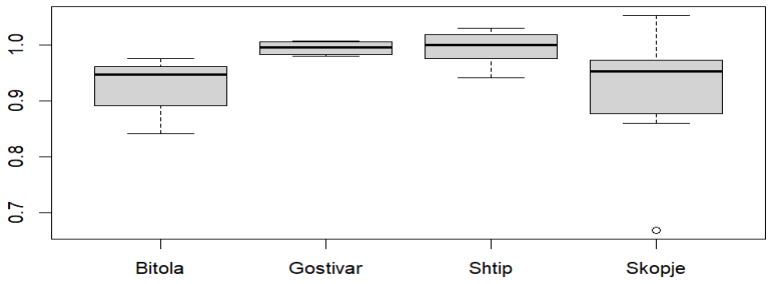
**Table 4.** Kruskal-Wallis test rank sum test results of the clearance rate of civil cases

| Year | Kruskal-Wallis chi-squared | d.f. | p-value | Concusion |
|---|---|---|---|---|
| 2015 | 4.101 | 3 | 0.2508 | Fail to reject Ho |
| 2016 | 6.3444 | 3 | 0.0960* | Fail to reject Ho |
| 2017 | 2.8194 | 3 | 0.4203 | Fail to reject Ho |
| 2018 | 0.13867 | 3 | 0.9868 | Fail to reject Ho |
| 2019 | 6.9641 | 3 | 0.0731* | Fail to reject Ho |
| 2020 | 4.8516 | 3 | 0.183 | Fail to reject Ho |
| 2021 | 2.8496 | 3 | 0.4154 | Fail to reject Ho |
| 2022 | 2.2425 | 3 | 0.5236 | Fail to reject Ho |
| 2023 | 9.0362 | 3 | 0.0288** | Reject Ho |

Note: *** = p<0.01; ** = p<0.05; * = p<0.1. Source: Authors' calculations.

The results suggest that there is not statistically significant difference between the clearance rate of the civil cases in the first instance courts in North Macedonia in the period between 2015 and 2022, at a level of significance of 5%. However, the Kruskal Wallis test statistics is above 9 in 2023 with corresponding p – value of 0.03. Because the p-value is lower than 0.05 we can conclude that we can reject the hypothesis that there is not a statistically significant difference between the clearance rates of the civil cases among the courts from different appellate areas. However, the Kruskal-Wallis test does not provide information about how many and which groups differ significantly. To understand better the differences between the clearance rates of the civil cases between the courts from different appellate areas in 2023, we use boxplot (see Figure 1).

**Figure 1.** Boxplot of clearance rates of civil cases in 2023



This boxplot suggests that AA Gostivar and AA Shtip have the highest medians, with very small interquartile ranges (IQRs), meaning their values are tightly clustered and show low variability. AA Bitola and AA Skopje have a slightly lower median and a wider spread, indicating more variability in their values. Overall, the graph suggests that the groups AA Bitola and AA Skopje differ from AA Gostivar and AA Shtip, with AA Skopje showing the most variability and a potential outlier.

Next, we proceed with the results from the Kruskal - Wallis test of the clearance rate of criminal cases. The results are provided in Table 5.

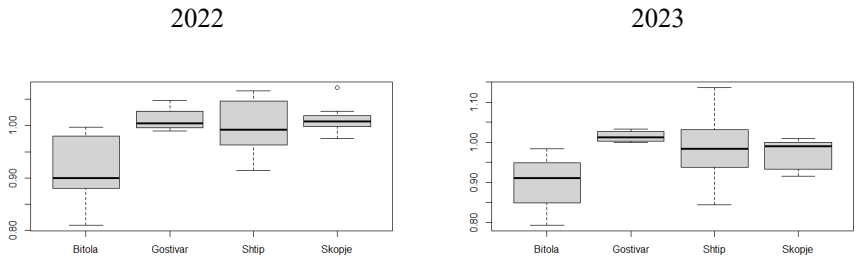
**Table 5.** Kruskal-Wallis rank sum test results of the clearance rate of criminal cases

| Year | Kruskal-Wallis chi-squared | d.f. | p-value | Conclusion |
|---|---|---|---|---|
| 2015 | 4.3405 | 3 | 0.227 | Fail to reject Ho |
| 2016 | 2.067 | 3 | 0.5586 | Fail to reject Ho |
| 2017 | 4.8405 | 3 | 0.1839 | Fail to reject Ho |
| 2018 | 9.584 | 3 | 0.0225** | Reject Ho |
| 2019 | 1.1175 | 3 | 0.7728 | Fail to reject Ho |
| 2020 | 6.0897 | 3 | 0.1073 | Fail to reject Ho |
| 2021 | 1.8846 | 3 | 0.5967 | Fail to reject Ho |
| 2022 | 9.6695 | 3 | 0.0216** | Reject Ho |
| 2023 | 8.5748 | 3 | 0.0355** | Reject Ho |

Note: *** = $p<0.01$; ** = $p<0.05$; * = $p<0.1$. Source: Authors' calculations.

Similarly to the previous results, also there are not enough evidence to reject the null hypothesis of existence of statistically significant difference between the clearance rates of criminal cases in the period from 2015 to 2021. Only exception in this period is 2018 when the test statistics of the Kruskal – Wallis test is 9.6 with corresponding p-value of 0.02. However, the results from 2022 and 2023 suggest that in these two years there are evidence to reject the null hypothesis at a level of significance of 5%. The boxplots for the clearance rates of criminal cases are presented in Figure 2.

**Figure 2.** Boxplots of clearance rates of criminal cases in 2022 and 2023




Several findings derive from the boxplots of clearance rates of criminal cases relevant for both 2022 and 2023. First, we registered a difference between the IQRs. The groups AA Gostivar and AA Skopje have relatively narrow interquartile ranges (IQRs), indicating that their values are more concentrated around the median. AA Shtip and AA Bitola have a wider spread, suggesting greater variability in their data. Both in 2022 and in 2023, AA Bitola had the lowest median and the widest spread, indicating more variation within its values.

Besides clearance rates, we use the disposition time of different types of cases (civil and criminal) to capture the performance of the first instance courts. Table 6 depicts the results from the Kruskal-Wallis analysis of the difference between the disposition time of civil cases of the courts belonging to the four different groups.

**Table 6.** Kruskal-Wallis rank sum test results of the disposition time of civil cases

| Year | Kruskal-Wallis chi-squared | d.f. | p-value | Conclusion |
|---|---|---|---|---|
| 2015 | 6.9575 | 3 | 0.0733 | Fail to reject Ho |
| 2016 | 2.4193 | 3 | 0.49 | Fail to reject Ho |
| 2017 | 6.884 | 3 | 0.0753 | Fail to reject Ho |
| 2018 | 4.5031 | 3 | 0.212 | Fail to reject Ho |
| 2019 | 4.4826 | 3 | 0.2138 | Fail to reject Ho |
| 2020 | 4.597 | 3 | 0.2038 | Fail to reject Ho |
| 2021 | 3.9634 | 3 | 0.2654 | Fail to reject Ho |
| 2022 | 2.9105 | 3 | 0.4056 | Fail to reject Ho |
| 2023 | 7.3695 | 3 | 0.0610 | Fail to reject Ho |

Note: *** = $p<0.01$; ** = $p<0.05$; * = $p<0.1$. Source: Authors' calculations.

The results suggest that there are not enough evidence to conclude that there is a statistically significant difference between the disposition time of the civil cases between the different court groups. However, the test statistic for the year

2023 is larger than all the test statistics for the previous years, with a corresponding p-value of 0.6. We consider this year to be a borderline case. The boxplot for 2023 is presented at Figure 3.

**Figure 3.** Boxplot of disposition time of civil cases in 2023


The boxplot of the disposition time of civil cases suggest that the groups AA Bitola and AA Skopje show a wider interquartile range (IQR) compared to AA Gostivar and AA Shtip. This indicates higher variability in the disposition time. AA Skopje has the highest median value, followed by AA Bitola, while AA Gostivar and AA Shtip have lower median values, suggesting they contain smaller overall values. AA Skopje also has a significant outlier, which is much higher than the rest of the data points, indicating a value that deviates substantially from the distribution of the other observations. The graph suggests that AA Skopje might differ significantly from the other groups, but a statistical test would be necessary to confirm the significance of these differences.

Table 7 depicts the results of the analysis of the differences between the disposition time of the criminal cases of the first instance courts belonging to different areas.

**Table 7.** Kruskal-Wallis rank sum test results of disposition time of criminal cases

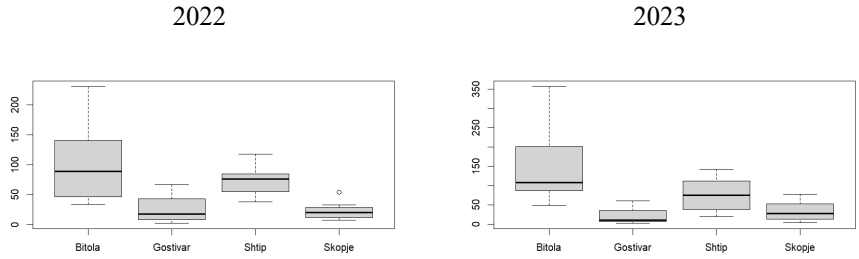
| Year | Kruskal-Wallis chi-squared | d.f. | p-value | Conclusion |
|---|---|---|---|---|
| 2015 | 3.5627 | 3 | 0.3127 | Fail to reject Ho |
| 2016 | 1.8618 | 3 | 0.6016 | Fail to reject Ho |
| 2017 | 0.2628 | 3 | 0.9669 | Fail to reject Ho |
| 2018 | 1.9174 | 3 | 0.5897 | Fail to reject Ho |
| 2019 | 4.5392 | 3 | 0.2088 | Fail to reject Ho |
| 2020 | 6.6161 | 3 | 0.0852* | Fail to reject Ho |

| | | | | |
|---|---|---|---|---|
| 2021 | 8.703 | 3 | 0.0335** | Reject Ho |
| 2022 | 15.556 | 3 | 0.0014*** | Reject Ho |
| 2023 | 12.376 | 3 | 0.0062*** | Reject Ho |

Note: *** = p<0.01; ** = p<0.05; * = p<0.1. Source: Authors' calculations.

The results, similarly to the results of the clearance rates of criminal cases, show that we can distinguish two separate periods regarding courts' performance. In the first period, from 2015 to 2020, we discovered that there are not statistically significant differences between the disposition time of the court groups. However, in the last three analyzed years, the results suggest that the null hypothesis should be rejected and that at least one court group had demonstrated statistically significant performance regarding the disposition time of criminal cases at a level of significance of 5%. The boxplot for 2022 and 2023 is provided in Figure 4.

**Figure 4.** Boxplots of disposition time of criminal cases in 2022 and 2023




Both in 2022 and in 2023, AA Bitola exhibits the highest variability, with a wide IQR and large whiskers, indicating a broader spread of values. AA Gostivar and AA Shtip remained relatively stable, with slightly higher median values in 2023, but their variability stayed moderate. Skopje has the lowest IQR in both years, showing the most concentrated values. Overall, the boxplots suggest that AA Bitola differ from the other groups due to its higher median, wider spread, and increasing maximum values in 2023.

## 6. Conclusions

Judicial efficiency plays a vital role in ensuring access to justice, strengthening democratic institutions, and supporting economic stability. Despite notable progress in reforming the judiciary in North Macedonia, particularly through procedural reforms, digitalization, and institutional restructuring, longstanding issues regarding courts performance and efficiency remain. The adoption of the third Developmental Strategy for the Judiciary (2024–2028) signals a continued commitment to addressing these gaps.

This study provides an exploratory assessment of court efficiency in North Macedonia by assessing the most common key performance indicators: clearance rate and disposition time. The analysis covers the period from 2015 to 2023 and focuses on the efficiency of the 27 first-instance courts in the country. Our study does not assess the efficiency of individual courts, but rather the average efficiency of the courts within a specific appellate region.

Our findings indicate that, for civil cases, court efficiency remained relatively uniform between appellate areas up until 2022. However, the emergence of statistically significant differences in 2023 points to a shift that merits further investigation. This conclusion is valid both for clearance rates and disposition time. On the other hand, indicators criminal cases exhibited earlier and more consistent disparities. Statistically significant differences in both clearance rates and disposition times were observed in 2022 and 2023, signaling growing inefficiencies or uneven resource allocations across appellate regions. These findings suggest the need to revisit court-level resource management and performance monitoring.

The limitations of our study arise from the application of the Kruskal-Wallis test. While this test was appropriate considering the distributional properties of our data, the results do not indicate which court group outperformed or underperformed relative to the other groups. Future research could expand the methodological framework by incorporating parametric tests such as ANOVA where assumptions permit. More importantly, a robust link between court inputs and outputs should be established using techniques like Data Envelopment Analysis (DEA). Such an approach would allow a more comprehensive understanding of how court resources, judicial staff, budget and other resources, relate to performance outcomes, thereby facilitating targeted policy interventions.

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**Appendix A. Results from Shapiro – Wilk tests (Variable: CRcivil)**

| **Year** | AA Bitola | | AA Gostivar | | AA Skopje | | AA Shtip | | Normality assumption |
|---|---|---|---|---|---|---|---|---|---|
| | W | p | W | p | W | p | W | p | |
| 2015 | 0.81 | 0.07 | 0.89 | 0.37 | 0.86 | 0.09 | 0.956 | 0.79 | *Not violated* |
| 2016 | 0.91 | 0.46 | 0.90 | 0.41 | 0.65 | 0.00 | 0.89 | 0.22 | *Violated* |
| 2017 | 0.96 | 0.78 | 0.84 | 0.21 | 0.89 | 0.22 | 0.82 | 0.04 | *Violated* |
| 2018 | 0.98 | 0.96 | 0.87 | 0.30 | 0.83 | 0.05 | 0.93 | 0.53 | *Violated* |
| 2019 | 0.78 | 0.04 | 0.94 | 0.65 | 0.80 | 0.02 | 0.90 | 0.29 | *Violated* |
| 2020 | 0.95 | 0.77 | 0.77 | 0.06 | 0.67 | 0.00 | 0.86 | 0.11 | *Violated* |
| 2021 | 0.97 | 0.89 | 0.87 | 0.31 | 0.83 | 0.04 | 0.88 | 0.17 | *Violated* |
| 2022 | 0.83 | 0.11 | 0.64 | 0.00 | 0.72 | 0.00 | 0.65 | 0.00 | *Violated* |
| 2023 | 0.87 | 0.24 | 0.87 | 0.32 | 0.88 | 0.16 | 0.95 | 0.67 | *Not violated* |

Note: Alpha = 0.05

**Appendix B. Results from Shapiro – Wilk tests (Variable: CRcriminal)**

| Year | AA Bitola | | AA Gostivar | | AA Shtip | | AA Skopje | | Normality assumption |
|---|---|---|---|---|---|---|---|---|---|
| | W | p | W | p | W | p | W | p | |
| 2015 | 0.98 | 0.94 | 0.89 | 0.36 | 0.88 | 0.17 | 0.80 | 0.03 | *Violated* |
| 2016 | 0.77 | 0.03 | 0.98 | 0.70 | 0.94 | 0.60 | 0.67 | 0.00 | *Violated* |
| 2017 | 0.80 | 0.06 | 0.81 | 0.11 | 0.84 | 0.08 | 0.90 | 0.30 | *Not violated* |
| 2018 | 0.89 | 0.31 | 0.79 | 0.09 | 0.96 | 0.86 | 0.94 | 0.67 | *Not violated* |
| 2019 | 0.89 | 0.30 | 0.97 | 0.82 | 0.85 | 0.10 | 0.89 | 0.23 | *Not violated* |
| 2020 | 0.98 | 0.93 | 0.83 | 0.159 | 0.91 | 0.36 | 0.97 | 0.91 | *Not violated* |
| 2021 | 0.92 | 0.48 | 0.97 | 0.6984 | 0.88 | 0.19 | 0.95 | 0.76 | *Not violated* |
| 2022 | 0.95 | 0.72 | 0.86 | 0.2747 | 0.94 | 0.62 | 0.89 | 0.22 | *Not violated* |
| 2023 | 0.95 | 0.76 | 0.95 | 0.6953 | 0.98 | 0.97 | 0.83 | 0.06 | *Not violated* |

Note: Alpha = 0.05

**Appendix C. Results from Shapiro – Wilk tests (Variable: *DTcivil*)**

| Year | AA Bitola | | AA Gostivar | | AA Shtip | | AA Skopje | | Normality assumption |
|---|---|---|---|---|---|---|---|---|---|
| | W | p | W | p | W | p | W | p | |
| 2015 | 0.95 | 0.72 | 0.68 | 0.01 | 0.93 | 0.54 | 0.90 | 0.28 | *Violated* |
| 2016 | 0.98 | 0.95 | 0.93 | 0.61 | 0.89 | 0.23 | 0.89 | 0.18 | *Not violated* |
| 2017 | 0.96 | 0.80 | 0.92 | 0.54 | 0.84 | 0.08 | 0.80 | 0.02 | *Violated* |
| 2018 | 0.83 | 0.11 | 0.90 | 0.44 | 0.83 | 0.07 | 0.66 | 0.00 | *Violated* |
| 2019 | 0.90 | 0.36 | 0.87 | 0.31 | 0.73 | 0.01 | 0.76 | 0.01 | *Violated* |
| 2020 | 0.85 | 0.15 | 0.87 | 0.31 | 0.90 | 0.27 | 0.88 | 0.16 | *Not violated* |
| 2021 | 0.81 | 0.08 | 0.90 | 0.43 | 0.91 | 0.38 | 0.91 | 0.30 | *Not violated* |
| 2022 | 0.73 | 0.01 | 0.89 | 0.37 | 0.93 | 0.49 | 0.85 | 0.08 | *Violated* |
| 2023 | 0.84 | 0.14 | 0.96 | 0.76 | 0.92 | 0.44 | 0.79 | 0.01 | *Violated* |

Note: Alpha = 0.05

**Appendix D. Results from Shapiro – Wilk tests (Variable: *DTcriminal*)**

| Year | AA Bitola | | AA Gostivar | | AA Shtip | | AA Skopje | | Normality assumption |
|---|---|---|---|---|---|---|---|---|---|
| | W | p | W | p | W | p | W | p | |
| 2015 | 0.73 | 0.01 | 0.87 | 0.29 | 0.95 | 0.72 | 0.72 | 0.00 | *Violated* |
| 2016 | 0.98 | 0.95 | 0.87 | 0.31 | 0.80 | 0.03 | 0.87 | 0.17 | *Violated* |
| 2017 | 0.91 | 0.43 | 0.80 | 0.10 | 0.95 | 0.74 | 0.90 | 0.29 | *Not violated* |
| 2018 | 0.88 | 0.25 | 0.89 | 0.38 | 0.99 | 0.99 | 0.90 | 0.30 | *Not violated* |
| 2019 | 0.85 | 0.15 | 0.79 | 0.08 | 0.93 | 0.54 | 0.82 | 0.05 | *Violated* |
| 2020 | 0.83 | 0.11 | 0.82 | 0.14 | 0.92 | 0.41 | 0.92 | 0.41 | *Not violated* |
| 2021 | 0.82 | 0.08 | 0.79 | 0.08 | 0.98 | 0.95 | 0.90 | 0.30 | *Not violated* |
| 2022 | 0.90 | 0.39 | 0.85 | 0.24 | 0.94 | 0.62 | 0.88 | 0.17 | *Not violated* |
| 2023 | 0.84 | 0.14 | 0.76 | 0.05 | 0.93 | 0.50 | 0.94 | 0.57 | *Violated* |

Note: Alpha = 0.05

**Appendix E. Results from Levine test**

| Year | Variable: Clearance rate | | | | | |
|---|---|---|---|---|---|---|
| | Civil cases | | | Criminal cases | | |
| | Test stat. | P-value | Conclusion | Test stat. | P-value | Conclusion |
| 2015 | 0.866 | 0.473 | Ho is not rejected | 0.855 | 0.479 | Ho is not rejected |
| 2016 | 0.086 | 0.967 | Ho is not rejected | 0.376 | 0.771 | Ho is not rejected |
| 2017 | 0.347 | 0.792 | Ho is not rejected | 0.631 | 0.603 | Ho is not rejected |
| 2018 | 0.886 | 0.463 | Ho is not rejected | 1.161 | 0.347 | Ho is not rejected |
| 2019 | 1.268 | 0.309 | Ho is not rejected | 2.517 | 0.085 | Ho is not rejected |
| 2020 | 1.072 | 0.38 | Ho is not rejected | 0.783 | 0.516 | Ho is not rejected |
| 2021 | 1.550 | 0.228 | Ho is not rejected | 0.901 | 0.457 | Ho is not rejected |
| 2022 | 0.174 | 0.913 | Ho is not rejected | 2.110 | 0.128 | Ho is not rejected |
| 2023 | 1.914 | 0.156 | Ho is not rejected | 2.517 | 0.085 | Ho is not rejected |
| Year | Variable: Disposition time | | | | | |
| | Civil cases | | | Criminal cases | | |
| | Test stat. | P-value | Conclusion | Test stat. | P-value | Conclusion |
| 2015 | 1.441 | 0.257 | Ho is not rejected | 0.439 | 0.728 | Ho is not rejected |
| 2016 | 0.839 | 0.486 | Ho is not rejected | 2.004 | 0.143 | Ho is not rejected |
| 2017 | 0.820 | 0.496 | Ho is not rejected | 1.404 | 0.268 | Ho is not rejected |
| 2018 | 0.424 | 0.738 | Ho is not rejected | 1.293 | 0.302 | Ho is not rejected |
| 2019 | 0.704 | 0.559 | Ho is not rejected | 0.085 | 0.967 | Ho is not rejected |
| 2020 | 0.747 | 0.535 | Ho is not rejected | 0.379 | 0.769 | Ho is not rejected |
| 2021 | 0.185 | 0.905 | Ho is not rejected | 0.454 | 0.717 | Ho is not rejected |
| 2022 | 0.324 | 0.808 | Ho is not rejected | 2.480 | 0.088 | Ho is rejected |
| 2023 | 1.612 | 0.214 | Ho is not rejected | 1.709 | 0.194 | Ho is not rejected |

Note: Ho:V**ariances are not significantly different**; H1: variances are significantly different. Significance codes: *** = p<0.01; ** = p<0.05; * = p<0.1. Source: Authors' calculations.