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**Gender-Based Violence and Gender Statistics in
Albania:
Comparison to the Balkan Region**

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Abstract

Gender-based violence (GBV) and related issues affecting women in Albania reflect deep-rooted social, economic, and cultural challenges. This thesis aims to provide a comprehensive analysis of these issues, considering Albania's unique socio-political landscape and cultural influences, and comparing Albania's performance in gender equality metrics with other Balkan countries. Despite progress in legislation and rising awareness, GBV remains prevalent, and the systemic support for women, particularly in rural areas, requires significant improvement. This study will examine Albania's status in gender-based violence, women's attitudes towards intimate partner violence, and Albania's performance in broader gender statistics within the Balkan region.

In the first chapter, we delve into Albania's context regarding gender-based violence. This chapter begins with an overview of the country's historical backdrop and the influence of communism on women's rights. The role of communism, often regarded as a period of enforced equality, left a complex legacy on the Albanian understanding of gender roles, societal expectations, and women's rights. Following the fall of communism, the resurgence of conventional structures reshaped women's roles in both the home and public sphere. The chapter covers the systemic problems that women confront, such as participation in decision-making, property rights, and economic prospects. Through this viewpoint, we examine Albanian society's GBV issues, including prevalence, social norms, and economic vulnerabilities. Special attention is given to Albanian legislative progress on gender equality, with examples highlighting advancements and gaps within the legal framework. To complement this, the chapter presents statistical insights from INSTAT (Albanian Institute of Statistics), examining the correlation between the Gender Inequality Index (GII) and related socioeconomic variables. Analytical methods such as multiple regression analysis and principal component analysis (PCA) are employed to interpret these correlations and provide a foundation for further discussions on the prospective paths for supporting women's rights in Albania.

The second chapter shifts focus to women's attitudes toward intimate partner violence, specifically within Albania. This section includes an extensive review of existing literature on intimate domestic violence in the region, shedding light on common attitudes and societal pressures that influence women's responses to such violence. The chapter adopts various analytical approaches, including pooled least squares, fixed effects, and random effects models, to evaluate data drawn specifically from Albania. The use of these models helps to reveal significant structural factors, such as economic development (measured by HDI) and religion, which may influence societal

tolerance for violence against women. Further examination of early marriage practices, a factor that perpetuates vulnerability among young women, is explored to understand the broader impact on gender norms and domestic violence in Albania. This chapter also presents the results of statistical models that reveal both Albania's distinct and shared characteristics within the region regarding the perception and justification of intimate partner violence. Statistical results provide a nuanced understanding of how socioeconomic, cultural, and religious factors converge to shape these perceptions, emphasizing the need for policies targeting awareness, education, and economic empowerment.

Chapter three expands the analysis to include Albania's gender statistics within the broader Balkan region, covering trends from 1999 to 2023. This chapter begins with a literature review that contextualizes Albania's progress in labor market participation, educational access, and political representation, acknowledging the role of EU integration and the contributions of international organizations. A significant part of this chapter is dedicated to methodological approaches, including cluster analysis and mixed effects modeling, used to group countries with similar profiles based on gender statistics data. The dataset, constructed with binary variables across various gender-related indicators, allows for longitudinal methods of clustering and comparative analysis. Kosovo is treated as a special example since its data availability and sociopolitical situations differ from those of the other Balkan countries. The analysis sheds light on the trends and patterns in Albania's gender statistics over the last two decades, with comparisons emphasizing Albania's distinctive progress and continuing issues. This chapter finishes with a detailed evaluation of Albania's performance in comparison to its Balkan peers, with an emphasis on ongoing gender imbalances and the possible implications of future policy interventions.

This thesis seeks to bring a comprehensive, data-driven viewpoint to the field of gender studies and policy analysis in the Balkan region. By focusing on Albania, we hope to shed light on the country's specific issues and achievements in gender equality, while also contrasting them with regional trends to create a more complete picture. This study also uses advanced statistical techniques to validate findings, such as cluster and regression analysis, which deepen the insights derived from the data. Furthermore, this study aims to assist policymakers, researchers, and social groups in developing effective measures to minimize gender inequities, defend women's rights, and reduce gender-based violence in Albania.

Finally, the thesis offers a thorough examination of gender-based violence and related gender equality concerns in Albania, supplemented with comparative perspectives from the Balkan

region. This study intends to be a foundational work that not only examines Albania's development but also recommends specific areas for future improvement, ultimately contributing to the continuous fight to promote gender equality and social justice throughout the Balkans.

Chapter 1:

Albania and Gender- Based Violence (GBV)

Introduction

Gender-based violence (GBV) is a pervasive and deeply rooted issue that affects individuals worldwide, with women and girls disproportionately impacted. This introductory chapter aims to provide an overview of gender-based violence on a global scale, focusing particularly on violence against women in Albania. It will explore the prevalence, contributing factors, consequences, and efforts toward prevention and intervention in the context of violence against women.

Violence against women (VAW) encompasses a wide range of abuses, including physical, sexual, emotional, and economic violence, perpetrated against women and girls. It occurs in various settings, including homes, workplaces, schools, communities, and online platforms. Violence against women is a violation of human rights and a manifestation of deeply entrenched gender inequalities and power imbalances.

The prevalence of VAW varies across regions and countries, but it is a global phenomenon affecting millions of women and girls. According to the United Nations (UN), an estimated one in three women worldwide has experienced physical or sexual violence in their lifetime, often perpetrated by intimate partners. Moreover, many cases of violence against women go unreported due to stigma, fear, and lack of support systems.

This phenomenon is rooted in systemic gender inequalities, cultural norms that perpetuate male dominance, and societal attitudes that condone or trivialize violence against women. Patriarchal systems, discriminatory laws, economic disparities, and lack of access to education and resources further exacerbate women's vulnerabilities to violence. Intersectional factors such as race, ethnicity, class, disability, and sexual orientation intersect with gender to compound these inequalities.

It has devastating consequences for survivors, impacting their physical and mental health, well-being, and ability to participate fully in society. Survivors may experience trauma, depression, anxiety, and long-term psychological effects. Violence against women also perpetuates cycles of poverty, undermines women's economic empowerment, and hinders their access to education, employment, and healthcare.

Efforts to address violence against women have gained momentum globally, with various initiatives, campaigns, and legal frameworks aimed at prevention, protection, and support for

survivors. International agreements such as the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) provide a framework for governments to uphold women's rights and address violence. However, challenges persist, including inadequate funding, weak legal enforcement, cultural barriers, and gaps in services and support for survivors.

Addressing this multifaceted issue requires comprehensive strategies that challenge societal norms, promote gender equality, strengthen legal protections, and provide holistic support for survivors. By working together across sectors and borders, we can strive towards a world free from violence against women, where all women and girls can live with dignity, safety, and respect.

Several facets of Women's rights in Albania remain in the dark starting from domestic violence in all its forms with all the societal stigma that stands behind it. The new provision of the criminal offence of domestic violence was amended only in 2013, providing for the protection of children who are present during domestic violence, and in 2020 aiming to clarify all forms of domestic violence, as well as those who are considered family members in the case of domestic violence.

'The new provision (Article 130/a, 20.05.2024) provides for beating and any other act of violence against persons in family relationships (paragraph 1); serious threat of murder or serious bodily injury in family relations (paragraph 2), intentional slight injury, intentional injury that has caused temporary incapacity for work for more than nine days is provided for in a special paragraph of Article 130/ a, (paragraph 3).' (UN Women , 2023)

Not to mention that marriages are still arranged in many rural areas of Albania, and society is largely patriarchal and traditional. Up in the north for example societal norms are markedly shaped by the Kanun's¹ traditional set of values. One wonders to what extent these arranged marriages might cross to be considered forced marriages in legal terms. Although society usually condemns forced marriage, it is a well-known phenomenon in the country, especially in rural and remote areas, where girls and women are very often forced into marriages because of patriarchal mentality and poverty.

¹ The Kanun of Lekë Dukagjini is the most important code of Albanian customary law, among other codes developed in the mountainous districts of Albania throughout the ages. It is an intrinsic part of Albanian cultural legacy and hence does not distinguish between the country's four traditional religions, Catholicism, Orthodoxy, Sunnism, and Bektashism, contrary to the Communist regime.

Regarding Femicide on the other hand Albania's criminal legislation does not specifically address gender-related killings. Therefore, it is not classified as a specific form of criminal conduct. According to the Regional Report – Social and institutional response to femicide in Albania, Montenegro and Serbia of UN Women Published just recently in 2023:

‘Albania must further improve the institutional mechanisms for the protection of victims of domestic violence, the guarantee of gender equality, and the provision of minimum health and social services, especially at the local government level. Special attention is also paid to empowering the civil judicial process to strengthen the prevention of domestic violence, violence against women, and femicide.’ (Beker, 2023)

This chapter examines how traditional gender roles in the family playground and a competitive marriage market may encourage unequal resource allocation within households and a subsequent rise in female poverty. Within the next sections, we are going to go deeper into these topics by taking into consideration as many aspects as possible connected to gender-based violence in Albanian society to better understand the dynamics in which Albanian women are found nowadays. This will help us understand more in-depth the framework of the existing gender gap to give us a starting point for considering changes and suggestions that the Albanian society should undertake towards inclusivity and a safer environment for women to grow.

Methodology

The data retrieved for this study in this chapter primarily stem from a comprehensive series of one-on-one interviews conducted across various regions of Albania. These interviews were meticulously organized to capture a wide spectrum of perspectives and insights from diverse stakeholders, including representatives from organizations, police officers, and official operators actively engaged in addressing gender-based violence and related issues. By engaging directly with these key informants, the study has been able to garner qualitative data that provide a nuanced understanding of the local context, challenges, and dynamics that influence the prevalence and response to gender-based violence in different areas of the country.

In addition to the qualitative data obtained from these interviews, the study also incorporates a significant amount of secondary statistical data. These statistical data have been sourced from reputable and authoritative entities such as the Albanian Institute of Statistics (INSTAT) and the Ministry of Health and Social Protection. Furthermore, data from various scholarly studies, institutional reports, and projects have been utilized to supplement the primary qualitative findings. This dual approach of combining firsthand accounts with rigorous statistical analysis ensures a more robust and comprehensive portrayal of the current state of gender-based violence and its broader implications in Albania.

The use of secondary data serves to contextualize the interview findings within a broader national framework. Official statistics and reports offer valuable quantitative benchmarks that help validate the qualitative insights and highlight broader trends and patterns that may not be immediately evident from individual interviews alone. By integrating these two types of data, the study aims to provide a balanced and well-rounded perspective, drawing on the strengths of both qualitative depth and quantitative breadth.

The methodological approach adopted in this chapter underscores the importance of triangulating data from multiple sources to achieve a holistic understanding of complex social issues. The interviews provide rich, detailed accounts from those directly involved in the field, while the statistical data lend empirical support and broader contextual understanding. This combination of qualitative and quantitative data not only enhances the reliability and validity of the study's findings but also ensures that the conclusions drawn are both deeply informed and widely applicable.

Overview of the Country

It is always complex to briefly summarize the narrative and the circumstances of the Albanian women for a foreign reader. For many Albania remains a mysterious small country in the Balkan region with its social dynamics yet to be explored and understood. So, to familiarize the readers with this country below are listed some historical facts. For example, the ancestors of the actual Albanian territories were the Illyrians, the name of a nation that once occupied the western portion of the Balkan Peninsula, an alliance of Illyrian tribes and dynasties that date from 8th-7th century BC until the attainment of these territories from the Roman Empire. For centuries, the territories were affected by numerous wars, divisions, conquest, and so on, with various influences from the Byzantium, Venetian Republic, Napoli Kingdom, Turkish Empire, and then from the European powers during the First and Second World Wars.

“Starting from 1928 Albania became a monarchy² under the dictatorial management of King Zog I³. The society was dominantly agrarian-oriented and weak development in harvesting techniques, while the rural population was very scattered throughout the country. Only 13% of the population lived in the cities. Almost 80% of adults were illiterate and only 30% of minors were being schooled. There was no University in the country and the Banking system was nonexistent. The Albanian population has been considered one of the poorest in Europe for many years and the transition to a developing country came only during the 2000s. The lack of modern infrastructure was one of the factors that kept the country at a very slow pace of development. During the last years of the Monarch rule of Albania (until 1944) connections among cities were completely inadequate and many regions were hardly reachable even by car.” (Elezi, 2021)

The country is characterized by a lack of democratic customs throughout history and its isolation during the communist regime (1945-1992) did not help with this process. The strong political

² The Albanian Kingdom stood from 1928 until 1939 with King Zog I on the throne. It ended with the Italian occupation of Albania.

³ *Ahmet Bej Zogu* (1895-1961). He made many enemies throughout the years of his rule and used the military force called the Royal Albanian Army (*Ushtria Mbretërore Shqiptare*), as a form of oppression against any kind of mutiny in the population. He is also known for the continuous attempts to modernize Albania through the agrarian reforms, introducing modern architecture in the country, improvement of education, welfare, and the national balance of trade in spite of that as a poor country many loans were needed. Zog managed to take these loans from fascist Italy and kept these relations ongoing throughout the years of his rule.

ideology kept the population cut off from every kind of external information, and as is to be expected when under a totalitarian regime, human rights were a relatively unimportant topic set aside. Family plays a crucial role in Albanian society considering that the family unit is typically extended.

“Up until 1990, the patriarchal family was still dominant, with two to three generations living under the same roof.” (INSTAT, 2006)

In the meantime, a more modern family unit has taken place in the urban centers but for most areas, the traditions of an extended family living together or close are maintained. This happens not only due to cultural reasons but is also often due to economic reasons. Respect for elders and close-knit family ties are highly valued. Traditional gender roles are still prevalent in many urban and rural areas, although there is an ongoing shift towards gender equality and women’s empowerment in the bigger cities.

The majority of the population speaks Albanian, which is the country's official language. With around 82% of the population, Albanians are the largest ethnic group in the nation. The Indo-European language group includes the two main dialects of Albanian: Gheg and Tosk.

Islam is the most common religion in Albania, where Muslims make up the majority of the population. However, Albania is renowned for its tolerance of all major religions, and the country has a sizable Christian community that includes both Catholics and Orthodox believers. Religion was persecuted in Albania for a long time under communist authority. Still, after communism was overthrown in the early 1990s, religious freedom was reinstated in the newly secular state.

Albanian society places a high importance on education, and a fair amount of people are literate. Since the end of communism, the nation has made considerable improvements to its educational system. Agriculture has historically been significant to the economy, but recently, sectors like tourism, energy, and services have become more significant.

Emigration has a long history in Albanian society, and many Albanians currently reside overseas. The movement has been influenced by economic concerns, political unpredictability, and a lack of opportunities. The Albanian diaspora has remained closely connected to their homeland, aiding in its growth through investments and remittances. Particularly in rural areas, economic development and job creation continue to be crucial objectives.

It is important to remember that villages and different areas within Albania can have different societal characteristics. This summary gives a broad knowledge of the development of Albanian society, although it may leave out certain important details and regional variations. Not to mention some of the issues that the country still faces are political instability, organized crime, and corruption but we are not going to dive deep into these thematics as it is not the main purpose of this thesis.

The Influence of Communism

To understand the current social and economic situation of the country it is important to mention the communist past as the late history and society of Albania were significantly influenced by the communist regime. From 1944 until the end of the communist government in 1992, Albania adhered to a strict version of Stalinist communism under the direction of Enver Hoxha.

Following World War II, Enver Hoxha's Albanian Party of Labor ruled the country under communist ideology. After successfully repelling the Nazi occupiers, the communist leadership went on to build a socialist state.

Albania adopted a self-reliance and isolationist stance toward both the capitalist West and the Soviet Union. Due to ideological and geopolitical differences, it severed connections with Yugoslavia and the Soviet Union in the late 1940s, siding with China during the Sino-Soviet split.

The communist government in Albania was known for its stringent control over all facets of society, strong authoritarianism, and repression. Political dissent was not permitted, and anyone who opposed the administration or was seen as a threat to it was subject to harsh punishment, including incarceration, forced labor, and even execution. By enacting dramatic social and cultural transformations, the communist regime aimed to establish a new socialist society. Industries, agriculture, and resources were nationalized, and private property was abolished. Rapid industrialization and collectivization were priorities for the dictatorship, frequently at the sacrifice of agricultural production and personal freedoms.

Enver Hoxha was exalted as the nation's leader and communist doctrine was promoted heavily by the state. Hoxha was the undeniable dictator, and a cult of personality grew up around him. His likeness was ubiquitous in public areas, and the "Hoxhaist ideology," which he popularized, was widely disseminated.

Albania had few diplomatic ties with other nations due to its isolationism and ideological rigidity. It mostly kept in touch with other communist countries, especially China and North Korea. Albania developed as a fervent supporter of Marxism-Leninism and assisted other revolutionary movements and communist regimes all over the world.

Economic stagnation and widespread poverty were the results of the communist regime's policies, which included strict financial regulation and centralized planning. Living conditions remained poor compared to other European nations, and Albania experienced ongoing shortages of essential goods and services.

Along with other communist regimes in Eastern Europe, Albania's communism fell in the early 1990s. To overcome the legacy of communism, the transition to a democratic system and market economy brought about considerable obstacles and reforms. Since then, Albania has started on a road of political and economic reforms, aiming to join European organizations and develop stronger ties with other nations.

We then go forward to the social unrest in Albania in 1997 was primarily triggered by the collapse of widespread pyramid schemes that had ensnared a significant portion of the population. These schemes promised high returns and drew in massive investments from ordinary citizens, but when they inevitably collapsed, people lost their life savings, leading to widespread financial ruin. The government's failure to regulate these schemes and the perception of corruption and complicity within the political elite further fueled public anger. This economic crisis quickly escalated into widespread protests and violent unrest, resulting in a breakdown of law and order, with armed gangs seizing control in various regions and the country descending into chaos. The ensuing turmoil led to significant political and social upheaval, necessitating international intervention to restore stability.

In June 1997, after the civil unrest, a transitional administration of National Reconciliation was established, followed by general elections that resulted in a new government and president. The new government's political, social, and economic reform agenda included political normalization and democracy, law and order restoration, institutional reform, poverty alleviation, financial

reform, and privatization to promote recovery.⁴ (Executive Board of the United Nations Development Programme and of the United Nations Population Fund, 2nd Sess., 1998) Due to the Constitution's recent ratification by a countrywide vote in November 1997 (Albanian State Constitution, 1998) and ongoing societal turmoil, official functions have yet to completely operationalize.⁵ (Bureau of Democracy, 1998) Albania's ethnic composition in 1999 was 95% Albanian and 3% Greek, with 2% Vlachs, Roma, Serbs, and Bulgarians. About 70% of its citizens are Muslim, 20% Albanian Christian Orthodox, and 10% Catholic. (CIA, 1999)

Regarding Gender Equality in the country in a report of 2006, UNICEF states:

‘Gender equality is a new principle for Albanian society, with which it is desperately struggling to come to terms with. Due to its strong patriarchal Balkan traditions, Albanian society has traditionally been dominated by males, with women forced into submissive positions. The years of communism created a stark contrast between the rhetoric of emancipation and the reality of everyday life. Following the fall of communism in 1991, Albania went through a period of often dramatic changes in the social, political, and economic forms.’⁶

Reflection of the Actuality

On July 31, 2014, with the decision of the Albanian Parliament, the new administrative-territorial organization that divides the country into 12 districts and 61 municipalities was approved, with the subdivisions provided for in the law as shown from the list and the map below. (INSTAT, 2021)

⁴ UNDP: Country Cooperation Frameworks and Related Matters, First Country Cooperation Framework for Albania (1998-2001), Executive Board of the United Nations Development Programme and of the United Nations Population Fund, 2nd Sess., Agenda Item 3, at 2, DP/CCF/ALB/1 (Jan. 30, 1998)

⁵ For example, the judiciary was unable to function for much of 1997; 15 out of 36 district courts were destroyed by vandalism or fire, along with an unknown number of records, papers, books and other legal resources. Even before the civil strife, the judicial system was subject to corruption and executive pressure. The High Council of Justice, which appoints judges, has undergone restructuring which gives some hope to the greater independence of the judicial branch.

⁶

Table 1 List of the prefectures (INSTAT, 2021) and percentage of the rural population (INSTAT, 2024)

No	Prefecture	Category	% of rural pop
1	BERAT	Predominantly rural	57.6
2	DIBËR	Predominantly rural	72.9
3	DURRËS	Intermediate	24.7
4	ELBASAN	Predominantly rural	55.5
5	FIER	Predominantly rural	58.4
6	GJIROKASTËR	Predominantly rural	62.2
7	KORÇË	Predominantly rural	51.6
8	KUKËS	Predominantly rural	75.1
9	LEZHË	Predominantly rural	62.4
10	SHKODËR	Predominantly rural	51.1
11	TIRANË	Predominantly rural	11.5
12	VLORË	Intermediate	43.9

Albania has a population density of 83.6 persons per km². Since 1990, the population has been declining due to immigration. The population has a gender ratio of 98.2 males for every 100 females. Five of Albania's six centenarians are women. Tirana is home to roughly 31.6 percent of Albania's population. On September 18, 2023, the Republic of Albania's resident population was 2,402,113, a decline of 420 thousand persons from the 2011 census. (INSTAT, 2023)

This is likely due to a low fertility rate and a rapidly increasing median age of the population, which usually suggests lower mortality rates and an improved health system. With just under half a million inhabitants, Albania's capital Tirana is also the country's largest city. Overall, Albanians have been relocating more and more to urban areas, and by 2016, more than half of the population was urban. Taking Albania's unusually high unemployment rate into account, this fact is hardly surprising. Most of the country's GDP is generated by the services sector, like tourism, agriculture, and industry.

Figure 1 Territorial administrative map of the counties of Albania (INSTAT, 2023)

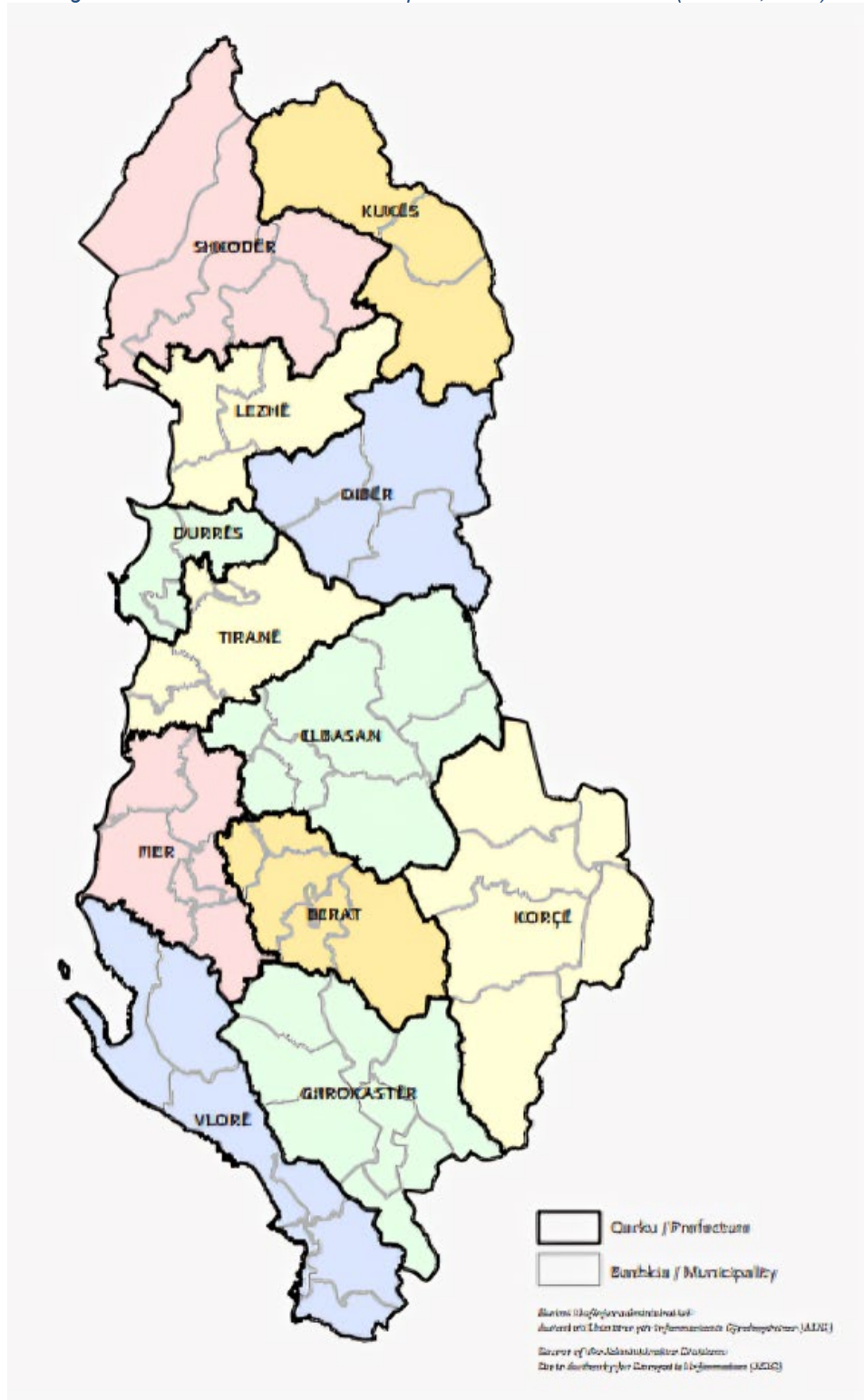


Table 2 List of the municipalities (INSTAT, 2021)

1	BERAT	23	ROSKOVEC	45	SHKODËR
2	DIMAL	24	DIVJAKË	46	VAU I DEJËS
3	KUÇOVË	25	MALLAKASTËR	47	MALËSI E MADHE
4	SKRAPAR	26	GJIROKASTËR	48	PUKË
5	POLIÇAN	27	LIBOHOVË	49	FUSHË ARRËS
6	DIBËR	28	PËRMET	50	TIRANË
7	BULQIZË	29	KËLCYRË	51	KAMËZ
8	MAT	30	TEPELENË	52	VORË
9	KLOS	31	MEMALIAJ	53	KAVAJË
10	DURRËS	32	DROPULL	54	RROGOZHINË
11	SHIJAK	33	KORÇË	55	VLORË
12	KRUJË	34	POGRADEC	56	HIMARË
13	ELBASAN	35	MALIQ	57	SARANDË
14	CËRRIK	36	PUSTEC	58	KONISPOL
15	BELSH	37	KOLONJË	59	DELVINË
16	PEQIN	38	DEVOLL	60	FINIQ
17	GRAMSH	39	KUKËS	61	SELENICË
18	LIBRAZHD	40	TROPOJË		
19	PRENJAS	41	HAS		
20	FIER	42	LEZHË		
21	LUSHNJË	43	MIRDITË		
22	PATOS	44	KURBIN		

Migration has significantly impacted Albania's population decrease over the past few decades. Several factors have contributed to this trend like the lack of Jobs and Low Wages: Albania's economy has struggled to provide sufficient job opportunities and competitive wages, prompting many Albanians to seek better prospects abroad. Many Albanians migrate to send money back home, which, while beneficial economically, also reinforces the trend of leaving the country. Periods of political instability, particularly in the 1990s and early 2000s, drove many to seek stability elsewhere. Better healthcare, education, and living standards in other countries have attracted many Albanians, particularly the younger and more educated demographics. A significant portion of the emigrant population comprises young people, which affects the birth rate and accelerates population aging. The emigration of educated and skilled individuals has led to a "brain drain," weakening Albania's human capital base and long-term development potential.

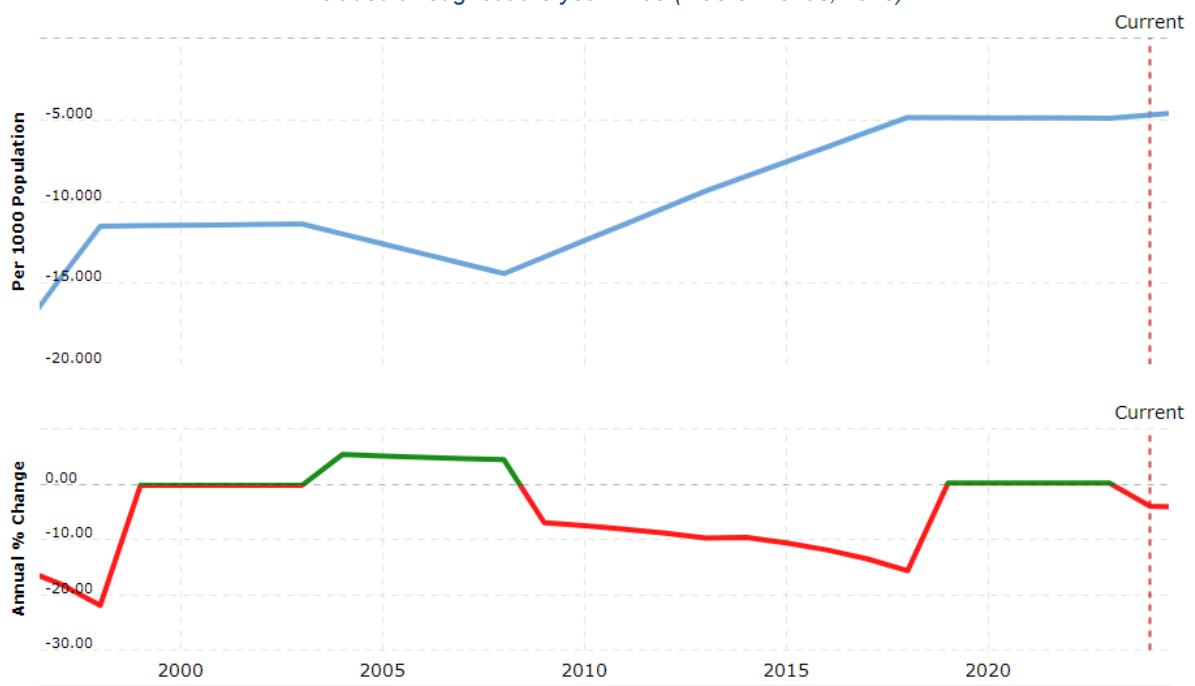
Established Albanian communities abroad facilitate further migration through family reunification policies, perpetuating the cycle of emigration. The presence of a large Albanian diaspora abroad encourages more people to migrate, as they can rely on existing networks for support.

Agreements with the European Union, such as visa liberalization policies, have made it easier for Albanians to travel and settle in EU countries. Bilateral agreements with other countries, including labor migration programs, have facilitated the legal migration of Albanians.

The cumulative effect of these factors has been a steady decline in Albania's population, with significant numbers of Albanians living abroad. The exodus of young people has led to an aging population, which poses challenges for the country's social security and healthcare systems.

Migration has affected Albania's demographic landscape, leading to a population decrease characterized by youth emigration, brain drain, and an aging population. The socio-economic and political drivers behind this migration have created a complex scenario that continues to shape Albania's future as we can see in the chart below.

Figure 2 Chart and table of Albania's net migration rate from 1997 to 2024. United Nations projections are also included throughout the year 2100 (Macro Trends, 2023)

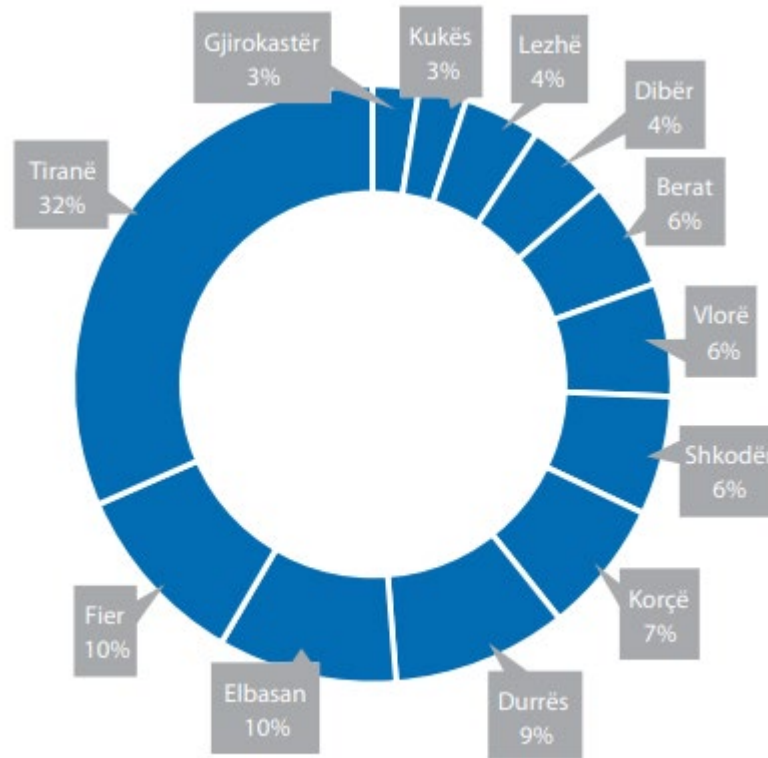


The following results regarding migration in Albania were received from the Macro Trends website:

- The current net migration rate for Albania in 2024 is **-4.699** per 1000 population, a **4.02% decline** from 2023.
- The net migration rate for Albania in 2023 was **-4.896** per 1000 population, a **0.16% increase** from 2022.

- The net migration rate for Albania in 2022 was **-4.888** per 1000 population, a **0.18% increase** from 2021.
- The net migration rate for Albania in 2021 was **-4.879** per 1000 population, a **0.16% increase** from 2020. (Macro Trends, 2023)

Figure 3 Population percentage for each prefecture (INSTAT, 2023)

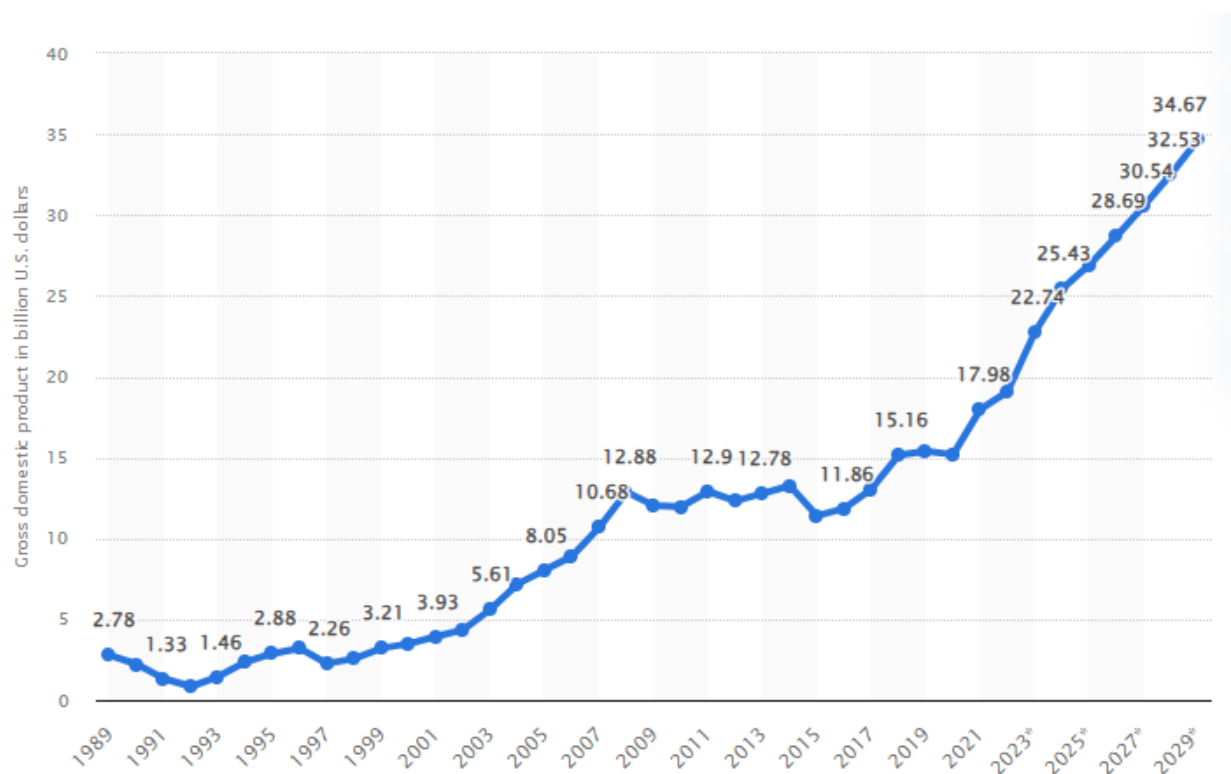


Tirana, Durrës, and Fieri have the highest population weights. Tirana had around 32% of the total population on January 1, 2023, remaining one of the most populous counties in the country, followed by Durrës, Elbasan, and Fieri with 9% and 10%, respectively. In terms of the other prefectures, five of them account for between 1.9% and 7% of the overall population. (INSTAT, 2023)

The economy of Albania is relatively stable and shows potential for economic growth. Its transition from socialism to capitalism is also considered to be quite a success. The gross domestic product (GDP) in current prices in Albania was forecast to continuously increase between 2024 and 2029 by in total of 9.2 billion U.S. dollars (+36.18 percent). After the ninth consecutive increasing year, the GDP is estimated to reach 34.67 billion U.S. dollars and therefore a new peak

in 2029. Italy is the country's most important trading partner. (Statista, 2024) For years now, Albania had to report a significant trade deficit. In 2023, Albania's trade deficit amounted to around 4.29 billion U.S. dollars. (Statista, 2024) However, the country has been steadily increasing its exports since 2006, working towards an improvement of the trade balance. In 2023, goods worth 4.32 billion U.S. dollars were exported from Albania. (Statista, 2024) In 2017, the estimated national debt of Albania amounted to 70.8 percent of its GDP. (Statista, 2024) The ratio of national debt to gross domestic product (GDP) in Albania was forecast to decrease between 2024 and 2029 by in total of 2.7 percentage points. This overall decrease does not happen continuously, notably not in 2029. The ratio is estimated to amount to 55.32 percent in 2029. (Statista, 2024) One of the five convergence criteria to join the euro area is a debt-to-GDP ratio of not more than 60 percent, a goal the country is likely to achieve over the next few years.

Figure 4 Albania: Gross domestic product (GDP) in current prices from 1989 to 2029(in billion U.S. dollars) (Statista, 2024)



Albania's drive to join the European Union is motivated by multiple factors, primarily centered around economic development, political stability, and socio-cultural integration. Membership in the EU is seen as a pathway to enhance Albania's economic prosperity through access to the single

market, which promises increased trade opportunities, foreign investments, and economic aid. Politically, EU membership is associated with stronger governance standards, the rule of law, and improved public institutions, which Albania hopes will bolster its democratic structures and reduce corruption. Additionally, cultural and social integration with Europe is a significant motivator, as it promises improved educational and employment opportunities for Albanian citizens. The process is extensive and includes rigorous monitoring to ensure compliance with EU criteria, particularly concerning democracy, the rule of law, and human rights. Despite reforms, challenges remain in fully eradicating corruption and ensuring the judiciary's complete independence. Persistent issues such as high unemployment rates, particularly among youth, and regional disparities need addressing. Implementation of comprehensive policies aligning with EU standards continues to be a work in progress, requiring ongoing commitment and adaptation.

The relationship between Albania and the EU has also influenced gender dynamics within the country. The EU's emphasis on human rights and gender equality has prompted Albania to adopt more progressive policies concerning gender issues. This includes legislative measures to protect women's rights, initiatives to combat gender-based violence, and efforts to promote women's participation in the workforce and political sphere.

Many studies and papers done beforehand on the topic of the gender gap and gender inequalities in Albania have shown significant gender-specific intra-household inequality as linked to sex ratio imbalances brought on by previous migration in the country.

“This leads to an expected general increase in poverty rates, mainly driven by a previously unperceived issue, female poverty, which emerges as an aspect of concern to consider in future anti-poverty policies.” (Betti, Mangiavacchi, & Piccoli, 2020)

Social justice cannot be achieved without guarding the Gender Discrimination phenomenon in the country which is only a setback for the economic development of the country overall. Specific actions are required to defend women's economic empowerment and work prospects to prevent an increase in the number of women being forced into extreme poverty in the upcoming years.

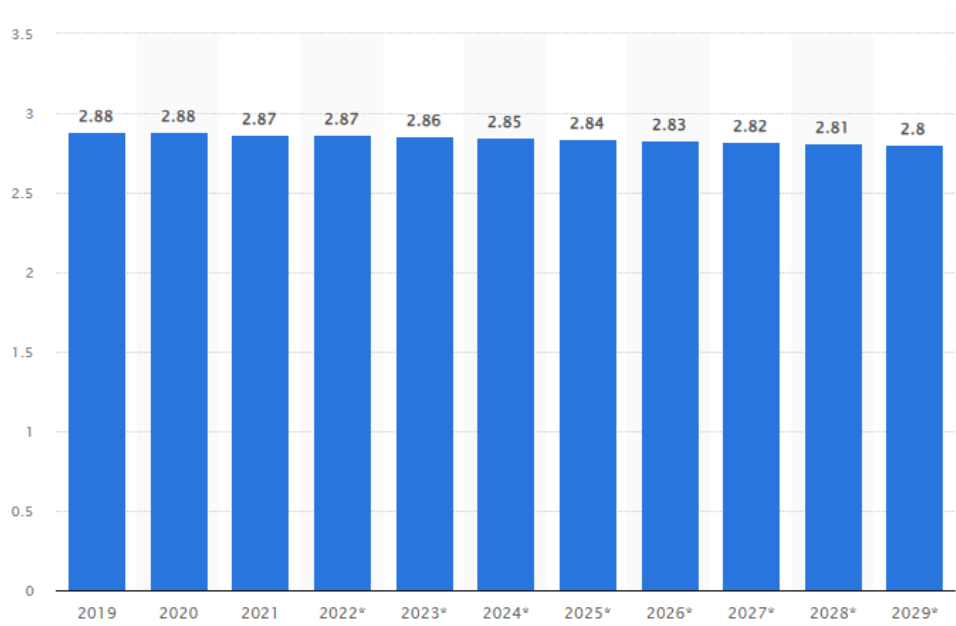
Addressing the childcare dilemma, assisting women with family law concerns, addressing gender-based violence, and developing social safety programs to support women are a few examples, particularly since the pandemic and onwards. Beyond immediate actions, significant initiatives

are required to overcome enduring gender disparities, such as asset ownership, occupational segregation, and unpaid labor, which run the risk of putting women behind in the race to eradicate poverty. The unequal treatment of women and men by the law is one of the most common kinds of gender discrimination and is also a significant barrier to women's economic potential. This disparity manifests in various legal frameworks, where women often encounter discriminatory practices concerning property rights, inheritance laws, access to finance, employment opportunities, and participation in decision-making processes. Such systemic biases not only undermine women's economic independence but also perpetuate broader societal inequalities.

These legal disparities reflect deep-rooted gender norms and stereotypes that relegate women to subordinate roles within the family and society, limiting their ability to achieve economic empowerment and financial security. For instance, discriminatory inheritance laws may deny women their rightful share of familial assets, perpetuating cycles of poverty and dependence. Similarly, unequal access to credit and financial services can hinder women entrepreneurs from starting or expanding businesses, thereby stifling economic growth and innovation.

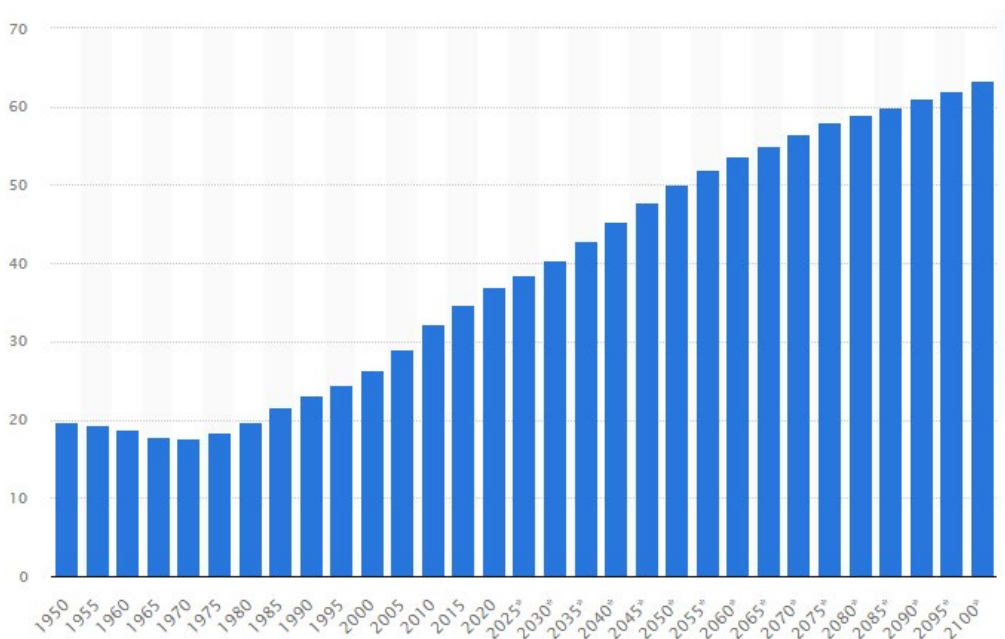
Gender discrimination phenomenon in the country is something very visible and present almost in every sort of circumstance, starting from the family core basis and everyday life to the institutional environment to the traditional social concept of being inferior to men, to the lower wages in comparison to those of male population in labor spectrum, and so on. While we tend to think that the role of women in the society, we live in is as important as that of men when it comes to legal, educational, socio-economic, or religious matters, we often tend to employ different yardsticks. According to causes of inactivity, generally speaking, women remain out of the labor force mostly because they are busy with unpaid work at home (21.4%) or are attending school (22.0%). Overall, there has been an improvement in the economic development of the country since 2014, despite the hardships that the pandemic brought to the scene, where we can see a slowdown in growth in the graph during 2020. The total population in Albania was forecast to continuously decrease between 2024 and 2029 by in total of 0.1 million people (-3.51%). After the seventh consecutive decreasing year, the total population is estimated to reach 2.8 million people and therefore a new minimum in 2029. (Statista, 2024)

Figure 5 Albania: Total population from 2019 to 2029 (in million inhabitants) (Statista, 2024)



In 2020, the median age of the Albanian population was 36.9 years. The figure was forecast to increase steadily in the following eight decades, reaching around 63.3 years in 2100. (Statista, 2024)

Figure 6 Albania: Median age of the population from 1950 to 2100 (in years) (Statista, 2024)



Albanian Society and Women's Rights

As the country began to open up, external and internal migration hastened the demise of the patriarchal household. Nonetheless, poverty, unemployment, and individual safety concerns continued to deny women and young girls basic rights, particularly in poor and isolated locations. The situation has not changed. Despite recent improvements, gender inequality and the gender gap are still serious problems in Albania.

Democratic Representation in Albania, there are fewer women in political leadership roles. Women are still underrepresented in positions of decision-making despite efforts to expand their participation in politics. The influence and impact of women's viewpoints in influencing policies and governance are constrained by this underrepresentation.

They have difficulty finding equal employment opportunities and obtaining fair wages, are more likely to work in informal settings, and are frequently concentrated in low-wage industries. Women continue to earn less than their male counterparts for comparable labor due to the gender pay gap. In 2022, the average employee in the country was paid 61,898 lek gross per month, representing a small rise of 8.2%. (Euronews Albania, 2024) For men, the average pay was 63,773 lek, up 9.2%. The average wage for women was 59,813 lek, up 7.3% from the previous year. The gender pay gap widened as men's salaries increased at a quicker rate than those of women. Women earned 6.2% less than men in 2022, down from 4.2% in 2021. Only five of the 36 professional groupings recorded by INSTAT pay higher wages to women. Despite receiving lower pay than men, women have a higher degree of education. According to INSTAT, girls are more likely than boys to attend university. In total, 21.3% of women over the age of 25 have completed higher education, compared to 18.2% for men.

Women tend to dominate in the field of management. According to data from INSTAT, women in the category of "Administrative and Commercial Directors" earned an average monthly gross salary of 189,393 lek in 2022. This figure not only stands as the highest among all professional groups in the country but also represents an 11.1% higher wage compared to their male counterparts. Over the course of the previous year, salaries in this professional category saw an increase of approximately 10% for both men and women.

Another sector where women outearn men is in electro-technology professions. Here, women receive a salary of 64,365 lek, which is 10.7% higher than that of men.

In two other fields, namely "Service and Assistant Workers" and "Personal Service and Defense Workers," women earn 1.3% and 1.1% more than men, respectively.

The administrative sector appears to provide equal pay, as "Legislators, senior state administration officials, and executive directors" receive a consistent salary of around 92,000 lek per month, regardless of gender.

However, gender disparities persist in other industries. Men tend to dominate in education, where they earn nearly 80,000 lek per month, representing a 12% higher wage compared to women in the same profession.

In healthcare, discrepancies are also evident. Male "Health Specialists" earn an average monthly salary of 85.8 thousand lek, which is 13.8% more than their female counterparts. Similarly, for "Specialized Health Assistants," men earn about 8% more than women, with a monthly salary of 65.8 thousand lek. The most significant wage gap between men and women exists in the production industry, where men earn 24.6% more than women. (Euronews Albania, 2024)

The variances and inequalities vary according to the target group being studied, associated with various socioeconomic and cultural conditions, ages, geographies, and communities. Women tend to group together more easily in auto-tone societies since they share cultural, social, and family origins. That is, it makes women feel like they are part of a community and encourages them to work together and support one another in economic and social activities.

All Albanian women share the trait of doing double jobs. This means that women are more likely to take on the task of caring for children, the elderly, the home (care work), and working outside the home to support the family financially. This double work requires all ladies to live with the family for the entire day, which begins early in the morning and ends late in the evening. Taking care of children, the elderly, and the house are social - invisible - jobs that are considered innate and outside the home since they are considered an accessory to man while being important for the sustenance of the family and the family economy.

There have been great strides toward gender balance in the classroom. Boys and girls have comparable access to education, and there is less gender difference in literacy rates. However, there may still be societal and cultural influences on school decisions and career pathways that result in gender discrepancies in some academic specialties.

Domestic abuse and other forms of violence against women are still very much present in Albania. There have been initiatives to improve legislation, increase public awareness, and offer survivors of violence support services. Cultural conventions and conventional gender roles, however, can support the continuation of such abuse.

Gender stereotypes and conventional gender norms might restrict women's possibilities and promote gender inequality. In many facets of society, prejudices, and stereotypes still exist, which has an impact on how women are treated in terms of their ability to access resources, make decisions, and general social standing.

The Albanian government, civil society organizations, and international partners have all made an effort to combat gender inequity and advance gender mainstreaming. To uphold women's rights, stop violence against women, and advance gender equality, legislative measures and policies have been introduced. However, it would take a persistent effort and cooperation from all stakeholders to change deeply ingrained societal practices and achieve complete gender equality.

The main data collection on violence against women (VAW) and domestic violence in Albania is managed by the Ministry of Health and Social Protection (which is in charge of gender equality issues). This system is based on cases reported to the municipality's local VAW coordinator, who is notified of relevant instances and enters all necessary data into the system (kind of violence reported to the police, health issues, employment issues, protective measures, and so on). At the moment, the system covers 30 out of 61 towns and is primarily used to monitor referral mechanisms: the system reveals that not all instances reported to the police (which has its own separate data collection on crimes reported to the police) are also reported to the referral system. Furthermore, the courts collect data on cases that move through the legal system, but the data is not harmonized or comparable. (EIGE, 2024)

Law Improvements Worth Mentioning

The law promoting employment includes state subsidies aimed at fostering job creation, but a significant issue arises from the fact that these subsidies are predominantly allocated to positions requiring at least eight years of schooling. This requirement inherently disadvantages uneducated women, especially those from rural areas, who are often unable to meet this educational threshold. Consequently, these women find themselves at a significant disadvantage in accessing employment opportunities compared to their more educated counterparts. This discrepancy exacerbates the existing economic and social inequalities faced by uneducated women in rural regions.

According to law nr.15 dt 13.3.2019 Promotion of employment

'Employment promotion programs:

Public employment policies support job seekers, as well as employers, to create new sustainable jobs through special employment promotion programs. 2. Employment promotion programs include the engagement of unemployed jobseekers in various employment programs, public works, self-employment, professional practices or training, for which subsidization, in a certain percentage...; (Albanian Constitution, 2019)

The law provides the possibility for subsidizing businesses that employ women, but this measure does not adequately address the deeper systemic issues affecting women in vulnerable situations. The focus on educational qualifications means that many women who lack formal schooling, often due to historical, socio-economic, or cultural barriers, remain excluded from the benefits of these employment subsidies.

The economic support offered to businesses hiring women does not sufficiently fill the gap for those in more precarious circumstances. While it is a step in the right direction, it tends to favor women who already possess a certain level of education and skills, leaving behind a significant segment of the female population. This oversight fails to create an inclusive labor market that accommodates the needs of all women, particularly those in rural areas who might benefit most from such support.

So, while the state's efforts to subsidize employment are commendable, the current focus on educational attainment for subsidy eligibility overlooks the unique challenges faced by uneducated women in rural areas. To create a truly inclusive labor market, there needs to be a more

comprehensive approach that considers the diverse educational and socio-economic backgrounds of women across the country. This includes implementing targeted initiatives and support systems that can help bridge the gap and provide meaningful employment opportunities for all women, regardless of their educational background.

A similar situation arises with the free access to professional courses offered by the state. A girl cannot attend these courses if she has not completed compulsory education. Many girls and women have been denied the opportunity to attend school by their families and, later on, have been forced into early marriages through arranged unions. This situation often leads to a scenario where, even if these women are eventually allowed by their husbands to leave the house, they are only permitted to work, and any income or decisive power over the family economy remains firmly in the hands of the man.

Although women in these circumstances represent a relatively small percentage of the overall population, their numbers should not be overlooked. Their plight reflects systemic issues that can contribute to broader societal problems, such as domestic violence. Women who lack decision-making power within their families often find themselves in dire situations, with no career prospects, no property or economic autonomy, and no support from their families or the broader society. This is compounded by the prevalent societal stigma against divorced women, trapping them in a vicious cycle of dependency and disempowerment.

The lack of trust in institutions and the absence of robust support structures for cases of abuse or divorce exacerbate these issues. Even when support structures exist, they often suffer from inadequate infrastructure and a lack of information dissemination. Expecting a person who has not been educated to independently seek out information online is unrealistic. Similarly, expecting someone who has been isolated from society for years to have developed the necessary social skills to navigate their way out of challenging family or social situations is unreasonable.

The societal trend of stigmatizing divorced women adds another layer of difficulty for those trying to escape abusive relationships. These women, often without career prospects, property, or economic power, find themselves with limited options and little support from the community around them. This lack of support perpetuates their vulnerability and dependence on their spouses. The current system fails to address the needs of these women adequately. Comprehensive reforms are required to provide equitable access to education and professional training, irrespective of previous educational attainment. Additionally, there must be a concerted effort to dismantle the

cultural and social barriers that prevent women from pursuing education and professional opportunities.

Creating safe, accessible support structures and robust information dissemination mechanisms is crucial. Empowering women through education, professional training, and economic independence is not only a matter of individual rights but also a crucial step toward breaking the cycle of poverty and domestic violence. By addressing these systemic issues, society can help women build better futures for themselves and their families, fostering a more equitable and just community.

'LAW-no.-111-2017-date-14.12.2017.pdf

FOR LEGAL ASSISTANCE GUARANTEED BY THE STATE

Legal aid is offered to the following persons, regardless of their income and wealth: a) victims of domestic violence; b) sexually abused victims and victims of human trafficking, at any stage of the criminal proceedings;' (Albanian Constitution, 2017)

Since 2017 target groups that have very few economic resources (unemployed and or minimum wage and no property under their name), and that weren't able to support themselves throughout the costs of judiciary processes have the right of a free advocate and are excluded from paying any judiciary taxes in case of legal processes.

The law, while aiming to provide greater access to justice, has inadvertently widened the gap in support available to victims. One of the primary issues is that the costs associated with court proceedings, including legal fees and psychological assessments, have become prohibitively expensive. These costs often exceed the average salaries in the region, placing a substantial financial burden on victims who seek justice. Consequently, many women and girls find themselves unable to afford the necessary legal and psychological support required to navigate the judicial system effectively.

It is worth mentioning though that through the years many improvements have been made in the implementation of the law. This law has significantly expanded access to the courts for many women and girls who are victims of gender-based violence, particularly those who previously lacked the financial means to obtain legal support. According to the Women's Centre "Light Steps"⁷ Women's Center in Shkoder, the landscape of legal support has shifted considerably. In

⁷ Interview with 'Light Steps' Woman's Center director on 30 May 2024

the past, the cost of hiring a psychologist for the judicial process psychological report in gender violence or divorce judiciary cases was often borne by non-profit organizations that supported reported cases of violence. However, this expense escalated beyond the financial capabilities of these organizations. Additionally, regulations have changed to prevent psychologists from these non-profits from performing psychological evaluations during court sessions, which was previously permissible.

A negative aspect on which the implementation of this law has made improvements is in the amortization of the intensified financial strain on non-profit organizations that support women's rights. As the costs of providing comprehensive support services rise, these organizations struggle to meet the growing demand for assistance. This financial burden led to a reduction in the availability of crucial services, such as psychological support, legal representation, and advocacy, which are essential for victims to successfully pursue their cases in court.

The law's intent to open judicial doors to more victims is commendable, but its implementation highlights significant challenges. The increased financial requirements for legal proceedings create a barrier for many women and girls, particularly those from low-income backgrounds. Without adequate financial resources, these victims are less likely to pursue legal action, perpetuating a cycle of violence and injustice.

To address these issues, there must be a concerted effort to ensure that the legal system is truly accessible to all victims of gender-based violence. This includes revising the cost structure of court proceedings to make them affordable and exploring alternative funding mechanisms to support victims. Providing state-funded legal aid and psychological services could significantly alleviate the financial burden on victims and non-profit organizations.

Additionally, the regulations preventing non-profit psychologists from participating in court proceedings need to be reconsidered. Allowing these professionals to provide their expertise can ensure that victims receive consistent and comprehensive support throughout the judicial process. This approach can also help reduce costs and improve the overall efficiency of the legal system. The law aimed to provide greater access to justice for victims of gender-based violence, its implementation has addressed critical gaps and challenges. By addressing the financial and regulatory barriers that hinder access to legal support, we can create a more equitable and supportive environment for victims seeking justice. It is essential to continue advocating for reforms that prioritize the needs of victims and ensure that the judicial system serves as a beacon of hope and justice for all.

Hardships

Gender equality is a novel notion for Albanian society, which is still battling to accept it. Albanian culture has long been dominated by men due to its strong patriarchal Balkan customs, with women obliged to accept subservient roles. The communist regime years exposed a sharp contrast between the rhetoric of emancipation and the realities of daily existence. Following the fall of communism in 1991, Albania experienced frequent and drastic changes in the social, political, and economic areas.

While gender inequalities in education are not prominent, the same cannot be said with regard to employment and participation in the labor market. Women's participation in the labor market fell drastically during the nineties, from 78 percent in 1989 to 46 percent in 2005. Besides having a lower level of employment, women are paid less and are the first to lose their jobs. Moreover, women of reproductive age are discriminated against in the market because they may start a family, and thus have fewer opportunities for retraining and qualification. Since they occupy the lower ranking positions, women are paid less, and although a woman may have attained the same educational level as a man, there are marked differences between them in the level of remuneration.

Women in Decision-making

Gender inequalities have deepened due to women's low level of representation in policy and decision-making. In addition, Albanian society pays little attention to educating boys and men about the principles and values of gender equality, whether inside the family or in the wider society.

The low representation of Albanian women in decision-making creates an obstacle for reforms and policies oriented toward the needs of women, children, and the family. Notwithstanding the satisfactory participation rates of women in public administration, men hold the leading posts. Women are also insignificantly represented in the political party leadership. Aiming to lessen the country's multitude of gender inequalities, many women have successfully run for office.

As of 2017, "women make up 23% of members of parliament, 35% of local counselors, 9 in 61 mayors and 8 in 20 cabinet ministers." Though the numbers fall short of achieving proper

representation, initiatives by the Albanian Parliament are encouraging women to run for various political offices.

According to the 2023 "Women in Politics" global map created by UN Women and the Inter-Parliamentary Union, Albania ranks first in terms of the number of women cabinet ministers and 42nd in terms of the percentage of women in Parliament, representing a 12-position improvement from 2021, when it was ranked 54th globally. (UN Women Headquarters Office, 2023) However, at the local level, women's representation remains lower than men's: Women gained 44% of local council seats in the 2019 election, yet only 8 of 61 municipalities (13%) elected women mayors, which is considerably lower than the EU average.⁸ (UN Women, 2021)

The low levels of women's representation in the decision-making structures is an indicator of the fact that the aspirations and needs of women are not fully recognized and that women have fewer opportunities to promote policies addressing poverty and gender inequalities or upgrade their weight and role in the economic and social progress of the country, or both.

A media monitoring assessment conducted by UN Women during Albania's 2021 general elections revealed that traditional and social media repeatedly harmed female candidates. In addition, a UNDP study found that women politicians are more likely than men to face assault. Political parties should take steps to effectively prevent and combat harassment and violence against women during elections, including modifying legislation to address violence against female candidates, voters, and elected officials. Women and girls' free votes should also be protected, by combating family voting, compulsion, and intimidation of female voters. (McCluney, Ribotta, & UN Women, 2023)

However, there are encouraging efforts on the part of the government to empower women. The National Gender Strategy currently being formulated will enhance the gender perspective of public policies and will help real positive steps to be taken towards achieving gender equality in the future. The prospective law on Gender Equality will supplement the legal framework on gender equality in education, employment, and decision-making. It will enable the establishment of

⁸ According to UN Women, in Europe in 2019, the share of women among municipal mayors was 15%, twice lower than the share of women amongst councilors (30%). See page 17 in this publication: <https://www.unwomen.org/sites/default/files/2022-01/Womens-representation-in-local-government-en.pdf>

governmental structures towards the formulation of gender-sensitive policies and will create the premises for measuring policy impacts on the real situation through the institutionalization of periodical assessments and evaluations.

The approval of the national strategy on gender equality and the endorsement of relevant documents represents the first step towards the creation of an overall enabling environment for improving conditions for women. Why is gender so important? Gender costs are double since these costs are borne not just by women but by the entire society, especially children. This study rests on the assumption that protection of women from gender-based discrimination means protecting the rights of children too, because women give birth to life and protect it; women give birth to the future and contribute to building it.

As a developing nation in Europe, women have long fought for equality. However, as it has become a more urgent concern for thousands of residents, this subject has recently gained more attention. The proportion of Albanian women participating in the labor force is rising quickly, yet they continue getting lower wages than the male population an average of 18% less than their male counterparts in urban areas and doubly lower in rural areas. They mostly engage in agricultural activities, but the rest is not left behind. Women are over-represented in Albania's informal economy and as unpaid family workers in businesses and on farms. Over 50% of Albanian women work in agriculture – 87% of them in unpaid family jobs – and rural women are not covered by basic social, pension, and health services. (UN Women) Few women own or operate businesses or serve on corporate boards. Women own or manage only 28.5% of all businesses, the majority of which are undercapitalized small and medium-sized enterprises in largely informal, low-value-added sectors. Only 27.9% of corporate board members are women, but more than 43% of corporations have no women on their boards. (UN Women)

Property Rights

The Constitution guarantees all individuals, regardless of gender, the right to own property. Thus, women may own and enjoy the same tangible and intangible properties as men; they may sell or purchase property without any particular limitation and can inherit property in the same way as men. The formal equality of women with regard to property rights was first established in Albania in 1928. Nevertheless, these formal guarantees are still not fully realized because the patriarchal

mentality which prevails especially in remote rural areas tends to divest women of their rights, particularly in the inheritance of family property.⁹ (Centre for Reproductive Rights, 2003)

Despite the clear provisions within the Albanian constitution stipulating the equal division of property by 50 percent in the event of divorce, practical challenges often impede the realization of women's property rights. One significant barrier is the reluctance of real estate offices to register properties in the name of the wife, particularly when couples fail to formally register their marriage certificates. Consequently, property ownership frequently remains in the name of both spouses, effectively denying women their rightful share of assets.

Ironically, while this oversight may spare women from protracted court battles, it simultaneously deprives them of their property entitlements. This discrepancy underscores the enduring influence of patriarchal norms, which persist despite legal safeguards. Even though women have the legal right to inherit property and may possess ownership from their birth families, societal pressure often compels them to relinquish their claims in favor of male relatives. Thus, despite the legal framework, entrenched social norms pose formidable barriers to women's property rights.

The situation becomes further compounded when divorced women return to their natal families, only to face economic dependency and marginalization. Despite potentially holding property titles in their own names, women may still be viewed as burdensome liabilities by the male heads of their birth families, who are expected to provide housing and support. This dynamic illustrates the complex interplay between legal regulations and social realities, wherein legal entitlements often fall short of translating into tangible empowerment for women.

Addressing this disparity requires a multi-faceted approach that addresses both legal and societal barriers. Efforts to raise awareness about women's property rights and challenge patriarchal norms are essential for effecting meaningful change. Moreover, reforms within the real estate sector, including streamlined procedures for property registration and enforcement of legal provisions, are necessary to ensure women's equal access to property rights. By tackling these challenges comprehensively, Albania can move closer towards achieving gender equality and empowering women to assert their rights and autonomy in all aspects of their lives.

⁹ Albanian National Women Report 1999, *supra* note 140, at pg. 7

Traditional conventions prohibit women from holding property. According to the Pollination Project¹⁰ (Di Georgina, 2023), only two out of every ten women in Albania possess property. They are denied the right to inherit and ownership. Albanian laws allow women to purchase and own property. However, these laws are frequently disobeyed. Women have always been unable to sign as a "head of the household" in legal proceedings, making it extremely difficult for them to become property owners.

‘Women’s right to property is a complicated issue in Albania. Although the Albanian civil and family law recognizes women’s equal right to land and property, only a small percentage of women—8 percent—own land because the laws are not implemented and women continue to be marginalized in matters of inheritance. When it comes to informal settlements, properties are often registered under the name of the “head of household”—a role reserved for men, effectively leaving women out. Women also lack information and awareness about their property rights and justice sector professionals often look the other way or are equally misinformed.’ (UN Women ECA, 2018)

According to the National Cadaster Agency, as of 2018 barely 8% of women own land, and just 19.1% of private property is recorded in their names. This suggests that men own 80.9% of private property. Albania's Center for Civic and Legal Initiatives is striving to increase this figure by encouraging women to buy property. They also provide legal assistance to help manage the challenges that traditional practices present.

An important aspect of women’s rights in Albania is reproductive healthcare. Women in Albania struggle to live independent lives, not being able to decide for themselves, due to the frequency and severity of gender inequality. Sexist legislation and cultural attitudes restrict women's rights. Particularly during the COVID-19 pandemic crisis restricted healthcare would make it impossible for women to receive access to safe abortion care. According to Amnesty International, not only Albania but governments in the region regard abortion care as a non-essential health service.

Fertility decisions are surely rooted in a complex interplay of relationship status, availability of health care, perceived health risks, personal decision-making authority, cultural norms and institutions, and financial means. In the past 20 years or so, Albania has struggled to reform many

¹⁰ The Pollination Project is a collaborative Foundation that offers seed funding ranging from \$1,000 to \$10,000. A network of sixty five grant advisors and five country coordinators: <https://thepollinationproject.org/>

aspects on the institutional and organizational level and has had a very slow trend of improvement in aspects also specifically regarding the female portion of the population.

Many of these parameters were influenced even more by the COVID-19 pandemic according to a study ‘The impact of COVID-19 on sexual and reproductive health in Eastern Europe and Central Asia’ by UNFPA in 2023 taking into consideration the period between July 2020 and February 2021 in 30 countries including Albania.

According to this statistical study ‘Albanian and Armenian respondents tend to report poorer mental health, while respondents from Serbia and Kosovo tend to report better mental health. (Table 37) Respondents were asked to what extent they were worried about the lasting impact of the COVID-19 measures on various aspects of their lives. Overall, the topics of most concern were limitation of individual freedoms, (future) employment, mental health, and access to reliable information. Respondents from Albania and Armenia also stated their greatest worries were centered on these topics.’ (Michielsen, Campbell, & Farje De la Torre, 2022)

Something interesting worth mentioning from the UNPFA report is that a substantial proportion of women reported doing most of the household work (41.8%) and most of the childcare (55.9%) alone, compared with 11.6% and 11.5% of men, respectively. The COVID-19 pandemic did not bring about many changes in the division of household responsibilities. Similarly, more men (30.5%) than women (22.4%) reported having the most control over household spending. This did not change to any large extent in the three months preceding the study compared with the period before the pandemic. At the same time, some positive effects on household cohesion were observed: around 6 out of 10 respondents reported that COVID-19 had brought their households closer together. (Michielsen, Campbell, & Farje De la Torre, 2022)

Gender-based violence

Albania like many countries in the world, struggles with the complex issue of gender-based violence (GBV), including violence against women. Gender-based violence is a significant concern. Overall, the male population is the one suffering most from gender violence in Albania, meanwhile, women and girls suffer most from domestic abuse. According to data from the Albanian Institute of Statistics, approximately 58% of women in Albania have experienced some form of gender-based violence in their lifetime, with intimate partner violence being the most prevalent.

Tremendous progress against gender-based violence has been made especially in the 2000s through legislative reforms and policy measures. The Law on Measures Against Violence in Family Relations, adopted in 2006 and amended in subsequent years, provides legal protections for survivors and outlines measures for prevention and support. Additionally, ratifying international conventions, including the Istanbul Convention, which obligates states to prevent and combat violence against women and domestic violence, has made a significant difference in the system.

Despite progress in legislative and policy frameworks, challenges persist in effectively addressing gender-based violence in Albania, including gaps in the implementation and enforcement of laws, limited access to support services for survivors, societal stigma, and insufficient resources allocated to prevention and intervention efforts. However, civil society organizations, women's rights activists, and governmental institutions are actively working to raise awareness, provide support services, and advocate for systemic change.

Gender-based violence remains a pressing issue in Albania, posing significant challenges to the well-being and rights of women and girls. Addressing GBV requires a multi-faceted approach, including legal reforms, awareness-raising initiatives, provision of support services, and efforts to challenge harmful gender norms. By prioritizing the protection of women's rights and promoting gender equality, the country can continue its journey toward a society free from gender-based violence, where all individuals can live with dignity and respect. Sure, the journey is a lot to be done still and the change should come from within the population but in order to be able to give suggestions for the future we first have to analyze the current situation and maybe make some predictions based on past trends. This pervasive issue is influenced by a combination of social norms, economic factors, and systemic failures. Despite the presence of various organizations

striving for equality, significant challenges remain in addressing and mitigating the impact of GBV.

Prevalence and Social Norms

A complex interplay of social, cultural, and economic factors influences this phenomenon. Traditional gender norms, reinforced by patriarchal values, perpetuate unequal power dynamics and normalize violence against women. Economic disparities, lack of access to education, and limited economic opportunities further exacerbate women's vulnerability to violence.

Domestic violence is a significant concern in Albania, with women and girls being the primary victims. Strangely enough, in urban areas, social norms and stigma make it particularly difficult to uncover and address such violence rather than in the rural areas of the country. The societal expectations and pressures in these areas contribute to a culture of silence and shame, where victims feel unable to report their experiences due to fear of social ostracism and retaliation.

Economic Vulnerabilities

Economic factors play a crucial role in perpetuating gender-based violence. Many women in Albania face economic dependency on their spouses, making it challenging to escape abusive situations. The economic determination of women is very low, limiting their opportunities for financial independence and self-sufficiency. This economic dependency often leads to situations where women are unable to pursue legal action against their abusers, as they lack the financial resources to support themselves and their legal proceedings.

According to a study made on target groups in 3 municipalities in North Albania by 'Light Steps' Women's Centre in Shkoder in 2018 (AICS, 2018) together with COSPE and RTM (two Italian NGOs) financed by (Agenzia Italiana per la Cooperazione allo Sviluppo) AICS, although women play an important role in agricultural production, their contribution is overshadowed by the fact that they only participate in mechanized agriculture and rarely benefit from agricultural credits or other advantages reserved for men, who are almost always the sole owners of economic activities. Income-earning activities for women who produce and process food products at home exist, but they are not considered declared and taxable work, so they are not true business activities, but rather forms that can be reduced to a 'women's everyday economy', often closely linked with knowledge passed down from woman to woman in families and communities. These activities and the skills brought by these women served as the foundation for the economic activities created

under the project 'Alliance for the Development and Enhancement of Family Agriculture in Northern Albania' (AID 10916, 2017/2020) which is one of the few projects undertaken throughout the past years towards the improvement of the economic empowerment of Albanian women.

Female entrepreneurs encounter a multitude of challenges that impede their ability to develop and sustain economic operations effectively. Among the most significant difficulties are:

Poor or Difficult Access to the Market: many women-owned businesses struggle to penetrate local, national, and international markets due to a lack of established networks and connections. This barrier is often compounded by limited knowledge of market dynamics and trends, making it challenging for female entrepreneurs to position their products or services competitively. Furthermore, socio-cultural biases and gender discrimination can restrict women's participation in market activities, limiting their opportunities for growth and expansion.

Lack of Instruments for Communicating Product Quality: Effective communication of product quality is crucial for building consumer trust and loyalty. However, many female entrepreneurs lack the necessary instruments and platforms to adequately convey the quality and value of their products. This issue can stem from inadequate marketing resources, limited access to branding expertise, and a general lack of awareness about effective marketing strategies. Without the means to communicate product quality effectively, women entrepreneurs may find it difficult to attract and retain customers, hindering their business growth and sustainability.

Lack of Machines and Technology: The absence of advanced machines and technology is another significant challenge faced by female entrepreneurs. Many women-owned businesses, particularly in developing regions, operate with outdated or inadequate equipment. This lack of modern machinery not only reduces operational efficiency but also limits the ability to scale production and meet market demands.

Difficulty with Logistics for Selling Products: another major hurdle for female entrepreneurs, affecting their ability to distribute and sell products effectively. Inadequate infrastructure, such as poor transportation networks and unreliable delivery services, can disrupt supply chains and increase costs. Female entrepreneurs often face additional logistical constraints due to their limited financial resources and lack of access to professional logistics services. These difficulties can lead to delays in product delivery, reduced market reach, and diminished customer satisfaction, all of which negatively impact business performance.

Systemic Failures

The Albanian legal system faces significant issues in addressing gender-based violence. There is a lack of legal support for victims, and the system is plagued by inefficiencies and corruption. Legal processes often depend on personal connections, power, and money, rather than justice and the rule of law. State institutions, which should protect and support victims, lack the necessary resources and confidence to pursue cases effectively. Consequently, many sentences are withdrawn for economic reasons, and victims remain trapped in abusive situations. In other cases, the judiciary process takes 1 to 2 years to file a divorce. Understandably, crawling divorce cases, especially when domestic violence is part of the equation might escalate even more the situation. The Justice system reform initiated in 2017 has brought a lot of delays to court processes as well, giving priority to matters such as corruption, malfunction, lack of integrity, professionalism, independence, efficiency, reliability, transparency, accountability, and responsibility in the judiciary system of Albania. These factors have already been identified and widely accepted as damaging phenomena, and they were the focus of this deep reform, which aimed at changing the situation in the country's justice system.

A very important point is that national data collection on violence against women is not centralized, and each relevant system (e.g., police, social protection, prosecution offices, and courts) collects its data, making comparison difficult.

In Albania, a persistent challenge lies in bridging the gap between the existence of robust laws and their effective implementation. This gap has historically plagued the country, hampering its progress and undermining efforts to uphold justice and the rule of law. Various factors contribute to this discrepancy, ranging from a lack of access to information to systemic issues such as corruption and inadequate institutional capacity.

One of the primary obstacles to the effective implementation of laws is the pervasive lack of information among the population. Many citizens, particularly those in rural and marginalized communities, are unaware of their legal rights and responsibilities. This lack of awareness hinders their ability to advocate for themselves and access the protections afforded by the law. Additionally, limited access to legal resources and services further exacerbates this problem, leaving many individuals vulnerable to exploitation and injustice.

Corruption is another significant barrier to the proper implementation of laws in Albania. Instances of bribery, nepotism, and favoritism undermine the integrity of the legal system and erode public trust in institutions. Corruption not only distorts the application of laws but also creates a culture

of impunity, where those with wealth and connections can evade accountability for their actions. This systemic issue undermines the principles of fairness and equality before the law, perpetuating inequalities and injustices within society.

Furthermore, structural deficiencies and a shortage of qualified personnel pose significant challenges to the effective enforcement of laws. The lack of adequate infrastructure, including courts, police stations, and administrative offices, hampers the delivery of justice and legal services. Similarly, the need for more skilled professionals, including judges, lawyers, and law enforcement officers, compromises the quality and efficiency of legal proceedings. With sufficient resources and expertise, the implementation of laws becomes cohesive and effective, hindering efforts to uphold the rule of law and protect citizens' rights.

Addressing these challenges requires comprehensive reforms aimed at strengthening legal institutions, enhancing transparency and accountability, and promoting public awareness and education. Investments in legal education, training, and capacity-building can empower individuals to understand and assert their rights, while measures to combat corruption and improve governance can foster trust in the legal system. Additionally, efforts to enhance access to justice, including the expansion of legal aid services and the modernization of judicial infrastructure, are essential for ensuring that laws are applied equitably and effectively across the country.

Ultimately, closing the gap between laws and their implementation is essential for advancing Albania's development, promoting social justice, and upholding the rule of law. By addressing the root causes of inefficiencies and inequalities within the legal system, Albania can build a more just and inclusive society where the rights and dignity of all citizens are respected and protected.

Regarding the specific structures dealing with Domestic Violence, it has taken a staggering 17 years since the enactment of the law in 2007, aimed at establishing structures within municipalities, to witness any tangible progress in Albania. Despite the legislative framework being in place, practical implementation has fallen short, leaving many municipalities grappling with ineffective systems. While sporadic meetings are convened to address specific cases, these gatherings often culminate in the production of mere documents, such as meeting minutes, without any substantive outcomes. This lack of progress is evident across all 61 municipalities of Albania, where meaningful change remains elusive.

Central to the referral mechanism is the steering committee and the judge responsible for adjudicating cases. Although there have been positive developments, such as the introduction of preliminary orders for immediate protection of victims, enabling their transfer to shelters for

safety, challenges persist. Protective orders, although activated in the interim, have not fully addressed the complexities of the situation.

Moreover, the participation of key institutions, including the court, prosecutor's office, and enforcement office, in the steering committee has diminished over time. While their involvement was once mandatory by law, it is now contingent upon invitation, based on evaluations from other institutions. This shift is concerning, as these institutions wield significant influence over the lives of both perpetrators and victims. Excluding them from the decision-making process undermines the efficacy of the referral mechanism and compromises the well-being of individuals within the family unit.

Another pressing issue pertains to the shortage of violence coordinators. According to the stipulations, there should be two Violence Coordinators available for every 100,000 inhabitants. However, recent delays in the release of the new census data have hindered the appointment of additional coordinators, exacerbating an already strained system.

Addressing these systemic challenges requires a concerted effort to bridge the gap between legislative intent and practical implementation. Strengthening coordination among key institutions, reinstating mandatory participation in the referral mechanism, and expediting the appointment of violence coordinators are essential steps towards enhancing the effectiveness of Albania's response to gender-based violence. By prioritizing these measures, Albania can take significant strides towards creating a safer and more supportive environment for victims of domestic violence.

Cultural and Familial Influences

Cultural and familial factors also play a significant role in the perpetuation of gender-based violence. Traditional mentalities and societal expectations often hold women hostage, creating a vicious cycle where victims feel ashamed and are discouraged from seeking help. Families may pressure victims to remain silent to avoid bringing shame to the family name. The stigma attached to being a "denounced girl" can be overwhelming, leading many to endure their suffering in silence.

It is worth mentioning though it does not amount to the majority of the population that in rural areas mostly but also in the cities many refuse to school their children, it might be for different reasons including the lack of economic support, but it is a phenomenon that exists. According to the director of the Women's Center 'Light Steps' whom I interviewed on 30 May 2024, girls who

move from one patriarchal family (the birth family) to another (the husband's family) have it very hard to become independent. Especially when living in environments where their basic needs are not met and under the effect of domestic abuse. Not being schooled lowers their chance of trying to get out of toxic households. It also makes them less appropriate for the labor market by not having done the compulsory education years they're automatically disqualified even when applying for simple jobs.

Marriages and Divorces

There is still a lot of stigmas associated with divorce in Albanian society today. The fundamental reason for this is that they adhere to traditional values and regard family as the foundation of society. However, recent research has emphasized the right of spouses, particularly women, to seek divorce. According to data gathered from the Institute of Statistics and the Ministry of Justice, women requested the greatest number of divorces.

The possibility of an unclean marriage paradigm with a pragmatic nature has increased in postmodern times, leading to conflicting or consenting divorce. Article 50 of the Family Code, "Obligation for fidelity, assistance, and cooperation," stipulates that "by marriage, husband and wife enjoy the same rights and assume the same obligations".

People in today's society have a tendency to marry at an early age. This may occur for a variety of reasons, including economic difficulties and family troubles, but the overarching trend is the marriage of young women to well-off households. This frequently indicates a lack of maturity or the ability to make a relatively sound marriage decision, increasing the likelihood of divorce later in their marriage. According to a poll conducted in 2022 on the causes of divorce in Albania (with a target group of 569 persons), 13% of respondents believe that early marriage is a cause of divorce. (Shehu, Pagria, & Osmani, 2022)

While physical, psychological, or emotional abuse is one of the leading causes of divorce, and it is acknowledged by 37% of respondents. (Shehu, Pagria, & Osmani, 2022) 33% of respondents emphasize the phenomenon of domestic violence, even murder, as the biggest problem in Albanian society.

One of the significant challenges encountered in resolving marital disputes relates to the issue of alimony payments. While courts may issue decisions mandating that the abuser or spouse pays a

specified amount, the practical implementation often deviates from these rulings. In Albania, this discrepancy is particularly pronounced due to the country's incomplete social insurance registration system and widespread non-compliance with alimony contributions dedicated to children. Despite advocacy efforts by various organizations, a viable solution to this impasse remains elusive.

In practice, court-ordered alimony payments frequently go unpaid, creating financial hardship for custodial parents and their children. This failure to fulfill financial obligations undermines the intended purpose of alimony, which is to provide essential support to dependents following the dissolution of a marriage. The non-payment of alimony exacerbates existing economic inequalities and can have detrimental effects on the well-being of affected families, perpetuating cycles of poverty and financial instability.

The root of the problem lies in the lack of effective mechanisms to enforce alimony payments and hold delinquent spouses accountable. Despite the efforts of advocacy groups to address this issue through lobbying and awareness campaigns, systemic barriers persist, preventing the implementation of lasting solutions. Additionally, the prevalence of informal employment and cash-based transactions further complicates efforts to track and enforce alimony payments, contributing to a culture of non-compliance.

Moreover, the social stigma associated with divorce and the traditional gender roles prevalent in Albanian society may discourage individuals, particularly women, from seeking legal recourse to enforce alimony payments. Fear of retaliation, social ostracism, and financial dependency on the non-paying spouse can deter individuals from pursuing legal avenues to secure their entitlements. As a result, many custodial parents and their children are left without the financial support they are entitled to under the law.

To address this pervasive issue, a multi-faceted approach is required. This approach should encompass legal reforms to strengthen enforcement mechanisms, including the establishment of dedicated agencies tasked with monitoring and facilitating alimony payments. Furthermore, efforts to raise awareness about the importance of fulfilling alimony obligations and the rights of custodial parents should be intensified through educational campaigns and community outreach initiatives.

Additionally, initiatives aimed at promoting financial literacy and economic empowerment among custodial parents can help mitigate the adverse effects of non-payment of alimony. By equipping individuals with the knowledge and resources needed to assert their rights and navigate the legal system effectively, we can empower them to seek redress for non-compliance with court-ordered alimony payments.

In conclusion, the failure to enforce alimony payments represents a significant impediment to the resolution of marital disputes in Albania. Addressing this issue requires concerted efforts to strengthen enforcement mechanisms, raise awareness, and promote economic empowerment among affected individuals. By addressing the root causes of non-compliance and implementing targeted interventions, we can work towards ensuring that all families receive the financial support they need to thrive following the dissolution of marriage.

Case Studies and Media Attention

High-profile cases, such as the May 15th 2024th Inside Story media service, of a whistleblower against violence, highlight the severe challenges victims face. These cases bring attention to the systemic issues within Albania's approach to gender-based violence but also underline the need for significant reforms. Despite the bravery of whistleblowers, the shame and stigma from the community and even from within their families often overshadow their actions, further discouraging others from coming forward.

Organizations and Legislative Efforts

Various organizations, such as Women for Women, work tirelessly to support victims and advocate for their rights. However, their efforts are often hampered by the broader systemic issues within the country. Legislative measures, like the law on the alienation of wealth, aim to protect victims economically, but their implementation is inconsistent and often ineffective.

More than 50% of Albanian women have experienced "sexual, physical, or psychological violence," according to research conducted by the Swedish government, U.N.D.P., and U.N. Women. This most frequently happens as a result of a partner's misconduct. This most frequently happens as a result of a partner's misconduct. Domestic violence has increased (Kushti, 2020) in Albania recently as a result of COVID-19's stay-at-home rules and the country's current economic difficulties. Because of this, women have a limited defense against violent circumstances.

According to an INSTAT poll performed in 2018, more than half of women and girls aged 15 to 74 have encountered one or more of the five categories of violence (intimate relationship violence, dating violence, non-partner violence, sexual harassment, and/or stalking) in their lives. Approximately 37% of women and girls had suffered violence during the last year. Violence in romantic partners is the most common sort of violence, followed by intimate partner violence and sexual harassment the third.

COVID-19 and GBV

Going through a global pandemic surely did not help the situation. According to the report ‘The impact of COVID-19 on sexual and reproductive health in Eastern Europe and Central Asia’ published by the UNFPA ‘*The odds of one’s economic situation becoming worse were also higher for those women experiencing violence (aOR 1.67, $p < 0.001$, 95% CI 1.36– 2.04). Those who stated that they had a disability had lower odds of experiencing a worsened economic situation (aOR 0.54, $p = 0.001$, 95% CI 0.38–0.78).*’ (Michielsen, Campbell, & Farje De la Torre, 2022)

The survey was designed to examine the frequency and dynamics of gender-based violence (GBV) during the COVID-19 pandemic. Given the pandemic's global reach, there was widespread concern that lockdowns and limitations might worsen domestic violence cases. The study was presumably designed to collect data on violent episodes, assess changes in reporting patterns, and identify the obstacles that survivors encountered during the pandemic.

Participants who answered that they had a partner were asked questions on tension in their relationship and as a result, between 60.3% and 75.7% of respondents reported experiencing tension in their relationship in the three months leading up to the study-relationship. ‘*For a substantial proportion (27.9% - 45.9%) this was an increase compared with the period before the introduction of the COVID-19 measures. Examining individual countries, most relationship tension is reported by respondents from Albania (75.7%) (Table 3). The countries with the highest proportion of respondents reporting an increase in tension are the Republic of Moldova and Serbia.*’ (Michielsen, Campbell, & Farje De la Torre, 2022)

Table 3 : I-SHARE study – tension with partner in the three months preceding (Michielsen, Campbell, & Farje De la Torre, 2022)

Country	How often have you experienced tension in your relationship with your boyfriend or girlfriend or steady partner in the last three months?			Is this more or less than you experienced before the initial introduction of the COVID-19 measures?		
		N	%		N	%
Albania	Never	35	24.3	(Much) less	18	16.2
	4 times a month or less	95	66.0	Same	62	55.9
	2 times a week or more	14	9.7	(Much) more	31	27.9
Kyrgyzstan	Never	114	39.7	(Much) less	52	24.9
	4 times a month or less	154	53.7	Same	98	46.9
	2 times a week or more	19	6.6	(Much) more	59	28.2
Moldova	Never	46	30.3	(Much) less	15	13.8
	4 times a month or less	86	56.6	Same	44	40.4
	2 times a week or more	20	13.2	(Much) more	50	45.9
Serbia	Never	261	32.3	(Much) less	46	9.0
	4 times a month or less	448	55.4	Same	239	46.6
	2 times a week or more	99	12.3	(Much) more	228	44.4

No data reported from Armenia, Bosnia and Herzegovina, Ukraine and Kosovo because of limited sample sizes.

A substantial number of respondents experienced partner violence in the three months before the survey: insults (20.9%), economic deprivation (14.7%), restricting contact with family (9.5%), and having sexual intercourse against their will because their partner used physical force (7.0%) or threats (4.6%). While a significant proportion of respondents reported an increase in violence following the COVID-19 epidemic, the proportion of respondents who reported a decrease in violence was higher across all forms of violence.

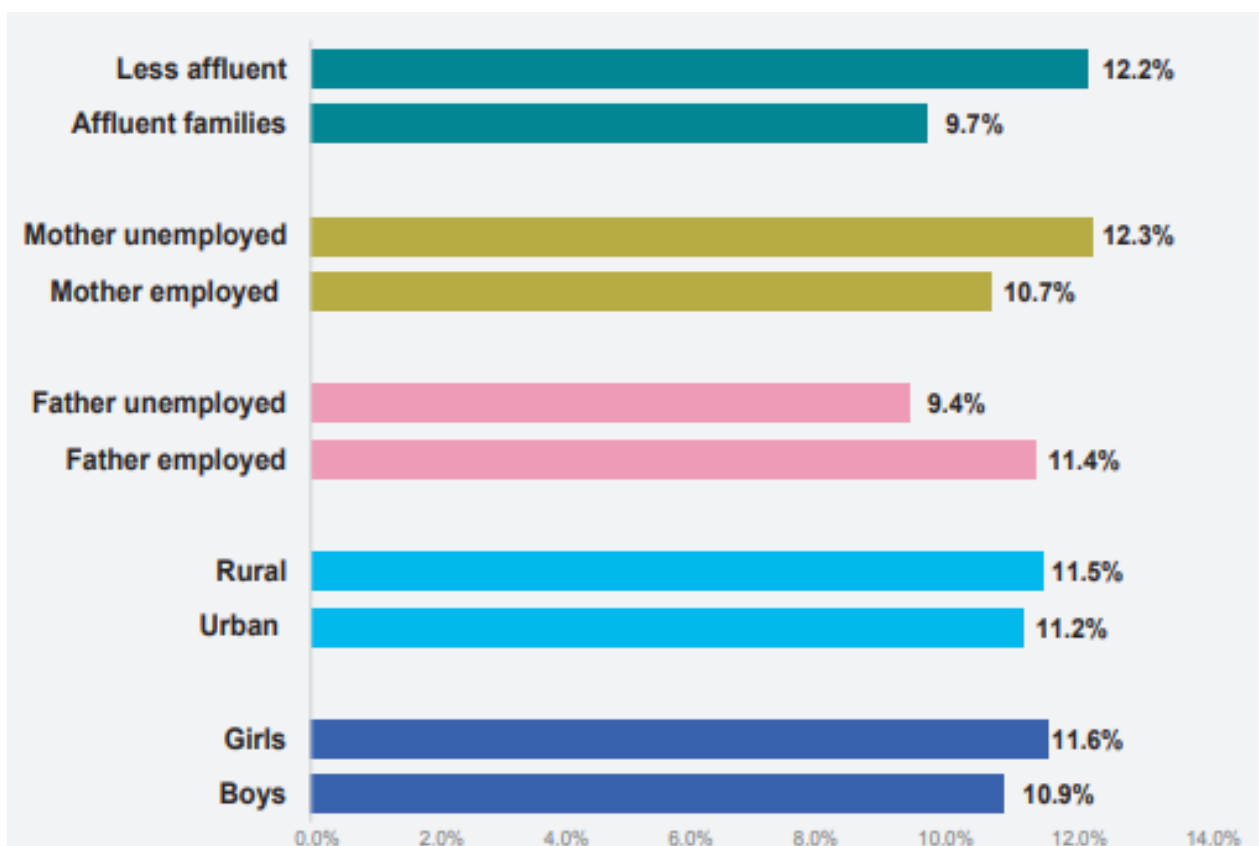
A decrease in the percentage of people reporting violence could be attributed to the separation of survivors and perpetrators as a result of COVID-19 restrictions, or to the fact that violence is more difficult to conceal when everyone is at home. Furthermore, these data may hide rises within specific sub-populations. It is critical to understand that the survey's sample procedure may have yielded replies solely from individuals who could access the survey without risk of being detected by their partners. As a result, we may have overlooked those who were subjected to extreme

brutality. As a result, further investigation into violence during COVID-19 throughout the EECA region is required. (Michielsen, Campbell, & Farje De la Torre, 2022)

The UNFPA poll gives useful information about the intricacies of gender-based violence during the COVID-19 pandemic. While it emphasizes certain good elements, such as potential reductions in specific circumstances, it also draws attention to major obstacles and gaps. Addressing these difficulties requires a collaborative strategy that includes improved support mechanisms, inclusive research approaches, and targeted policy actions. Further study and ongoing efforts are required to protect the safety and well-being of GBV survivors during and after the epidemic.

Meanwhile, the UNFPA report published in September 2023 named ‘‘In-depth Analyses of Abuse and Neglect Indicators Measured in the Framework of the Health Behavior in School-aged Children (HBSC) 2021/22 SURVEY CONDUCTED IN ALBANIA’ stated that the prevalence of physical abuse was similar in rural and urban youngsters (approximately 11% in each), although it was slightly higher: - in girls compared to boys (about 12% vs. 11% respectively, $P=0.71$) as shown in figure 7. (NESMARK, 2023)

Figure 7 Prevalence of last year’s physical abuse (at least once) by socio-demographic (NESMARK, 2023)



Although the survey was done mainly for the purpose of comparing results of lifetime domestic abuse in children taking into consideration factors like poverty, family background, residence, and so on, indicating and giving an insight divided by gender. Other results that came out from the UNFPA poll that are worth mentioning for this thesis purpose are:

- The prevalence of lifetime emotional abuse was higher: - in girls compared to boys (about 19% vs. 12% respectively, $P < 0.01$)
- The prevalence of lifetime sexual abuse was higher: - in boys compared to girls (5.2% vs. 2.7% respectively, $P < 0.01$),
- The prevalence of lifetime emotional neglect was higher: - in girls compared to boys (about 22% vs. 8% respectively, $P < 0.01$),
- The prevalence of emotional neglect was higher: in girls compared to boys (about 14% vs. 6% respectively, $P < 0.01$),
- The prevalence of lifetime witnessing of family violence was higher: - in girls compared to boys (7.5% vs. 6.5% respectively, $P = 0.41$),
- Lifetime emotional abuse was more prevalent in girls and among urban residents. Hence, after controlling for all the other socio-demographic factors, there was evidence of an independent positive association of lifetime emotional abuse with female gender and urban residence: - compared to boys, girls had 80% higher odds of reporting lifetime emotional abuse. - compared to children residing in rural areas, children who resided in urban areas had 60% higher odds of reporting lifetime emotional abuse.
- Same as during the pandemic - *compared to boys, girls had 80% higher odds of reporting last year's emotional abuse*. - compared to children residing in rural areas, children who resided in urban areas had 50% higher odds of reporting.
- Lifetime sexual abuse was more prevalent in boys and among children pertinent to better-off families- compared to girls, boys had 80% higher odds of reporting lifetime sexual abuse. - compared to children pertinent to poorer families, the odds of reporting lifetime sexual abuse were two times higher among children who belonged to wealthier families.
- Last year sexual abuse was, similarly, more preventable in boys and among children pertinent to better-off families. Thus, after controlling for all the other socio-demographic factors, there was evidence of an independent positive association of last year's sexual abuse with male gender and children from wealthier families: - compared to girls, the odds of reporting last year's sexual abuse were 3.7 times higher among boys. - compared to

children pertinent to poorer families, the odds of reporting last year sexual abuse were 1.9 times higher among children who belonged to wealthier families.

- Lifetime emotional neglect was more prevalent in girls and among children whose mothers were employed. Hence, after controlling for all the other socio-demographic factors, there was evidence of an independent positive association of lifetime emotional neglect with female gender and children from wealthier families: - compared to boys, the odds of reporting lifetime emotional neglect were 3.3 times higher in girls. - compared to children with unemployed mothers, children whose mothers were employed had 30% higher odds of reporting lifetime emotional neglect.
- Last year's emotional neglect was more prevalent in girls than in boys. Thus, after controlling for all the other socio-demographic factors, there was evidence of an independent positive association of lifetime emotional neglect with female gender: - compared to boys, the odds of reporting last year's emotional neglect were 2.6 times higher in girls.

The current analysis revealed a slight increase in the prevalence of self-reported domestic violence among Albanian schoolchildren during the pandemic which can be influenced by various factors and dynamics within the family and broader society.

The statistical data from this survey might intuitively lead us to find structural causes of the domestic violence symptoms in Albanian society. Taking into consideration the lifetime abuse, emotional abuse, and emotional neglect reported as higher in female schoolchildren gives us a hint that there is a different type of treatment between the female and male population of the country starting from their childhood years. As per sexual abuse, the survey specifies that male schoolchildren, particularly the ones who are part of rich families are the ones that tend to mostly report the happenings but by not having an actual number of the overall sexual abuses of schoolchildren we are not able to determine the whole percentage divided by gender of schoolchildren that have been victims of sexual abuse throughout their life. From an outsider lookout of this study, the answers might be found in societal norms and considerations of the Albanian society. As the UNFPA report itself specifies It is crucial to note that a rise in self-reports does not necessarily imply that the prevalence of domestic violence is growing; rather, it may represent children's increased readiness or awareness to disclose such instances.

Summary Statistics of Gender and Socioeconomic Data (INSTAT)

The dataset was retrieved from the Albanian Institute of Statistics (INSTAT), a key provider of statistical information in Albania. It includes a variety of gender-related and socioeconomic indicators, which cover multiple years (from 2012 to 2024).

The dataset includes variables like the Gender Inequality Index (GII), parliamentary representation of women, secondary education attainment, and labor participation rate to reflect gender disparities in social, political, and economic spheres. Maternal Mortality Ratio and Adolescent Birth Rate provide insights into reproductive health and the well-being of women, which are critical indicators for evaluating health outcomes and access to maternal care. The dataset also includes indicators related to reported domestic violence cases and the number of deaths due to domestic violence, highlighting issues related to gender-based violence and the protection of women. This area is relatively new to the national statistics of Albania as it appears to have been updated only by the end of September 2024.

The dataset contains variables on unemployment rates (for both men and women), household sector accounts, and loans, showing Albania's financial and labor market conditions. Variables such as poverty thresholds and violent crime statistics provide additional information on the economic and social challenges faced by certain population groups. Indicators related to secondary education and violent crime rates also suggest an interest in understanding both the educational landscape and public safety issues in the country and gives us some space to analyze whether there is some kind of correlation between sexual and domestic violence crimes and the other variables taken into consideration. Even though a relatively small dataset it's the first of its own that gives us some clue regarding Domestic Violence in Albania. In general, this dataset would be valuable for analyzing trends in gender equality, public health, economic conditions, and social justice in Albania. The data offers opportunities for identifying progress over time and potential areas for policy interventions, especially in reducing gender disparities and improving the overall quality of life. Below you may see the descriptive statistics report which provides an analysis of the summary statistics from a dataset that examines gender, education, health, violence, and socioeconomic variables across 12 countries from 1999 to the present. The table includes key statistics such as the number of observations, mean values, standard deviations, and the minimum and maximum values for each variable.

Table 4 Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Year	13	2018	3.89444	2012	2024
GII	11	.1109091	.0445992	.06	.2
Ma_mor_rat~e	8	5.5	2.529681	3	9.7
Ad_bi_rx1000	9	15.70222	3.948717	10	21.91
Par_rep	9	28.46	5.28858	20.71	35.7
Att_sec_high	9	.8877778	.0281859	.85	.94
Lab_part_r~e	9	.5077778	.0373423	.44	.57
Rec_rep_dv	11	4142.091	579.0869	3020	4897
Ofwhichdead	11	17.09091	5.029007	11	28
Prot_req_dv	11	2622.364	426.0707	1851	3266
A_DV	11	4234.182	628.6517	2951	5025
DV_male_per	5	1605	225.6092	1311	1833
DV_fe_per	5	156.4	30.69691	127	196
DV_per_de	5	14	2.828427	11	17
Prot_req	5	2917.6	208.602	2730	3266
Sus_per	5	4705.4	309.1412	4323	5025
Rec_cr_off~x	9	136.8889	19.92765	110	169
Rec_cr_off~v	9	1538.778	226.7674	1300	1911
Cri_chi_ma~a	9	1721.778	234.8445	1456	2122
Tot_un_rate	6	11.93333	.9750214	10.9	13.7
Un_rate_men	6	12.05	1.420915	10.6	14.6
Un_rate_wo	6	11.83333	.4412105	11.4	12.6
Dep_com_ba~a	5	1383204	66858.21	1268631	1438991
Dep_com_ba~e	5	1083776	24530.8	1042251	1102660
Hh_sect_ac~a	5	1997074	88111.82	1867184	2112713
Hh_sect_ac~e	5	1511964	105329.9	1346961	1629238
Bor_Comm_b~a	5	184845.6	7613.836	176383.7	193128
Bor_Comm_b~e	5	141044	6003.19	134461	147498
Lo_acc__ba~a	5	217169.1	8617.673	206607	227292.5
Lo_acc__ba~e	5	165306.5	7574.061	154137	173376.5
Re_onl_np_ma	4	53.175	.4349329	52.8	53.8
Re_onl_np_fe	4	47.275	1.043631	46.2	48.7
bu_onl_np_ma	4	32.325	13.68147	19.1	46.4
bu_onl_np_fe	4	67.675	13.68147	53.6	80.9
Se_cri_ma_~p	5	237.6	170.067	143	541
Se_cri_fe_~p	2	2.5	2.12132	1	4
Ar_pov_thr~h	4	193.6873	23.26084	170.785	225.931
Cri_per_free	639	5.492958	2.871249	1	10
Cri_mor_dig	639	5.492958	2.871249	1	10
Par_soc_ne	4	1.75	.9574271	1	3
Ar_pov_rat	4	2.5	1.290994	1	4
Sev_mat_dep	4	2.5	1.290994	1	4
Sev_mat_so~p	4	2.5	1.290994	1	4
Ar_pov_so~20	4	2.5	1.290994	1	4
Ar_pov_so~30	4	2.5	1.290994	1	4
Ar_pov_emp	4	2.5	1.290994	1	4
Ar_pov_not~p	4	2.25	.9574271	1	3
Ar_pov_unemp	4	2.5	1.290994	1	4
Ar_pov_re	4	2	.8164966	1	3

A wide range of statistical indicators for Albania are represented in the collection of the data, focusing on various social, economic, and gender-related aspects from 2012 to 2024. Below you may find an analysis of the key variables included in the dataset:

1. **Gender Inequality and Social Indicators:**

- The **Gender Inequality Index (GII)** has a mean value of 0.11, with a relatively low standard deviation (0.044), indicating minor variability across time. The GII values range from 0.06 to 0.2, reflecting differences in gender-based inequality.
- **Parliamentary representation of women** has an average of 28.46%, indicating moderate female participation in government. However, this participation has varied between 20.71% and 35.7%.
- **Attainment of secondary education** shows a high rate, with an average of 88.8% and minor variability (std. dev. of 0.028). This suggests widespread access to education for both genders.

2. **Health Indicators:**

- The **Maternal Mortality Ratio** has an average of 5.5 deaths per 100,000 live births, with a wide range (3 to 9.7), highlighting some fluctuations in maternal health outcomes.
- The **Adolescent Birth Rate** is relatively high, averaging 15.7 per 1,000 women, with a range from 10 to 21.91.

3. **Domestic Violence and Protection:**

- **Reported domestic violence cases** average 4,142 annually, while **protection requests** from domestic violence are about 2,622 per year. These figures indicate the ongoing issue of domestic violence in Albania.
- The data also includes information on the number of deaths related to domestic violence, with an average of 17 deaths annually, showing the severity of the problem.

4. **Economic Indicators:**

- The **unemployment rate** for the total population averages around 11.93%, with a slightly higher rate for men (12.05%) compared to women (11.83%). This indicates a persistent challenge with unemployment in Albania.

- Household sector data (e.g., **household sector accounts** and **borrowing community balance**) show stable figures but reflect Albania's financial environment and public sector activity.
- **Crime and violent crime statistics** are represented through various variables, such as **recorded criminal offenses** and **serious criminal acts**, showing notable variability and suggesting changes in crime rates over time.

5. **Poverty and Social Deprivation:**

- Variables related to **poverty thresholds**, **severe material deprivation**, and **social exclusion** illustrate some concerns regarding economic inequality. The consistency in these figures (mean values around 2.5) suggests that issues of poverty and deprivation remain consistent across regions and time periods.

6. **Digital Access:**

- The dataset includes figures on **online newspaper readership** for both men and women, reflecting the growing use of digital media in Albania. Women tend to access online newspapers more frequently, with an average of 67.7%, compared to 32.3% for men.

In summary, this dataset provides a comprehensive overview of Albania's social, economic, and gender-related issues. The data spans a range of important indicators, offering valuable insights into trends in gender equality, domestic violence, health, unemployment, and digital access. It is useful for policy analysis and tracking the country's progress in addressing key development challenges.

General Observations:

- Many variables have relatively small numbers of observations (some as low as 4-5), indicating potential gaps or missing data.
- Variables like unemployment rates, household accounts, and violent crime-related statistics show a range of values, which can provide insight into economic and social differences across the dataset.
- Some variables, like **Ar_pov_rat**, **Sev_mat_dep**, and **Ar_pov_emp**, show a consistent mean of 2.5 with low variation (standard deviation of 1.29), suggesting little variation in these measures across observations.

This table gives an overall picture of gender inequality, labor participation, education, violence, and economic data across a set of countries and years. However, there are missing values in several variables (as indicated by lower observation counts), which should be handled before further analysis.

The summary statistics reveal disparities in areas such as maternal mortality, parliamentary representation, domestic violence, and adolescent birth rates, indicating areas where further analysis and policy intervention may be necessary. However, missing data in certain variables suggests caution in concluding, and it may require further cleaning or imputation of missing data for a more comprehensive analysis. Slow but surely data on Domestic Violence are being processed by the National Statistics institution therefore in the forthcoming years we hope to see more elaboration and predictions to help policymaking.

Correlation Between GII and Other Variables

After running corr in Stata the key findings are:

- The correlation between GII (Gender Inequality Index) and maternal mortality ratio is **very strong** (0.9470). This suggests that higher gender inequality is strongly associated with higher maternal mortality rates, a clear indicator of challenges in women's healthcare access.
- The adolescent birth rate shows a **weak positive correlation** (0.1596) with GII. This indicates a less pronounced but existing relationship between gender inequality and teenage pregnancies.
- GII has a **moderate positive correlation** with women's representation in parliament (0.2774). As gender inequality increases, women's political representation tends to decrease, highlighting the ongoing struggle for gender parity in political participation.
- The **negative correlation** between GII and female secondary education attainment is very strong (-0.9862). This implies that countries with higher gender inequality see fewer women achieving secondary or higher levels of education.
- There is a **strong positive correlation** between GII and female labor force participation (0.9707). As gender inequality increases, labor force participation tends to decrease, emphasizing the impact of inequality on women's economic engagement.

- Reporting domestic violence cases correlates **weakly** with GII (0.0908). This weak relationship could indicate the underreporting of domestic violence cases in highly unequal societies or the effect of societal norms on the willingness to report.
- Correlation with reporting sexual offenses is **moderate** (0.2106), whereas for domestic violence-related crimes, the correlation is **slightly negative** (-0.3127). This could suggest that high gender inequality might lead to an underreporting of certain crimes against women.
- There is a **very strong positive correlation** (0.9707) between GII and female unemployment rates, indicating that gender inequality is closely linked to higher unemployment rates for women.
- Unemployment rates for men show a **moderate positive correlation** (0.6373) with GII. This might reflect that Gender Inequality, while impacting women more strongly, can also indirectly influence men's employment.
- GII is **moderately negatively correlated** with access to borrowing and loans for both men and women. This implies that financial inclusion tends to decrease in countries with higher gender inequality, affecting both genders' access to credit but likely having a more profound effect on women.
- GII is negatively correlated with various crime-related measures such as crime reporting on child maltreatment and crime-related perception of safety. This shows that high gender inequality might coincide with lower perceived safety and underreporting of gender-based violence.

Interpretation of the Results

The correlations between GII and the selected variables present a clear picture of the complex relationships between gender inequality and various socioeconomic factors. In countries where gender inequality is high:

- Women's health outcomes are poorer (e.g., higher maternal mortality, and adolescent birth rates).
- Women face barriers to educational attainment and political representation.
- Economic opportunities for women are limited, as seen in the strong correlation with labor force participation and unemployment.

- Financial access is curtailed for both men and women, with women likely facing more severe restrictions.
- Domestic and gender-based violence may be underreported, highlighting societal issues related to gender norms and legal protections.

The high correlation between GII and multiple variables underscores the interconnectedness of gender inequality with broader development and governance issues. Efforts to reduce gender inequality would need to focus on improving healthcare, education, political representation, and economic opportunities for women, along with strengthening the legal framework to protect women from violence. The strong correlations with maternal mortality, educational attainment, labor participation, and crime reporting show that gender inequality remains a pressing issue, impacting women's lives across the board. Achieving gender parity in these areas would lead to broader societal benefits, including improved health, economic growth, and justice for all.

Multiple Regression Analysis

The regression output indicated that many of the independent variables were omitted due to collinearity, meaning they were highly correlated with one another and did not provide unique contributions to the model. Here are the key findings from the analysis:

- **Remaining Variables:**

Dep_com_banks_fe: The coefficient is 1.02, indicating a positive relationship with GII, although the statistical significance cannot be determined as the output does not provide t-values or p-values.

Hh_sect_acc_sinc_fe: The coefficient is -3.19, indicating a negative relationship with GII, also lacking statistical significance information.

Constant Term: The constant term is 0.46, suggesting the baseline level of GII when all independent variables are zero.

R-squared: The R-squared value is 1, indicating that the model explains 100% of the variability in GII. However, this is misleading due to the collinearity issue and the extremely small number of observations (only 3), suggesting that the model may be overfitted.

The regression analysis indicates significant collinearity among the independent variables, leading to many of them being omitted from the final model. The positive coefficient for **Dep_com_banks_fe** and the negative coefficient for **Hh_sect_acc_sinc_fe** suggests potential

areas for further investigation. However, the small sample size and the issues with collinearity limit the interpretability and generalizability of these findings.

This comprehensive examination of the factors influencing GII provides a foundation for future research and policy implications aimed at addressing gender inequality.

Principal Component Analysis (PCA)

The aim of the Principal Component Analysis (PCA) was to reduce the dimensionality of the dataset while retaining as much variance as possible. The PCA results show the eigenvalues, differences, proportions, and cumulative proportions for the components:

Table 5 PCA Results

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	19.5626	9.12522	0.6521	0.6521
Comp2	10.4374		0.3479	1.0000
Comp3 - Comp30	0		0.0000	1.0000

Comp1: The first principal component accounts for **65.21%** of the variance in the data.

Comp2: The second principal component accounts for **34.79%** of the variance, bringing the total explained variance to **100%**.

The following table summarizes the loadings of the original variables on the first two principal components:

Table 6 Loadings of the original variables on the first two principal components

Variable	Comp1	Comp2	Unexplained
GII	-0.0852	0.2867	0
Ma_mor_rat_de	-0.0134	0.3090	0
Ad_bi_rx1000	-0.2203	-0.0694	0
Par_rep	0.1776	0.1916	0
Att_sec_high	0.1187	-0.2635	0
Lab_part_rate	-0.0324	0.3063	0
Rec_rep_dv	0.2008	0.1422	0
Prot_req_dv	0.1719	0.2010	0
A_DV	0.1976	0.1503	0
DV_male_per	0.2261	0.0051	0
DV_fe_per	0.1824	0.1829	0
DV_per_de	-0.0324	0.3063	0

Prot_req	0.1719	0.2010	0
Sus_per	0.1976	0.1503	0
Rec_cr_off_sex	-0.2227	-0.0537	0
Rec_cr_off_dv	0.2256	0.0212	0
Cri_chi_ma_fa	0.2232	0.0491	0
Cri_per_free	-0.2205	0.0686	0
Cri_mor_dig	0.2136	0.1015	0
Tot_un_rate	-0.1837	0.1804	0
Un_rate_men	-0.2157	0.0928	0
Un_rate_wo	-0.0324	0.3063	0
Dep_com_banks_ma	0.2261	0.0033	0
Dep_com_banks_fe	0.2180	-0.0821	0
Hh_sect_acc_sinc_ma	0.0800	-0.2895	0
Hh_sect_acc_sinc_fe	0.1079	-0.2720	0
Bor_Comm_ba_ma	0.2133	-0.1025	0
Bor_Comm_ba_fe	0.2155	-0.0935	0
Lo_acc_ba_ma	0.2224	-0.0554	0
Lo_acc_ba_fe	0.2244	-0.0372	0

Component 1 (Comp1) appears to capture a significant amount of the variance in the dataset, suggesting that it may represent a generalized dimension of gender inequality or socio-economic factors, as indicated by high loadings for variables such as **DV_male_per** and **Rec_cr_off_sex**.

Component 2 (Comp2) captures another dimension, likely reflecting a different aspect of socio-economic conditions or gender equality indicators, as indicated by variables like **Lab_part_rate** and **Hh_sect_acc_sinc_fe**.

The presence of a large number of components with zero eigenvalues indicates that the dataset may be under-determined with respect to the PCA. This suggests a high degree of multicollinearity among the original variables, where many variables convey similar information.

With only three observations, the robustness of the PCA is questionable. Generally, a larger sample size is necessary to obtain reliable and generalizable results from PCA.

This PCA analysis provides a foundational understanding of the dimensions of gender inequality and related socio-economic indicators in the dataset, but further investigation is warranted to derive actionable insights.

Prospectives

Gender equality, women's rights, social assistance programs, law, science, and civil society have all made significant advances in the recent two decades in Albania. Ratification of UN Conventions on Gender Equality, beginning with CEDAW (Convention on the Elimination of All Forms of Discrimination Against Women), as well as the passage of gender equality, anti-discrimination, and anti-domestic violence legislation, are all evidence of this commitment, and, along with the approval of the national gender equality strategy, provide the framework for achieving national goals.

Civil society, particularly women's movements represented in several NGOs, women's centers, women's national-based networks, and so on, has a prominent presence in Albania. They are also organized in coalitions, such as the Anti-Violence Coalition, the Businesswomen Coalition, the Women Empowerment Network, and so on. All of these realities operate on social, economic, and political levels at the local and national levels, as well as through relationships and alliances with European, Balkan, and other international groupings.

The women's situation in Albania needed to have proper legislation that met EU criteria. During these years, the Albanian Parliament has passed the following legislation, which is critical to the gradual shift toward gender equality in Albanian society: the Republic of Albania's Labor Code and the Law on Reproductive Health.

Supportive structures

Protection shelters are a vital resource for survivors of domestic violence, providing a safe haven and support services during times of crisis. However, their accessibility remains a challenge, particularly in rural areas where coverage is limited. The issue is compounded by deficiencies in the public transport system, which hinders survivors' ability to access shelter services when needed.

In Albania, the public transport infrastructure is not optimal, with limited coverage in rural areas and irregular schedules. This poses a significant obstacle for individuals seeking refuge in protection shelters, as they may lack reliable means of transportation to reach these facilities. In many cases, survivors have no choice but to rely on walking or private cars, which may not be feasible or safe, especially in emergency situations.

Moreover, intercity transport options are often provided by private companies and operate only at specific times of the day, further complicating survivors' ability to access shelter services. The limited

availability and scheduling constraints of these services can delay or impede survivors' efforts to seek refuge and support.

A recent interview with the head teacher of the center in Shkoder - Hapa te Lehte - shed light on the challenges faced by survivors in accessing shelter services in the district of Shkodra. It was revealed that only two shelters are available to accommodate women in crisis situations, with one of them offering support for a maximum of 48 hours. Additionally, municipalities such as Vau i Dejes, Puka, and Fusharresi lack dedicated shelters for domestic violence cases, leaving Shkoder as the primary source of support in the region.

The combination of transportation difficulties and economic constraints further exacerbates the situation, making it challenging for women in crisis to access shelter services promptly. Many survivors find themselves unable to overcome these barriers, leaving them vulnerable and without the critical support they need during times of distress.

Addressing these challenges involves improving the accessibility of protection shelters, enhancing public transportation services in rural areas, and increasing awareness of available resources among survivors. Additionally, collaboration between government agencies, non-profit organizations, and community stakeholders is essential to ensure comprehensive support for survivors of domestic violence across Albania. By addressing these systemic barriers, we can work towards creating a more inclusive and supportive environment for survivors seeking refuge and assistance.

Awareness and Information

In Albania, various organizations are actively engaged in conducting meetings and seminars to disseminate information on how Albanian women can navigate situations of domestic violence. These efforts seek to empower women with the knowledge and resources they need to assert their rights and seek assistance when faced with abusive situations. However, despite these initiatives, significant challenges persist, stemming from a pervasive lack of trust in institutional systems, particularly in the police and courts.

The widespread distrust in institutions is largely attributed to the lengthy delays prevalent in the judicial processes. While settlements in other countries may be resolved within approximately six months under normal conditions, the process can extend to one to two years in Albania. These delays exacerbate the challenges faced by survivors of domestic violence, prolonging their suffering and hindering their ability to obtain timely resolution and justice.

Moreover, the obstacles women encounter extend beyond mere informational deficiencies. While awareness of legal frameworks and basic rights is crucial, the overarching issue lies in the lack of access to essential services and institutions. As discussed in the previous section, the inadequacy of public transportation infrastructure further compounds the difficulties faced by women seeking assistance. Without reliable transportation options, many women are unable to access support services or present themselves to relevant institutions, perpetuating their vulnerability and limiting their ability to seek help.

Despite efforts to disseminate information through meetings and seminars, awareness campaigns targeting the broader population, particularly vulnerable groups, remain insufficient. More robust initiatives are needed to ensure that information reaches as many individuals as possible within the target demographic. By expanding awareness campaigns and enhancing outreach efforts, organizations can effectively educate and empower women to recognize their rights, access support services, and navigate the complexities of seeking assistance in situations of domestic violence.

In conclusion, while organizations in Albania are actively engaged in disseminating information and raising awareness about domestic violence, significant barriers persist, undermining women's ability to access essential services and seek justice. Addressing these challenges requires comprehensive efforts to build trust in institutional systems, streamline judicial processes, and improve access to support services. By prioritizing awareness campaigns and expanding outreach initiatives, we can empower women to assert their rights and break free from the cycle of violence and oppression.

The advent of digitalization has ushered in a new era of transparency and accessibility in Albania, with information becoming increasingly available to the public. However, this digital revolution has also brought to light a notable gender gap in research skills among women. While access to information is now more widespread than ever before, possessing the necessary digital literacy skills remains a prerequisite for effectively navigating online resources.

To fully leverage the benefits of digitalization, individuals must not only have access to an internet connection and essential tools such as smartphones or computers but also possess the skills required to interpret and generate relevant documents. This is particularly crucial in situations such as seeking accommodation or filing complaints, where the ability to access and utilize online platforms is essential.

Platforms like E-Albania have emerged as valuable resources, offering transparent and free access to a wealth of information and services. However, despite the accessibility of these platforms, women from older or less technologically savvy generations may find themselves at a disadvantage due to their limited proficiency in digital research and document processing.

Addressing this gap in research skills among women is essential for ensuring equal access to information and opportunities in the digital age. Efforts to promote digital literacy and empower women with the necessary skills to navigate online platforms are crucial steps towards bridging this divide. This may involve targeted training programs, workshops, and educational initiatives designed to enhance women's proficiency in digital research and document management.

Recognizing and valuing the knowledge and expertise of older generations can play a vital role in closing this gap. Intergenerational learning opportunities, where younger individuals can share their digital skills with older counterparts, can foster mutual understanding and collaboration, ultimately strengthening the digital capabilities of all members of society.

By prioritizing digital literacy initiatives and fostering a culture of lifelong learning, Albania can empower women of all ages to fully participate in the digital revolution and reap the benefits of an increasingly interconnected world. By equipping women with the skills, they need to effectively navigate online resources and platforms, we can ensure that no one is left behind in the digital age.

Conclusion

Addressing gender-based violence in Albania necessitates a comprehensive and multi-faceted approach. This includes investing in girls' education and women's economic empowerment, alongside enhancing financial and social services such as early childhood development and access to kindergartens. These services must be made accessible to all women and girls, particularly those who are most marginalized.

Elected leaders must prioritize the effective functioning and resourcing of local referral mechanisms for a coordinated response to domestic violence. These mechanisms are critical for sustaining the protection and reintegration of women and girls who are survivors or at risk of violence.

Victims of Gender-based Violence need unobstructed access to necessary support services, especially during crises. Therefore, it is essential to keep these support services operational and adapt them to the situation by providing support online or over the phone. Communities also play a vital role in preventing and addressing violence by offering support to victims.

The COVID-19 pandemic has highlighted the importance of paying continuous attention to gender equality within households, as it neither worsened nor improved the division of household responsibilities and control over spending between men and women. Organizations dedicated to gender equality should incorporate the division of labor within the home into their programming. Additionally, further research is warranted to examine the long-term impact of pandemic-related restrictions on household cohesion.

In conclusion, addressing Gender-based Violence in Albania requires legal reform, economic support for victims, and a cultural shift to challenge societal norms that perpetuate violence and shame. Through comprehensive and sustained efforts, Albania can work towards reducing the prevalence of gender-based violence and providing victims with the necessary support to pursue justice and healing.

'Women in Albania that are victims of domestic violence when trying to escape from it they find themselves in such a vicious cycle that they'd sometimes prefer to stay within a toxic household.' - 'Light Steps' Women's Centre, Shkoder

Women's economic independence is often the key to escape from these very hard situations. Support from government agencies, non-profit organizations, and private sector partners is

essential in creating an enabling environment for female entrepreneurs. Initiatives such as training programs, financial assistance, mentorship opportunities, and infrastructure development can significantly alleviate these barriers.

Moreover, fostering a culture of gender inclusivity and equality within the entrepreneurial ecosystem is crucial. By challenging societal norms and promoting the economic empowerment of women, communities can unlock the full potential of female entrepreneurs and drive sustainable economic growth. Through concerted efforts and targeted interventions, the path to successful economic operations for female entrepreneurs can be paved, leading to greater independence and the possibility for women to have the freedom of choosing a better future for themselves without depending on the support of their partners/families.

Addressing legal inequities is crucial for promoting gender equality and fostering inclusive economic development. Efforts to reform discriminatory laws and enforce gender-sensitive policies are essential steps toward creating a level playing field for women and men. By ensuring equal legal rights and protections, societies can empower women to fully participate in economic activities, contribute to household income, and drive sustainable development. Eliminating legal barriers to women's economic participation not only enhances individual prosperity but also benefits communities and economies at large by tapping into a broader talent pool and fostering diverse perspectives and innovation.

Achieving gender equality under the law is not only a matter of human rights but also a prerequisite for realizing inclusive and sustainable economic growth.

Chapter 2:

*Women's attitudes
towards intimate
domestic violence
(Albania's case)*

*****Disclaimer:**

This chapter originated as part of a collaborative research initiative with Professor Elisabetta Croci Angelini and Professor Alessandra Michelangeli. Initially, our work focused on collecting and structuring the dataset, drafting segments of the Methodology section, and developing initial random effects and fixed effects models. Although the collaboration was subsequently interrupted, this foundation was instrumental in shaping the early stages of this analysis. The following content builds upon and extends these foundational efforts to provide a comprehensive examination of gender violence perceptions in the specified case of Albania.

Introduction

A significant public health issue and a violation of women's human rights, violence against women, particularly against intimate partners and sexual assault, is on the rise. According to estimates made by the WHO, around one in three (30%) women worldwide have experienced physical and/or sexual intimate relationship abuse or non-partner sexual violence at some point in their lives. The majority of this violence occurs between intimate partners. Nearly a third (27%) of women aged 15 to 49 who have been in a relationship worldwide say their intimate partner has abused them physically or sexually in some way. (WHO, 2024) Violence can hurt a woman's physical, emotional, sexual, and reproductive health and, in some circumstances, may raise her chance of contracting HIV. In addition to serving as a point of entry for directing women to various support services they may require; the health sector has a crucial role to play in providing comprehensive healthcare to victims of abuse.

Supportive attitudes should not necessarily be interpreted as approval of wife-beating, nor should they imply that a woman girl will inevitably become a victim of domestic violence. Rather they should be seen as indicative of the degree of social acceptance of such practices. This can be influenced by the perception that women and girls have a lower status in society than men and boys or the expectation that they should fulfill certain gender roles.

In this paper, we make a comparative analysis of countries at different development stages.

There are few comparatives on acceptance of wife beating and they are usually limited to specific geographic areas such as Africa (Rani, Bonu, & Diop-Sidibe, An empirical investigation of attitudes towards wife-beating among men and women in seven sub-Saharan African countries, 2004), Asia (Rani & Bonu, Attitudes Toward Wife Beating: A Cross-Country Study in Asia, 2008).

The findings provide insights into the potential role of socioeconomic development over time in changing beliefs and attitudes toward beating.

The remainder of the article is structured as follows. In Section 2, we review the literature on perceived Intimate Domestic Violence and disparities between objective and subjective IDV. Section 3 describes data and presents some stylized facts about the relationship between objective intimate domestic violence, perceived IDV, and the desired level of IDV. Section 4 discusses the empirical methodology. Section 5 presents the results. The last section concludes.

Literature Review

Intimate partner violence, also known as physical aggression, sexual coercion, psychological abuse, and dominating behavior, is any behavior that takes place in an intimate relationship and harms either party physically, sexually, or psychologically. It is also referred to as domestic abuse, spousal abuse, or intimate partner violence. This term covers violence committed by spouses, partners, and former partners. It is just a part of the spectrum of Domestic Violence which refers to violence of any kind, including physical, emotional, sexual, and economic/financial, used by a family member or spouse against another.

According to the United Nations "Domestic Violence or Intimate Partner Violence, can be defined as a pattern of behavior in any relationship that is used to gain or maintain power and control over an intimate partner. Abuse is physical, sexual, emotional, economic or psychological actions or threats of actions that influence another person. This includes any behaviors that frighten, intimidate, terrorize, manipulate, hurt, humiliate, blame, injure, or wound someone. Domestic abuse can happen to anyone of any race, age, sexual orientation, religion, or gender. It can occur within a range of relationships including couples who are married, living together, or dating. Domestic violence affects people of all socioeconomic backgrounds and education levels." (United Nations, 2023)

The term "intimate partner violence" (IPV) refers to a wide range of academic approaches designed to comprehend and explain the dynamics of violence in intimate relationships. These ideas make an effort to explain the elements that lead to partner abuse occurring and continuing. Any type of physical, emotional, psychological, sexual, or financial abuse that takes place between people in a romantic or intimate relationship is referred to as IPV, often known as domestic violence or spousal abuse.

As a complex phenomenon, IPV has been found more tolerable in some cultures more than the others and they have a tendency on normalizing it on a day to day basis. Overall, IPV is more widespread in developing nations, especially those experiencing political-related-violence. (Arguello, 2021)

Even though there is a wealth of knowledge regarding the various aspects of IPV, very few studies have examined empirically supported methods to address it. According to research, women—

especially those from underrepresented groups—should get support and advice to enroll in higher education institutions. Their level of education will probably operate as a shield throughout their lives, possibly shielding them from ever suffering IPV.

Parity in access to higher-paying jobs likely could help reduce the prevalence of IPV. Well-implemented cultural change strategies also appear to be a solution to the problem of IPV. Societal structures (e.g., law, religion) and organizations (e.g. welfare) seem to be key participants in the development of respectful and nonviolent relationships between men and women that likely could prevent IPV from ever taking place. Early detection of violence within the home and follow-up interventions could prevent children from normalizing such behavior. Healthcare system screenings could detect early signs and symptomatology of IPV. These screenings could potentially ensure that multisystem interventions are implemented to disrupt the development of IPV and provide survivors with needed support. Lastly, research suggests that governments and their officials should refrain from endorsing politically violent acts. Governmental acts of violence likely could endorse or ignite the problem of IPV in nations. (Arguello, 2021)

There are several key theories that have been developed to explain intimate partner violence from which we can mention:

The social learning theory (Hammer, 2011) - According to Albert Bandura's social learning theory, learning happens through imitation, modeling, and observation and is influenced by things like motivation, attitude, and emotions. (Bandura, 1977) The idea takes into account how environmental and cognitive factors interact to influence how people learn.

According to the hypothesis, learning happens as a result of people seeing the results of other people's actions. Bandura's theory goes beyond cognitive theories, which take into account psychological factors like attention and memory, and behavioral theories, which contend that all behaviors are learned through conditioning.

The Social Exchange Theory (Cook, 2015) - A relationship between two people is developed through a process of cost-benefit analysis, according to the social exchange hypothesis. In other words, it's a statistic created to assess the level of commitment made by a person in a person-to-person connection. Data from the measurement of a relationship's positives and negatives may be used to assess whether someone is investing excessive effort in their connection.

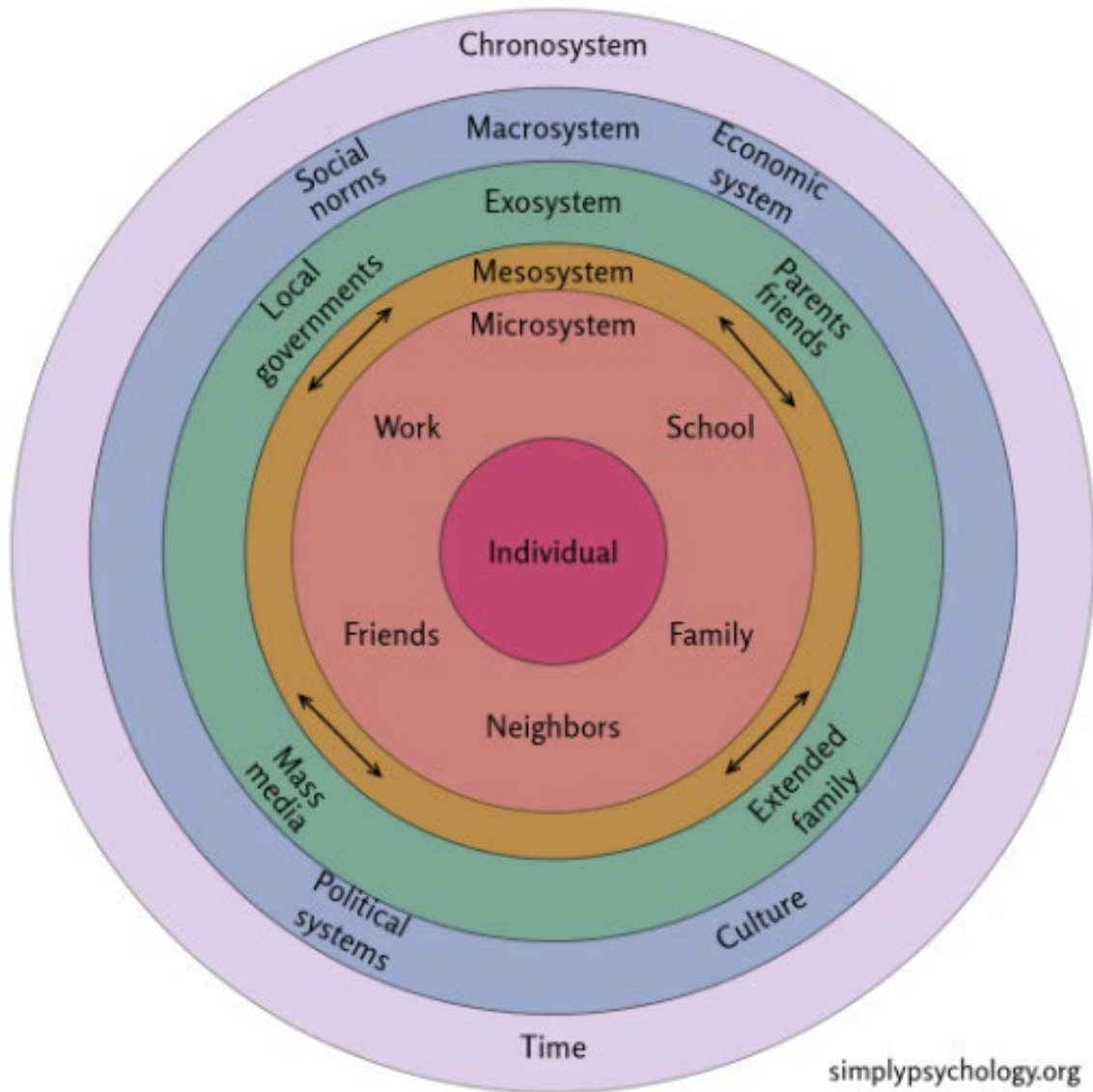
The idea is distinctive in that it doesn't always gauge interpersonal connections using emotional measurements. Instead, its systematic procedures use logic and mathematics to ascertain balance in a connection. In addition to assessing sexual relationships, the theory can also be used to assess the harmony within a friendship.

Feminist Theory (Renzetti, 2008)- The expansion of feminism into theoretical, fictional, or philosophical discourse is known as feminist theory. This theory tries to look for comprehension of gender disparity. In a wide range of disciplines, including anthropology and sociology, communication, media studies, psychoanalysis, political theory, home economics, literature, education, and philosophy, it explores women's and men's social roles, experiences, interests, tasks, and feminist politics.

Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, *The ecology of human development: Experiments by nature and design*, 1979) - This theory examines a child's growth within the framework of the network of connections that make up his or her environment. According to Bronfenbrenner's hypothesis, there are many "layers" of the environment that have an impact on a child's development. Recently, the name of this theory was changed to "bioecological systems theory" to stress that a child's primary environment for growth is biology. (Bronfenbrenner, *Making Human Beings Human: Bioecological Perspectives on Human Development*, 2004) Their development is fueled and guided by biology, their immediate family and community, and the social environment. Conflict or changes in one layer will have an impact on all the others. To research a child's development must consider the interaction of the greater world as well as the child and her immediate environment. The theory views child development as a complex system of relationships affected by multiple levels of the surrounding environment. (Bronfenbrenner & Morris, *The Bioecological Model of Human Development*, 2007)

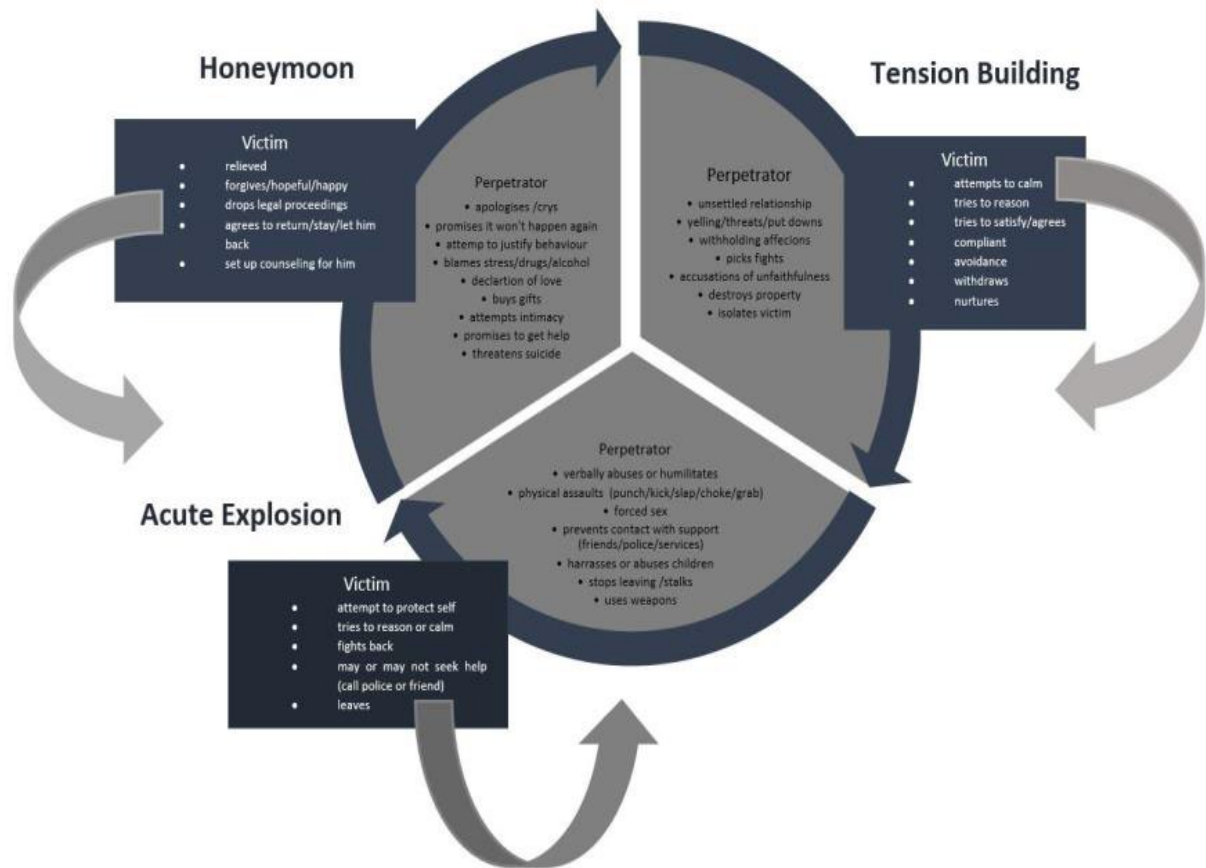
Bronfenbrenner classified the environment into five subsystems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The microsystem is the most influential level, which includes the child's immediate surroundings such as family and school. The hypothesis has major consequences for educational practice and understanding of many developmental contexts. (Guy-Evans, 2024)

Figure 8 Bronfenbrenner's Ecological Systems Theory – developed by SimplyPsychology



Cycle of Violence Theory (Walker, 1979)- According to the cycle of violence theory, abusive relationships go through several stages, including a phase where tension is growing, an acute outbreak of violence, and a phase where things are calm and happy. The pattern tends to repeat itself, with the level of violence rising over time. (Wilson, 2019)

Figure 9 Cycle of Violence



Attachment theory (Bowlby , 1982) - Relationships later in life can be affected by early attachment experiences, according to the theory of attachment. Individuals with insecure attachment patterns may be more likely to commit acts of violence against intimate partners or to become their victims. (Bowlby , 1982) (Cherry, 2023)

Psychopathology and Personality Disorders - Some researchers have examined the potential roles that specific mental health conditions, personality disorders, or drug misuse concerns may play in the incidence of violence towards intimate partners.

It is significant to remember that these ideas are not all-encompassing and that many other elements frequently interact to cause intimate partner violence. Furthermore, IPV research is a field that is always changing, so new viewpoints may surface over time. Understanding these theories will aid in addressing and reducing intimate partner violence through prevention and intervention.

On the other hand, **Perceived Domestic Violence** refers to how a scenario is viewed by a person or group of people as involving domestic violence. It is based on how they see the events that take place in a domestic or intimate relationship in terms of acts, behaviors, or incidents. Although perceived domestic violence may not always fit the objective or legally established definitions of domestic abuse, it does represent how individuals view and interpret the actions they observe.

A wide range of abusive actions are included in domestic violence, including physical assault, emotional or psychological abuse, sexual assault, financial abuse, and more. However, cultural norms, individual experiences, and personal views can all have an impact on how domestic violence is seen. The perception of domestic violence can be influenced by a number of things, including:

Cultural norms - People's perceptions and interpretations of abusive acts can be influenced by other cultures' views on and attitudes toward intimate partner violence.

Personal Experiences - Those who have personally experienced or witnessed domestic violence may be better able to spot similar patterns of conduct in the relationships of others.

Media and Education - Being exposed to media representations of domestic violence and receiving education about the warning signals of abuse might affect how people view and recognize such behavior.

Social Support Networks - A person's understanding of domestic abuse may be influenced by the opinions and responses of friends, relatives, or support groups.

Gender Roles and Power Dynamics - Power disparities in relationships and societal norms can influence how people behave.

Perceptions of domestic violence can vary, and in certain circumstances, people may not completely comprehend or recognize violent behaviors, but they can make better decisions and respond appropriately when they encounter such circumstances by becoming more aware of domestic abuse and receiving education about its various manifestations. Differences between stated and verifiable criteria for domestic violence and how individuals and observers understand domestic violence situations are referred to as disparities between objective and subjective

perceived domestic violence. These inequalities may influence how domestic violence is identified, reported, and handled in different contexts.

Methodology

As a starting point, we develop a baseline least-squares model of the determinants of perceived where Y_{ir} is the outcome variable of individual i in country r , i.e. perceived inequality of desired inequality; X_{ir} is a column vector of personal features; u_{it} is the usual error term.

We consider a random intercept model specified as follows:

$$Y_{it} = \beta_0 + \beta'_1 + \mu_{it} + u_{it} \quad (2)$$

where μ_{it} is the random intercept representing level 2 residuals; u_{it} are level 1 (individual-specific) residuals. They are assumed to be mutually independent and normally distributed with zero mean and variance equal to σ^2 . Level 2 residuals are assumed to be uncorrelated with u_{it} , mutually independent and normally distributed with zero mean and variance equal to τ^2 . Level 1 residuals represent the unexplained variability of the outcome variable after considering the measurable characteristics of the individual and region. Level 2 residuals represent unexplained heterogeneity at the regional level.

The model is estimated by restricted maximum likelihood using this method that maximizes the probability on the constrained subspace orthogonal to the known confounding factors to estimate the latent variables. This approach then calculates the variance-covariance parameters by maximizing the remaining components in the likelihood function given the latent variables. Our approach achieves higher or equivalent likelihood values than gradient-based optimizers, can be computed using common matrix operations, produces latent factors that do not overlap with any known factors and runs at a fraction of the time. As a result, the REML method makes it easier to apply random effects modeling techniques to significantly larger gene expression datasets.

No model can be said to be safe from the risk of omitting explanatory factors of various types that vary per individual but are constant over time (for example, gender, individual characteristics, socioeconomic background); that vary only over time (for example, the business cycle, which is the same for all individuals); and that vary in both directions (for example, individual wages, capital stock).

Two approaches can be used to examine the model parameters for this type of panel data:

- Averaging: an estimate of equations divided into individual (group) variables. Analysis of

the coefficients' distribution across people. The average of the (heterogeneous) parameters is consistently estimated by the mean group estimator (MGE).

- Using a panel model (with fixed or random effects, FE or RE), where the slopes and variances of the error are taken to be equal, is known as "pooling." Pooling can be used to make up for a lack of time-series depth in the data by increasing degrees of freedom and possibly lowering standard errors of the regression results.

Additional advantages of using panel data may also be:

- They provide more efficient data, more variability, less collinearity between the variables, and more degrees of freedom.
- They are more useful for researching the dynamics of adjustment.
- They allow for the creation and testing of more complex behavioral models than merely cross-section or time-series data.
- They are better equipped to find and evaluate effects that are simply not detectable in pure cross-section or pure time-series data.
- They may help to remove biases brought on by aggregation over individuals.

When estimating the various coefficients, various i (or t) assumptions lead to either adopting the fixed effects approach or the random effects approach. The observations of the exogenous variables are considered to be independent of the error term for all cross-sections or time periods under the fixed effects approach, where the i -s are supposed to be fixed parameters to be estimated. This is a suitable specification form for the majority of accounting research, according to Baltagi (2005:12), if one is focusing on a certain set of firms and inference is restricted to that set of firms.

Pooled Least Square Approach

Statistical models known as fixed-effects models assume that the levels (or values) of the independent variables are fixed (or constant) and that only the dependent variable changes in response to the levels of the independent variables. This model does not consider time and individual dimensions therefore we assume that the behavior of the data is the same in various periods and the Ordinary Least Square (OLS) approach can be used to estimate the panel data model. So in that case the model would be similar to OLS like so:

$$Y_{it} = \alpha + \beta' x_{it} + u_{it}$$

For $i = 1, 2, \dots, N$ and $t = 1, 2, \dots, T$.

Where N = Number of individuals or cross section and T is the number of time periods.

The Summary of Regression Result Panel Data Common Effects Model is the following based on the result mentioned above:

1. The number of periods or the order of periods that are included in the analysis.
2. Cross section Includes the number of panels or cross sections used in the analysis. At the same time, the panel employed in this example of panel data regression consists of up to 51 different countries.
3. Total Panel (Balanced) observations: This refers to the overall number of observations included in the study. Balanced refers to harmony, i.e., the amount of time (year) spent on each panel.
4. The variables that are examined are listed in the variable column. Where Y is used as the response variable in this example of panel data regression. While X1, X2, and X3 are the predictor variables. And u as the panel data regression equation's residual or error.

Fixed effect Model Approach

This model assumes that various intercepts can account for individual variations, so we assume that the unobservable individual effects are correlated with the regression variables. Panel data are used in the fixed effects method to account for (omitted) variables that vary between people or things (such states or countries) but remain constant over time. Different intercept can develop as a result of variations in work, managerial, and incentive cultures. This can be captured by estimating Fixed Effects model panel data using a dummy variable technique to describe the changes between intercept firms. However, the intercept was consistent among businesses. The Least Squares Dummy Variable (LSDV) technique is another name for this estimate strategy.

$$Y_{it} = \alpha_i + \sum_{k=1}^K \beta_k X_{itk} + u_{it} \quad (4)$$

Where:

- i is the unique intercept for each observation such that i is different from j ; therefore, it quantifies the individual effect, which changes from individual to individual but remains constant across time. As a result, there will only be N individual effects.

- They are classical errors: they have a zero expected value and a matrix of variances and covariances with the property of homoscedasticity, i.e. the variance of each observation is constant and equal to σ^2 , for each i and for each t , and they show an uncorrelation between observations and different instants of time.

The model has $K + N$ parameters: K from the vector and N constants for all individuals, representing the heterogeneity of the investigated sample. Fixed effects models assume that differences in individual effects arise from the intercept μ_i , which is unique to each observation and stable across time, but unobservable, allowing for the presence of correlation with the X regressors. In fact, as we will see in variable effects models, the heterogeneity will not form part of the error component, permitting the presence of a correlation between the individual effects and the fitted values, which are dependent on the regressors.

The key assumptions of the Fixed effect model approach are:

- The included regressor(s) and the omitted variable are correlated.
- Unobserved traits of people (such as innate talent) or things that are connected with the regressor(s) don't change over time.

When employing FE, we presume that an individual's traits may influence or bias the predictor or outcome variables, and we need to account for this. The association between an entity's error term and predictor factors is predicated on this reasoning. We can evaluate the overall impact of the predictors on the result variable since FE takes these time-invariant properties out of the equation. In fixed effects models, the population regression line's intercept varies across people or entities, but its slope coefficient is constant for all persons or entities (Stokes and Watson, 2019).

Random Effect Approach

Random Effects approach in data panel is mostly used if you have grounds to think that variations between entities have some bearing on your dependent variable. You must identify the specific traits in a random effects model that may or may not have an impact on the predictor variables. The issue with this is that certain factors, such as personal traits like natural ability, may not have data, resulting in bias in the model due to missing variables.

$$Y_{it} = \alpha + \sum_{k=1}^K \beta_k X_{itk} + \mu_i + u_{it} \quad (5)$$

because:

$$\alpha_i = \alpha + \mu_i$$

Using the random effects method has the benefit of allowing to include of time-invariant variables in the model, such as geographic proximity and interstate distance. These variables are absorbed by the intercept in the fixed effects model.

The key assumption of the Random Effect model approach is:

- The included regressor(s) and the omitted variable are not correlated.

It may be suitable to describe the individual specific constant terms as randomly distributed across cross-sectional units if individual effects are strictly uncorrelated with the regressors. If we think that sampled cross-sectional units were selected from a sizable population, then this point of view would be appropriate.

Fixed Effects or Random Effects?

Returning to Kennedy's work in "A Guide to Econometrics" (2008), we can gain a deeper understanding of the theoretical intuition behind fixed effects and random effects models. Both of these effects represent unobservable or non-measurable components that can lead to bias in the classic OLS estimator.

In a fixed effects model, heterogeneity is addressed by introducing dummy variables into the model to estimate the specific intercept for each cross-sectional unit. This approach effectively isolates the unique characteristics of each unit, allowing for more precise estimates.

In contrast, a random effects model treats the intercept as one of the possible intercepts that could be drawn from a population, hence the term "random." This intercept is treated as part of the error term. The random effects model, therefore, has a composite error term that includes both the classic error and a random intercept. This intercept captures the deviation of an individual unit's intercept from the general population intercept.

The fundamental difference between the two models lies in the correlation between the error term and the regressors. In the fixed effects model, the unique intercepts are correlated with the regressors, while in the random effects model, they are not.

Example: Production and Investment in Companies

To illustrate the differences between these models, consider a regression analysis of the production output of different companies based on their investment levels.

The fixed effect can be interpreted as the initial production capacity that each company can sustain without additional investments. This initial capacity varies from one company to another, reflecting each company's unique baseline production level.

The random effect, on the other hand, can be viewed as the ability of a company to maintain stable production relative to the productivity levels of other companies (represented by the coefficient of the investment term). If a company's production experiences fluctuations, this variability is captured by the random intercept, which reflects the difference between the individual company's intercept and the general population intercept.

In summary, while the fixed effects model captures the individual-specific characteristics that are correlated with the regressors, the random effects model assumes these individual differences are random and uncorrelated with the regressors. Understanding these distinctions helps in choosing the appropriate model based on the nature of the data and the specific research question at hand.

In the modeling phase, the first step is to verify the presence of heterogeneity in the data. If no significant heterogeneity is detected, a pooled OLS model would suffice. To determine this, we use specific tests:

- F Test: If the null hypothesis is rejected, indicating significant fixed effects, we opt for a fixed effects model.
- Breusch and Pagan Test: If the null hypothesis is rejected, indicating significant random effects, we opt for a random effects model.
- Pooled OLS: If neither test rejects the null hypothesis, a pooled OLS model is appropriate.

Once individual effects are confirmed, the Hausman test is conducted to determine whether the fixed or random effects model is more suitable.

- If the null hypothesis of uncorrelated individual effects and regressors is rejected, the fixed effects model is chosen.

- If the null hypothesis is not rejected, indicating uncorrelated individual effects, the random effects model is preferred.

Judge's Guidelines for Model Choice: Judge (1988) proposes four practical guidelines for choosing between fixed and random effects models:

- High T, Small N: When the time dimension (T) is large and the cross-sectional dimension (N) is small, parameter estimates from both models tend to be similar. The fixed effects model is preferred for its computational convenience.
- Large N, Small T: If the cross-sectional units (N) are random samples from a larger population, the random effects model is preferred. Otherwise, the fixed effects model is chosen.
- Correlation Between Individual Heterogeneity and Regressors: When there is a correlation between individual heterogeneity and one or more regressors, the fixed effects model is chosen because random effects estimates would be biased.
- Large N, Small T with Valid Uncorrelation Hypothesis: If N is large, T is small, and the hypothesis of no correlation between individual effects and regressors holds, the random effects estimator is more efficient.

In econometric modeling, the choice between fixed effects and random effects models depends on the presence and nature of heterogeneity in the data. Initial tests such as the F test and Breusch and Pagan test guide us towards recognizing individual effects. The Hausman test further refines the model choice based on the correlation between individual effects and regressors. By following Judge's guidelines, we can make informed decisions about model selection that best suits the data structure and research objectives.

After having the results of the fixed effect models and the random effect models we can perform the Hausman test in Stata which allows us to understand which one of the models would be the best in terms of accuracy. The Hausman test, also known as the Hausman specification test or Hausman-McFadden test, is a statistical test used to determine the appropriate model specification when choosing between two or more alternative models. It tests whether the unique errors are correlated with the regressors, the null hypothesis is they are not.

The purpose of this test is to assess whether a model with random effects (RE) or a model with fixed effects (FE) is more appropriate for a given dataset. These two approaches are commonly used to account for unobserved heterogeneity in panel data analysis. The test is based on the principle that if the random effects assumption holds and is consistent with the data, the estimated coefficients in the random effects model will be more efficient than those in the fixed effects model. Therefore, the null hypothesis of the Hausman test is that the random effects model is appropriate, while the alternative hypothesis is that the fixed effects model is preferable.

It involves estimating both the random effects and fixed effects models and comparing the estimated coefficients. It calculates the difference between the two sets of coefficients and constructs a test statistic based on this difference. The test statistic follows a chi-square distribution under the null hypothesis. The test statistic follows a chi-squared distribution, and its p-value indicates whether the null hypothesis of no difference between the fixed effects and random effects models can be rejected.

If the test statistic is statistically significant at a chosen significance level (e.g., 5%), indicating a rejection of the null hypothesis, it suggests that the fixed effects model is more appropriate due to the presence of unobserved individual-specific effects. On the other hand, if the test statistic is not significant, it implies that the random effects model can be used as it provides more efficient estimates by assuming that the unobserved individual-specific effects are uncorrelated with the explanatory variables. The Hausman test helps researchers determine which model specification to use based on the trade-off between efficiency and consistency. However, it is important to note that the test assumes certain assumptions about the data, such as the absence of endogeneity and correct model specification, and violations of these assumptions can affect the test's results.

Data and Variables

The analysis relies on data from Multiple Indicator Cluster Surveys and Demographic and Health Surveys (DHS), in which women are asked whether they think a husband is justified in hitting or beating his wife under certain circumstances. Questions are addressed to all women and men aged 15 to 49 years, regardless of their marital status and experience of violence. The main variables refer to the percentage of women aged 15 to 49 years who think a husband is justified in hitting or beating his wife for any of the following five reasons: *i*) argues with him; *ii*) refuses to have sex; *iii*) burns the food; *iv*) goes out without telling him; *v*) neglects the children.

Variables are observed for 51 countries for 22 years, from 1999 to 2020. The dataset presents several missing values and low variability of all variables across years. This led us to divide the time span period in three waves: the first wave - from 1999 to 2006, - covers the period before the Great Recession; the second wave, 2007-2013, includes the period in which occurred the Great Recession; the third wave, 2014-2020, includes the period of the COVID-19 pandemic. For each variable, we computed the average value over the years included in each wave. In this way, we obtain unbalanced panel data composed of 51 countries observed over three periods. The list of the countries taken into consideration is as follows: Albania, Armenia, Bangladesh, Benin, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, Colombia, Congo, Congo DR, Dominican Republic, Egypt, Ethiopia, Gambia, Ghana, Guinea, Guyana, Haiti, Honduras, India, Indonesia, Jordan, Kenya, Kyrgyz Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mozambique, Namibia, Nepal, Niger, Nigeria, Pakistan, Peru, Philippines, Rwanda, Senegal, Sierra Leone, Tajikistan, Tanzania, Timor-Leste, Togo, Turkey, Uganda, Zambia, Zimbabwe.

After the selection of 54 countries to take into consideration, we managed to gather information regarding other variables starting from religions divided into 4 principal divisions (Buddhist, Muslim, Christian, and Hindu), then adding HDI (Human Development Index), GNI and GDP per capita, Literacy rate [divided in Literacy rate for youth (ages 15-24), the Literacy rate for female youth, the Literacy rate for male youth, the Literacy rate for ages 15 and above, also divided in male and female population], Gini Index, Income share [divided in Income share held by the lowest and highest 10%, and Income share held by lowest, second, third, fourth and highest 20% of the population], the Poverty Gap (divided in Poverty gap at \$2.15 a day, Poverty gap at \$3.65 a day, Poverty gap at \$6.85 a day), and the Poverty headcount (divided in Poverty

headcount ratio at \$2.15 a day, Poverty headcount ratio at \$3.65 a day, Poverty headcount ratio at \$6.85 a day, Poverty headcount ratio at national poverty lines). This way we ended up with a dataset of 18 variables from which the missing values persisted in the variables of ‘Women making their own informed decisions regarding sexual relations, contraceptive use, and reproductive health care (% of women aged 15-49)’ (SGDMKSRCRFNZS) and beliefs in which these missing values are justified given that each individual could only choose one of the 4 options we had included. This way we could start our analysis with a solid base of answers.

Regarding the missing values we chose not to take any action because by default Stata handles the missing values using "listwise deletion", meaning that it will automatically remove any observation that is missing on the outcome variable or on any of the predictor variables.

Table 7 Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SGVAWREFUZS	126	21.386	17.476	.2	69.7
SGVAWNEGLZS	129	32.176	18.305	.7	81
SGVAWGOESZS	128	28.837	19.439	.3	82.7
SGVAWBURNZS	125	15.173	13.45	.1	62.75
SGVAWARGUZS	126	25.721	18.923	.4	77.6
SGVAWREASZS	132	42.522	22.763	.8	92.1
SPM152024FEZS	135	7.916	7.387	0	37.7
SPM182024FEZS	143	29.694	15.785	2.2	76.3
SGDMKALLDFNZS	121	48.573	21.667	8.6	87.2
SGDMKSRCRFNZS	74	47.78	19.105	6.333	81
SGLAWINDEX	153	65.306	14.284	26.25	94.286
buddist	16	24.813	36.24	1	96
christian	121	59.488	30.571	1	97
indu	10	48.8	40.928	1	81
muslim	108	46.185	38.171	1	100
HDI	153	.533	.122	.27	.796
country num	153	26	14.768	1	51
wave num	153	2	.819	1	3

The Variables related to Violence Perception amongst women are as below:

- Women who believe a husband is justified in beating his wife when she refuses sex with him (%) -SGVAWREFUZS
- ‘Women who believe a husband is justified in beating his wife when she neglects the children (%) -SGVAWNEGLZS
- Women who believe a husband is justified in beating his wife when leaving the house without notice (%) - SGVAWGOESZS
- Women who believe a husband is justified in beating his wife when burning food (%) – SGVAWBURNZS
- Women who believe a husband is justified in beating his wife in the case of having arguments with their partners (%) – SGVAWARGUZS
- Women who believe a husband is justified in beating his wife in the case of having any of the reasons taken into consideration in the first 5 variables (%) – SGVAWGOESZS
- Women who were first married by age 15 (% of women ages 20-24) - SPM152024FEZS
- Women who were first married by age 18 (% of women ages 20-24) - SPM182024FEZS
- Women Business and the Law Index Score (scale 1-100) – SGLAWINDEX

Looking at the average frequencies over the period, it turns out that the most common reason agreed by women as a justification for wife beating is undefined, i.e. any reason (42.52%). The acceptance of wife beating dampens when women are questioned on specific reasons: neglecting children (32,17%); going out without informing the husband (28.83%); arguing back with the husband (25.72%); refusing sex (21.38%) and burning food (15.17%).

Dividing these answers into three major waves 1999-2006, 2007-2013, and 2014-2020 we were able to perform the panel data analysis so as to understand the dynamics that happen between the perception of domestic violence and trends regarding the development of each country. After the selection of 51 countries to take into consideration, we managed to gather information regarding other variables starting from religions divided into 4 principal divisions (Buddhist, Muslim, Christian, and Hindu), then adding HDI (Human Development Index), GNI and GDP per capita, Literacy rate [divided in Literacy rate for youth (ages 15-24), the Literacy rate for female youth, the Literacy rate for male youth, the Literacy rate for ages 15 and above, also divided in male and female population], Gini Index, Income share [divided in Income share held by the lowest and

highest 10%, and Income share held by lowest, second, third, fourth and highest 20% of the population], the Poverty Gap (divided in Poverty gap at \$2.15 a day, Poverty gap at \$3.65 a day, Poverty gap at \$6.85 a day), and the Poverty headcount (divided in Poverty headcount ratio at \$2.15 a day, Poverty headcount ratio at \$3.65 a day, Poverty headcount ratio at \$6.85 a day, Poverty headcount ratio at national poverty lines). This way we ended up with a dataset of 41 variables from which the missing values persisted in the variables of 'Women making their own informed decisions regarding sexual relations, contraceptive use, and reproductive health care (% of women aged 15-49)' (SGDMKSRCRFNZS) and beliefs in which these missing values are justified given that each individual could only choose one of the 4 options we had included. This way we could start our analysis with a solid base of answers.

Looking at the results of each wave, we can see that there was a decrease in acceptance of violence from the first to the last wave for all of the reasons considered for the analysis: on average, it was reduced by 28.4%, with a peak of -39.4% in the case where the woman burns the food. These preliminary findings point to a general improvement in women's conditions, as well as increased awareness of domestic abuse, with women less prone to explain any motivation that leads their partner to violence.

This is undoubtedly a promising indicator for tackling the phenomena of intimate partner violence, as Alesina revealed a positive association between the actual occurrence of violence and the proclivity of women (and men) to excuse it. (Alesina, Brioschi, & Eliana, Violence against women: a cross-cultural analysis for Africa., 2021) (Alesina, Giuliano, & Nunn, On the origins of gender roles: Women and the plough, 2013)

Regarding the missing values we chose not to take any action because by default Stata handles the missing values using "listwise deletion", meaning that it will remove any observation that is missing on the outcome variable or any of the predictor variables. You do not need to do anything for Stata to do this, it does this automatically.

Fixed Effects Models

If the Between group variation is high relative to the Within-group variation, then the F-statistic of the ANOVA will be higher and the corresponding p-value will be lower, which makes it more likely that we'll reject the null hypothesis that the group means are equal. The larger the F-statistic, the greater the variation between groups means relative to the variation within the groups. Thus, the larger the F-statistic, the greater the evidence that there is a difference between the group means.

From this report of means and standard deviations for our panel data, we notice that the variability between for each dependent variable and for the HDI is higher than the variability from within but not too much so they're all more or less in the same magnitude. which means that we'll reject the null hypothesis that the group means are equal. They say that the variation in answers across the states taken into consideration is different but not too much to that observed within a question over time. That is, if you were to draw two states randomly from our data, the difference in answers is expected to be nearly equal to the difference for both states in two randomly selected years.

The fe option stands for fixed effects which is the same thing as within-subjects. Notice that there are coefficients only for the within-subjects (fixed-effects) variables.

Let's have a look at the results of the fixed effects model estimate for the dependent variable SGVAWREFUS, which represents the level of violence tolerated in the event of sex rejection. Since we assume that there are individual differences, the intercept should adequately represent heterogeneity.

The estimated model in this instance is **Model 1**:

Equation 1

$$SGVAWREFUS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

The models we are studying try to explain the effect that HDI might have on the level of awareness that these women have towards the endured domestic violence. Without the need to establish N dummy variables, Stata may directly estimate the model using the xtreg command, which is helpful when there are many cross-sectional observations. Let's take for example Model 1 where

the dependent variable will be 'Women who believe a husband is justified in beating his wife when she refuses sex with him (%) -SGVAWREFUZS'.

The given model represents the individual-specific random effect or unobserved heterogeneity for the i -th individual in the data. It captures the unobserved characteristics of each individual that may influence the outcome variable (SGVAWREFUS) but are not directly included in the model. Including the random effect models, allows for the estimation of individual-specific intercepts, accounting for the variations across individuals that cannot be explained by the observed variables in the model. It helps address the potential correlation or dependence within individuals' repeated observations over time.

In the context of the variable SGVAWREFUS (Women who believe a husband is justified in beating his wife when she refuses sex with him (%)), would capture the unobserved individual-specific factors that influence women's beliefs regarding this issue but are not explicitly included in the model.

Some possible factors may include:

- Cultural or societal norms - Different societies or cultural groups may have varying beliefs and attitudes towards gender roles, power dynamics within relationships, and acceptable behavior within marriages. The random effect can capture the influence of these cultural or societal norms that vary across individuals.
- Personal experiences- Individual experiences, such as personal history, upbringing, exposure to violence, or relationship dynamics, can shape one's beliefs about acceptable behavior within a marriage. The random effect can account for the impact of these unique experiences on women's attitudes.
- Personality traits or individual characteristics - Certain personality traits, values, or individual characteristics that are not measured or included in the model can influence women's beliefs about justifying violence in relationships. The random effect can capture these unobserved individual-specific factors.
- There may be other unmeasured contextual factors at the individual level that can affect women's attitudes toward domestic violence. For example, socioeconomic status, educational background, or exposure to media and information can play a role. The random effect helps to account for these unobserved factors.

By including this in the model, we allow for the estimation of individual-specific variation in beliefs about justifying violence in relationships, capturing the unobserved heterogeneity across women that cannot be explained by the observed variables in the model. The estimation output in STATA is as follows:

Table 8 Fixed Effects Model 1

```
. xtreg SGVAWREFUZS HDI , fe

Fixed-effects (within) regression      Number of obs   =       126
Group variable: country_num          Number of groups =        50

R-squared:                             Obs per group:
    Within = 0.3845                    min =           1
    Between = 0.4356                   avg =           2.5
    Overall = 0.4032                    max =           3

corr(u_i, Xb) = 0.0204                  F(1,75)         =       46.86
                                         Prob > F         =       0.0000
```

SGVAWREFUZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-93.61926	13.67641	-6.85	0.000	-120.8641	-66.37444
_cons	70.40249	7.179592	9.81	0.000	56.10001	84.70497
sigma_u	12.370129					
sigma_e	5.8685801					
rho	.81627989	(fraction of variance due to u_i)				

F test that all u_i=0: F(49, 75) = 11.97 Prob > F = 0.0000

Stata analyses fixed effect models using the within transformation and initially outputs just the estimate of the common constant and the regression coefficients (the specific heterogeneity component of each individual is thus not shown directly). Stata, in fact, examines the breakdown of individual effects into components $\alpha_i = \alpha + \mu_i$, which we utilized only in the case of random effects in the previous chapter's theoretical explanation.

The first thing we notice is the Prob>F = 0, which tells us that the model is a good prediction for SGVAWREFUZS. The t-value that tests that each coefficient is different from 0 is lower than 1.96 for a 95% confidence interval therefore HDI has a significant influence on the dependent variable. Meanwhile, looking at the two-tail p-value we notice the same trend, that HDI has a significant influence on the dependent variable SGVAWREFUZS, so that has a p-value lower than 0.05 in a

95% confidence interval. In the left bottom of the table, we can see that rho is 0.81 which means that 81% of the variance is due to differences across panels. The temporal effects (wave_num) seem particularly insignificant in our case.

Last but not least, the test shown below the table enables us to select between an easy pooling model (pooled OLS) that ignores individual effects and one that takes individual heterogeneity into account. There is heterogeneity in the data since the p-value for the individual effects' significance test rejects the null hypothesis ($H_0: \mu = 0$).

Even by looking at the table results, we are tempted to accept the t-test, which confirms that each coefficient is different from 0. As a result, the HDI variable has a large impact on the dependent variable in this example.

Finally, the test shown below the table assists us in deciding between a basic pooling model (pooled OLS) with no individual effects and one that takes individual heterogeneity into account. The p-value for the significance test for the individual effects μ_i rejects the null hypothesis ($H_0: \mu_i = 0$), indicating that heterogeneity exists in the data.

Table 9 Testparm HDI Model 1

```
. testparm HDI

( 1)  HDI = 0

      F( 1, 75) = 46.86
      Prob > F = 0.0000
```

The F statistic with 1 numerator and 75 denominator degrees of freedom is 46.86. The significance level of the test is 0%—we cannot reject the hypothesis at the 5% level. Therefore, there is no need to continue further with the evaluation of a model by including the temporal effects wave_num. As a matter of fact, when we test it as in the tables below the significance levels perform worse.

We do the same procedure but change only the dependent variable to see the effects that HDI has in each one of them in the fixed effect model like below:

Table 10 Testparm HDI & Wave Model 1

```
. testparm HDI

( 1)  HDI = 0

      F( 1, 74) = 0.48
      Prob > F = 0.4904

. testparm wave_num

( 1)  wave_num = 0

      F( 1, 74) = 1.62
      Prob > F = 0.2065
```

Using the xtreg command to estimate the model yields inaccurate R square estimates because they are based on the inside transformation, i.e. a standard OLS on transformed variables with the intercept deleted. To generate the right estimate, use the areg command or an LSDV (Least Square Dummy Variable) model, in which a dummy variable is included, in this case for each of the 51 cross-sectional units, in a normal pooled OLS model. We are not going to include that in this paper given that what we are trying to prove in the case is to consider which would be the better approach in modeling in our case, the fixed effect model or the random effect model.

When a dummy variable is excluded, its intercept is utilized as a "benchmark" for calculating the individual intercepts for the other observations, while its intercept is presented in the `_cons` item. As a result, the coefficients presented for each other dummy variable represent the deviation of the distinct ones from the common one, which is not necessarily significant, as evidenced by the relative p-values.

Although it may be more convenient to estimate the fixed effects regression using xtreg, keep in mind that the accurate estimates of the R square and F statistic are those derived using the LSDV model.

Next, we do the same in Stata as for Model 1 but by taking into consideration the other questions. In Model 2 dependent variable will be 'Women who believe a husband is justified in beating his wife when she neglects the children (%) -SGVAWNEGLZS' which represents tolerance of violence in the case of neglect of children care.

Equation 2

$$SGVAWNEGLZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 11 Fixed Effects Model 2

Fixed-effects (within) regression
Group variable: country_num

Number of obs = 129
Number of groups = 51

R-squared:

Within = 0.4719
Between = 0.3547
Overall = 0.3405

Obs per group:

min = 1
avg = 2.5
max = 3

corr(u_i, Xb) = -0.4051

F(1,77) = 68.80
Prob > F = 0.0000

SGVAWNEGLZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-141.4029	17.04703	-8.29	0.000	-175.3479	-107.458
_cons	106.8897	9.030245	11.84	0.000	88.90814	124.8712
sigma_u	14.894948					
sigma_e	7.3185279					
rho	.8055305	(fraction of variance due to u_i)				

F test that all u_i=0: F(50, 77) = 9.02

Prob > F = 0.0000

Model 3 SGVAWGOESZS_{it} will measure the tolerance of violence in the case of her leaving the house without notice.

Model 3:

Equation 3

$$SGVAWGOESZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 12 Fixed Effects Model 3

```

Fixed-effects (within) regression      Number of obs   =      128
Group variable: country_num          Number of groups =       51

R-squared:                             Obs per group:
  Within   = 0.4997                    min =      1
  Between  = 0.3691                    avg  =     2.5
  Overall  = 0.3467                    max  =      3

corr(u_i, Xb) = -0.3475                F(1,76)         =     75.92
                                         Prob > F        =     0.0000
  
```

SGVAWGOESZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-142.8539	16.39478	-8.71	0.000	-175.507	-110.2009
_cons	104.1595	8.666572	12.02	0.000	86.89856	121.4205
sigma_u	15.461065					
sigma_e	7.0008569					
rho	.82985284	(fraction of variance due to u_i)				

F test that all u_i=0: F(50, 76) = 11.27 Prob > F = 0.0000

Model 4 SGVAWBURNZSit will measure the tolerance of violence in the case of burning food.

Equation 4

$$SGVAWBURNZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 13 Fixed Effects Model 4

Fixed-effects (within) regression	Number of obs	=	125
Group variable: country_num	Number of groups	=	50
R-squared:	Obs per group:		
Within = 0.2895	min =		1
Between = 0.3002	avg =		2.5
Overall = 0.2595	max =		3
corr(u_i, Xb) = -0.4120	F(1,74)	=	30.15
	Prob > F	=	0.0000

SGVAWBURNZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-96.03756	17.49082	-5.49	0.000	-130.8888	-61.18634
_cons	65.83295	9.249438	7.12	0.000	47.40304	84.26286
sigma_u	10.762867					
sigma_e	7.2875869					
rho	.68564971	(fraction of variance due to u_i)				

F test that all u_i=0: F(49, 74) = 4.87 Prob > F = 0.0000

Model 5 SGVAWARGUZSit will measure the tolerance of violence in the case of having arguments with their partners.

Equation 5

$$SGVAWARGUZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 14 Fixed Effects Model 5

```

Fixed-effects (within) regression      Number of obs   =      126
Group variable: country_num          Number of groups =       50

R-squared:                             Obs per group:
  Within = 0.2952                      min =          1
  Between = 0.3601                     avg =          2.5
  Overall = 0.3379                      max =          3

corr(u_i, Xb) = -0.0083                F(1,75)         =      31.41
                                        Prob > F         =      0.0000

```

SGVAWARGUZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-93.69714	16.71728	-5.60	0.000	-126.9997	-60.39461
_cons	75.08774	8.830722	8.50	0.000	57.49604	92.67944
sigma_u	14.241					
sigma_e	7.1117142					
rho	.8003948	(fraction of variance due to u_i)				

F test that all u_i=0: F(49, 75) = 10.43 Prob > F = 0.0000

And finally Model 6, SGVAWGOESZS_{it} measures the tolerance of violence in the case of having any of the reasons taken into consideration in the first 5 models.

Equation 6

$$SGVAWGOESZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 15 Fixed Effects Model 6

```

Fixed-effects (within) regression      Number of obs   =      128
Group variable: country_num          Number of groups =       51

R-squared:                             Obs per group:
  Within   = 0.4997                    min       =       1
  Between  = 0.3691                    avg       =      2.5
  Overall  = 0.3467                    max       =       3

corr(u_i, Xb) = -0.3475                F(1,76)        =      75.92
                                          Prob > F       =      0.0000
  
```

SGVAWGOESZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-142.8539	16.39478	-8.71	0.000	-175.507	-110.2009
_cons	104.1595	8.666572	12.02	0.000	86.89856	121.4205
sigma_u	15.461065					
sigma_e	7.0008569					
rho	.82985284	(fraction of variance due to u_i)				

F test that all u_i=0: F(50, 76) = 11.27 Prob > F = 0.0000

As we can see the models are quite similar to the first one in the values that they take and in accuracy, and with this we can conclude that HDI is a significant variable for each of the models taken into consideration.

Random Effects Models

The given random effect Model 1 below represents the individual-specific random effect or unobserved heterogeneity for the i -th individual in the data. It captures the unobserved characteristics of each individual that may influence the outcome variable (SGVAWREFUS) but are not directly included in the model.

Including the random effect models, allows for the estimation of individual-specific intercepts, accounting for the variations across individuals that cannot be explained by the observed variables in the model. It helps address the potential correlation or dependence within individuals' repeated observations over time.

In the context of the variable SGVAWREFUS (Women who believe a husband is justified in beating his wife when she refuses sex with him (%)), would capture the unobserved individual-specific factors that influence women's beliefs regarding this issue but are not explicitly included in the model.

To prevent the estimator from being inconsistent, there should be no correlation between the random effects and the regressors. Next, we will take a look at the casual effects of our 6 models. To fit the corresponding random-effects model, we use the same command as in the models in the beforehand section but change the `fe` option to `re`. Let's start with running the Random Effect model in the first one as below:

Model 1:

$$SGVAWREFUS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 16 Random Effects Model 1

```

Random-effects GLS regression           Number of obs   =       126
Group variable: country_num           Number of groups =        50

R-squared:                             Obs per group:
    Within = 0.3845                    min =           1
    Between = 0.4356                   avg =           2.5
    Overall = 0.4032                   max =           3

corr(u_i, X) = 0 (assumed)             Wald chi2(1)    =       84.07
                                         Prob > chi2     =       0.0000
    
```

		theta		
min	5%	median	95%	max
0.5574	0.6705	0.7259	0.7259	0.7259

SGVAWREFUZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-95.06391	10.36825	-9.17	0.000	-115.3853	-74.74251
_cons	70.9371	5.760787	12.31	0.000	59.64617	82.22804
sigma_u	11.889097					
sigma_e	5.8685801					
rho	.80408405	(fraction of variance due to u_i)				

The rho coefficient in this case can be interpreted as an index of the model's goodness: it represents the percentage of the error variance explained by the individual component. In this case, the individual error component explains 80% of the variance of the composite error.

After having the results of both the fixed effect models and the random effect models, we can perform the Hausman test in Stata which allows us to understand which one of the models would be the best in terms of accuracy. To accomplish this, we must first save the outcomes of our random effects model, update the fixed effects model to reflect those outcomes, and then run the test below.

Table 17 Hausman Test Model 1

```
. hausman fe re
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-93.61926	-95.06391	1.444651	8.918728

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```
chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 0.03
Prob > chi2 = 0.8713
```

Under the null hypothesis, the coefficients of both the fixed effects and random effects models are consistent. However, only the coefficients of the random effects model are efficient. If we cannot reject the null hypothesis using the Wu-Hausman test, it means that the random effects model should be preferred.

On the other hand, only the coefficients of the fixed effects model are consistent under the alternate hypothesis. The coefficients of the random effects model are not consistent. If we reject the null hypothesis, the fixed effects model should be preferred instead of a random effects model.

The software does a t-test on the regression coefficients, where B is the estimated coefficient for the random effects model and b is the estimated coefficient for the dependent variable in the fixed model. The test statistics' p-value, which is more than 5%, indicates that the null hypothesis should not be rejected. Therefore, the random effects model provides estimates similar to the fixed effect ones, but more efficient.

Model 2:

$$SGVAWNEGLZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 18 Random Effects Model 2

```

Random-effects GLS regression           Number of obs   =       129
Group variable: country_num           Number of groups =        51

R-squared:                             Obs per group:
    Within = 0.4719                    min =           1
    Between = 0.3547                   avg =           2.5
    Overall = 0.3405                   max =           3

corr(u_i, X) = 0 (assumed)             Wald chi2(1)    =       87.57
                                         Prob > chi2     =       0.0000

```

theta				
min	5%	median	95%	max
0.5064	0.6276	0.6886	0.6886	0.6886

SGVAWNEGLZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-114.5894	12.24516	-9.36	0.000	-138.5894	-90.58931
_cons	92.58284	6.811273	13.59	0.000	79.23299	105.9327
sigma_u	12.895965					
sigma_e	7.3185279					
rho	.75639406	(fraction of variance due to u_i)				

Table 19 Hausman Test Model 2

	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
HDI	-141.4029	-114.5894	-26.81357	11.85991

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
         = 5.11
Prob > chi2 = 0.0238

```

The test statistic's p-value, which is less than 5%, indicates that the null hypothesis should be rejected. The fixed-effects model should be preferred instead of a random-effects model. Therefore, the coefficients of the random effects model are not consistent. Only the coefficients of the fixed effects model are consistent under the alternate hypothesis. We will do the same procedure for the rest of the models.

Model 3:

$$SGVAWGOESZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 20 Random Effects Model 3

```

Random-effects GLS regression           Number of obs   =       128
Group variable: country_num            Number of groups =        51

R-squared:                               Obs per group:
  Within = 0.4997                          min =           1
  Between = 0.3691                          avg  =           2.5
  Overall = 0.3467                          max  =           3

corr(u_i, X) = 0 (assumed)                Wald chi2(1)    =       97.96
                                           Prob > chi2     =       0.0000

```

SGVAWGOESZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-121.5138	12.27716	-9.90	0.000	-145.5766	-97.451
_cons	92.67309	6.867304	13.49	0.000	79.21342	106.1328
sigma_u	13.905649					
sigma_e	7.0008569					
rho	.79778782	(fraction of variance due to u_i)				

Table 21 Hausman Test Model 3

```
. hausman fe re
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-142.8539	-121.5138	-21.34015	10.86555

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```
chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
          = 3.86
Prob > chi2 = 0.0495
```

We reject the null hypothesis. The fixed-effects model should be preferred instead of a random-effects model.

Model 4:

$$SGVAWBURNZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 22 Random Effects Model 4

```
Random-effects GLS regression           Number of obs   =       125
Group variable: country_num            Number of groups =        50

R-squared:                               Obs per group:
  Within = 0.2895                          min =           1
  Between = 0.3002                          avg  =          2.5
  Overall = 0.2595                          max  =           3

corr(u_i, X) = 0 (assumed)                Wald chi2(1)    =       45.17
                                           Prob > chi2     =       0.0000
```

SGVAWBURNZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-68.38817	10.17599	-6.72	0.000	-88.33274	-48.44359
_cons	51.21443	5.591471	9.16	0.000	40.25535	62.17351
sigma_u	8.5455947					
sigma_e	7.2875869					
rho	.57895544	(fraction of variance due to u_i)				

Table 23 Hausman Test Model 4

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-96.03756	-68.38817	-27.6494	14.22597

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 3.78
 Prob > chi2 = 0.0519

The null hypothesis should not be rejected. The random effects model provides estimates similar to the fixed effect ones, but more efficient.

Model 5:

$$SGVAWARGUZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 24 Random Effects Model 5

Random-effects GLS regression	Number of obs	=	126
Group variable: country_num	Number of groups	=	50
R-squared:	Obs per group:		
Within = 0.2952	min =		1
Between = 0.3601	avg =		2.5
Overall = 0.3379	max =		3
corr(u_i, X) = 0 (assumed)	Wald chi2(1)	=	58.64
	Prob > chi2	=	0.0000

SGVAWARGUZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-93.43052	12.20097	-7.66	0.000	-117.344	-69.51707
_cons	74.83893	6.80329	11.00	0.000	61.50472	88.17313
sigma_u	13.605584					
sigma_e	7.1117142					
rho	.78540955	(fraction of variance due to u_i)				

Table 25 Hausman Test Model 5

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-93.69714	-93.43052	-.2666208	11.42821

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 0.00
 Prob > chi2 = 0.9814

The null hypothesis should not be rejected. The random effects model provides estimates similar to the fixed effect ones, but more efficient.

and Model 6:

$$SGVAWGOESZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 26 Random Effects Model 6

Random-effects GLS regression
 Group variable: country_num
 Number of obs = 128
 Number of groups = 51
 R-squared:
 Within = 0.4997
 Between = 0.3691
 Overall = 0.3467
 Obs per group:
 min = 1
 avg = 2.5
 max = 3
 corr(u_i, X) = 0 (assumed)
 Wald chi2(1) = 97.96
 Prob > chi2 = 0.0000

SGVAWGOESZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-121.5138	12.27716	-9.90	0.000	-145.5766	-97.451
_cons	92.67309	6.867304	13.49	0.000	79.21342	106.1328
sigma_u	13.905649					
sigma_e	7.0008569					
rho	.79778782	(fraction of variance due to u_i)				

Table 27 Hausman Test Model 6

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-142.8539	-121.5138	-21.34015	10.86555

b = Consistent under H0 and Ha; obtained from `xtreg`.
 B = Inconsistent under Ha, efficient under H0; obtained from `xtreg`.

Test of H0: Difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(1) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 3.86 \\ \text{Prob} > \text{chi2} &= 0.0495 \end{aligned}$$

We reject the null hypothesis. The fixed-effects model should be preferred instead of a random-effects model.

As a conclusion for Models 2, 3, and 6 the fixed-effect model should be preferred instead of the random-effect one. While for models 1, 4, and 5 we will choose the random effect model as the best prediction.

Given that the above models give confused and inconsistent results of whether we should overall choose the fixed-effect or the random-effect model we chose to take into consideration a 7th model in which we take under the observation only the 31 countries¹¹ that actually have all three complete waves of the variable ‘Women who believe a husband is justified in beating his wife (any of five reasons) (%) – SGVAWREASZS’.

¹¹ Albania, Armenia, Benin, Cambogia, Cameroun, Dominican Republic, Egypt, Ethiopia, Gambia, Ghana, Guinea, Haiti, Indonesia, Jordan, Kenya, Kyrgyz Republic, Lesotho, Malawi, Mali, Mozambique, Nepal, Nigeria, Philippines, Rwanda, Senegal, Sierra Leone, Tagikistan, Tanzania, Uganda, Zambia, Zimbabwe

Let's start with the fixed effect model for 'Any reason':

Equation 7 'Any reason for 31 countries'

$$SGVAWREASZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 28 Fixed Effects Model 7

```

Fixed-effects (within) regression      Number of obs   =       93
Group variable: country_num          Number of groups =       31

R-squared:                             Obs per group:
  Within = 0.4506                       min =         3
  Between = 0.3375                       avg =        3.0
  Overall = 0.3508                       max =         3

corr(u_i, Xb) = -0.3388                 F(1,61)         =       50.04
                                         Prob > F         =       0.0000
  
```

SGVAWREASZS	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-162.1732	22.92644	-7.07	0.000	-208.0175	-116.3289
_cons	129.1797	12.09446	10.68	0.000	104.9953	153.364
sigma_u	17.501867					
sigma_e	9.2207147					
rho	.78274073	(fraction of variance due to u_i)				

F test that all u_i=0: F(30, 61) = 9.57 Prob > F = 0.0000

The random effect model for 'Any reason' gives us the results below:

Table 29 Random Effects Model 7

```

Random-effects GLS regression           Number of obs   =       132
Group variable: country_num           Number of groups =        51

R-squared:                               Obs per group:
    Within = 0.4495                       min =           1
    Between = 0.4111                      avg =           2.6
    Overall = 0.3975                      max =           3

corr(u_i, X) = 0 (assumed)              Wald chi2(1)    =       95.82
                                          Prob > chi2     =       0.0000
    
```

SGVAWREASZS	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-139.5805	14.25922	-9.79	0.000	-167.528	-111.6329
_cons	116.6805	7.96366	14.65	0.000	101.0721	132.289
sigma_u	15.465007					
sigma_e	8.6846105					
rho	.76025074	(fraction of variance due to u_i)				

After taking the values for .fe, and .re evaluation we can run the Hausman test exactly as with the other models like below.

Table 30 Hausman Test Model 7

	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
HDI	-162.1732	-138.511	-23.66222	14.56056

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
          = 2.64
Prob > chi2 = 0.1041
    
```

The test statistics' p-value, which is more than 5%, indicates that the null hypothesis shouldn't be rejected. The random-effects model should be preferred instead of a fixed-effects model.

Therefore, the coefficients of the fixed-effects model are not consistent. Only the coefficients of the random-effects model are consistent under the alternate hypothesis.

The Models of Early Marriage

Taking into consideration other models so the one regarding ‘Women who were first married by age 15 (% of women ages 20-24) - SPM152024FEZS’ and one regarding ‘Women who were first married by age 18 (% of women ages 20-24) - SPM182024FEZS’ we do the same as before, so measure the random and fixed effect model and then do the Hausman test.

Equation 8

$$SPM152024FEZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 31 Fixed Effects Model 8

Fixed-effects (within) regression	Number of obs	=	135
Group variable: country_num	Number of groups	=	51
R-squared:	Obs per group:		
Within = 0.2756	min =		1
Between = 0.3410	avg =		2.6
Overall = 0.3230	max =		3
corr(u_i, Xb) = 0.1485	F(1,83)	=	31.57
	Prob > F	=	0.0000

SPM152024F~S	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	-27.50647	4.895323	-5.62	0.000	-37.24307	-17.76987
_cons	22.77454	2.650851	8.59	0.000	17.50211	28.04698
sigma_u	5.9184699					
sigma_e	2.1538497					
rho	.88305072 (fraction of variance due to u_i)					

F test that all u_i=0: F(50, 83) = 19.68 Prob > F = 0.0000

. testparm HDI

(1) HDI = 0

F(1, 83) = 31.57
 Prob > F = 0.0000

Table 32 Random Effects Model 8

Random-effects GLS regression
 Group variable: country_num
 Number of obs = 135
 Number of groups = 51
 R-squared:
 Within = 0.2756
 Between = 0.3410
 Overall = 0.3230
 Obs per group:
 min = 1
 avg = 2.6
 max = 3
 corr(u_i, X) = 0 (assumed)
 Wald chi2(1) = 55.90
 Prob > chi2 = 0.0000

SPM152024F~S	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-30.22831	4.042974	-7.48	0.000	-38.15239	-22.30422
_cons	24.0775	2.327519	10.34	0.000	19.51564	28.63935
sigma_u	5.7339016					
sigma_e	2.1538497					
rho	.87634656	(fraction of variance due to u_i)				

Table 33 Hausman Test Model 8

. hausman fe re

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
HDI	-27.50647	-30.22831	2.721841	2.760172

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 0.97
 Prob > chi2 = 0.3241

The test statistic's p-value, which is more than 5%, indicates that the null hypothesis shouldn't be rejected. The random-effects model should be preferred instead of a fixed-effects model. Therefore, the coefficients of the fixed-effects model are not consistent. Only the coefficients of the random-effects model are consistent under the alternate hypothesis.

Equation 9

$$SPM182024FEZS_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Table 35 Random Effect Model 9
 . xtreg SPM182024FEZS HDI , re

```

Random-effects GLS regression           Number of obs   =       143
Group variable: country_num           Number of groups =        51

R-squared:                               Obs per group:
    Within = 0.4373                       min =           2
    Between = 0.4508                      avg =           2.8
    Overall = 0.4256                      max =           3

corr(u_i, X) = 0 (assumed)              Wald chi2(1)    =       107.41
                                         Prob > chi2     =        0.0000
    
```

SPM182024F~S	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	-71.17753	6.867934	-10.36	0.000	-84.63843	-57.71662
_cons	67.85683	4.029041	16.84	0.000	59.96006	75.75361
sigma_u	11.602019					
sigma_e	3.6714296					
rho	.90897604	(fraction of variance due to u_i)				

Table 36 Hausman Test Model 9
 . hausman fe re

	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
HDI	-65.47745	-71.17753	5.700074	3.66885

b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 2.41
Prob > chi2 = 0.1203
    
```

The test statistic's p-value, which is more than 5%, indicates that the null hypothesis shouldn't be rejected. The random-effects model should be preferred instead of a fixed-effects model. Therefore, the coefficients of the fixed-effects model are not consistent. Only the coefficients of the random-effects model are consistent under the alternate hypothesis.

Now let's try out Model 10 of 'Women Business and the Law Index Score (scale 1-100) – SGLAWINDEX'.

Equation 10

$$SGLAWINDEX_{it} = \alpha + \beta HDI_{it} + \mu_i + u_{it}$$

Equation 11 Fixed Effects Model 10

```

Fixed-effects (within) regression      Number of obs   =      153
Group variable: country_num          Number of groups =       51

R-squared:                            Obs per group:
  Within = 0.6292                      min =          3
  Between = 0.0555                     avg =          3.0
  Overall = 0.1075                     max =          3

corr(u_i, Xb) = -0.7058                F(1,101)       =      171.41
                                        Prob > F        =       0.0000
  
```

SGLAWINDEX	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
HDI	142.3331	10.87138	13.09	0.000	120.7672	163.899
_cons	-10.60544	5.815171	-1.82	0.071	-22.14118	.9302933
sigma_u	18.082651					
sigma_e	5.507429					
rho	.91511172 (fraction of variance due to u_i)					

F test that all u_i=0: F(50, 101) = 16.23 Prob > F = 0.0000

Equation 12 Random Effects Model 10

Random-effects GLS regression
Group variable: country_num

Number of obs = 153
Number of groups = 51

R-squared:

Within = 0.6292
Between = 0.0555
Overall = 0.1075

Obs per group:

min = 3
avg = 3.0
max = 3

corr(u_i, X) = 0 (assumed)

Wald chi2(1) = 105.65
Prob > chi2 = 0.0000

SGLAWINDX	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
HDI	101.2068	9.846287	10.28	0.000	81.90839	120.5051
_cons	11.32871	5.585584	2.03	0.043	.3811685	22.27625
sigma_u	11.665013					
sigma_e	5.507429					
rho	.81772241	(fraction of variance due to u_i)				

Equation 13 Hausman Test Model 10

	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
HDI	142.3331	101.2068	41.12633	4.608428

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 79.64
Prob > chi2 = 0.0000

The test statistic's p-value, which is less than 5%, indicates that the null hypothesis should be rejected. The fixed-effects model should be preferred instead of a random-effects model. Therefore, the coefficients of the random effects model are not consistent. Only the coefficients of the fixed effects.

Results

Based on the results of the Hausman tests performed on the models regarding women's attitudes toward intimate partner violence across 51 countries, we can draw the following conclusions:

- Model 1: The random effects model provides estimates similar to the fixed effects model but more efficient. Preferred the random effects model.
- Model 2: Fixed effects model is preferred; coefficients of the random effects model are not consistent.
- Model 3: Reject the null hypothesis; fixed effects model is preferred.
- Model 4: Do not reject the null hypothesis; the random effects model provides estimates similar to the fixed effects model but more efficient. Preferred the random effects model.
- Model 5: Do not reject the null hypothesis; the random effects model provides estimates similar to the fixed effects model but more efficient. Preferred the random effects model.
- Model 6: Reject the null hypothesis; the fixed effects model is preferred.
- Model 7: The P-value of the test statistic is greater than 5%, indicating that the null hypothesis should not be rejected. Preferred the random effects model.

Given these results, the choice between fixed effects and random effects models varies based on the specific model and dataset in use. Here's a breakdown of the conclusions for each model:

Fixed Effects Model Preferred:

Model 2

Model 3

Model 6

Random Effects Model Preferred:

Model 1

Model 4

Model 5

Model 7

From this, we see that for Models 2, 3, and 6, the fixed effects model should be used due to the inconsistency of the random effects model under these scenarios. Conversely, for Models 1, 4, 5, and 7, the random effects model is preferred due to its efficiency and similar estimates compared to the fixed effects model.

Given the mixed results, we chose to evaluate an additional model (Model 7) which considers only the 31 countries with complete data for all three waves of the variable "Women who believe a husband is justified in beating his wife (any of five reasons) (%)" – SGVAWREASZS". The results from Model 7 indicate that the random effects model should be preferred.

Considering the overall mixed results and the additional insights from Model 7, it is reasonable to lean towards using the random effects model when broader generalizability and efficiency are needed, especially for datasets with complete waves. However, for specific instances where the Hausman test indicates the necessity of a fixed effects model (such as Models 2, 3, and 6), the fixed effects model should be utilized to ensure consistency.

On the other hand, based on the extended analysis, including additional models on early marriage and women's business law index scores, we can now draw a more comprehensive conclusion about whether to use fixed effects or random effects models. Conclusions about the new models are as followed:

Model 8: The random effects model is preferred as the null hypothesis is not rejected.

Model 9: The random effects model is preferred as the null hypothesis is not rejected.

Model 10: Fixed effects model preferred due to rejection of the null hypothesis.

The results are mixed, with some models indicating a preference for fixed effects and others for random effects. Here's a breakdown of the conclusions for each model:

Fixed Effects Model Preferred:

Model 2

Model 3

Model 6

Model 10

Random Effects Model Preferred:

Model 1

Model 4

Model 5

Model 7

Model 8

Model 9

Given the introduction of additional models (Models 8 and 9 on early marriage and Model 10 on women's business law index scores), we see that the preference for random effects models continues in most cases, but the fixed effects model remains necessary for certain datasets.

While the results vary, the general trend leans towards using the random effects model for broader analyses due to its efficiency and consistent estimates in most scenarios. However, for specific instances where the Hausman test indicates the necessity of a fixed effects model (such as Models 2, 3, 6, and 10), the fixed effects model should be utilized to ensure reliability.

For models examining women's attitudes towards intimate partner violence, where results favor random effects, it makes sense to prioritize efficiency and broader applicability with the random effects model.

For models related to early marriage and the women's business law index score, the random effects model is similarly preferred unless the fixed effects model is shown to be necessary for consistency.

Given these insights, we should generally lean towards using the random effects model for most analyses due to its efficiency and broader applicability. However, in cases where the Hausman test suggests inconsistency in the random effects model (Models 2, 3, 6, and 10), the fixed effects model should be employed to ensure the accuracy and reliability of the results.

Random Effects Religion Models

The random effects model results presented show the relationships between each dependent variable (e.g., SGVAWREFUZZ, SGVAWNEGLZS, etc.) and the independent variable "Religion" across multiple countries. Here's a breakdown of key insights and potential interpretations:

The R-squared values (both within and between) are quite low for all models, ranging from 0 to around 0.097, suggesting that "Religion" does not strongly explain the variation in the dependent variables, either within or between countries. Only one dependent variable, SGVAWREFUZZ, shows a statistically significant relationship with "Religion" at the 5% significance level ($p = 0.023$). For the other variables, the p-values are higher than 0.05, indicating that the effect of "Religion" is not statistically significant in these cases. The fraction of variance due to differences between countries (denoted by ρ) is consistently high (typically above 0.70), suggesting that much of the variation in each variable is due to differences across countries rather than within-country changes over time.

Model 1: SGVAWREFUZZ (Refusal of Sexual Relations)

Coefficient: 5.17, significant at the 5% level, suggesting a positive association with "Religion."

Interpretation: Countries with higher levels of religious adherence may show higher values of SGVAWREFUZZ, implying that religion might play a role in this dimension of the dependent variable.

Variance Ratio: With rho at 0.80, most variance is due to country-level differences.

Model 2: SGVAWNEGLZS (Neglect Scenario)

Coefficient: 1.09, not statistically significant ($p = 0.649$).

There appears to be no strong association between "Religion" and SGVAWNEGLZS, as indicated by the non-significant coefficient.

Variance Ratio: A high rho of 0.71 indicates between-country differences.

Model 3: SGVAWGOESZS (Goes Out Scenario)

Coefficient: 2.33, not statistically significant ($p = 0.365$).

"Religion" does not significantly explain variation in SGVAWGOESZS, as evidenced by the lack of statistical significance.

Variance Ratio: Rho of 0.75 suggests substantial variation is country-specific.

Model 4: SGVAWBURNZS (Burns Food Scenario)

Coefficient: 0.63, not statistically significant ($p = 0.704$).

The association between "Religion" and SGVAWBURNZS is minimal, and country-specific factors largely dominate.

Variance Ratio: Rho of 0.59, somewhat lower than others, indicating within-country variability.

Model 5: SGVAWARGUZS (Argument Scenario)

Coefficient: 2.85, not statistically significant ($p = 0.254$).

There is no significant relationship between "Religion" and SGVAWARGUZS.

Variance Ratio: High rho of 0.80, indicating a similar trend of country-level variance dominance.

Model 6: SGVAWREASZS (Reasonable Scenario)

Coefficient: 2.85, not statistically significant ($p = 0.338$).

The model shows no significant effect of "Religion" on SGVAWREASZS.

Variance Ratio: Rho of 0.74 further supports that variation is largely between countries.

The consistently high rho values suggest that each variable's variation is primarily driven by differences between countries rather than changes within countries over time. This implies that factors other than "Religion" might be influencing these metrics on a country level. This trend is crucial for policy recommendations, as it indicates that addressing within-country variance may not be as effective without considering broader, country-level influences.

Considerations and Recommendations:

- **Insignificance of Religion:** Aside from SGVAWREFUZS, the lack of statistical significance for "Religion" in most models suggests it may not be a major determinant of these variables in this context. Further analysis could involve introducing additional independent variables that may better explain the between-country variations.
- **Country-Level Factors:** Given the high between-country variance, future models could benefit from exploring additional macro-level factors (e.g., economic status, education levels) to capture variations more accurately.
- **Model Robustness:** Since random effects assume no correlation between the country-specific effects and the independent variable, considering a fixed effects model could help validate these findings.

In summary, "Religion" only shows a statistically significant positive effect for SGVAWREFUZS, while the other variables remain unaffected. The strong country-specific effects suggest that much of the observed variation is likely influenced by stable, country-level factors.

Random Effects Models for Early Marriage and Legal Indices

The results from the random effects models assess the association between the variable *Religion* and three specific indices: *SPM152024FEZS* (early marriage rate for ages 15-24), *SPM182024FEZS* (early marriage rate for ages 18-24), and *SGLAWINDEX* (a law index). Below is a detailed analysis of each regression model.

Model 7: SPM152024FEZS (Early Marriage Rate for Ages 15-24)

Between-group R-squared: 0.0839, indicating 8.39% of the variance between countries is explained by the variable *Religion*.

Overall R-squared: 0.0737, showing that 7.37% of the variance in early marriage rates for ages 15-24 is explained by religion.

Wald chi-squared: 4.47, with a statistically significant p-value ($p = 0.0345$), suggesting that *Religion* significantly influences the early marriage rate in this age group.

Coefficients

Religion: Coefficient of 2.07, with a 95% confidence interval of [0.15, 3.99] ($p = 0.034$). This suggests that as the index for religion increases by 1 unit, early marriage rates for ages 15-24 tend to increase by approximately 2.07 points.

Constant: Estimated at 2.49, indicating the baseline early marriage rate for ages 15-24 when the *Religion* variable is at zero.

Variance Components

Sigma_u (between-country variance): 6.76, suggesting variability in early marriage rates across countries.

Sigma_e (within-country variance): 2.51, indicating some variability in early marriage rates within countries over time.

Rho: 0.88, indicating that 88% of the variance in early marriage rates for ages 15-24 is due to differences between countries.

Model 8: SPM182024FEZS (Early Marriage Rate for Ages 18-24)

Between-group R-squared: 0.0557, suggesting that only 5.57% of the variance between countries is explained by *Religion*.

Overall R-squared: 0.0501, indicating that 5.01% of the total variance in early marriage rates for ages 18-24 is explained by *Religion*.

Wald chi-squared: 2.88, with a p-value of 0.0896, indicating that the relationship between *Religion* and early marriage rates for ages 18-24 is not statistically significant at the 5% level, but it is close (at the 10% level).

Coefficients

Religion: Coefficient of 3.70 with a 95% confidence interval of [-0.57, 7.97] ($p = 0.090$). This implies a positive association between *Religion* and early marriage rates for ages 18-24, though it is not statistically significant.

Constant: Estimated at 20.32, indicating the baseline early marriage rate for ages 18-24 when *Religion* is zero.

Variance Components

Sigma_u (between-country variance): 15.21, suggesting substantial variability in early marriage rates for ages 18-24 between countries.

Sigma_e (within-country variance): 4.87, indicating lower within-country variability over time.

Rho: 0.91, showing that 91% of the variance in early marriage rates for ages 18-24 is attributed to between-country differences.

Model 9: SGLAWINDEX (Law Index)

Between-group R-squared: 0.2394, indicating that 23.94% of the variance between countries is explained by *Religion*.

Overall R-squared: 0.1756, suggesting that 17.56% of the total variance in the law index is explained by *Religion*.

Wald chi-squared: 15.42, with a p-value < 0.001 , indicating a highly statistically significant relationship between *Religion* and the law index.

Coefficients

Religion: Coefficient of -5.99 with a 95% confidence interval of [-8.99, -3.00] ($p < 0.001$). This suggests a strong, statistically significant negative relationship between *Religion* and the law

index, indicating that higher levels of religious influence are associated with lower law index scores.

Constant: Estimated at 80.71, representing the baseline law index when *Religion* is zero.

Variance Components

Sigma_u (between-country variance): 9.52, indicating moderate variability in the law index across countries.

Sigma_e (within-country variance): 9.00, showing some variability in the law index within countries over time.

Rho: 0.53, indicating that 53% of the variance in the law index is due to differences between countries.

Summary

- **SPM152024FEZS (Early marriage rate for ages 15-24)** shows a statistically significant positive association with *Religion*, indicating that increased religious influence correlates with higher early marriage rates in this age group.
- **SPM182024FEZS (Early marriage rate for ages 18-24)** has a positive but not statistically significant association with *Religion*, suggesting a weaker or less consistent impact of religious influence on early marriage rates in this slightly older age group.
- **SGLAWINDEX (Law Index)** reveals a significant negative association with *Religion*, implying that higher religious influence correlates with a lower law index, which may reflect a restrictive legal environment, possibly affecting gender equality laws.

These results highlight the substantial impact of religious factors on early marriage rates and legal indices, emphasizing cross-country differences in how religion interacts with these social and legal metrics. The significance of *Religion* in influencing early marriage (ages 15-24) and legal indices suggests it plays a crucial role in shaping both social norms and legal frameworks.

Random Effects HDI & Religion Models

The regressions here explore the relationships between various forms of justification for violence (as dependent variables) and two independent variables, HDI (Human Development Index) and Religion, using random-effects models. Here's a summary interpretation for each model:

Model 1: SGVAWREFUZZ (Refusal of Sexual Relations)

HDI: Strongly significant and negative coefficient (-93.34), indicating that higher HDI levels are associated with lower justifications for refusal-related violence. This finding has high statistical significance ($p < 0.001$).

Religion: Positive and significant coefficient (3.98, $p = 0.02$), suggesting that religious factors may correlate with higher justification rates for this scenario.

Model 2: SGVAWNEGLZZ (Neglect Scenario)

HDI: Also significantly negative (-114.76, $p < 0.001$), showing a consistent trend where higher HDI is associated with less justification for violence in neglect scenarios.

Religion: Non-significant ($p = 0.855$), indicating no strong relationship with violence justification in neglect scenarios.

Model 3: SGVAWGOESZZ (Goes Out Scenario)

HDI: Significant and negative (-121.26, $p < 0.001$), again showing that higher HDI correlates with reduced justification for violence.

Religion: Not significant ($p = 0.452$), suggesting that religious affiliation does not have a significant impact on this scenario.

Model 4: SGVAWBURNZZ (Burns Food Scenario)

HDI: Significant and negative (-68.58, $p < 0.001$), reinforcing the trend of reduced justification with higher HDI.

Religion: Extremely small and non-significant effect ($p = 0.992$), implying no substantial relationship between religion and justification for violence in this scenario.

Model 5: SGVAWARGUZS (Argument Scenario)

HDI: Negative and highly significant ($-92.83, p < 0.001$), showing that higher HDI relates to a lower likelihood of violence justification.

Religion: Not significant ($p = 0.289$), suggesting no notable correlation with this form of violence justification.

Model 6: SGVAWREASZS (Reasonable Scenario)

HDI: Strongly negative ($-139.16, p < 0.001$), indicating that as HDI increases, the justification for violence in this context decreases significantly.

Religion: Non-significant ($p = 0.393$), showing no substantial influence on justification for violence in this scenario.

Across all scenarios, HDI consistently has a significant negative effect, indicating that higher human development levels correlate with a lower justification for violence. This trend is stable across various contexts of violence, highlighting HDI's critical role in shaping social norms regarding violence. Religion shows significance in only one case (SGVAWREFUZS), suggesting a complex relationship that may vary depending on specific types of violence justification. The lack of significance in most cases for Religion may point to its limited explanatory power in isolation from these social norms.

Early Marriage & Legal Indices Models

These random-effects GLS regression results evaluate the relationship between early marriage (ages 15-24) and legal indices (SGLAWINDEX) with HDI and Religion as predictors. Below is an interpretation for each model:

Model 7: SPM152024FEZS (Early Marriage Rate for Ages 15-24)

HDI: Significant and negative coefficient ($-30.09, p < 0.001$), showing that higher HDI levels are associated with a decrease in early marriage rates for females aged 15-24.

Religion: Positive and significant ($1.88, p = 0.018$), indicating that religious factors may correlate with an increase in early marriage rates within this age group.

Interpretation: As HDI rises, early marriage rates decrease, potentially reflecting better access to education and resources, while religion appears positively associated, possibly due to cultural norms.

Model 8: SPM182024FEZS (Early Marriage Rate for Ages 18-24)

HDI: Highly significant and negative (-71.08, $p < 0.001$), indicating a strong association where higher HDI leads to lower early marriage rates among females aged 18-24.

Religion: Positive and significant (3.28, $p = 0.044$), again suggesting a positive association with early marriage rates.

Interpretation: Similar to the previous variable, higher HDI correlates with reduced early marriage, while religion is linked with increased rates, implying that cultural factors may influence marriage norms in these age brackets.

Model 9: SGLAWINDEX (Law Index)

HDI: Significant and positive (93.18, $p < 0.001$), showing that higher HDI correlates with stronger legal indices promoting gender equality.

Religion: Significant and negative (-5.49, $p = 0.001$), suggesting that religious factors may be associated with lower gender equality in legal frameworks.

Interpretation: Higher HDI aligns with improved gender equality laws, potentially reflecting a broader societal commitment to rights and protections. Conversely, religion's negative association may indicate challenges in adopting progressive legal measures in areas with strong religious influence.

The results show that HDI has a significant, consistent impact on decreasing early marriage rates and enhancing gender equality in legal indices across all models. Religion is positively associated with early marriage rates but negatively associated with gender equality in legal indices. This pattern suggests that while higher development levels (HDI) broadly contribute to progressive social outcomes, cultural or religious contexts may introduce complexities in advancing gender norms.

Pulled OLS

The analysis below explores the determinants of attitudes toward violence justification across six distinct areas (refusal, neglect, going out, burning, arguing, and reasoning) using Pooled Ordinary Least Squares (OLS) regression models. The primary independent variables are the **Human Development Index (HDI)** and **Religion**.

Across all models, **HDI** consistently shows a significant negative relationship with attitudes justifying violence in various contexts, while **Religion** has mixed results—significant in some models and not in others. Below you may find the model interpretations:

1. **SGVAWREFUZZ (Refusal):**

HDI: Shows a strong, significant negative effect (-91.72, $p < 0.001$), implying that higher HDI is associated with lower justification of violence when a woman refuses her partner.

Religion: Has a positive, significant effect (4.25, $p < 0.001$), suggesting that religious factors may be linked with greater acceptance of violence in this context.

Model Fit: The model explains about 46% of the variance, indicating a moderately strong fit.

2. **SGVAWNEGLZZ (Neglect):**

HDI: Significant and negative (-89.76, $p < 0.001$), showing that higher HDI is associated with decreased acceptance of violence due to perceived neglect.

Religion: The coefficient is positive but non-significant (0.75, $p = 0.568$), suggesting religion's influence on violence justification for neglect is minimal in this model.

Model Fit: 0.3422 indicates that about 34% of the variance is explained by the model.

3. **SGVAWGOESZZ (Going Out Without Permission):**

HDI: Negative and significant (-95.60, $p < 0.001$), showing that higher HDI is associated with reduced justification of violence when women go out without permission.

Religion: Positive but not statistically significant (2.04, $p = 0.142$).

Model Fit: This model explains approximately 36% of the variance ($R^2 = 0.3579$).

4. **SGVAWBURNZS (Burning):**

HDI: Strongly significant and negative ($-57.53, p < 0.001$), indicating that higher HDI correlates with lower tolerance for violence in cases involving burning.

Religion: Not significant ($0.10, p = 0.922$).

Model Fit: Lower explanatory power (0.2595) compared to the previous models, suggesting that other factors may play a role in this context.

5. **SGVAWARGUZS (Arguing):**

HDI: Negative and significant ($-91.57, p < 0.001$), highlighting the association of higher HDI with decreased justification for violence following an argument.

Religion: Positive but not significant ($1.93, p = 0.157$).

Model Fit: The model explains about 34.9% of the variance ($R^2 = 0.3487$).

6. **SGVAWREASZS (Reasoning):**

HDI: Highly significant and negative ($-118.77, p < 0.001$), showing that as HDI rises, acceptance of violence decreases.

Religion: Positive but non-significant ($2.35, p = 0.124$).

Model Fit: 0.4084 , the model has reasonable explanatory power.

General Observations:

The Human Development Index (HDI) consistently shows a significant negative effect on all forms of violence justification. This indicates that higher levels of HDI are associated with lower societal tolerance for justifying violence in different situations, which may reflect better education, gender equality, and economic opportunities that challenge traditional norms.

Religion has a significant positive effect only in the **Refusal** context, suggesting that in situations

where women assert refusal, religious factors may impact societal attitudes toward the justification of violence. In other contexts, the effect of religion is positive but generally non-significant.

Model Fit: Values range from 0.2474 to 0.4531, indicating that the models explain 24-45% of the variance in attitudes toward violence justification. This range suggests moderate explanatory power but also highlights the potential influence of other variables not included in this analysis.

This analysis suggests that **higher HDI correlates strongly with lower acceptance of violence**, highlighting the importance of socioeconomic development in shaping societal attitudes. The mixed role of **Religion** points to complexities in how cultural and religious values influence views on violence, especially in contexts where refusal or disobedience is involved. Further exploration into additional cultural, economic, and policy-related variables would help in understanding these dynamics more comprehensively.

Early Marriage & Legal Indices Pulled OLS

Below is an analysis of early marriage rates and law indices using Pooled Ordinary Least Squares (OLS) regression models. This analysis examines the impact of the **Human Development Index (HDI)** and **Religion** on two age-specific early marriage indicators and one index reflecting the strength of legal frameworks for gender equality.

HDI has a significant impact across all three models but varies in direction. It negatively affects early marriage indicators, suggesting higher HDI is associated with lower rates of early marriage. In contrast, HDI positively affects the law index, implying a stronger legal framework for gender equality with higher HDI. **Religion** shows mixed results: it is positively associated with early marriage rates, but negatively associated with the legal framework index. The model interpretation is as follows:

1. SPM152024FEZS (Early Marriage Rates, Ages 15-24):

HDI: The coefficient is negative and statistically significant (-34.48, $p < 0.001$), indicating that higher HDI is associated with lower rates of early marriage among females aged 15-24.

Religion: The coefficient is positive and significant (1.98, $p < 0.001$), suggesting that stronger religious contexts may be linked to higher early marriage rates in this age group.

Model Fit: The model explains about 39% of the variance, which suggests a moderate fit.

2. SPM182024FEZS (Early Marriage Rates, Ages 18-24):

HDI: Negative and highly significant ($-83.26, p < 0.001$), indicating that as HDI increases, early marriage rates for females aged 18-24 decrease. The effect size here is larger than for the 15-24 age group, showing HDI's heightened influence as age progresses.

Religion: Positive and significant ($3.20, p = 0.001$), indicating that religious contexts are associated with increased early marriage rates even in the older subset of this age group.

Model Fit: 0.4665, indicating that the model explains approximately 47% of the variance, making it a fairly strong model.

3. SGLAWINDX (Gender Equality Legal Index):

HDI: The coefficient is positive and statistically significant ($36.31, p < 0.001$), implying that higher HDI values are associated with stronger gender equality legal frameworks, likely due to more developed policy and institutional structures in higher HDI countries.

Religion: The coefficient is negative and significant ($-5.80, p < 0.001$), suggesting that greater religious influence is associated with weaker gender equality frameworks, possibly reflecting traditional values.

Model Fit: This model explains approximately 27% of the variance, suggesting that other factors may be influencing the strength of legal frameworks for gender equality beyond HDI and religion.

General Observations:

- **HDI:** A higher HDI is consistently associated with lower rates of early marriage and stronger legal frameworks for gender equality. This trend aligns with the idea that socio-economic development is linked with greater educational and economic opportunities, which may reduce early marriage rates and promote stronger legal protections for gender equality.
- **Religion:** Religious influence is positively associated with early marriage rates but negatively associated with the strength of legal protections for gender equality. This

finding may reflect that religious norms and practices, particularly in some traditional contexts, can shape attitudes toward marriage and gender roles in ways that do not align with modern legal frameworks for gender equality.

- **Model Fit:** Values range from 0.2618 to 0.4589, indicating moderate explanatory power for each model. While HDI and religion are significant predictors, the moderate values suggest other factors not included in this analysis may be important in shaping early marriage rates and gender equality frameworks.

The analysis reveals that higher HDI is a significant deterrent to early marriage and supports stronger legal protections for gender equality. In contrast, Religion exhibits mixed effects, supporting early marriage but opposing stronger legal frameworks. These findings underline the potential role of development and cultural contexts in shaping gender-related outcomes, and further exploration into additional socio-political factors would deepen understanding of these dynamics.

Albania's Performance

To compare Albania's position with other countries across waves of Intimate Partner Violence Perception and associated indicators, let's break down the key points using the dataset variables.

The dataset includes the following key variables for gender violence perception, categorized by waves (1999-2006, 2007-2013, 2014-2020):

1. **Perception on refusal or justification of gender violence** (SGVAWREFUZS, SGVAWNEGLZS, SGVAWGOESZS, SGVAWBURNZS, SGVAWARGUZS, SGVAWREASZS)
 - **1999-2006:** Albania shows moderate values in perception variables with SGVAWREFUZS = 9 and SGVAWARGUZS = 9, indicating less justification of gender violence compared to countries like **Burkina Faso** and **Sierra Leone**, which have very high values (above 50 in multiple categories).
 - **2007-2013:** A slight increase in Albania's SGVAWNEGLZS (22) and SGVAWARGUZS (12), but still, it's lower compared to countries such as **Burundi** and **Congo DR** with significantly higher scores, showing more societal acceptance or tolerance of gender-based violence.
 - **2014-2020:** Albania's indicators on gender violence perception dropped significantly (SGVAWREFUZS = 1 and SGVAWGOESZS = 4), showing considerable improvement in societal views on gender-based violence. This is relatively low compared to **Tanzania** and **Timor-Leste**, where tolerance remains high.
2. **Social protection and legal rights** (SPM152024FEZS, SPM182024FEZS, SGLAWINDX)
 - **Legal Index (SGLAWINDX):** Albania consistently scores high across waves, moving from 80 in the 1999-2006 wave to 90 in 2014-2020, indicating strong legal frameworks relative to **Bangladesh** and **Pakistan**, where scores remain in the 40s and 50s, suggesting weaker legal support for gender equality.
 - **Social Protection (SPM152024FEZS and SPM182024FEZS):** Albania's figures show improvements from wave to wave in the social protection domain, with SPM scores rising from 8 to 12 by 2020, although it remains low compared to countries with strong protection policies like **Gambia** and **India**.
3. **Gender discrimination in major areas like education, labor force, etc.**

(SGDMKALLDFNZS, SGDMKSRCRFNZS)

- **Overall Discrimination** (SGDMKALLDFNZS): Albania shows an improvement with scores increasing from 59 (2007-2013) to 84 (2014-2020), indicating a decrease in gender discrimination. This aligns Albania closer to **Ethiopia** and **Ghana**, which also demonstrate positive changes.
- **Specific Discrimination Criteria** (SGDMKSRCRFNZS): Albania starts with a lower score of 62 in 2007-2013, which increases to 69 in 2014-2020, illustrating strides toward equality in resources, work, and education sectors.

Overall, Albania shows:

- **Improvements in the perception of gender violence**, with marked progress from 2014 onwards.
- **High legal support** as indicated by the SGLAWINDEX index, positioning it favorably against many other countries with more limited gender equality laws.
- **Steady growth in social protection** and gender discrimination indices, though it remains moderate compared to top performers like **Gambia** and **India**.

In summary, Albania has improved substantially over the years in Gender Equality perception and legal frameworks. However, social protection measures and specific discrimination issues still show room for growth compared to some of the higher-ranking countries in these aspects.

Albania's performance on gender violence perception, based on the pooled OLS regression analysis, highlights the influence of key indicators like the Human Development Index (HDI) and Religion on different aspects of violence justification perceptions:

1. **Justification of Violence Indicators:** The analysis across variables such as SGVAWREFUZS (refusal), SGVAWNEGLZS (neglect), SGVAWGOESZS (going out), SGVAWBURNZS (burning), SGVAWARGUZS (arguing), and SGVAWREASZS (reasoning) indicates that HDI and Religion significantly affect societal attitudes toward justifying violence. In Albania, similar to countries with comparable socioeconomic profiles, perceptions of violence justification tend to be more pronounced among populations with lower HDI scores and in regions where religious beliefs exert considerable cultural influence.
2. **Influence of HDI:** The negative relationship between HDI and justification of violence perception (shown by large, negative coefficients) suggests that as HDI increases, justification for violence decreases across categories. Albania, with a lower HDI compared

to many countries but relatively higher than some of its neighbors, experiences a mixed impact on violence perception. This aligns Albania closer to regional trends where higher development correlates with lower acceptance of violence justification.

3. **Role of Religion:** The positive coefficients for Religion indicate that in countries where religion holds more influence (which includes Albania), perceptions justifying violence may be slightly higher. This is consistent with Albania's position among the other countries analyzed in this chapter, where traditional and religious values may still affect attitudes toward gender roles and violence, though Albania shows a gradual shift toward lower violence tolerance.
4. **Comparison with Regional Averages:** Albania's trend aligns with several nations, where societal attitudes toward gender-based violence are influenced by development and cultural norms. Compared to countries with higher HDI scores, Albania shows a higher tolerance for certain forms of violence justification, indicating a need for policies targeting education, empowerment, and socioeconomic support.

In summary, while Albania's perceptions toward Gender Violence show progress, challenges remain, especially in rural areas or communities with deeply ingrained traditional or religious influences. Continued efforts in education, economic growth, and social policies are essential for further improvement in reducing violence justification attitudes.

Conclusion

This study highlights the complex and enduring issue of gender-based violence, revealing not only societal tolerance in some regions but also important strides toward change. The perception data analyzed across multiple countries, including Albania, indicate that cultural and socioeconomic factors still play significant roles in shaping societal attitudes toward gender violence.

Albania's gradual but steady progress in reducing the societal justification of gender violence reflects broader trends associated with developmental indicators, including Human Development Index (HDI) levels and legal protections. The analysis underscores that as countries develop—reflected in improved education, economic standing, and access to legal resources—attitudes justifying violence tend to decline. For Albania, this relationship is evident in the notable drop in violence justification from 2014 onwards, suggesting that economic and social advancements help foster more equitable attitudes. Yet, the country's rural and traditionally influenced areas still

reveal pockets of resistance to this shift, where traditional beliefs and religious values can perpetuate tolerance toward restrictive gender norms.

The observed correlation between higher HDI scores and lower violence justification across countries also underscores the importance of socioeconomic policies in addressing gender violence. Increased educational attainment, economic security, and enhanced health outcomes create a foundation for empowering individuals to reject gender-based violence. Notably, countries with stronger economic frameworks and progressive social policies, such as Gambia and India, reflect these gains, showing marked reductions in both the tolerance and prevalence of violence.

While Albania's legal frameworks provide strong support for gender equality, the country's social protection measures and specific indicators on gender discrimination still show room for growth. Enhancing education and economic policies, particularly in rural regions, can support further violence justification. Such initiatives should be coupled with continuous efforts to dismantle deeply rooted gender biases and to promote a societal shift towards equitable gender norms.

The findings of this study affirm that substantial progress in gender equality is possible with sustained investment in educational, legal, and economic policies. Achieving a society that rejects gender violence requires a holistic approach—one that addresses the cultural, psychological, and economic factors that perpetuate harmful norms. By fostering an environment where traditional stereotypes are progressively replaced by equitable values, Albania and other countries can pave the way toward a future free from Gender-based Violence.

Chapter 3

*Gender Statistics in
the Balkan Region
(1999-2023)*

Albania's performance

Introduction

This chapter focuses on a comparative analysis of gender statistics across 12 Balkan countries (Albania, Bulgaria, Bosnia and Herzegovina, Greece, Croatia, Moldova, North Macedonia, Montenegro, Romania, Serbia, Slovenia, and Kosovo) from 1999 to 2023. The aim is to evaluate how these countries, including Albania, have progressed in terms of gender equality over time, based on key indicators such as labor force participation, education, health, and legal frameworks. In this analysis, we employ cluster analysis as the primary method to identify patterns and groupings among the countries, offering insights into their relative performance. This methodology helps to uncover commonalities between countries and sheds light on specific areas where progress has been made or where challenges remain.

The dataset consists of both binary and numeric variables retrieved from reputable sources like the World Bank DataBank and national statistical institutions, covering key aspects of gender equality. Binary variables capture the existence of gender-related laws and policies, such as non-discrimination laws, equal pay legislation, and parental leave provisions. Numeric variables, on the other hand, reflect quantitative measures such as female labor force participation rates, education attainment rates, and health outcomes (e.g., maternal mortality rates, life expectancy, etc.).

To gain a deeper understanding of Albania's position within the region, cluster analysis was conducted separately for both binary and numeric variables. This method allowed us to group Albania with countries exhibiting similar performance in gender-related metrics and to highlight key areas of success and persistent challenges. By comparing Albania's clusters across time and in relation to other Balkan countries, we aim to provide a comprehensive assessment of the country's progress toward gender equality and the areas that require further improvement.

The first part of the chapter contains a literature review regarding Gender Statistics in the Balkan region and particularly in Albania. It then continues with an explanation of all the statistical methodologies used for the comparison of the parameters of Gender Statistics between the 12 countries. It will then follow with the outcomes of the Cluster analysis for both binary and numeric variables and the Multiple Regression analysis. Next, it will delve into a detailed comparison of Albania's performance relative to the other Balkan countries based on the performed statistical methods, examining its strengths and weaknesses across various gender equality dimensions.

Finally, we will draw key conclusions based on Albania's cluster assignments and offer policy recommendations that could help the country move closer to achieving gender parity in the future.

Literature Review

The Balkan region has undergone significant social, political, and economic transformations over the past 25 years, impacting gender equality and women's empowerment in profound ways. This literature review provides an overview of the key developments, challenges, and achievements in gender statistics in the Balkans, focusing on trends in labor market participation, education, health, and political participation from 1999 to 2023.

The fall of communist regimes in the Balkans in the early 1990s, followed by the Yugoslav wars, led to political instability, economic transitions, and a restructuring of social policies, including those affecting gender equality. The 1995 Beijing Platform for Action (UN Women, 2000) and subsequent international commitments, such as the Sustainable Development Goals (SDGs), have played a crucial role in shaping the region's gender equality frameworks. Many countries in the Balkans started to adopt gender-sensitive policies, though their implementation has been uneven. The emergence of gender statistics as a critical tool for monitoring progress gained momentum in the late 1990s and early 2000s. Researchers like Bettio and Verashchagina (Verashchagina & Bettio, 2009) have highlighted that gender statistics provide key insights into the disparities between men and women in social and economic life, particularly in the post-socialist context of Eastern Europe. However, in the Balkans, systematic data collection faced challenges, as Kollmorgen (Kollomorgen, 2013) notes, due to weak institutional capacities, lack of coordination, and political priorities.

Labor Market, Education, and Political Representation

One of the most studied areas in gender statistics is the labor market. Throughout the last 25 years, female labor force participation rates have shown considerable variation across the Balkans, often reflecting the political and economic transitions of each country. Albania, Bosnia and Herzegovina, and Kosovo have failed to incorporate women into official employment, owing to conventional gender roles and a lack of supportive infrastructure such as daycare. Perceptions of

employment instability in the six less developed post-communist Western Balkan (WB6¹²) countries can be attributed to poor institutional performance.

Bulgaria and Romania have had higher female labor force participation rates, driven by their more developed economies and earlier integration into the European Union (EU). The EU's gender equality directives, including laws on equal pay, anti-discrimination, and parental leave, have contributed to a more favorable environment for women in these countries compared to non-EU Balkan states.

Nevertheless, many studies made in recent years highlight that even in more progressive economies, the gender pay gap and occupational segregation remain persistent. Many women in the Balkans are still concentrated in lower-paying jobs or in informal sectors, limiting their economic advancement.

Education has been a domain where the Balkans have made notable progress in gender equality, particularly in terms of access to primary and secondary education. Studies show that countries like Albania and North Macedonia have closed the gender gap in school enrollment, with women surpassing men in tertiary education attainment in some cases (Babovic, 2023). However, educational attainment has not always translated into improved labor market outcomes, as higher unemployment rates for educated women in countries like Bosnia and Herzegovina and Kosovo indicate (World Bank Group, 2020).

Health outcomes also reflect mixed progress. Maternal health indicators, such as maternal mortality rates, have improved across the region (UNICEF, 2023). However, there remain significant challenges in ensuring universal access to reproductive health services, especially in rural areas. Luzha et al. (Luzha, et al., 2023) have identified gaps in maternal care and a lack of gender-sensitive health services in countries like Kosovo, despite national efforts to improve the situation.

Political participation is another area where gender inequality remains stark. Over the last 25 years, various Balkan countries have adopted gender quotas to increase women's representation in parliament and local governance. Studies point out that countries like North Macedonia, Albania, and Serbia have enacted quota systems that have led to a significant increase in female representation in their legislatures (Babovic, 2023). Albania, for instance, has seen women occupy

¹² Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia

33.6% of parliamentary seats in recent years (Equal Future EurAsia, 2023), aligning with EU and international standards.

However, political empowerment remains largely superficial in many parts of the Balkans, with women often relegated to symbolic roles rather than substantive decision-making positions. Moreover, the enforcement of gender equality laws remains weak. Despite progress in adopting legislation aligned with international norms, such as anti-gender-based violence laws and equal pay regulations, implementation has been hampered by insufficient resources and political will.

Impact of EU Integration and International Organizations

The influence of the European Union (EU) and other international organizations has played a pivotal role in advancing gender equality across the Balkan region. EU integration has provided a strong incentive for legislative and institutional reforms in areas of gender equality, especially in countries such as Bulgaria, Croatia, and Romania, where compliance with EU standards has been mandatory for accession. The adoption of gender-sensitive policies, along with legislation that prohibits discrimination and promotes equal opportunities, has become a crucial aspect of the EU accession process. These reforms, aligned with the EU's *acquis Communautaire*, have not only contributed to reducing gender disparities but have also acted as a model, inspiring similar initiatives in non-EU Balkan states, including Albania.

In Albania and other non-EU Balkan countries, alignment with EU standards has influenced several gender policies despite their non-member status. The EU, through programs like the *Instrument for Pre-Accession Assistance (IPA)*, has directed significant resources to promote gender equality, focusing on issues such as women's employment, political representation, and violence against women. This support has been instrumental in helping these countries establish a baseline for gender statistics, providing data that is essential for monitoring gender disparities and informing policy.

Other international organizations, such as the United Nations (UN), World Bank, and the Council of Europe, have complemented EU efforts by funding various gender equality programs across the region. The United Nations Development Programme (UNDP), for instance, has implemented multiple initiatives aimed at enhancing women's empowerment and combating gender-based violence, while the World Bank has financed projects focused on increasing women's labor force participation and economic opportunities. The Council of Europe has also engaged in extensive

advocacy to advance women's rights, particularly focusing on combating domestic violence through its Istanbul Convention, which has been widely adopted in the Balkans.

These international actors have also significantly contributed to building institutional capacity in the Balkans for the development and use of gender statistics. Through technical assistance and training, they have helped national statistical agencies establish reliable gender data collection mechanisms, which are essential for policymaking. For example, the *World Bank's Gender Data Portal* and UN Women's *Global Database on Violence Against Women* have provided essential tools and frameworks for measuring and monitoring gender-based indicators in Albania and neighboring countries. These developments have made it possible to analyze gender disparities in domains such as education, employment, and political participation, providing a clearer picture of progress and areas where further improvements are needed.

This collaborative effort between the EU, UN, World Bank, and other international bodies underscores the importance of a multifaceted approach to promoting gender equality. By harmonizing standards, funding critical programs, and developing gender statistics, these organizations have not only accelerated progress but also ensured that gender equality remains a prominent agenda item across the Balkan region. In Albania, the integration of these frameworks has led to significant improvements, yet ongoing challenges highlight the need for sustained support from the EU and international partners to fully achieve gender parity in various sectors.

Challenges and Persistent Gaps

Despite the progress in gender equality over recent decades, the Balkan region still faces formidable challenges that hinder women's full participation in social, economic, and political life. Cultural norms and patriarchal structures deeply embedded in Balkan societies continue to perpetuate gender inequalities, especially in rural and traditional areas. These social norms often limit women's access to education, professional advancement, and political representation. In some rural communities, attitudes towards women's roles remain largely conservative, with expectations centered on domestic responsibilities, which constrains women's opportunities to pursue education or careers and impacts their overall empowerment.

Gender-based violence is another significant issue across the Balkans, and the response to this crisis remains inadequate. Reports indicate high rates of domestic violence in Kosovo, Serbia, and Albania, among other countries in the region. Although most Balkan countries have adopted laws

to address violence against women, enforcement remains weak due to limited resources, inadequate training, and, in some cases, societal tolerance for such violence. The lack of consistent enforcement of protective laws leaves many women vulnerable and perpetuates a culture of silence around gender-based violence.

The COVID-19 pandemic further intensified these gender disparities, disrupting recent advancements in gender equality. According to the national Statistics institutions for each country, women in the Balkans were disproportionately affected by job losses, particularly in sectors like hospitality, retail, and education, which employ a large number of women. Simultaneously, unpaid care responsibilities increased significantly for women as they took on additional roles, such as homeschooling children and caring for sick or elderly family members. This “shadow pandemic” of unpaid labor has highlighted the unequal burden borne by women in times of crisis, reinforcing traditional gender roles and limiting their ability to participate fully in the workforce.

Healthcare access, particularly for reproductive and maternal health services, also became more restricted during the pandemic, compounding existing challenges. Women faced obstacles to accessing essential healthcare, with facilities overwhelmed by COVID-19 cases and public health measures limiting in-person consultations. As a result, some women postponed or missed necessary care, which has had both immediate and long-term effects on their health outcomes. These setbacks underline the fragility of recent progress and the urgent need for policies that can protect and advance gender equality, even in times of crisis.

In summary, the Balkan region’s journey towards gender equality remains fraught with persistent gaps and ongoing challenges. Cultural norms, gender-based violence, and the disproportionate impact of the COVID-19 pandemic underscore the need for targeted interventions that address these deeply rooted issues. While legislative and institutional reforms have provided a foundation, ensuring that these policies are effectively implemented and sustained will be essential to achieving true gender equality in the Balkans.

Albania and Gender Statistics

Over the past 25 years, Albania has made significant strides in improving gender equality, particularly in areas such as labor market participation, education, and political representation. However, despite this progress, Albania's performance still lags behind some of its neighboring

Balkan countries in certain gender-related areas. Below we take a look into several aspects of Gender Statistics:

Labor Force Participation: Albania has seen a steady increase in female labor force participation, but this growth has been slower compared to other Balkan countries like Slovenia and Bulgaria. According to the World Bank's 2020 report (World Bank, 2020), Albania's female labor force participation rate remains lower than the regional average, largely due to persistent traditional gender norms and structural barriers such as inadequate access to childcare and unequal distribution of unpaid domestic work. Countries like Slovenia, Bulgaria, and Croatia have implemented more robust gender-sensitive labor policies, leading to higher female participation rates in these regions.

Political Representation: Albania has made notable advancements in women's political representation, especially after the implementation of gender quotas in the early 2010s. With 29% of parliamentary seats held by women in 2020 (Equal Future EurAsia, 2023), Albania performs better than Serbia, Bosnia and Herzegovina, and Kosovo, but still trails behind countries like North Macedonia and Slovenia, which have adopted more comprehensive gender quotas. While quotas have helped boost female representation in politics, significant challenges remain in ensuring that women occupy decision-making roles and hold positions of real influence.

Education: Albania performs relatively well in terms of educational attainment, with the gender gap in primary and secondary education largely closed. In fact, women in Albania now surpass men in tertiary education enrolment. However, this trend is common across the Balkan region, and countries like Croatia and Serbia report similar achievements. The key challenge for Albania is translating educational gains into meaningful employment opportunities for women, where it still lags behind other Balkan nations.

Gender-Based Violence: Gender-based violence remains a major issue across the Balkans, and Albania is no exception. According to reports from Amnesty International and UN Women, domestic violence and violence against women are pervasive, with Albania recording one of the highest rates of reported incidents in the region. However, unlike countries such as Kosovo and North Macedonia, Albania has recently implemented more proactive legal frameworks and institutional mechanisms to combat gender-based violence. Despite this, enforcement of these laws remains weak, highlighting a gap between policy and practice.

Policy Framework: In terms of gender equality policies, Albania has aligned itself with EU standards, particularly through its commitment to the EU accession process. Countries like Croatia, Slovenia, and Bulgaria, which are already EU members, have integrated gender equality measures more comprehensively into their policy frameworks. Albania's focus on harmonizing its policies with EU directives has led to significant improvements, but the implementation and monitoring of these policies still face challenges.

Pension and Social Security Equality: Albania has made slower progress in gender equality in pension rights and retirement age compared to countries like Romania and Bulgaria. In Albania, women are often disadvantaged due to shorter working lives and lower earnings, which affect their pension benefits. Some neighboring countries have introduced reforms that address these gender disparities in retirement, while Albania is still in the process of aligning its policies with broader EU standards.

Reflections

Overall, Albania has made considerable efforts to improve gender equality over the last two decades, particularly in political representation, education, and combating gender-based violence. However, when compared to other Balkan countries, Albania still faces significant challenges in areas like labor market participation, enforcement of gender-based violence laws, and pension equality. Countries like Slovenia, Croatia, and Bulgaria serve as benchmarks for Albania in terms of implementing more comprehensive and effective gender equality policies. While Albania's progress is commendable, more needs to be done to ensure that the gains made in gender equality translate into broader social and economic outcomes for women.

The literature on gender statistics in the Balkans paints a picture of gradual but uneven progress over the last 25 years. While countries like Croatia, Bulgaria, and Slovenia have made significant strides toward gender equality, others, particularly in the Western Balkans, continue to face challenges rooted in economic instability, political transitions, and deeply ingrained gender norms. The role of international actors, including the European Union and the United Nations, has been critical in promoting gender-sensitive policies and the collection of reliable gender data. However, the literature highlights the need for stronger enforcement mechanisms, greater investment in gender equality programs, and cultural change to achieve substantive equality across the region.

The subsequent sections will explore Albania's position relative to other Balkan countries, drawing from the data analysis and cluster evaluations conducted in this study.

Methodology

Data preparation involved several steps to ensure consistency, accuracy, and compatibility across different analyses. Initial preprocessing included handling missing values, normalizing the data, and encoding categorical variables as needed. Standardization was applied to continuous variables to ensure comparability across different scales. Additionally, binary indicators were created for certain categorical variables where needed. After the preparation of the dataset the methodologies taken into consideration for this chapter are mentioned in the sections below.

Cluster Analysis

Cluster analysis is a widely used statistical technique aimed at grouping a set of objects in such a way that objects in the same group (or cluster) are more similar to each other than to those in other groups. This method is particularly valuable in identifying patterns and structures within data, which can inform decision-making processes in various fields, including social sciences, marketing, and biology (Jain, 2010). Traditional clustering algorithms, such as K-means and hierarchical clustering, have been extensively studied and applied to diverse datasets (MacQueen, 1967; Ward, 1963). Recent advances have introduced more sophisticated techniques, including density-based clustering (DBSCAN) and model-based approaches, which enhance the robustness and interpretability of the results (Ester et al., 1996; Fraley & Raftery, 2002). Cluster analysis serves as the primary tool for grouping countries based on their gender equality profiles. We utilize K-means clustering due to its efficiency in handling large datasets and its capacity to partition the data into distinct clusters. The optimal number of clusters is determined using the Elbow method, which assesses the variance explained as a function of the number of clusters. The analysis is conducted in Stata, leveraging the generate cluster command to facilitate the grouping process.

The clustering outcomes were validated using silhouette scores to evaluate the consistency and cohesiveness of each cluster. Higher silhouette scores indicated well-separated and cohesive clusters. Additionally, country assignments were assessed for stability across different clustering techniques, such as agglomerative clustering, to confirm robustness. Once the clusters are formed, you will see countries grouped together based on similar gender equality profiles. This could reveal

interesting insights, such as regional patterns or countries that face similar gender equality challenges.

The table of cluster means will show how the average values of gender equality indicators differ across clusters. For example, one cluster may represent countries with high female labor participation and low maternal mortality, while another may group countries with lower gender equality outcomes in both education and political representation.

This analysis can form the basis for more advanced analysis, such as studying how cluster membership relates to other socio-economic outcomes or identifying common challenges among countries within the same cluster.

Including both binary and non-binary (continuous or categorical) variables in the same cluster analysis can be challenging because different types of variables have different scales and properties. Here's a breakdown of the considerations and approaches when mixing variable types for clustering:

1. **Differences in Scale:**

Binary variables take only values of 0 or 1, while continuous variables can span a much larger range.

This disparity in scale can make continuous variables dominate the distance calculation unless special techniques are used to normalize or weight the variables appropriately.

2. **Distance Measures:**

The choice of distance measures is crucial when handling mixed data types. Standard methods like Euclidean distance don't work well when you combine binary and continuous variables because binary variables need a different treatment.

It is possible to include both binary and non-binary variables in cluster analysis, but the choice of method depends on the structure of the data. **Gower's distance** is generally recommended for mixed data types, as it properly handles binary, continuous, and categorical variables. If Gower's distance is not feasible in your current setup, you might consider standardizing continuous variables or using PCA to reduce dimensionality.

Cluster Analysis with PCA Components

To enhance the interpretability and robustness of the cluster analysis, we incorporate principal component analysis (PCA) prior to clustering. PCA is performed on the selected gender statistic

variables to reduce dimensionality and mitigate issues related to multicollinearity. This approach not only simplifies the dataset but also ensures that the clustering reflects the most significant underlying patterns in the data.

Principal Component Analysis (PCA) serves as a dimensionality reduction technique that transforms a large set of variables into a smaller one while preserving as much information as possible (Jolliffe, 2002). When combined with cluster analysis, PCA can help address issues of multicollinearity and noise in high-dimensional data, thereby improving clustering outcomes. The integration of PCA with clustering methodologies enables researchers to visualize data in reduced dimensions and uncover underlying patterns that may not be apparent in the original high-dimensional space (Kaufman & Rousseeuw, 1990). Studies have shown that PCA-enhanced clustering can lead to more meaningful segmentations, particularly in sociological and economic research contexts.

Principal Component Analysis (PCA) was conducted to reduce the dimensionality of the dataset, allowing the most significant features to emerge while minimizing redundancy and multicollinearity among predictors. PCA components were used as inputs for a secondary clustering analysis to group countries based on composite dimensions rather than individual variables.

PCA Procedure

PCA was applied to the dataset to extract principal components that explain the maximum variance in the data. The components with eigenvalues greater than 1 were retained based on Kaiser's criterion, and a scree plot was used to confirm the number of components to retain. These components were then standardized and used as the input for cluster analysis. The principal components were used in a k-means clustering algorithm to group countries. Clustering with PCA components offers a more nuanced understanding of similarities between countries by considering composite dimensions, which reduces noise from less relevant features.

Mixed Effects Model with PCA Components

Mixed effects models (MEM) are increasingly employed in the analysis of hierarchical or nested data structures, where observations are not independent but grouped at different levels (Laird & Ware, 1982). Incorporating PCA components into mixed effects models allows for the efficient handling of complex datasets with both fixed and random effects, capturing the variability inherent

in the data (Browne & Draper, 2006). This approach is particularly beneficial when dealing with longitudinal data or datasets where repeated measures are taken across subjects, as it accommodates both individual variability and group-level effects. The combination of MEM and PCA has shown promise in enhancing the interpretability of results in various fields, including health sciences and educational research (Goldstein, 2010) (Raudenbush & Bryk, 2002).

Given the hierarchical nature of the data, where observations may vary across different countries and over time, we employ mixed effects models (MEM). This model allows us to account for both fixed effects, such as time and specific country characteristics, and random effects, which capture variability across countries. The PCA components identified in the previous step are included as predictors in the mixed effects model. This inclusion enables the assessment of the relationship between gender equality indicators and the identified components while controlling the hierarchical structure of the data.

A mixed-effects model was employed to assess the effects of selected socioeconomic indicators on a dependent variable across countries, while accounting for both fixed and random effects. PCA components were included in this model to address potential collinearity issues among predictors and to capture key dimensions within the data.

Model Specification

The mixed-effects model specified a random intercept for each country to control for unobserved heterogeneity. This approach allowed each country to have its baseline value, with the fixed effects representing the influence of the predictors across all countries.

The model can be represented as follows:

$$Y_{ij} = \beta_0 + \beta_1 PC_1 + \beta_2 PC_2 + \dots + \beta_k PC_k + U_i + \epsilon_{ij}$$

where Y_{ij} represents the outcome variable for country i at time j , β_0 is the fixed intercept, $\beta_1, \beta_2, \dots, \beta_k$ represent fixed effects of the PCA components, U_i is the random intercept for each country, and ϵ_{ij} is the residual error term.

The model was estimated using maximum likelihood estimation, and the intraclass correlation coefficient (ICC) was computed to assess the proportion of variance attributable to differences between countries. Model diagnostics included checking for multicollinearity (using VIF for fixed effects), normality of residuals, and random effects assumptions.

Regression Analysis

Regression analysis remains one of the most fundamental tools in statistical modeling, allowing researchers to examine relationships between a dependent variable and one or more independent variables (Field, 2013). Multiple regression, logistic regression, and other forms of regression analysis provide frameworks for making predictions and inferring causal relationships from data. The application of regression techniques spans numerous domains, from economics to social sciences, enabling researchers to quantify the impact of different factors on outcomes of interest (Cohen et al., 2003). With the advent of machine learning and advancements in computational power, regularized regression methods, such as LASSO and Ridge regression, have gained prominence, allowing for the selection of relevant predictors while managing multicollinearity (Tibshirani, 1996).

To further explore the relationships between specific gender statistic variables and potential predictors, regression analysis is conducted. Multiple regression techniques are employed to quantify the impact of various factors on gender equality outcomes. We assess linear relationships, control confounding variables, and utilize interaction terms where necessary. The regression models are evaluated for assumptions of linearity, homoscedasticity, and normality of residuals, ensuring the validity of the results.

Multiple regression analysis was conducted to evaluate the direct relationships between key gender equality indicators and specific socioeconomic predictors. This analysis aimed to provide insights into how individual variables impact the outcome variable.

Model Specification

The multiple regression model included a range of predictors, selected based on theoretical relevance and statistical criteria, to estimate their unique contributions to the outcome variable. The following specification was used:

$$y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \epsilon$$

where y is the dependent variable, α is the intercept, $\beta_1, \beta_2, \dots, \beta_n$ are the coefficients for predictors X_1, X_2, \dots, X_n and ϵ is the error term.

The model was refined using backward stepwise selection to remove non-significant predictors. Model fit was evaluated through R-squared and adjusted R-squared values, with further assessment

via residual diagnostics (normality, homoscedasticity, and independence of errors) and multicollinearity tests (VIF).

The coefficients of significant predictors were interpreted to understand the effect size and direction of impact on the outcome variable. Standardized coefficients were also computed to compare the relative strength of each predictor.

Summary

The combination of clustering, mixed-effects modeling, and regression analysis provides a comprehensive understanding of the complex relationships within the dataset. The use of PCA in both clustering and mixed-effects models allows for dimensionality reduction and enhances model stability, while regression analysis highlights specific influences of variables on the outcome. This methodological approach ensures robust and meaningful findings that can guide data-driven policy decisions.

All analyses are conducted using Stata software, which is well-suited for the statistical methodologies employed in this study. Stata's user-friendly interface and extensive statistical packages facilitate efficient data manipulation and analysis, ensuring that the methodologies are implemented accurately and effectively.

The Dataset and Its Usage

The dataset assembled for the purpose of this chapter analysis was collected from the Gender Statistics of DataBank, elaborated by the World Bank Group (World Bank Group, 2024) and is a valuable resource for assessing and comparing gender equality trends across 12 countries of the Balkan region (Albania, Bulgaria, Bosnia and Herzegovina, Greece, Croatia, Moldova, North Macedonia, Montenegro, Romania, Serbia, Slovenia, and Kosovo) over the span of more than two decades from 1999 to 2023. It includes a wide array of gender statistics, offering a holistic view of gender dynamics in multiple domains like labor market participation, education, health, political representation, and legal frameworks. This breadth of data allows for a nuanced analysis of the multifaceted nature of gender inequality and provides opportunities for drawing insights at both the national and regional levels. Below I have categorized the variables that are taken into consideration for macro themes:

1. Labor Market Participation

Variables: Female and male labor force participation rates, unemployment rates, employment types (formal/informal), and wage gaps. These variables help assess gender disparities in the labor market. For example, you can compare how female labor participation varies between countries or how the wage gap between men and women has evolved over time. Identifying countries where women are underrepresented in the workforce can guide deeper analyses into the underlying social or policy factors contributing to this disparity.

2. Education

Variables: Gender differences in enrollment rates at primary, secondary, and tertiary levels, literacy rates, dropout rates, and educational attainment. Education is a key determinant of gender equality, especially in the long term. By comparing the educational attainment of men and women across countries, you can explore how early educational gaps translate into disparities in economic opportunities and political participation later in life. You could, for instance, investigate whether countries with high female tertiary enrollment have higher levels of female political representation or workforce participation.

3. Health

Variables: Life expectancy, maternal mortality rates, reproductive health services access, adolescent fertility rates, and health insurance coverage by gender. Health is a critical component of gender equality, influencing women's capacity to participate fully in society. These health-related indicators provide insights into disparities in access to healthcare services and outcomes such as maternal mortality. By comparing health data, you can identify countries where women's health outcomes lag behind and explore the socio-economic or policy-based reasons for these disparities.

4. Political Participation

Variables: The proportion of women in national parliaments, local governments, and leadership roles in political institutions. These indicators measure women's representation and influence in decision-making processes. You can use this data to analyze whether countries with higher political representation for women tend to perform better in other gender equality indicators, such as labor market participation or wage equality. Political participation variables are also important for understanding the role of governance in promoting gender-inclusive policies.

5. Legal and Regulatory Frameworks

Variables: Existence of laws regarding gender equality, maternity/paternity leave policies, anti-discrimination laws, and laws addressing gender-based violence. Legal frameworks shape the opportunities available to women and men in different aspects of life. By analyzing these variables, you can compare how different countries' policies promote or hinder gender equality. For example, countries with strong anti-discrimination laws may show narrower gender wage gaps or higher female participation in traditionally male-dominated fields. This data can also help assess the effectiveness of gender equality policies over time.

Some ways to extract comparison analysis from this dataset are listed below.

Longitudinal Comparisons: The dataset spans multiple decades, allowing for the tracking of gender equality progress within individual countries over time. You can observe how key indicators, such as female labor market participation or educational attainment, have evolved. For example, you may discover that certain countries have made rapid strides in narrowing the wage gap, while others have seen slower progress.

Cross-Country Comparisons: By comparing gender statistics across countries, you can identify which countries are leading in gender equality and which are lagging behind. For instance, comparing female labor market participation rates between developed and developing countries may reveal different patterns of gender inequality, possibly due to varying economic structures or social norms.

Regional Comparisons: Beyond individual countries, the dataset allows for regional comparisons. Countries within the same geographic area (e.g., Western Europe vs. Eastern Europe) may exhibit similar gender equality patterns due to shared cultural, economic, or historical factors. Regional patterns might show that countries in certain areas are particularly advanced in terms of education equality but lag in political representation or labor market participation.

Sectoral Comparisons: You can focus on specific domains, such as education or political participation, and compare gender equality outcomes within those areas across countries. For example, one country may excel in gender equality in education but fall behind in political participation. Understanding sectoral strengths and weaknesses can help highlight areas where targeted policy interventions might be necessary.

Identification of Leaders and Laggards: By ranking countries based on different indicators, such as wage gaps or political representation, the dataset can help identify gender equality leaders and laggards. This allows for an analysis of the factors contributing to success in leading countries and

the challenges facing lagging countries. Such insights can inform policy recommendations and inspire cross-country learning and collaboration.

Exploration of Trade-offs and Synergies: Gender equality progress in one area may coincide with or contribute to progress in other areas. For instance, countries with high female educational attainment often have higher female labor market participation. Conversely, countries with low political representation for women may also have poor labor market outcomes for women. Exploring these interdependencies can offer a more holistic understanding of the factors that drive gender equality.

Special Case of Kosovo

Kosovo, being a relatively new state, presents a unique case in the dataset. The country declared independence in 2008, and as a result, the availability and continuity of its gender statistics are more limited compared to other countries with longer-standing statistical systems. Kosovo may lack historical data or have gaps in its dataset for certain variables, particularly those that require long-term tracking, such as labor market trends or political representation.

Challenges in Cross-Country Comparisons: Due to its shorter history of data collection, Kosovo may not always be directly comparable with other countries in the study. When making comparisons, it's important to account for the incomplete nature of Kosovo's data. For example, missing data for certain years or variables may make it difficult to assess long-term trends or the impact of certain policies on gender equality.

Focus on Recent Data: While Kosovo lacks historical data, recent data on gender equality indicators is available. Analyzing Kosovo's most current statistics can provide insights into its recent progress in promoting gender equality, particularly in comparison with other countries at similar stages of development.

Regional Comparison: Given Kosovo's geographic location in the Balkans, it may be more appropriate to compare its gender equality progress with neighboring countries that share similar historical and socio-economic contexts. This could offer a more nuanced understanding of how Kosovo's gender equality outcomes fit into a broader regional picture.

The dataset provides an in-depth look at gender equality across a range of indicators and countries, offering rich potential for both longitudinal and cross-country analyses. By examining labor market participation, education, health, political representation, and legal frameworks, you can

gain insights into the multifaceted nature of gender inequality and the specific challenges facing different countries. Despite Kosovo's limited historical data, its recent statistics still provide valuable information for understanding its gender equality trajectory. Through careful analysis, this dataset can reveal patterns, trends, and disparities that will be key in shaping future gender equality policies and initiatives.

Binary Dataset

Table 37 Overview of the binary variables (World Bank Group, 2024)

name	type	format	label	Variable label
Country	str3	%9s		Country
Year	int	%10.0g		Year
passport_app_eq	byte	%10.0g		A woman can apply for a passport in the same way as a man (1=yes; 0=no)
head_hh_eq	byte	%10.0g		A woman can be "head of household" in the same way as a man (1=yes; 0=no)
live_eq	byte	%10.0g		A woman can choose where to live in the same way as a man (1=yes; 0=no)
job_eq	byte	%10.0g		A woman can get a job in the same way as a man (1=yes; 0=no)
dvrce_eq	byte	%10.0g		A woman can obtain a judgment of divorce in the same way as a man (1=yes; 0=no)
bank_eq	byte	%10.0g		A woman can open a bank account in the same way as a man (1=yes; 0=no)
bus_reg_eq	byte	%10.0g		A woman can register a business in the same way as a man (1=yes; 0=no)
sign_eq	byte	%10.0g		A woman can sign a contract in the same way as a man (1=yes; 0=no)
trvl_eq	byte	%10.0g		A woman can travel outside her home in the same way as a man (1=yes; 0=no)
ctr_trvl_eq	byte	%10.0g		A woman can travel outside the country in the same way as a man (1=yes; 0=no)
ngt_work_eq	byte	%10.0g		A woman can work at night in the same way as a man (1=yes; 0=no)
work_dng_eq	byte	%10.0g		A woman can work in a job deemed dangerous in the same way as a man (1=yes; 0=no)
und_work_eq	byte	%10.0g		A woman can work in an industrial job in the same way as a man (1=yes; 0=no)
remrig_eq	byte	%10.0g		A woman has the same rights to remarry as a man (1=yes; 0=no)
pen_sx_hr_emp	byte	%10.0g		Criminal penalties or civil remedies exist for sexual harassment in employment (
dml_prg_w	byte	%10.0g		Dismissal of pregnant workers is prohibited (1=yes; 0=no)
eq_rnm_wk	int	%10.0g		Law mandates equal remuneration for females and males for work of equal value (1
eq_inh	byte	%10.0g		Sons and daughters have equal rights to inherit assets from their parents (1=yes
gov_ma_le	byte	%10.0g		The government administers 100 percent of maternity leave benefits (1=yes; 0=no)
eq_adm_auth	byte	%10.0g		The law grants spouses equal administrative authority over assets during marriag
leg_prov_ob	byte	%10.0g		The law is free of legal provisions that require a married woman to obey her hus
eq_acc_cr	byte	%10.0g		The law prohibits discrimination in access to credit based on gender (1=yes; 0=n
eq_discr_emp	byte	%10.0g		The law prohibits discrimination in employment based on gender (1=yes; 0=no)
eq_ret_age	byte	%10.0g		The mandatory retirement age for women and men is the same (1=yes; 0=no)
abs_child_pens	byte	%10.0g		There are periods of absence due to childcare accounted for in pension benefits
leg_sex_h	byte	%10.0g		There is legislation on sexual harassment in employment (1=yes; 0=no)
leg_dom_v	byte	%10.0g		There is legislation specifically addressing domestic violence (1=yes; 0=no)
paid_pa_le	byte	%10.0g		There is paid parental leave (1=yes; 0=no)

This dataset provides a comprehensive overview of gender equality across 12 Balkan countries from 1999 to 2023. The dataset contains 300 observations, each representing the status of gender-related legal rights and protections for each country during a particular year. The countries

included are **Albania (ALB)**, **Bulgaria (BGR)**, **Bosnia and Herzegovina (BIH)**, **Greece (GRC)**, **Croatia (HRV)**, **Moldova (MDA)**, **North Macedonia (MKD)**, **Montenegro (MNE)**, **Romania (ROU)**, **Serbia (SRB)**, **Slovenia (SVN)**, and **Kosovo (XKX)**. The dataset covers 30 variables related to various aspects of gender equality and discrimination, with binary values indicating whether a certain gender-related legal right or protection is available (1 = yes) or absent (0 = no).

The variables in this dataset represent binary indicators of gender equality laws or policies in different social, economic, and legal domains. They offer insights into the progression of women's rights in these countries over the past 25 years.

- **Legal and Economic Autonomy:** Variables such as `passport_app_eq`, `head_hh_eq`, `live_eq`, `job_eq`, and `dvrc_e_eq` assess whether women have the same legal rights as men in critical aspects of life, including the ability to apply for a passport, be the head of household, choose their place of residence, obtain a job, and seek a divorce. These variables are fundamental indicators of gender equality in decision-making and economic autonomy.
- **Financial and Employment Rights:** Other key variables such as `bank_eq`, `bus_reg_eq`, and `sign_eq` reflect women's access to financial services and their ability to participate in the formal economy, either as employees or entrepreneurs. For instance, `bank_eq` indicates whether women can open bank accounts under the same conditions as men, while `bus_reg_eq` shows whether they can register a business. Similarly, `sign_eq` assesses whether women can sign contracts with the same legal standing as men.
- **Mobility and Labor Rights:** The variables `trvl_eq`, `ctr_trvl_eq`, `ngt_work_eq`, `work_dng_eq`, and `und_work_eq` explore women's rights related to mobility and the workplace. `trvl_eq` and `ctr_trvl_eq` assess women's freedom to travel both within and outside the country, while `ngt_work_eq`, `work_dng_eq`, and `und_work_eq` measure whether women can engage in night shifts, dangerous jobs, or industrial work under the same conditions as men.
- **Family Rights and Protections:** Family-related variables like `remrig_eq` (equal rights to remarry), `dml_prg_w` (protection against dismissal of pregnant workers), and `pen_sx_hr_emp` (penalties for sexual harassment) evaluate legal protections concerning

marriage, pregnancy, and workplace harassment. These variables highlight how legal systems in these countries support or neglect women's rights in family and employment contexts.

- **Equal Treatment in Law:** Variables like `eq_rnm_wk`, `eq_inh`, `eq_adm_auth`, and `leg_prov_ob` track gender equality in inheritance rights, administrative authority within marriage, and whether laws require women to obey their husbands. These variables are essential for assessing whether legal frameworks promote or hinder gender equality in asset management and family law.
- **Discrimination and Employment Protections:** The dataset also covers variables that reflect protection against gender-based discrimination. For instance, `eq_acc_cr` (non-discrimination in access to credit), `eq_discr_emp` (non-discrimination in employment), and `eq_ret_age` (equal retirement age) are critical in evaluating whether women face legal barriers in the workplace or financial sector. Similarly, variables such as `leg_sex_h` and `leg_dom_v` indicate the presence of legislation addressing sexual harassment and domestic violence, respectively, providing insights into the broader legal protections afforded to women.
- **Parental Leave and Childcare:** Lastly, `gov_ma_le`, `abs_child_pens`, and `paid_pa_le` measure the availability of state-funded maternity leave, the inclusion of childcare absences in pension benefits, and whether paid parental leave exists, respectively. These variables are particularly significant for understanding how gender equality is supported through social policies that enable work-life balance for women.

While each of these binary variables focuses on specific rights or protections, they are inherently interconnected. For example, a country where women have the same legal right to apply for a passport (`passport_app_eq`) and travel independently (`trvl_eq` and `ctr_trvl_eq`) may also be more likely to grant women equal employment rights (`job_eq`, `work_dng_eq`). Similarly, a country that provides equal inheritance rights (`eq_inh`) and administrative authority in marriage (`eq_adm_auth`) is likely to have laws that support broader gender equality.

Moreover, the variables related to family rights, such as `remrig_eq` and `dml_prg_w`, connect closely with broader legal and economic protections, such as `eq_discr_emp` and `pen_sx_hr_emp`, highlighting the intersections between family law, employment law, and protections against

discrimination. Additionally, protections against sexual harassment (`leg_sex_h`) and domestic violence (`leg_dom_v`) are critical in safeguarding women's rights in both personal and professional spheres, reflecting the broader state of gender equality in each country.

Cluster Analysis on Binary Variables

The dataset's temporal dimension (1999–2023) allows for an examination of how gender equality has evolved over time in the Balkans. By comparing the development of these binary variables across years, we can track progress or stagnation in each country. For instance, it might reveal that some countries, like Slovenia or Greece, implemented gender equality measures earlier, while others like Albania or Kosovo, perhaps due to historical or socio-political factors, took longer to establish these protections.

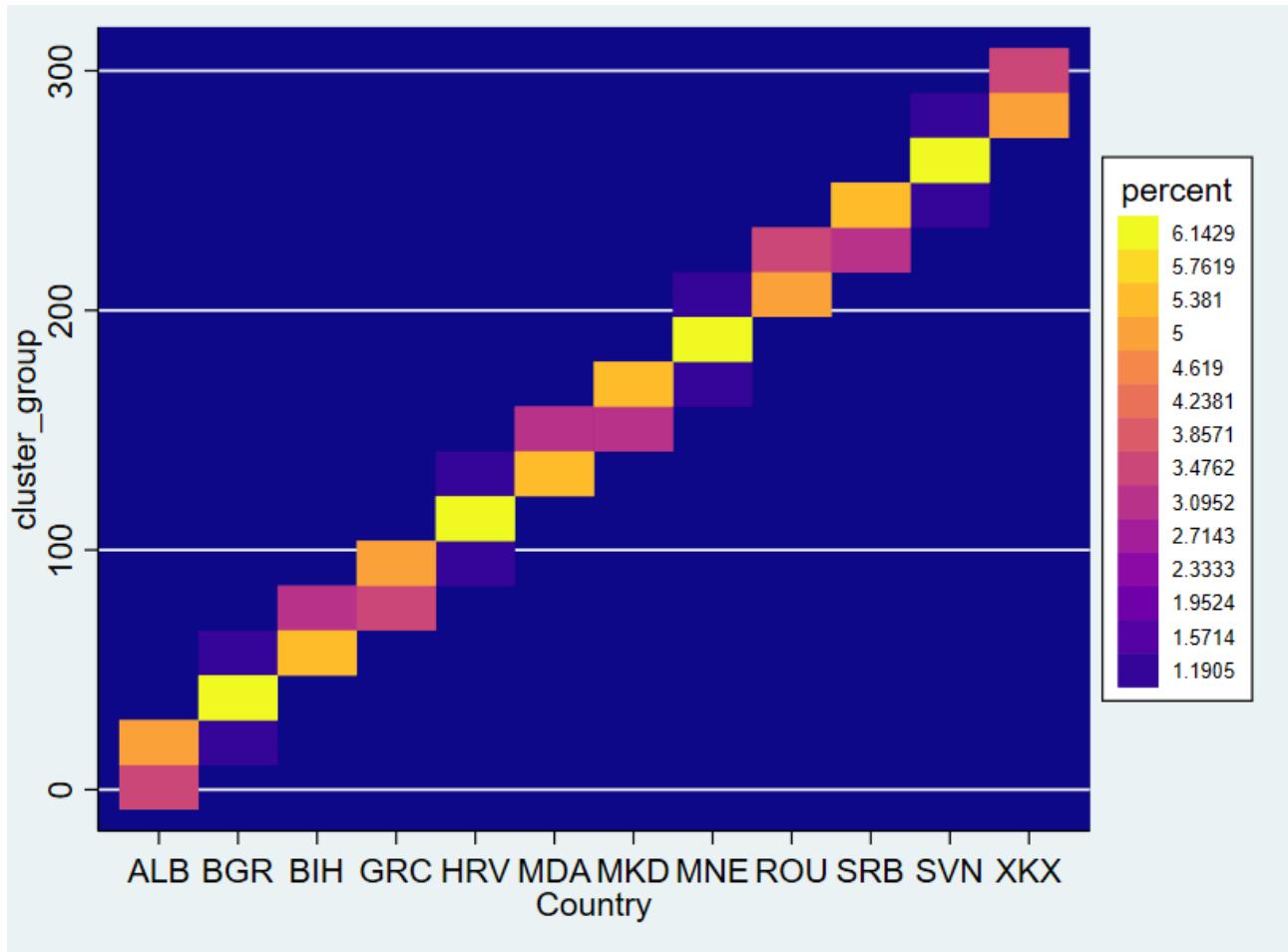
Cross-country analysis can reveal whether there are regional trends in gender equality reforms or whether individual countries have followed distinct trajectories. For example, similarities in legal frameworks between countries like Serbia and Montenegro or Bulgaria and Romania might indicate regional influences on gender policy. This dataset is suitable for a variety of quantitative analyses, such as cluster analysis to group countries with similar gender equality profiles. It allows researchers to investigate how different facets of gender equality interact and how legal reforms in one area might drive changes in another.

Hierarchical Clustering Analysis

The hierarchical clustering analysis on the dataset containing binary gender statistics for 12 Balkan countries has produced the following results:

- **Cluster Group Frequency:** Each cluster group has only **1 case**, which is uniformly distributed. Specifically, 232 unique clusters were generated, each containing a single country with a frequency of **0.33%**.

Figure 10 Heatplot on Hierarchical Clusters on Binary Variables¹³



This outcome suggests that hierarchical clustering has grouped each data point (each country) into a separate cluster, implying no meaningful grouping or similarity between the countries. Therefore, we conclude that hierarchical clustering is often not suitable, as in this particular case, for binary data for several reasons mentioned below:

1. Nature of Binary Data:

Binary data does not inherently contain continuous information about distances between points. Hierarchical clustering relies on distance measures (e.g., Euclidean distance) that work better with continuous or ordinal data. Binary variables capture only presence/absence (0/1), which makes it difficult for these methods to interpret meaningful distances.

¹³ The percentage on the right side of the heatplot, created by the command `heatplot country_clusters Country, backfill colors(plasma)`, represents the intensity or value of the variables that the heatmap is based on. In this case, the heatplot is clustering countries.

2. Overfitting issue:

The output shows many cluster groupings (multiple entries for each country), which could indicate overfitting. This can happen if the clustering method generates more clusters than are meaningful, leading to each observation being assigned to a distinct cluster.

3. Sparsity of Data:

In cases where the dataset has many binary variables (as seems to be the case here), the data becomes sparse. This sparsity leads to issues where distance measures often treat all data points as being equally distant from each other, which explains why each country was placed in its own cluster.

4. Cluster Interpretability:

When all countries are placed in separate clusters, it indicates that no substantial pattern or similarity has been identified. The primary goal of clustering is to group similar observations, and here, the clustering algorithm fails to do so because of the binary nature of the data. The resulting clusters offer no interpretable insights.

5. Appropriate Distance Measures:

Standard distance measures (such as Euclidean or Manhattan) are not optimal for binary data. Binary datasets typically require specialized measures (like Jaccard or Hamming distance) that account for the unique nature of binary attributes.

In conclusion, the hierarchical clustering applied here is ineffective due to the binary nature of the dataset, the inappropriate distance metric, and the resulting one-country-per-cluster outcome. Alternative clustering methods tailored for binary data should be considered for a more meaningful analysis.

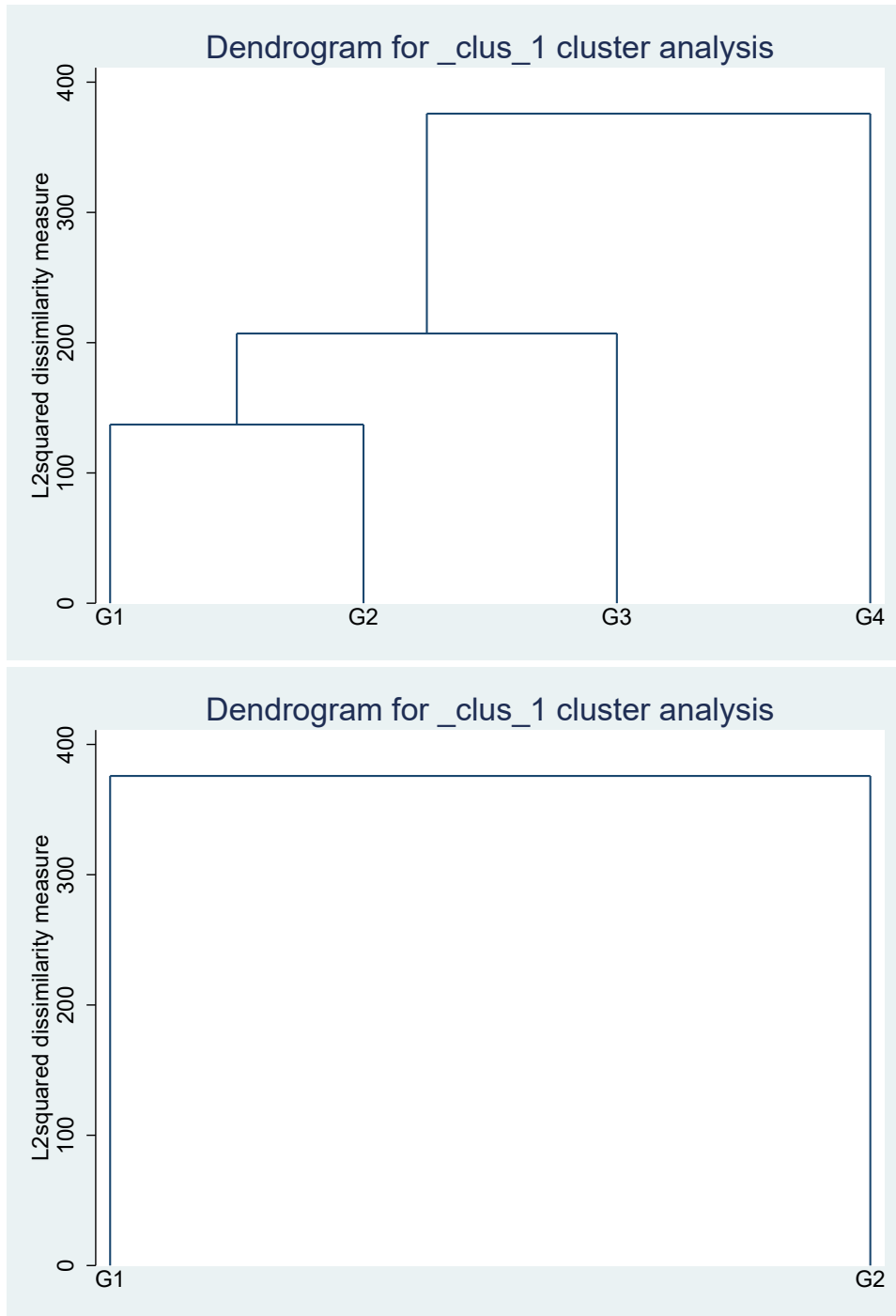
Visually we can see below 2 dendrograms with less clusters because the number of clusters depends on where you decide to make the cut in the hierarchical tree. The lower you go in the dendrogram (closer to the individual data points), the more clusters you will see, as the analysis is sensitive to finer distinctions between data points. When you use a higher cut level (fewer clusters like in `cutnumber(2)`), you are summarizing the data into broader categories, thus reducing the number of visible clusters.

- **With 4 clusters:** The algorithm is splitting the dataset into finer subgroups.

- **With 2 clusters:** The algorithm is capturing a more general structure, forming larger and fewer groups.

Overall, these dendrograms are not able to divide the dataset into accurate clusters.

Figure 11 Dendrogram with 4 clusters for binary variables and Dendrogram with 2 clusters for binary variables



Longitudinal Methods of Clustering on PCA Components

The longitudinal clustering on PCA (Principal Component Analysis) components aims to explore how the gender statistics binary variables from the dataset evolve over time (from 1999-2023) and how they can be grouped based on their underlying structures. Using PCA, we reduce the dimensionality of the dataset by extracting components that explain most of the variance in the data and then perform clustering on these components. The main goal is to interpret how these components capture different patterns in the gender equality variables across countries and time.

Key Results from PCA as shown from the Figure below:

- Component 1 (Comp1) explains 28.43% of the total variance.
- Component 2 (Comp2) explains 19.37% of the variance.
- Component 3 (Comp3) explains 12.62% of the variance.
- In total, the first 4 components account for 68.84% of the cumulative variance, meaning they explain a large portion of the differences in gender equality profiles across countries.

Figure 12 Key results from PCA on binary variables

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	4.54856	1.44988	0.2843	0.2843
Comp2	3.09868	1.07944	0.1937	0.4780
Comp3	2.01924	.670894	0.1262	0.6042
Comp4	1.34835	.385427	0.0843	0.6884
Comp5	.962922	.0959196	0.0602	0.7486
Comp6	.867003	.27152	0.0542	0.8028
Comp7	.595483	.0311421	0.0372	0.8400
Comp8	.564341	.0727099	0.0353	0.8753
Comp9	.491631	.091843	0.0307	0.9060
Comp10	.399788	.0423115	0.0250	0.9310
Comp11	.357476	.0688264	0.0223	0.9533
Comp12	.28865	.0969895	0.0180	0.9714
Comp13	.19166	.0588769	0.0120	0.9834
Comp14	.132783	.0425363	0.0083	0.9917
Comp15	.090247	.0470583	0.0056	0.9973
Comp16	.0431888	.	0.0027	1.0000

These top components capture the most important patterns, and the remaining components (5 to 16) capture smaller variations. The eigenvalues reflect the variance explained by each principal

component. Components with eigenvalues greater than 1 are typically considered significant. From the output:

- The first four components (Comp1 to Comp4) have eigenvalues greater than 1, meaning they capture substantial patterns in the data.
- The remaining components (Comp5 to Comp16) contribute less variance individually but may still capture small, important aspects of variation.

Breakdown of Variance Proportion:

- **Comp1** (28.43%): Captures the most dominant variation in gender statistics, possibly related to broad, systemic differences in gender equality.
- **Comp2** (19.37%): Represents secondary variation, likely capturing more specific gender equality aspects.
- **Comp3** and **Comp4** explain 12.62% and 8.43% of the variance, respectively, capturing further distinctions.

Table 38 Principal Components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
ctr_trvl_eq	0.0894	0.4474	0.2045	0.2267	0.1911	.1545
ngt_work_eq	0.2726	0.3063	0.0954	-0.2238	0.0761	.2798
work_dng_eq	0.2423	0.2812	0.1059	-0.4769	-0.0880	.1512
und_work_eq	0.2638	0.1983	-0.0452	-0.3461	0.2184	.35
pen_sx_hr_~p	0.3674	-0.0763	0.0103	-0.0751	-0.3906	.2133
dml_prg_w	0.1790	-0.1539	-0.0510	0.4129	0.2660	.4775
eq_rnm_wk	0.2769	-0.2306	-0.0006	0.0221	0.3094	.3935
gov_ma_le	-0.1551	-0.1611	0.5963	-0.0431	-0.1024	.07949
leg_prov_ob	0.1021	0.3506	0.2688	0.1880	0.1135	.3656
eq_acc_cr	0.3425	-0.2395	-0.0168	0.1087	0.0706	.2674
eq_discr_emp	0.2565	-0.1584	-0.0036	0.0669	-0.5104	.366
eq_ret_age	-0.0230	0.3473	-0.0148	0.5011	-0.2365	.231
abs_child_~s	-0.1063	-0.0761	0.6547	0.0101	-0.0998	.05556
leg_sex_h	0.3952	-0.0994	0.0719	0.1266	-0.2768	.1531
leg_dom_v	0.3844	0.0450	0.0833	0.2216	0.1839	.2087
paid_pa_le	0.1106	-0.3678	0.2531	-0.0703	0.3435	.2755

The loadings show how much each original variable contributes to the principal components. High absolute values indicate that the variable has a strong influence on that component.

- **Comp1:** Variables such as `leg_sex_h` (legal sanctions against sexual harassment), `leg_dom_v` (legal protections against domestic violence), and `pen_sx_hr_p` (penal sanctions against sex-based harassment) have high positive loadings, indicating these variables strongly influence this component.
- **Comp2:** Variables like `ctr_trvl_eq` (equal control over travel), `leg_prov_ob` (legal provisions for women in the labor force), and `ngt_work_eq` (equal rights in night work) contribute significantly. This component seems to capture gender-related legal and labor provisions.
- **Comp3:** Variables such as `abs_child_s` (childcare leave), `gov_ma_le` (female representation in government), and `paid_pa_le` (paid parental leave) influence this component, reflecting family and labor market-related gender aspects.
- **Comp4:** Focuses on variables related to labor rights, including `dml_prg_w` (domestic programs promoting women's employment) and `work_dng_eq` (protection against dangerous work for women).

The remaining components (Comp5 to Comp16) capture smaller, more specific variations across the dataset. After reducing the dataset into principal components, clustering is applied to group countries based on these components over time. The clustering approach helps to identify groups of countries that exhibit similar gender equality patterns.

Comp1 and Comp2: Since these components explain a substantial portion of the variance, the clustering primarily reflects differences in legal and institutional structures related to gender equality across countries.

- Countries with high scores on **Comp1** might have stronger legal frameworks protecting women from gender-based violence and harassment.
- Countries with high scores on **Comp2** are likely to have more progressive labor laws ensuring equal rights in employment and parental leave.

Comp3 and Comp4: These components reflect family-oriented and labor-specific policies.

- Countries that score highly on **Comp3** may provide better parental leave and childcare provisions, reflecting a more supportive structure for balancing family and work.

- **Comp4** might distinguish countries based on their approach to dangerous work and protections for women.

By using longitudinal clustering on these PCA components, we can group countries that follow similar patterns in gender equality variables over the years like below:

- **Cluster 1:** Could group countries with robust legal frameworks (e.g., Slovenia, Greece) that exhibit high scores on **Comp1** and **Comp2**, emphasizing comprehensive legal protections for women.
- **Cluster 2:** Might contain countries with more family-oriented gender policies (e.g., Croatia, Serbia) that score high on **Comp3** and focus on parental leave and childcare.
- **Cluster 3:** Could consist of countries with developing legal protections or specific gaps in gender equality (e.g., Moldova, Kosovo) that exhibit lower scores on components related to institutional structures.

The longitudinal aspect allows us to see how these clusters evolve over time. Some countries may shift clusters as their gender equality policies improve, stagnate, or regress over the period (1999–2023). For instance:

- **Countries improving over time:** Some countries may move from a cluster characterized by weaker protections to one with stronger, more comprehensive frameworks, especially as gender policies are reformed.
- **Countries with consistent patterns:** Some countries may remain in the same cluster, reflecting consistent policies and frameworks over time, whether they are progressive or less developed.

The clustering results, represented by four distinct clusters, reveal how these countries have changed over the years in terms of gender equality variables. The differences in cluster assignment highlight shifts in policy, economic, and social conditions affecting gender equality in these regions.

Cluster Assignment by Country

Albania (ALB)

- 1999–2003 (Cluster 1): Albania started in Cluster 1, reflecting a lower level of gender equality early in the observed period. This is likely due to the country's post-communist transition, where traditional gender roles were still prevalent, and institutional reforms were in their infancy.
- 2004–2023 (Cluster 4): Albania shifted to Cluster 4 after 2003, reflecting significant improvements. The implementation of gender-sensitive policies, labor market inclusion for women, and increased female political participation explain this shift.

Bulgaria (BGR)

- 1999–2002 (Cluster 1): Bulgaria shared similarities with Albania during the early stages, likely due to shared post-communist challenges, especially in closing the gender gap in labor markets and political participation.
- 2003–2007 (Clusters 2 and 4): Bulgaria entered Clusters 2 and 4 as a result of EU accession, which brought gender equality frameworks and legislative reforms, improving conditions for women in various sectors.
- 2008–2023 (Cluster 3): Over time, Bulgaria transitioned to Cluster 3, marking continued progress in gender equality, though with some limitations, especially in wage parity and leadership representation.

Bosnia and Herzegovina (BIH)

- 1999–2023 (Cluster 2): Bosnia remained consistently in Cluster 2, which reflects its slower progress compared to EU-member neighbors. The prolonged post-conflict recovery and slower integration into international frameworks have delayed gender equality reforms, particularly in areas like labor market participation and political inclusion.

Greece (GRC)

- 1999–2007 (Cluster 1): Greece initially showed slower progress in gender equality compared to its Western European counterparts, reflected in its Cluster 1 assignment.
- 2008–2023 (Cluster 4): Greece later shifted to Cluster 4, likely due to EU gender mainstreaming policies, as well as economic shifts requiring broader labor market participation, including women.

Croatia (HRV)

- 1999–2003 (Cluster 1): Croatia’s early inclusion in Cluster 1 mirrors that of other post-Yugoslav states with lower female participation in politics and the workforce.
- 2004–2023 (Clusters 2 and 4): After EU accession, Croatia moved to Clusters 2 and 4, signaling improved gender policies and stronger institutional frameworks promoting equality.

Moldova (MDA)

- 1999–2007 (Cluster 1): Moldova began in Cluster 1, reflecting economic instability and slow gender reforms.
- 2008–2018 (Cluster 2): Transitioning to Cluster 2, Moldova showed gradual improvements, with efforts toward gender-inclusive labor market policies.
- 2019–2023 (Cluster 3): Further progress in gender reforms shifted Moldova to Cluster 3, reflecting continued but uneven progress, particularly in wage gaps and rural women’s economic participation.

North Macedonia (MKD)

- 1999–2003 (Cluster 1): North Macedonia's early years saw it grouped with other countries in Cluster 1, highlighting significant gender inequalities.
- 2004–2023 (Cluster 4): North Macedonia moved to Cluster 4, likely driven by international pressure and domestic policies focused on gender mainstreaming and equal participation in labor and politics.

Montenegro (MNE)

- 1999–2003 (Cluster 1): Montenegro also started in Cluster 1, reflecting early gender disparities post-independence.
- 2004–2018 (Cluster 2): Montenegro shifted to Cluster 2 due to gradual improvements in gender policies.
- 2019–2023 (Cluster 4): By the last observed period, Montenegro aligned with Cluster 4, showing similar improvements to Albania and North Macedonia.

Romania (ROU)

- 1999–2003 (Cluster 1): Romania began in Cluster 1, reflecting post-communist challenges.

- 2004–2023 (Cluster 3): After EU accession, Romania transitioned to Cluster 3, with improvements in gender equality, though it still faces challenges in areas such as wage parity and representation in leadership roles.

Serbia (SRB)

- 1999–2003 (Cluster 1): Like many Balkan countries, Serbia started in Cluster 1 due to its post-conflict and post-communist status.
- 2004–2023 (Cluster 4): Serbia’s improvement in gender policies and legislative frameworks shifted it to Cluster 4, reflecting its progress in line with EU membership requirements.

Slovenia (SVN)

- 1999–2003 (Cluster 1): Slovenia was also initially grouped in Cluster 1.
- 2004–2023 (Cluster 4): As an EU member, Slovenia moved to Cluster 4, showing advanced gender equality, particularly in political representation and labor market participation.

The details on each cluster are explained below:

Cluster 1 (Early Stages of Gender Equality): Countries in Cluster 1 at the start of the period were characterized by significant gender disparities, particularly in labor market participation and political representation. These countries were largely in the early stages of economic and social transition after the collapse of communism or conflict.

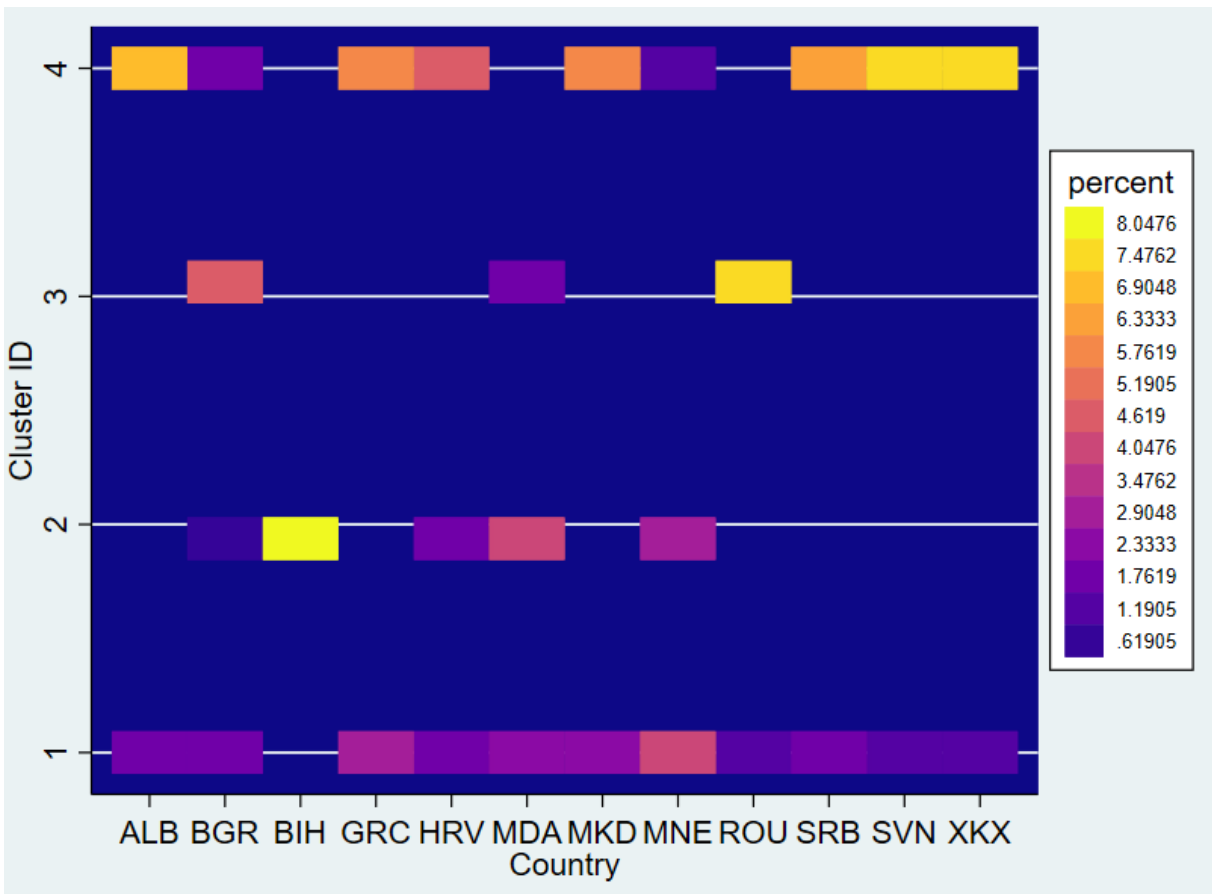
Cluster 2 (Gradual Progress): Countries that moved to Cluster 2 reflect gradual progress, often driven by EU accession requirements and gender-sensitive reforms. However, these countries still faced challenges in achieving complete gender equality, particularly in rural areas or traditional sectors.

Cluster 3 (Intermediate Progress with Ongoing Challenges): Countries in Cluster 3 made significant strides, particularly in areas like education and health. However, they faced challenges in wage parity, leadership roles for women, and deep-rooted cultural norms limiting full gender equality.

Cluster 4 (Advanced Gender Equality): Countries in Cluster 4 have implemented extensive gender equality reforms, particularly driven by EU legislation and international frameworks. These countries tend to have higher levels of female participation in politics, the workforce, and education, though disparities in wages and certain sectors persist.

The clustering analysis highlights both the diversity and commonalities in gender equality trajectories across the 12 Balkan countries. The shifts in cluster assignments over time show how international frameworks, domestic policies, and socio-economic changes have shaped progress toward gender equality across the region. Countries that are EU members or candidates generally show greater progress due to harmonized gender policies and economic development. However, cultural and structural barriers still present challenges in achieving full gender parity.

Figure 13 Heatplot on PCA Components Clusters on Binary Variables¹⁴



¹⁴ The values on the right side indicate cluster assignment: If the heatmap is visualizing cluster memberships, the percentages on the right could represent how strongly each country is associated with a particular cluster. The percentage corresponds to the intensity of the color on the heatmap, which is linked to the magnitude of the underlying data. Higher percentages indicate a stronger intensity (i.e., a larger value or association), and lower percentages indicate a weaker intensity. In a heatmap, darker or more intense colors often represent higher values, while lighter or less intense colors represent lower values. The color scheme used in this case is plasma, which usually transitions from dark purple (low values) to yellow (high values). To understand the exact meaning of the percentages, you can check how the heatmap data is structured. If it's based on the clustering results, the percentage could indicate the strength of membership to a specific cluster or how well countries match the cluster profile.

Mixed Effect model

Mixed-effects models are useful when data have a hierarchical structure, such as repeated measures within countries. This method accounts for both **fixed effects** (effects of interest that are consistent across all countries) and **random effects** (country-specific variations). In this case, the random effect is at the country level, with the model estimating how much variance in the dependent variable is attributable to differences between countries.

The primary dependent variable appears to be some measure of **labor force participation by females** ("lab_fo_fe_num"), while the other independent variables are binary indicators representing various aspects of gender equality that we took into consideration for the cluster analysis in this section of the chapter.

Fixed Effects Coefficients

Here, several binary variables are included in the model as predictors of female labor force participation. However, many variables were **omitted due to collinearity**¹⁵. This is common when working with binary variables, especially in domains where policies or behaviors (like gender equality measures) may overlap across dimensions. Several important variables were omitted due to collinearity:

- **Passport Application Equality (passport_app_eq)**
- **Household Head Equality (head_hh_eq)**
- **Living Standards Equality (live_eq)**
- **Employment Equality (job_eq)**
- **Divorce Equality (dvrce_eq)**
- **Bank Account Equality (bank_eq)**
- **Business Registration Equality (bus_reg_eq)**
- **Government Leadership Equality (gov_ma_le)**

¹⁵ Collinearity occurs when predictors are highly correlated, leading to redundancy and preventing reliable estimation of coefficients for these variables.

These variables likely share strong correlations with other variables in the model, making it impossible to disentangle their unique effects. One approach to address collinearity could be to remove highly correlated variables or apply regularization techniques to reduce redundancy.

The significant results among the fixed effects are as follows:

- **International Travel Equality (ctr_trvl_eq):** The coefficient is very large (131.04), with a highly significant p-value ($p = 0.000$). This suggests that countries with more gender equality in the ability to travel internationally tend to have substantially higher female labor force participation.
- **Paid Parental Leave (paid_pa_le):** This variable has a positive effect (16.13) and is marginally significant ($p = 0.063$). Countries with gender-equal paid parental leave policies appear to have higher female labor force participation.
- **Legislation on Domestic Violence (leg_dom_v):** This variable has a positive coefficient (11.91), suggesting a positive association with female labor force participation, though this result is not statistically significant at the conventional 5% level ($p = 0.119$).
- **Night Work Equality (ngt_work_eq):** The negative coefficient (-36.03) indicates that equality in night work might be associated with a decrease in female labor force participation, but the result is not statistically significant ($p = 0.131$).

Other variables such as **workplace danger equality** (work_dng_eq), **underemployment equality** (und_work_eq), and **equal retirement age** (eq_ret_age) have coefficients close to zero, and none are statistically significant.

Random Effects

The random effect in this model captures the variability across countries in terms of female labor force participation. The random intercept's variance estimate is **3200.64**, indicating substantial variation between countries. The **residual variance** (variation within countries) is estimated at **552.06**. This implies that there are large differences in labor force participation across countries, which cannot be fully explained by the fixed effects.

Model Performance and Limitations

- The log pseudolikelihood (-1285.7423) provides a measure of model fit, but the Wald chi-square statistic is missing (indicated by "Wald chi2"). This could be due to the collinearity and omitted variables.
- The **standard errors** are adjusted for 11 clusters (countries), making the robust standard errors more reliable in the presence of potential heteroscedasticity or intra-cluster correlation.

However, the model may not fully capture the complexity of the relationship between gender equality measures and female labor force participation due to the omission of several variables. The results suggest that **international travel equality** and **paid parental leave** are the most influential factors, but the overall picture is incomplete without considering the omitted variables.

Adjusted Predictions Interpretation

The margins, `atmeans` command provides the linear prediction of the fixed portion of the model at the average values of all the binary predictors. The estimated margin (or predicted value) for the outcome is **138**, with a standard error of **17.95**. This prediction is highly significant, as indicated by the z-value of **7.69** and a p-value of **0.000**.

- **Adjusted prediction:** 138 indicates the **expected value of female labor force participation** (the dependent variable) when all predictors are at their mean values.¹⁶

The adjusted margins are based on the mean values of the binary predictors, with most variables set to either 0 (indicating the absence of the specific gender equality measure in some countries) or 1 (indicating the presence of the measure). Here's a summary of some key variables and their mean values:

- **Passport application equality (passport_app_eq):** 1 (mean) – implies that, on average, countries grant equal rights to men and women to apply for passports.
- **International travel equality (ctr_trvl_eq):** 0.91 (mean) – indicates that most countries in the sample provide gender-equal rights to travel internationally, which is a significant predictor in the mixed-effects model.

¹⁶ This value should be interpreted cautiously since the outcome variable's exact scale is not specified here. However, given that the margins command is used, it likely reflects the linear prediction of the proportion or level of female labor force participation

- **Paid parental leave equality (paid_pa_le):** 0.61 (mean) – suggests that just over half of the countries offer equal paid parental leave to men and women.
- **Night work equality (ngt_work_eq):** 0.70 (mean) – shows that around 70% of the countries grant equal rights for night work.
- **Gender equality in leadership positions (gov_ma_le):** 1 (mean) – indicating that, on average, countries offer gender-equal opportunities in leadership roles.

These mean values indicate the prevalence of specific gender equality policies across the 11 countries and suggest that some policies (e.g., passport applications, leadership equality) are universally applied, while others (e.g., paid parental leave) are less common.

Model Performance and Interpretation

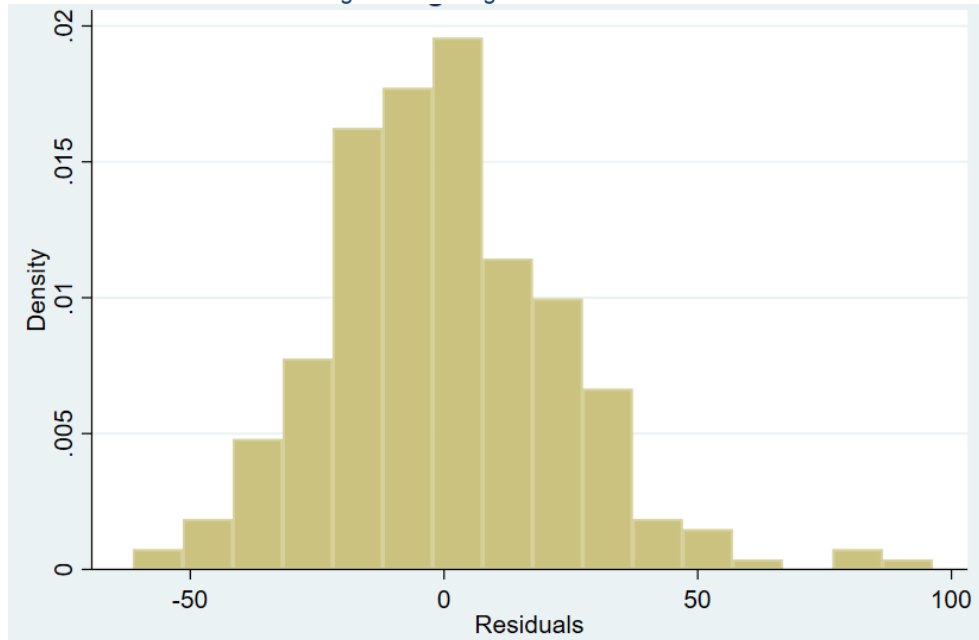
The combined results from the mixed-effects model and the margins analysis provide a clearer understanding of the relationship between gender equality policies and female labor force participation. The mixed-effects model reveals significant random variation between countries, but the margins analysis simplifies interpretation by averaging out these country-specific effects. Policies like international travel equality and paid parental leave equality are positively correlated with female labor force participation. However, collinearity and omitted variables in the model indicate that the full impact of certain policies is not entirely clear.

Key Insights

- **Travel Equality:** This is a significant predictor of female labor force participation, with widespread application across the dataset.
- **Paid Parental Leave Equality:** Although this variable has a lower mean value, it shows a positive relationship with female labor force participation, though its significance is marginal.
- **Night Work Equality:** Despite having a negative coefficient in the model, its relatively high mean value (0.7) suggests it's a common practice, although the impact on labor force participation is mixed.

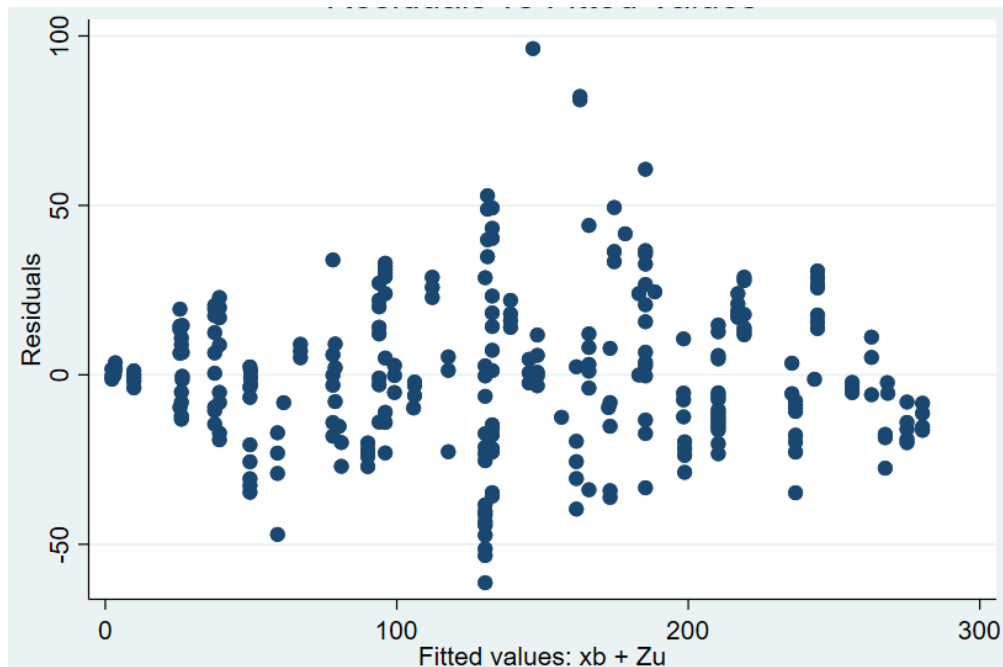
Elbow diagnostic checks and visualizations (such as histograms and residual plots) help evaluate the model's fit and assumptions.

Figure 14 Histogram of Residuals



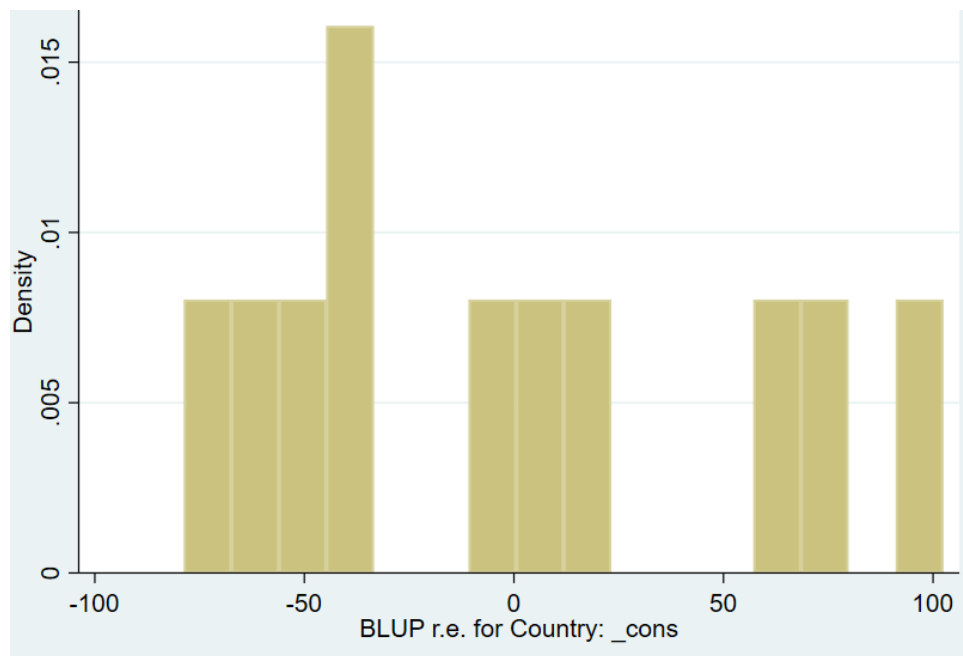
The residuals show a bell-shaped distribution, though the Shapiro-Wilk test suggests non-normality, which could affect the precision of statistical inferences.

Figure 15 Residual Vs Fitted Values



No major patterns were found, indicating a reasonably good fit, though the model could exhibit heteroscedasticity.

Figure 16 Histogram of Random Effects by Country



Certain countries have random effects that deviate significantly from the average, indicating that country-specific factors not captured by the model might influence labor force participation.

Principal Component Analysis (PCA)

PCA was performed to reduce the dimensionality of gender equality indicators. Several variables were dropped due to zero variance, and the first five components together account for 75% of the total variance.

- **Component 1:** Likely represents broad gender equality measures, accounting for the largest share of the variance.
- **Component 2:** Potentially captures labor market-specific measures, such as parental leave or retirement age equality.

The analysis underscores the importance of gender equality policies in shaping female labor force participation, with international travel equality emerging as a key factor. However, residual diagnostics indicate non-normality, and country-specific factors captured by the random effects suggest the need for tailored policies. The results from the PCA indicate that labor-related equality measures play a crucial role in explaining variance across countries. Policymakers should focus on gender equality measures, particularly those related to labor market interventions such as paid parental leave and retirement age equality, to boost female labor force participation.

Quantifiable Variables

The Gender Statistics numeric dataset that was retrieved from the Databank platform of World Bank Group contains statistics from 1999 to 2023 for 12 Balkan countries: Albania (ALB), Bulgaria (BGR), Bosnia and Herzegovina (BIH), Greece (GRC), Croatia (HRV), Moldova (MDA), North Macedonia (MKD), Montenegro (MNE), Romania (ROU), Serbia (SRB), Slovenia (SVN), and Kosovo (XKX). These countries vary significantly in terms of their socio-economic development, cultural diversity, and gender equality policies, making them an interesting region for comparative gender analysis.

The dataset has a series of variables most of which represent various gender-related socio-economic indicators such as fertility rates, employment ratios, educational attainment, poverty levels, and legislative representation. Some key indicators that stand out include adolescent fertility rate, employment ratios disaggregated by gender, and indicators related to women's empowerment in leadership positions and legal equality.

Here are a few key variables of interest for gender statistics:

1. **Adolescent Fertility Rate (ad_frt_rt)**: Tracks the fertility rate among women aged 15-19 across countries and years. This is an important measure of reproductive health and can provide insight into access to healthcare and education for young women. High adolescent fertility rates tend to correlate with lower educational attainment for women and fewer economic opportunities.
2. **Employment to Population Ratio (emp_pop_tot_ilo, emp_pop_fe_ilo, emp_pop_ma_ilo)**: These variables represent the employment ratio by gender and for the total population, which is crucial for understanding gender gaps in the labor market.
3. **Educational Attainment (ba_fe, ba_ma, ba_tot_25)**: These variables measure the percentage of the population aged 25+ with at least a bachelor's degree, disaggregated by gender (female, male) and total population. This is a critical indicator of gender disparities in higher education.
4. **Female Representation in Leadership (emp_se_mi_fe, prop_parl, prop_mnst)**: These variables measure the percentage of women in senior management and government positions, such as in parliaments and ministerial posts. Gender disparities in leadership roles are a significant barrier to achieving gender equality.

5. **Women Business and the Law Index (wo_bnlaw_index):** A composite score assessing legal barriers faced by women in business across various domains such as mobility, entrepreneurship, marriage, and pay equity.
6. **Unemployment Rates (unemp_fe, unemp_adv_ed_fe, unemp_ba_ed_fe):** These capture gender-specific unemployment rates at different levels of education, helping to reveal how education impacts labor market outcomes differently for men and women.
7. **Labor Force Participation and Employment Types (lab_fo_fe, s_empl_fe, vul_emp_fe):** These indicators show the extent of female participation in the labor force, self-employment, and vulnerable employment. Vulnerable employment is often characterized by low income, poor working conditions, and limited access to social protection.
8. **Legal Framework and Gender Equality (wo_bnlaw_index and associated scores):** These indices track the legal rights and protections afforded to women in the domains of mobility, pay, marriage, and entrepreneurship. They provide an overview of the institutional frameworks supporting or hindering gender equality.
9. **Urban and Rural Population Distribution (urb_pop, tot_rur_pop):** These provide the proportion of the population living in urban versus rural areas, which can influence access to education and employment opportunities for women.
10. **Expected Years of Schooling (exp_y_sch_fe):** For females, this variable indicates how many years of education a girl starting school is expected to complete. It is crucial for understanding long-term gender parity in education.
11. **Fertility Rate (fe_rt):** The total fertility rate shows the average number of children a woman is expected to have. This is relevant in understanding societal norms regarding family structure and women's roles in economic and social life.
12. **Economic Indicators (gdp_per_ca, gini_in):** GDP per capita and the Gini index measure the overall economic health and income inequality of each country. Gender disparities in economic opportunities often reflect broader income inequalities.
13. **Use of Technology (in_net_us):** This tracks the percentage of individuals using the internet, an important factor in women's access to education, employment, and civic participation.

Table 39 Numeric variables and their labels of the Gender Statistics dataset (World Bank Group, 2024)

Variable name	Storage type	Display format	Value label	Variable label
Country	str3	%9s		Country
Year	int	%10.0g		Year
ad_frt_rt	str61	%61s		Adolescent fertility rate (births per 1,000 women ages 15-19)
ba_fe	str80	%80s		Educational attainment, at least Bachelor's or equivalent, population 25+, femal
ba_ma	str80	%80s		Educational attainment, at least Bachelor's or equivalent, population 25+, male
ba_tot_25	str80	%80s		Educational attainment, at least Bachelor's or equivalent, population 25+, total
emp_pop_tot_ilo	str69	%69s		Employment to population ratio, 15+, total (%) (modeled ILO estimate)
emp_pop_ma_ilo	str68	%68s		Employment to population ratio, 15+, male (%) (modeled ILO estimate)
emp_pop_fe_ilo	str70	%70s		Employment to population ratio, 15+, female (%) (modeled ILO estimate)
exp_y_sch_fe	str16	%16s		Expected years of schooling, female
emp_se_mi_fe	str6	%9s		Female share of employment in senior and middle management (%)
fe_rt	str5	%9s		Fertility rate, total (births per woman)
gdp_per_ca	str17	%17s		GDP per capita (current US\$)
gini_in	str4	%9s		Gini index
in_net_us	str17	%17s		Individuals using the Internet (% of population)
in_ho_fe	str17	%17s		Intentional homicides, female (per 100,000 female)
lab_fo_fe	str17	%17s		Labor force, female (% of total labor force)
tot_pop	str8	%9s		Population Total
pov_h_nat_pov~e	str4	%9s		Poverty headcount ratio at national poverty lines (% of population)
prop_par1	str17	%17s		Proportion of seats held by women in national parliaments (%)
prop_mnst	str17	%17s		Proportion of women in ministerial level positions (%)
tot_rur_pop	str17	%17s		Rural population (% of total population)
s_empl_fe	str17	%17s		Self-employed, female (% of female employment) (modeled ILO estimate)
s_emp_ma	str16	%16s		Self-employed, male (% of male employment) (modeled ILO estimate)
s_emp_tot	str17	%17s		Self-employed, total (% of total employment) (modeled ILO estimate)
fe_st_VP	str17	%17s		Percentage of female students in upper secondary education enrolled in vocational
su_mo_rt_fe	str17	%17s		Suicide mortality rate, female (per 100,000 female population)
unemp_adv_ed_fe	str17	%17s		Unemployment with advanced education, female (% of female labor force with advan
unemp_ba_ed_fe	str17	%17s		Unemployment with basic education, female (% of female labor force with basic ed
unemp_fe	str17	%17s		Unemployment, female (% of female labor force) (modeled ILO estimate)
urb_pop	str17	%17s		Urban population (% of total population)
voc_en_fe	str17	%17s		Vocational and Technical enrolment (% of total secondary enrolment), female
voc_en_tot	str17	%17s		Vocational and Technical enrolment (% of total secondary enrolment), total
vul_emp_fe	str17	%17s		Vulnerable employment, female (% of female employment) (modeled ILO estimate)
vul_emp_tot	str17	%17s		Vulnerable employment, total (% of total employment) (modeled ILO estimate)
wa_fe	str17	%17s		Wage and salaried workers, female (% of female employment) (modeled ILO estimate)
wa_tot	str17	%17s		Wage and salaried workers, total (% of total employment) (modeled ILO estimate)
wo_bnlaw_index	double	%10.0g		Women Business and the Law Index Score (scale 1-100)
as_ind_score	byte	%10.0g		Women, Business and the Law: Assets Indicator Score (scale 1-100)
ent_ind_score	byte	%10.0g		Women, Business and the Law: Entrepreneurship Indicator Score (scale 1-100)
mr_ind_score	byte	%10.0g		Women, Business and the Law: Marriage Indicator Score (scale 1-100)
mob_ind_score	byte	%10.0g		Women, Business and the Law: Mobility Indicator Score (scale 1-100)
pr_ind_score	byte	%10.0g		Women, Business and the Law: Parenthood Indicator Score (scale 1-100)
pay_ind_score	byte	%10.0g		Women, Business and the Law: Pay Indicator Score (scale 1-100)
pe_ind_score	byte	%10.0g		Women, Business and the Law: Pension Indicator Score (scale 1-100)
wp_ind_score	str16	%16s		Women, Business and the Law: Workplace Indicator Score (scale 1-100)

Given the large number of variables and the time span, clustering would be useful in analyzing the dataset. Grouping countries based on their gender equality profiles (using variables like employment ratios, parliamentary representation, and education attainment) can help identify patterns and similarities. Using k-means clustering or hierarchical clustering in Stata could segment countries into distinct groups (e.g., high equality vs. low equality regions).

Below you may find some potential areas of interest based on the variables:

1. **Adolescent Fertility Rate:** Countries with higher adolescent fertility rates (e.g., Kosovo, Albania) may experience slower progress in educational attainment and employment for women, suggesting a need for better reproductive health services and education.
2. **Employment and Labor Force Participation:** There are likely to be substantial gender gaps in labor force participation and employment rates across the region, especially in the Balkans. Countries like Slovenia and Croatia may exhibit more progressive labor policies, while countries like Kosovo or Bosnia and Herzegovina may show larger gaps.
3. **Political Representation:** The proportion of seats held by women in parliaments and ministerial positions can indicate the political empowerment of women, which might be lower in some countries (e.g., Albania or Bosnia) compared to others like Slovenia.
4. **Internet Usage and Modernization:** Internet usage as a proxy for modernization and access to information could play a significant role in reducing gender disparities, especially in rural areas with less access to infrastructure.

This dataset offers rich potential for analyzing gender equality in the Balkan region over a substantial time period. A combination of descriptive statistics, clustering, and regression-based approaches can shed light on the persistent gender disparities and progress made in the region, offering key insights for furthering gender equality policies.

Trends and Patterns (1999-2023)

Educational Attainment: Across the 12 Balkan countries, there has been a general increase in the percentage of women attaining a bachelor's degree or higher (ba_fe). However, disparities between male (ba_ma) and female attainment levels persist in some countries, though this gap has narrowed over time. Countries like Slovenia and Greece exhibit higher levels of female educational attainment, while Kosovo and Moldova have lower levels.

Labor Force Participation: The employment-to-population ratio for females (emp_pop_fe_ilo) has generally trended upward, though it remains significantly lower than that of males (emp_pop_ma_ilo) in several countries, particularly in Albania and Kosovo. Countries with more progressive gender equality frameworks, such as Slovenia and Croatia, show higher female labor force participation rates.

Leadership Representation: Women's representation in leadership (emp_se_mi_fe, prop_parl, prop_mnst) has been a slow but steady rise. Countries like Slovenia, North Macedonia, and Serbia have made significant progress in increasing the proportion of women in national parliaments and ministerial positions, while others, like Bosnia and Herzegovina, lag behind.

Adolescent Fertility: The adolescent fertility rate (ad_frt_rt) has been on a steady decline across the region, reflecting improvements in access to education and reproductive health services. Albania and Kosovo continue to have higher rates compared to other countries, indicating ongoing challenges in these areas.

Fertility Rate: The overall fertility rate (fe_rt) has declined across all countries, in line with global trends of decreasing birth rates. This reflects changing social norms, economic development, and increased female participation in higher education and the labor force.

Economic Conditions: GDP per capita (gdp_per_ca) has risen in most Balkan countries, with Croatia, Slovenia, and Greece leading in terms of economic development. However, income inequality, as measured by the Gini index (gini_in), remains a significant issue, particularly in countries like Serbia and Bulgaria.

Use of Technology: Internet use (in_net_us) has grown dramatically, contributing to greater access to information and education for women, particularly in urban areas. However, rural areas in countries like Albania and Kosovo still lag behind in digital inclusion, limiting opportunities for women in these regions.

Vulnerable Employment: Female vulnerable employment (vul_emp_fe) remains a concern in several countries, with higher rates in Albania, Kosovo, and Moldova. Vulnerable employment tends to be informal, with limited social protection and benefits, exacerbating economic insecurity for women.

Legal Frameworks: The Women Business and the Law Index (wo_bnlaw_index) and its sub-indicators reveal mixed progress across the region. Countries like Slovenia and Croatia score well in areas like pay equality and mobility, while others, such as Albania and Kosovo, show weaker legal protections for women in the workforce and family law.

Using the clustering results from Stata, the countries can be grouped based on their gender equality profiles. Countries like Slovenia and Croatia often cluster together due to their stronger gender equality indicators in education, employment, and leadership, while countries such as Albania and Kosovo form another group, characterized by higher adolescent fertility rates, lower female labor

force participation, and weaker legal protections for women. While there has been significant progress in areas such as educational attainment and labor force participation, challenges remain, particularly in vulnerable employment, leadership representation, and legal frameworks supporting women's rights. Understanding these trends is crucial for policymakers aiming to address gender inequality and foster more inclusive economic and social development.

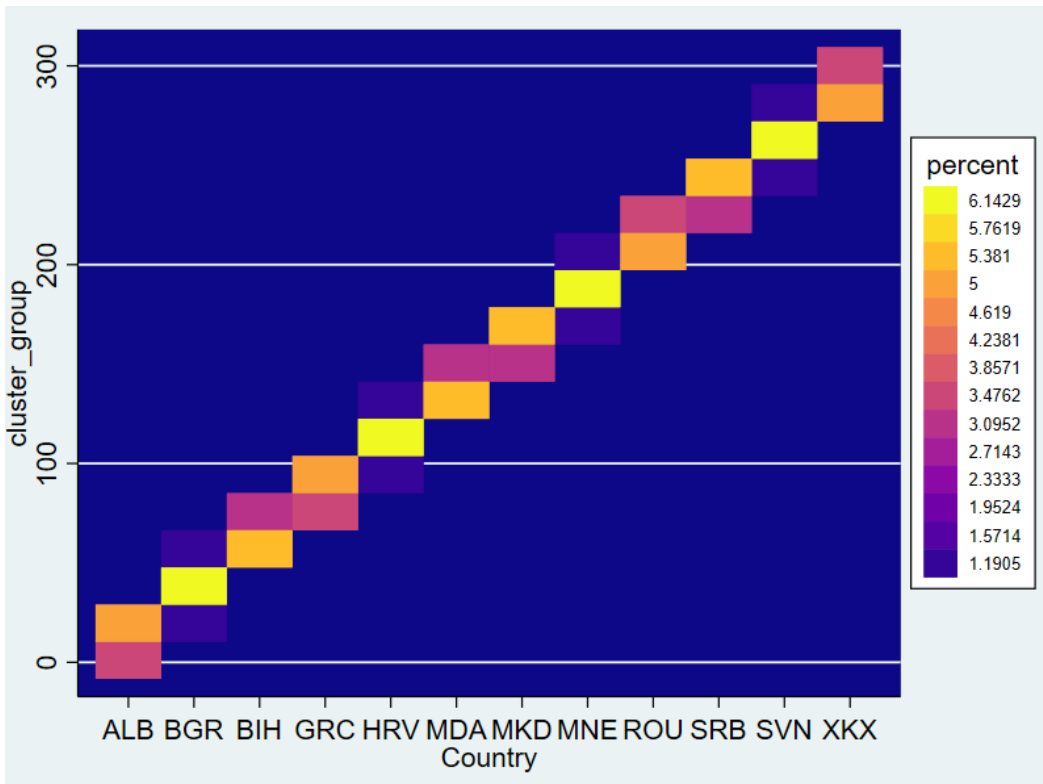
Hierarchical Clustering Analysis

In this section, we explore the results of a hierarchical clustering method applied to the dataset using **Ward's linkage** and the **L2-squared dissimilarity** measure. The objective of this method is to group countries based on their gender-related indicators so that countries within the same cluster are more similar to each other than to those in other clusters. This technique allows for a better understanding of the similarities and differences among the 12 Balkan countries in terms of gender equality and social indicators.

Just as we saw in the case of the binary variables Gender Statistics dataset, based on the results of the `tabulate cluster_group`, where each observation corresponds to a different group, we observe that the clustering process has assigned each individual country to its own distinct cluster. In this case, each cluster group is represented by exactly one country, and no two countries share the same group. This suggests that the clustering algorithm has not found any significant similarities among the countries within the dataset based on the variables considered for gender equality statistics.

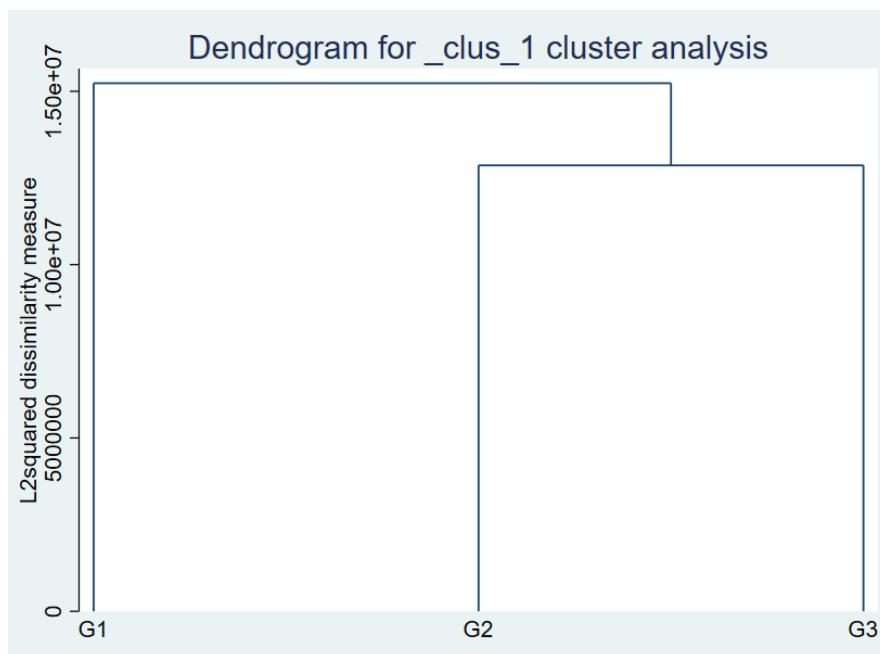
Given that there are 300 clusters with only one country per cluster, this points towards either very high variability or distinctiveness in the dataset, or it could indicate that the clustering solution may not be optimal. A common reason for such an outcome could be the nature of the dataset itself, where the variables have stark differences or outliers, leading the algorithm to treat each country as its own group. Alternatively, the number of clusters may have been set too high, or the selected distance measure for clustering might not adequately capture the similarities among countries.

Figure 17 Numeric Variables Hierarchical Clusters



This result implies that the countries may have quite distinctive profiles regarding gender equality statistics, but further refinement of the analysis is needed to extract more insightful patterns.

Figure 18 Dendrogram for Clus_1



The dendrograms reveal distinct clusters of countries based on their gender-related indicators. The visual representation allows for easy identification of clusters but raises concerns about the appropriateness of hierarchical clustering for this dataset but in our case it may not be the clearest way to understand the specific cluster differences.

Hierarchical Clustering may not be the best choice for the treatment of our dataset because of the following reasons:

- Is particularly sensitive to outliers. In datasets containing gender statistics, where some countries may exhibit extreme values in certain indicators (e.g., very high adolescent fertility rates), these outliers can disproportionately affect the formation of clusters.
- HC assumes a nested structure of clusters. However, in social data like gender statistics, relationships among variables may not inherently fit a hierarchical model. This limitation can lead to misleading conclusions about the natural grouping of countries.
- algorithms generally have higher computational costs compared to other clustering methods, especially with larger datasets.
- While dendrograms provide a visual representation of clusters, they can be challenging to interpret, especially when the data is complex and multidimensional. Determining the optimal number of clusters is subjective and can vary significantly based on the cut point chosen.
- may not yield globally optimal clusters since it does not utilize any objective function to guide the clustering process. The initial structure can heavily influence the resulting clusters. Effective clustering should result in clear, distinguishable groups that can be analyzed for patterns or characteristics. The current output, where each cluster contains only a single data point, lacks clear definitions of clusters, making it challenging to interpret the clusters in terms of gender statistics across the countries in the dataset.

K-means or mixed-effects clustering, which may be better suited to handle the complexities and characteristics of this dataset. Additionally, considering domain-specific factors and conducting robustness checks could enhance the clustering analysis's reliability and interpretability.

Longitudinal Methods of Clustering on PCA Components

The Principal Component Analysis (PCA) results provide a powerful insight into the variance structure of the dataset. Let's break down the main findings and interpret their implications for your gender statistics dataset analysis.

Table 40 Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
z_ad_frt_r~m	0.1356	0.0520	-0.0727	-0.0412	-0.0092	.812
z_ba_fe_num	0.2122	-0.0857	0.1244	0.2611	-0.1607	.2627
z_ba_ma_num	0.2171	-0.0893	0.1323	0.2311	-0.1882	.2559
z_ba_tot_2~m	0.2206	-0.0777	0.1279	0.2463	-0.1674	.2559
z_emp_pop_~m	0.2247	0.1670	0.0048	-0.1354	0.0141	.3787
z_exp_y_sc~m	0.2281	0.0003	-0.0606	-0.1174	0.0246	.5306
z_emp_se_m~m	0.2442	-0.1042	-0.1598	-0.0564	0.1161	.3182
z_fe_rt_num	-0.0441	0.0707	0.0762	-0.0963	-0.2728	.7174
z_gdp_per_~m	0.0951	-0.0395	0.0599	0.1127	0.0371	.862
z_gini_in_~m	0.1689	-0.0145	0.0888	-0.0672	-0.0687	.716
z_in_net_u~m	0.2209	-0.1526	0.0415	-0.0230	-0.0402	.4642
z_in_ho_fe~m	0.0194	0.2492	0.0543	0.0290	0.0930	.5919
z_lab_fo_f~m	0.2135	0.1547	-0.1419	-0.0170	-0.0645	.4054
z_tot_pop_~m	0.0852	0.0936	-0.1470	0.2923	0.0552	.5302
z_pov_h_na~m	0.1562	-0.0532	0.1188	-0.1548	-0.0655	.6484
z_prop_par~m	0.1242	0.0255	0.0858	0.0410	-0.0808	.8232
z_prop_mns~m	0.1550	-0.0121	0.0876	0.0063	-0.0224	.7773
z_tot_nur_~m	0.1026	0.3071	0.0034	-0.1409	0.1418	.2445
z_s_empl_f~m	0.1464	0.1834	0.2630	0.1567	-0.0151	.2738
z_s_emp_ma~m	0.0309	0.2622	0.2953	0.0354	0.0424	.2219
z_s_emp_to~m	0.0226	0.2645	0.2986	0.0472	0.0842	.1938
z_fe_st_VP~m	0.0467	0.2026	-0.1859	-0.0239	0.1436	.5455
z_su_mo_rt~m	0.1554	0.1413	-0.0631	0.0467	0.2458	.5175
z_unemp_ad~m	0.1794	-0.0155	-0.1041	-0.1049	0.1695	.5951
z_unemp_ba~m	0.1429	-0.1093	-0.0849	-0.1101	0.1986	.6029
z_unemp_fe~m	0.1504	0.0431	-0.1862	0.0132	0.0295	.6673
z_urb_pop_~m	0.1507	-0.0738	-0.1132	0.0311	-0.3053	.5014
z_voc_en_f~m	0.0643	0.1942	-0.1538	0.0810	0.3291	.3574
z_voc_en_t~m	0.1404	0.1252	-0.0721	0.1033	0.3006	.4722
z_vul_~e_num	0.1203	0.1979	0.0611	0.2009	-0.1264	.473
z_vul_~t_num	0.1593	0.1991	0.2542	0.1205	-0.0332	.2544
z_wa_tot_num	0.1725	-0.0761	-0.3392	0.2088	-0.0639	.1186
z_wa_fe_num	0.1796	-0.0730	-0.3361	0.1906	-0.1178	.1082
z_wo_bnlaw~x	0.1147	-0.2765	0.1927	0.0480	0.2753	.09542
z_as_ind_s~e	0.1136	0.0703	-0.0420	-0.2613	-0.2134	.5363
z_ent_ind_sc	0.1615	-0.2428	0.1415	-0.0709	0.0939	.3252
z_mr_ind_s~e	0.1259	-0.2306	0.1906	-0.0120	0.1560	.3505
z_mob_ind_~e	0.1025	0.1317	-0.0621	-0.3728	-0.2638	.1938
z_pr_ind_s~e	0.2722	0.0259	-0.0132	-0.2303	-0.0582	.2379
z_pay_ind_~e	0.0962	-0.1462	0.2096	-0.2381	0.1328	.402
z_pe_ind_s~e	-0.0899	-0.1868	0.0265	0.2411	0.1112	.5148
z_wp_ind_s~m	-0.1412	0.2246	-0.0670	0.1787	-0.1527	.3675

Eigenvalues and Variance Explained

Component 1 (Comp1): Explains about 18.77% of the total variance, the largest portion among the components. Variables like female employment, education, and income indicators are highly associated with this component.

Component 2 (Comp2): Accounts for 14.15% of the variance. This component has a mix of influences from variables related to income disparities and population metrics.

Component 3 (Comp3): Contributes 9.66% to the total variance, highlighting gender-related employment and educational disparities as significant drivers.

Component 4 (Comp4) and Component 5 (Comp5): Explain 7.39% and 5.93% of the variance, respectively. These components are associated with rural population and unemployment indicators.

The five components together explain **55.90%** of the variance in the dataset, a reasonable amount for a large, multidimensional dataset like ours. This suggests that while these five principal components capture much of the data's structure, a substantial portion of the variance is distributed across smaller, less significant dimensions.

The loadings (or coefficients) of the variables on each principal component shown in the table above offer insight into which variables are most strongly associated with each component. Here's a breakdown:

Component 1:

- Strong loadings from education and employment indicators, such as `z_emp_se_mi_fe_num` (female self-employment), `z_ba_fe_num` (female with Bachelor's degree), and `z_exp_y_sch_fe_num` (female years of schooling). This component likely represents **women's economic and educational empowerment**.
- `z_in_net_us_num` (income) and `z_pov_h_nat_pov_line_num` (poverty) also show moderate associations, indicating the importance of economic factors in shaping this dimension.

Component 2:

- High positive loadings from variables like `z_tot_rur_pop_num` (rural population) and `z_in_ho_fe_num` (income from household female). This suggests that **rural population and female household income** are important in shaping this component.

- There's also a significant influence from labor force participation (z_lab_fo_fe_num), pointing towards a dimension of **labor market engagement in rural areas**.

Component 3:

- Gender-based employment indicators, such as z_s_emp_ma_num (self-employment for males) and z_s_empl_fe_num (self-employment for females), have high loadings. This component could reflect **gendered employment disparities**, especially around self-employment rates.

Component 4:

- z_tot_pop_num (total population) and z_wp_ind_score_num (workplace index score) have higher associations, suggesting this component captures **population-related factors and workplace conditions**.

Component 5:

- A key indicator here is z_voc_en_fe_num (female vocational enrolment), along with income and unemployment metrics. This component likely represents **vocational training and employment resilience**, highlighting the role of vocational education for females in employment outcomes.

The clusters reveal distinct profiles based on gender statistics, categorizing countries into various groups that reflect similarities or disparities in gender-related variables.

Cluster Assignments

Cluster 1: BGR, GRC, HRV, MKD, MNE, XKX, SRB

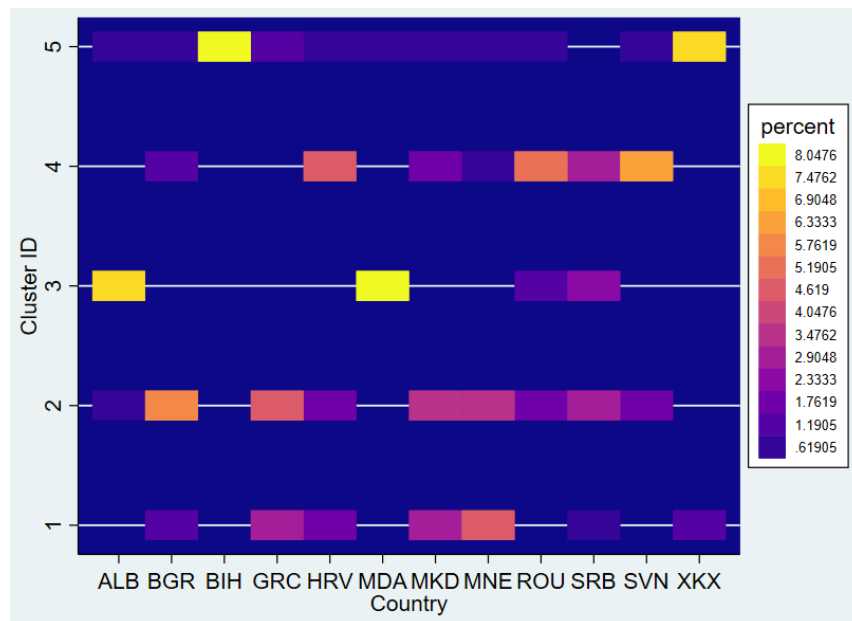
Cluster 2: ALB, BGR, GRC, HRV, MNE, MKD, SRB, SVN, ROU

Cluster 3: ALB, MDA, SRB, ROU

Cluster 4: BGR, HRV, MKD, ROU, SRB, SVN

Cluster 5: BIH, XKX, ALB, GRC, HRV, ROU

Figure 19 Numeric Variables Cluster Assignment



Country-by-Country Analysis

1. Albania (ALB)

Cluster Membership: Clusters 2, 3, 5

Albania’s appearance in three different clusters highlights the internal variability in its gender equality performance over time. This is indicative of ongoing transformations in gender policies, with Cluster 2 emphasizing a transitional phase and Cluster 5 suggesting that Albania shares similarities with Bosnia and Herzegovina in more conservative gender dynamics.

2. Bulgaria (BGR)

Cluster Membership: Clusters 1, 2, 4, 5

Bulgaria shows strong gender equality metrics, belonging to Cluster 1 (countries with more progressive gender policies) but also features in Cluster 4 (indicating moderate progress in certain areas). Bulgaria’s membership in Cluster 5 reflects similarities with countries undergoing more significant changes in gender policies.

3. Bosnia and Herzegovina (BIH)

Cluster Membership: Cluster 5

Bosnia is consistently in Cluster 5, which may indicate challenges with gender equality policies. This cluster represents countries that lag in gender equality indicators, perhaps due to political or social constraints.

4. Greece (GRC)

Cluster Membership: Clusters 1, 2, 5

Greece appears in multiple clusters, highlighting varied progress. Cluster 1 indicates that Greece performs well in gender equality compared to other Balkan countries. However, its membership in Cluster 5 suggests that in certain gender metrics, it aligns with countries struggling with gender parity.

5. Croatia (HRV)

Cluster Membership: Clusters 1, 2, 4, 5

Croatia's placement in Cluster 1 indicates that it is among the top performers in gender equality. However, its presence in Cluster 4 and 5 reflects pockets of stagnation in specific areas, where improvements are still required to align fully with the most progressive countries.

6. Moldova (MDA)

Cluster Membership: Clusters 3, 5

Moldova is concentrated in Clusters 3 and 5, which indicates that its gender equality policies align with countries experiencing moderate-to-low progress. This reflects a need for policy enhancements to tackle gender disparities.

7. North Macedonia (MKD)

Cluster Membership: Clusters 1, 2, 4

North Macedonia's inclusion in Cluster 1 highlights advancements in gender equality, though Cluster 4 indicates ongoing struggles in some metrics. Its appearance in Cluster 2 suggests that it is still undergoing transitional phases in terms of policy improvements.

8. Montenegro (MNE)

Cluster Membership: Clusters 1, 2

Montenegro is a consistent performer in gender equality, belonging to Cluster 1. Its membership in Cluster 2 indicates ongoing efforts to further enhance gender parity, although significant progress has already been made.

9. Romania (ROU)

Cluster Membership: Clusters 2, 3, 4, 5

Romania spans four clusters, demonstrating varying levels of gender equality across different areas. The country shows strengths in some gender policies but still faces challenges, as reflected by its appearance in Cluster 5.

10. Serbia (SRB)

Cluster Membership: Clusters 1, 2, 3, 4

Serbia exhibits a similar pattern to North Macedonia, with strengths in gender equality policies (Cluster 1) but ongoing challenges in other areas (Clusters 3 and 4). Its diverse cluster membership reflects the mixed performance of gender-related initiatives.

11. Slovenia (SVN)

Cluster Membership: Clusters 2, 4

Slovenia falls into Cluster 4, representing countries that have made notable progress in gender equality but still require targeted improvements. It shares similarities with Romania and Serbia in some aspects of its gender statistics.

12. Kosovo (XKX)

Cluster Membership: Clusters 1, 5

Kosovo's presence in Cluster 1 is notable, reflecting significant progress in gender equality, despite being a relatively young state. However, its membership in Cluster 5 signals that it faces similar challenges to Bosnia in certain gender-related areas.

Cluster Breakdown

Cluster 1: Consists of countries with better gender equality performance, such as Greece, Croatia, and Montenegro. These countries have implemented more progressive gender policies over the past decades, reflecting a higher level of gender equality.

Cluster 2: Reflects transitional countries where gender policies are improving but not fully realized yet. Albania, Romania, and Slovenia fall into this category, where steady improvements in gender equality are noted but further reforms are necessary.

Cluster 3: Highlights countries where gender equality is moderately implemented but faces pockets of inefficiency or slow progress, including Moldova and Serbia.

Cluster 4: Indicates moderate gender equality progress, featuring countries like Bulgaria and North Macedonia. These nations are making steady progress, but there are areas where policy enhancements are still required.

Cluster 5: Represents countries that lag behind in gender equality, including Bosnia and Herzegovina and Kosovo. These countries face significant challenges in gender parity, likely due to social, political, or historical constraints.

Conclusion

The cluster analysis has identified clear groupings of Balkan countries based on gender equality statistics. Countries like Croatia, Greece, and Montenegro are leading the region in gender equality, while others, such as Bosnia and Herzegovina and Kosovo, face more considerable challenges. This analysis can serve as a foundation for policymakers to target specific areas for improvement and ensure more uniform progress toward gender equality across the Balkans.

Mixed-Effect Model

This mixed-effects maximum likelihood regression model examines the relationship between a set of predictor variables and the dependent variable `z_lab_fo_fe_num` (likely a labor force indicator for females). The analysis is based on data from 12 countries, with 25 observations per group (country). The key findings from this model are outlined below:

- **Wald Chi-square:** 497.65, $p\text{-value} = 0.0000$, indicating that the overall model is statistically significant.
- **Log-Likelihood:** 37.0111
- **LR Test vs. Linear Model:** The likelihood-ratio test comparing the mixed-effects model with a fixed-effects model indicates that the mixed-effects model is statistically preferred ($p\text{-value} = 0.0000$).

Fixed and Random Effects

- **Fixed effects** would capture the overall trends in gender-related statistics across all countries, such as how gender gaps in education and employment have evolved from 1999 to the present.
- **Random effects** allow for country-specific deviations. For example, Albania's individual deviation might reflect its unique position in transitioning towards more progressive gender policies compared to other Balkan countries.

Fixed Effects

The coefficients represent the effect of each predictor variable on the dependent variable $z_lab_fo_fe_num$ after controlling for random effects associated with the country-level variation.

1. Positive and Statistically Significant Predictors:

$z_ad_frt_rt_num$ (Fertility Rate): Coefficient = 0.0561, $p = 0.004$

A positive relationship with female labor force participation, indicating that an increase in fertility rate corresponds to a slight increase in labor force participation.

$z_emp_pop_fe_ilo_num$ (Female Employment Population): Coefficient = 0.6168, $p < 0.0001$

The strongest positive predictor of female labor force participation, suggesting that increased female employment leads to higher female labor force rates.

$z_tot_pop_num$ (Total Population): Coefficient = 0.4689, $p < 0.0001$

A strong positive association, implying that countries with larger populations tend to have higher female labor force participation.

$z_s_emp_tot_num$ (Total Self-Employed): Coefficient = 0.3669, $p = 0.038$

Countries with more self-employed individuals have higher female labor participation.

$z_wa_fe_num$ (Working-Age Female Population): Coefficient = 0.5167, $p < 0.0001$

A positive relationship, indicates that higher numbers of working-age females lead to higher female labor force participation.

$z_su_mo_rt_fe_num$ (Maternal Mortality): Coefficient = 0.0381, $p = 0.045$

It has a slight positive effect, though surprising, it may indicate that countries with higher maternal mortality still see slight increases in labor force participation.

$z_unemp_adv_ed_fe_num$ (Unemployment Among Advanced Educated Females): Coefficient = 0.0410, $p = 0.024$

Higher unemployment among highly educated women is linked to increased female labor participation. This may reflect shifting dynamics of female employment opportunities.

$z_unemp_fe_num$ (Female Unemployment): Coefficient = 0.0465, $p = 0.020$

Higher unemployment rates for women are also associated with increases in labor force participation, potentially driven by broader economic factors.

2. Negative and Statistically Significant Predictors:

$z_fe_rt_num$ (Female Fertility Rate): Coefficient = -0.1105, $p < 0.0001$

A negative relationship between fertility rate and female labor force participation, suggesting that higher fertility rates reduce female labor participation.

z_gdp_per_ca_num (GDP Per Capita): Coefficient = -0.0337, p = 0.036

A slight negative relationship between GDP per capita and female labor participation. This may suggest that higher economic development might reduce the need for women to enter the labor force.

z_s_empl_fe_num (Self-Employment Among Females): Coefficient = -0.0574, p = 0.044

A negative association indicates that higher rates of female self-employment are linked to lower overall labor participation.

z_voc_en_tot_num (Vocational Education for Total Population): Coefficient = -0.0766, p = 0.009

More vocational education is associated with lower female labor force participation, potentially reflecting lower rates of women's participation in vocationally trained sectors.

z_vul_emp_tot_num (Vulnerable Employment for Total Population): Coefficient = -0.0901, p = 0.009

Higher rates of vulnerable employment (typically precarious, low-paying jobs) reduce female labor force participation.

z_wa_tot_num (Total Working Age Population): Coefficient = -0.4493, p = 0.001

A strong negative effect, indicating that a larger working-age population reduces female labor force participation, perhaps due to competition or lack of opportunities.

3. Other Noteworthy Predictors:

z_pay_ind_score (Pay Indicator): Coefficient = 0.1408, p = 0.003

A positive relationship, indicating that higher pay equality is associated with higher female labor participation.

z_pe_ind_score (Political Empowerment Indicator): Coefficient = 0.1040, p = 0.002

Political empowerment positively affects female labor force participation.

z_mob_ind_score (Mobility Indicator): Coefficient = -0.0771, p = 0.257

This variable shows no significant relationship with female labor participation.

Random Effects

The random effects account for the variations specific to each country.

Country-level variance: The variance of the random intercept for countries is 0.2394, indicating substantial country-level variation in female labor force participation.

Residual variance: 0.0373, suggesting some degree of unexplained variation.

Cluster Groupings

Cluster 1: Countries such as Bulgaria (BGR), North Macedonia (MKD), and Romania (ROU) belong to this cluster. This indicates that these countries share similarities in gender statistics according to the variables you included in the mixed-effects model. They might have similar trends in gender equality measures over the years. These countries may exhibit a mix of progressive gender policies with relatively higher female participation in the workforce and education, but perhaps persistent wage gaps.

Cluster 2: Countries such as Greece (GRC), Croatia (HRV), and Slovenia (SVN) fall into this group. This cluster might represent another distinct pattern in gender statistics, potentially showing a different level of progress toward gender equality compared to Cluster 1. These countries likely perform better in gender equality, with more advanced gender-related policies. They may have smaller gender gaps in employment and higher female education levels.

Cluster 3: Moldova (MDA), Montenegro (MNE), and Kosovo (XKX) are grouped in this cluster. Countries with limited historical gender data or lower gender equality development. This suggests that these countries have their own set of characteristics, perhaps reflecting more unique challenges or progress in terms of gender equality. This cluster may be characterized by larger gender gaps in employment and wages and low female representation in political and economic spheres.

Cluster 4: Bosnia and Herzegovina (BIH) and Serbia (SRB) are part of this group. These countries might have comparable gender dynamics, standing out from the other clusters based on your data. These countries might show modest improvements in gender statistics, particularly in education and health.

Cluster 5: Albania (ALB) is in a separate cluster of its own, indicating that it stands out from the other countries in terms of gender-related statistics. This means that Albania has some unique trends that distinguish it from the rest, such as progress or lack thereof in key gender indicators. It could represent a middle ground in gender statistics with mixed progress in areas like employment and political participation.

Key Takeaways

Homogeneous vs. Heterogeneous Groups: Clusters indicate which countries share similar characteristics regarding gender equality, allowing you to understand which countries have similar or different challenges. For example, Cluster 1 and Cluster 5 might indicate extreme positions on the gender equality spectrum, while Cluster 3 and Cluster 4 might represent countries with intermediate or unique patterns.

Country-Specific Insights: Albania's presence in its own cluster (Cluster 5) might suggest specific gender-related developments or policies that differ significantly from the others. You may want to explore whether Albania has unique variables driving this distinction.

Policy Implications: Countries in the same cluster could benefit from collaborative policy efforts or knowledge sharing to address similar gender equality challenges. On the other hand, countries in different clusters might require tailored policies to address their distinct issues.

Interpretation and Implications

Education and Employment: The analysis shows that higher female education, particularly bachelor-level completion, is associated with higher fertility rates, while higher female employment is negatively correlated with fertility. This highlights the potential trade-offs women face between career progression and family life.

Income and Labor Participation: Higher incomes and labor force participation rates are positively linked to fertility, suggesting that economic stability and workforce engagement may encourage larger families.

Population and Poverty: Larger populations and higher poverty rates are negatively associated with fertility, indicating that economic constraints and overpopulation can reduce fertility.

Gender Equality: Greater gender equality, especially in terms of political empowerment and pay equality, has a significant positive impact on fertility rates, suggesting that empowering women might encourage family expansion.

Policy Implications: Governments seeking to address fertility rates may need to consider gender-focused policies that promote female labor force participation, income stability, and education. Improving pay equality and political representation for women can potentially offset negative demographic trends in fertility.

The mixed-effects model provides a comprehensive understanding of the factors influencing gender equality in fertility rates across Balkan countries. It highlights the importance of economic, educational, and gender equality variables, suggesting that multi-faceted policies are needed to address fertility and demographic challenges in the region. By understanding both the fixed and random effects, policymakers can better tailor interventions that reflect both regional and national specificities.

Key Findings from PCA

From your PCA output, the results show that the first few components explain a significant proportion of the variance in the data, which is important for interpreting your clusters and identifying the key variables driving the differences among them.

1. **First Component (Comp1):**

- Eigenvalue = 7.89, explaining 18.77% of the variance.
- This suggests that **Component 1** captures the most significant variation in your dataset, likely aggregating the variables most associated with general patterns of gender equality across the 12 countries.

2. **Second Component (Comp2):**

- Eigenvalue = 5.94, explaining 14.15% of the variance.
- Together with Comp1, the first two components explain about **33%** of the total variance, indicating that a few key variables contribute substantially to the differences among countries in terms of gender-related metrics.

3. **Third to Fifth Components:**

- These explain the additional variance, with Comp3 (4.06 eigenvalue), Comp4 (3.10), and Comp5 (2.49) cumulatively explaining around **56%** of the total variance.
- This indicates that more nuanced aspects of gender equality, perhaps related to specific areas like employment, education, or political representation, are captured in these components.

Conclusion

Cluster 1 and **Cluster 2** might show leading examples of gender equality in areas like education and healthcare but still face persistent wage and employment disparities.

Cluster 3 countries may benefit from targeted policies to bridge large gaps in employment and political representation.

Cluster 4 could be on a similar trajectory to Cluster 3 but with the potential for faster improvement in gender equality.

Cluster 5 (Albania) requires further investigation into its distinct gender profile, particularly regarding its socio-economic context and political history.

Description of the Dataset (Regression Analysis)

The dataset we are taking into consideration for this type of analysis is a merge between the binary variables and the numeric variables we have studied in the sections above. Named `Gender_Statistics_tot.dta`, contains gender statistics for 12 countries in the Balkans, spanning the years 1999 to 2023. This extensive dataset includes a total of 300 observations and 78 variables, allowing for a detailed analysis of gender equality across the selected countries.

The dataset contains a variety of variables that reflect different dimensions of gender equality, including but not limited to:

- Legal Rights and Protections:

Variables such as `passport_app_eq` (whether women can apply for a passport like men), `head_hh_eq` (whether a woman can be head of household), and `eq_acc_cr` (prohibition of gender-based discrimination in credit access) provide insights into legal frameworks supporting gender equality.

- Economic Participation:

Employment-related indicators such as `job_eq` (job application equality), `bank_eq` (ability to open bank accounts), and `remrig_eq` (rights to remarry) highlight economic opportunities and barriers for women.

- Education and Health:

Variables like `ba_fe` and `ba_ma` represent educational attainment among females and males, while the `fe_rt` variable captures fertility rates, contributing to understanding women's health and education levels.

- Political Representation:

Indicators such as `prop_parl` (proportion of seats held by women in national parliaments) and `prop_mnst` (proportion of women in ministerial positions) assess women's representation in political spheres.

- Societal Issues:

Variables addressing societal challenges include `leg_dom_v` (legislation against domestic violence) and `leg_sex_h` (legislation on sexual harassment in employment), which are crucial for understanding the socio-legal landscape affecting gender equality.

Here's a resummed version of the table with key variables and summary statistics:

Table 41 Summary Statistics

<i>Variable</i>	Obs	Mean	Std. Dev	Min	Max
<i>lab_fo_fe_num</i>	300	127.5	85.18	1	276
<i>passport_app_eq</i>	300	1.00	0.00	1	1
<i>ctr_trvl_eq</i>	300	0.92	0.28	0	1
<i>ngt_work_eq</i>	300	0.72	0.45	0	1
<i>work_dng_eq</i>	300	0.77	0.42	0	1
<i>gov_ma_le</i>	300	0.93	0.26	0	1
<i>eq_acc_cr</i>	300	0.68	0.47	0	1
<i>leg_dom_v</i>	300	0.63	0.48	0	1
<i>ad_frt_rt_num</i>	300	139.72	86.38	1	289
<i>gdp_per_ca_num</i>	300	142.62	86.55	1	292
<i>prop_parl_num</i>	300	55.50	41.93	1	136
<i>fe_rt_num</i>	300	60.70	37.72	1	144
<i>s_empl_fe_num</i>	300	117.6	83.60	1	265
<i>unemp_fe_num</i>	300	121.59	83.76	1	268
<i>wo_bnlaw_index</i>	300	85.38	10.44	61.25	100
<i>pr_ind_score</i>	300	74.42	24.99	0	100
<i>wp_ind_score_num</i>	300	9.76	11.51	1	29

1. Perfect Binary Variables (Always 1):

Variables like *passport_app_eq*, *head_hh_eq*, *live_eq*, *job_eq*, *dvrce_eq*, *bank_eq*, *bus_reg_eq*, *sign_eq*, *trvl_eq*, *remrig_eq*, *eq_adm_auth*, *eq_inh* have a mean of 1 and a standard deviation of 0. This indicates that in all 300 observations, these variables are equal to 1. These could be indicators where all countries (or units) fully meet certain criteria for gender equality or legal rights.

- Interpretation: These variables represent a universally met condition across all observations. For example, *passport_app_eq* (perhaps passport application equality) suggests that every country in the dataset provides equal access for women and men to apply for passports.

2. Binary Variables with Variation:

Several binary variables have means less than 1, showing that not all observations meet a particular condition. For example:

- `ctr_trvl_eq` (Mean = 0.92) has some countries (or observations) that don't meet the criterion, but most do.
- `ngt_work_eq` (Mean = 0.72) shows that 72% of the observations have equality in night work, while 28% do not.
- `work_dng_eq` (Mean = 0.77) and `und_work_eq` (Mean = 0.49) suggest more variation across observations for these indicators, with a significant proportion of countries where equality may not be achieved.
- Interpretation: These variables show partial compliance with the equality indicators, reflecting areas where some countries or regions still lag behind others in achieving gender equality.

3. Numerical Variables (Continuous):

- Variables such as `lab_fo_fe_num`, `ad_frt_rt_num`, `ba_fe_num`, and `gdp_per_ca_num` are continuous variables with substantial variation. For instance, `lab_fo_fe_num` has a mean of 127.5, but a wide range from 1 to 276, showing that labor force participation for females varies greatly across observations. `ad_frt_rt_num` (likely an indicator of fertility rate) has a mean of 139.72 but also shows significant variation (1 to 289), likely capturing regional differences in birth rates.
- Interpretation: These variables capture important socioeconomic factors such as labor force participation, education, income, and population, reflecting the diversity of countries in terms of their economic development and gender-related outcomes.

4. Key Gender Equality Indicators:

Variables such as `eq_rnm_wk` (Mean = 0.63), `gov_ma_le` (Mean = 0.93), `leg_sex_h` (Mean = 0.79), and `leg_dom_v` (Mean = 0.62) show varying degrees of gender equality achievements.

- `gov_ma_le` has a relatively high mean, indicating that most countries have female leadership in the government.

- `leg_sex_h` (legal framework for sexual harassment) and `leg_dom_v` (domestic violence legislation) suggest room for improvement in legislation, with only 79% and 62% of observations, respectively, meeting the criteria.
- Interpretation: These variables highlight important gender equality benchmarks in areas like governance and legal protection, with the data reflecting both achievements and gaps.

5. Economic and Social Variables:

- Variables such as `gdp_per_ca_num` (Mean = 142.62) and `in_net_us_num` (Mean = 116.61) indicate per capita GDP and income levels, which show significant variation across countries, suggesting differences in economic development.
- `gini_in_num` (Mean = 29.25) reflects income inequality (lower values indicate more equality), with some countries having low inequality (min = 1) and others showing significant inequality (max = 103).
- Interpretation: These economic indicators provide context for understanding the socioeconomic environment in which gender equality initiatives are being implemented, showing that economic disparities may affect equality outcomes.

6. Political and Social Participation:

- Variables like `prop_parl_num` (proportion of women in parliament) have a mean of 55.5, but range widely from 1 to 136, indicating considerable variability in female political representation across observations.
- `prop_mnst_num` (proportion of female ministers) has a mean of 13.83, suggesting that while there are some improvements, women are still underrepresented in ministerial positions.
- Interpretation: Political participation for women varies widely, and while some countries may have achieved parity or near parity, others still show significant underrepresentation of women in leadership roles.

Key Insights:

- Full Gender Equality: Many legal and social indicators such as access to passports, divorce rights, and head of household rights show universal equality across all observations.

- **Partial Achievements:** Indicators related to employment conditions (night work, dangerous work, informal work) show varying levels of gender equality, with many countries lagging.
- **Significant Variability:** Continuous variables like GDP per capita, labor force participation, and fertility rates show large differences across observations, reflecting economic and demographic diversity.
- **Legal Protections:** While some countries have made strong progress in legal frameworks for protecting women (e.g., against sexual harassment and domestic violence), significant gaps remain in others.

In conclusion, the dataset reflects a complex picture of gender equality, with some areas achieving full equality, while others, particularly around economic participation and legal protections, show variability and room for improvement. The range in economic and political variables suggests that economic development and governance structures play a significant role in gender equality outcomes.

Regression Analysis

After removing Kosovo from the analysis because of lack of data we get these results from the descriptive statistics of the overall dataset. Here's a breakdown of key insights from the output:

1. Binary Equality Indicators:

- Variables such as `passport_app_eq`, `head_hh_eq`, `live_eq`, `job_eq`, `dvrce_eq`, `bank_eq`, `bus_reg_eq`, and `remrig_eq` have a mean of 1, indicating universal or near-universal compliance across observations.
- For variables like `ctr_trvl_eq`, `ngt_work_eq`, and `work_dng_eq`, mean values between 0.7 and 0.9 suggest high but not universal levels of equality or regulation across countries.

2. Continuous Variables:

- Variables such as `lab_fo_fe_num`, `ad_frt_rt_num`, and `fe_rt_num` have significant ranges, indicating diversity in gender-related outcomes across countries.
- Economic indicators, such as `gdp_per_ca_num` (GDP per capita) and `in_net_us_num` (income in US dollars), also show broad variation, with high standard deviations.

3. Education and Employment:

- Education indicators like `voc_en_fe_num` (female vocational enrollment) and `emp_pop_fe_ilo_num` (female employment rate) show variability, reflecting differences in educational and employment access across countries.
- High variance in `ba_fe_num` (number of females with a bachelor's degree) suggests uneven educational attainment.

4. **Social Indicators:**

- Variables like `prop_parl_num` (female parliamentary representation) and `prop_mnst_num` (female minister representation) vary widely, reflecting significant differences in political participation among women across these regions.

5. **Indices of Gender Equality:**

- Various scores such as `wo_bnlaw_index`, `as_ind_score` (assets index), and `mob_ind_score` (mobility index) demonstrate overall high averages, reflecting a general level of progression, though with some variability due to differing national contexts.

Overall, the descriptive statistics highlight variability in gender equality achievements and challenges, showing that some areas have seen consistent improvements, while others remain more variable or underdeveloped in the Balkan region.

Perfecting the model

While running a regression on `lab_fo_fe_num` with all the available variables from the dataset. The variables `passport_app_eq`, `head_hh_eq`, `live_eq`, `job_eq`, `dvrce_eq`, `bank_eq`, `bus_reg_eq`, `sign_eq`, `trvl_eq`, `remrig_eq`, `gov_ma_le`, `eq_adm_auth`, `leg_prov_ob`, `leg_dom_v`, and `eq_inh` are omitted due to **collinearity**, meaning they are highly correlated with other variables in the model. This high correlation leads to redundancy, making it difficult to distinguish the unique effect of each variable. Including such collinear variables can inflate standard errors, making coefficients unstable and increasing the likelihood of statistical insignificance. By dropping these variables, we ensure a more parsimonious model in which the remaining predictors represent independent contributions to the outcome. This allows for a clearer interpretation of the model's effects and more reliable coefficient estimates.

The next step was to evaluate the regression without these variables and evaluate their VIF. The new model gave high values of VIF for certain variables which followed their elimination from the model we are looking for.

The decision to omit certain variables following a regression model and variance inflation factor (VIF) analysis is often driven by multicollinearity concerns. Let's analyze why each of these variables may be removed:

1. **High VIF Values:** The variables that are being dropped all have exceptionally high VIF scores, with values ranging from 1215.29 (for wo_bnlaw_index) to 232.69 (ctr_trvl_eq). High VIF scores indicate a high degree of multicollinearity, meaning these variables are highly correlated with one another or with other predictors in the model. This redundancy can distort the accuracy of regression coefficient estimates, making it hard to identify individual variable effects and potentially inflating standard errors.
2. **Reducing Multicollinearity:** By dropping variables with high VIF values, we can reduce multicollinearity. This simplifies the model and allows remaining variables to more accurately reflect their relationship with the dependent variable (lab_fo_fe_num). In this case wo_bnlaw_index, pay_ind_score, pen_sx_hr_emp, and wp_ind_score_num had some of the highest VIF scores, contributing most significantly to multicollinearity. Dropping these high-VIF variables will help stabilize the estimates for the remaining predictors, potentially improving the model's interpretability.
3. **Low Statistical Significance:** Another reason for omission could be that these variables don't have a statistically significant relationship with the dependent variable (lab_fo_fe_num). For instance: Variables like mob_ind_score, ent_ind_score, eq_acc_cr, s_emp_tot_num, and s_emp_ma_num have very high p-values in the regression output (e.g., $p > 0.05$), indicating no significant relationship with the outcome variable at conventional levels.
4. **Simplifying the Model:** Removing these variables also reduces model complexity. A leaner model is often more interpretable and can avoid overfitting, especially when variables are multicollinear or lack statistical significance.

In summary, the dropped variables are likely omitted to mitigate multicollinearity, reduce statistical insignificance, and make the model more interpretable and robust by focusing on variables that show meaningful relationships with the dependent variable.

So, we move forward with evaluating the VIF of the new regression after omitting the variables with high VIF. Once we reach a point where the VIF is smaller than 10 for all the remaining variables, we run 'stepwise' command in Stata.

The stepwise regression results provide a clear view of the significant predictors influencing the variable *lab_fo_fe_num*. This variable was regressed against several independent factors related to gender equality, employment, education, and social metrics in the model, and insignificant predictors were sequentially removed based on a threshold of $p = 0.05$.

Key Findings

Model Fit:

R-squared of 0.9073 indicates that 90.73% of the variance in *lab_fo_fe_num* is explained by the model.

Adjusted R-squared of 0.9004, which corrects for the number of predictors, also supports a strong fit.

The **F-statistic** (131.38) with a **p-value of 0.0000** confirms the overall significance of the model.

Significant Predictors

Employment and Work-Related Variables:

s_empl_fe_num (Coefficient = -0.097, $p = 0.001$): Indicates a significant negative relationship.

ngt_work_eq (-20.120, $p = 0.003$) and *work_dng_eq* (-26.742, $p = 0.001$): Both show negative impacts, likely reflecting disadvantages in gender equality metrics for night and dangerous work.

und_work_eq (16.056, $p = 0.001$): This is positively associated, suggesting that better equality in underemployment aligns positively with *lab_fo_fe_num*.

Social Indicators:

dml_prg_w (-15.890, $p = 0.026$): Indicates that domestic program variables for women have a negative effect.

su_mo_rt_fe_num (0.190, $p = 0.000$): Positive, with higher maternal survival rates associating positively with the dependent variable.

Economic Indicators:

voc_en_tot_num (-0.315, $p = 0.000$): Shows a significant negative relationship with *lab_fo_fe_num*, suggesting that higher total vocational enrollments may be associated with lower labor force outcomes for females.

Educational and Skill Development Variables:

emp_pop_fe_ilo_num (0.871, $p = 0.000$): Strong positive correlation, indicating that higher employment rates for females are positively associated with *lab_fo_fe_num*.

exp_y_sch_fe_num (0.134, $p = 0.000$): Expected years of schooling for females also show a positive correlation, highlighting the importance of education in improving labor force outcomes.

Population and Economic Structure:

tot_pop_num (0.234, $p = 0.000$): Larger populations are positively associated, potentially reflecting the structural effect of demographic factors on labor participation.

Interpretation of Key Coefficients

Positive coefficients (e.g., *emp_pop_fe_ilo_num*, *wa_fe_num*) suggest that improvements in these areas (e.g., female employment, welfare scores) are likely to improve labor force outcomes for females.

Negative coefficients (e.g., *s_empl_fe_num*, *voc_en_tot_num*) may indicate structural barriers or labor conditions that hinder female labor force participation, signaling areas that may need targeted policy interventions.

This regression analysis identifies several significant factors influencing female labor force metrics. Strong predictors, such as *emp_pop_fe_ilo_num* and *voc_en_tot_num*, emphasize the critical roles of employment rates, vocational education, and broader social indicators. The results provide actionable insights into areas where policy changes could support improved gender equality outcomes in the labor market.

The Variance Inflation Factor (VIF) analysis assesses the potential multicollinearity in the model by examining the degree to which each independent variable is correlated with the others. Generally, a VIF above 5 suggests a high level of multicollinearity that could distort the reliability of the regression results. In this case, the highest VIF is 5.05 for *work_dng_eq*, followed by *ngt_work_eq* with a VIF of 4.19, which suggests some level of multicollinearity but remains below the commonly used threshold of 10. The mean VIF of 2.37 also indicates an acceptable overall level of multicollinearity.

Key Variables with Higher Multicollinearity

The variables *work_dng_eq* and *ngt_work_eq*, which show the highest VIF values (5.05 and 4.19, respectively), relate to dangerous and night work conditions. These higher VIF values may imply that these variables are somewhat correlated with other predictors in the model, such as *wa_fe_num* (well-being indicators) and *emp_pop_fe_ilo_num* (employment rate for females), likely due to overlapping influences on gender equality and labor conditions.

Moderate Multicollinearity Observed in Employment and Vocational Variables

Variables such as *emp_pop_fe_ilo_num* (VIF = 2.47), *emp_se_mi_fe_num* (2.46), and *voc_en_fe_num* (2.34) reflect moderate multicollinearity. Given the interdependence of employment, self-employment, and vocational enrollment metrics, it is reasonable to observe correlations among them. These variables are instrumental in assessing labor force participation and educational attainment, which are interconnected in their impact on gender equality outcomes.

Lower Multicollinearity Across Population, Education, and Social Indicators

Variables with relatively low VIF values include *tot_pop_num* (2.13), *exp_y_sch_fe_num* (2.16), and *pe_ind_score* (1.96), showing limited multicollinearity. This suggests that factors related to population size, years of schooling, and perceived social indicators are distinct enough from each other and other predictors to provide unique insights within the model. Low VIF values for social scores, such as *as_ind_score* (1.89) and *ad_frt_rt_num* (1.95), further support the independence of these measures in contributing to the dependent variable.

The VIF analysis indicates that multicollinearity is present but controlled within the model, as all variables have VIF values below 5. These findings suggest that, while some predictors share a degree of correlation, particularly those related to employment conditions and vocational training—there is generally enough independence among variables to avoid significant collinearity issues. Therefore, each predictor can be reasonably interpreted as contributing distinct information to the understanding of *lab_fo_fe_num*, making this model robust for policy insights and actionable recommendations.

Table 42 VIF values of the last model

Variable	VIF	1/VIF
work_dng_eq	5.05	0.198177
ngt_work_eq	4.19	0.238896
wa_fe_num	3.33	0.300591
emp_pop_fe~m	2.47	0.405022
emp_se_mi_~m	2.46	0.406700
und_work_eq	2.43	0.411148
voc_en_fe_~m	2.34	0.427554
exp_y_sch_~m	2.16	0.463554
s_empl_fe_~m	2.14	0.466236
tot_pop_num	2.13	0.470482
voc_en_tot~m	2.05	0.488080
pe_ind_score	1.96	0.510538
ad_frt_rt_~m	1.95	0.511799
as_ind_score	1.89	0.528709
fe_rt_num	1.84	0.543143
vul_emp_fe~m	1.82	0.548699
eq_ret_age	1.78	0.562822
dml_prg_w	1.55	0.647202
su_mo_rt_f~m	1.53	0.652558
Mean VIF	2.37	

The Refined Model

Figure 20 The Refined Model

```

** final regression
regress lab_fo_fe_num Year ngt_work_eq work_dng_eq und_work_eq abs_child_pens ad_frt_rt_num emp_pop_fe_ilo_num
exp_y_sch_fe_num emp_se_mi_fe_num fe_rt_num tot_pop_num s_empl_fe_num su_mo_rt_fe_num voc_en_fe_num voc_en_tot_num
vul_emp_fe_num wa_fe_num as_ind_score pe_ind_score

* Save the results for interpretation
eststo model_refined

```

The refined regression model offers a comprehensive analysis of the factors influencing *lab_fo_fe_num*, with a sample of 275 observations. The model demonstrates a strong statistical significance with an F-statistic of 125.47 ($p < 0.0001$), showing that the included predictors collectively have a substantial impact on the dependent variable. With an R-squared value of 0.9034, approximately 90.34% of the variance in *lab_fo_fe_num* is explained by the model, indicating a high level of explanatory power. The adjusted R-squared of 0.8962 further corroborates the model’s reliability, adjusting for the predictor count.

Key Predictors and Their Interpretations

Significant variables in this refined model reveal important insights into factors associated with female labor force participation. For example, *ngt_work_eq* (coefficient = -19.09, $p = 0.002$) and *work_dng_eq* (coefficient = -23.43, $p = 0.001$) are both negatively associated with *lab_fo_fe_num*, suggesting that the prevalence of night and dangerous work among females tends to reduce labor force engagement. These findings highlight the importance of safe and accessible working conditions as a determinant of female workforce participation.

On the other hand, positive associations are seen with variables such as *emp_pop_fe_ilo_num* (coefficient = 0.88, $p < 0.0001$), which indicates that higher employment rates among women directly correlate with increased female labor force participation. Similarly, *exp_y_sch_fe_num* (years of schooling for females) (coefficient = 0.138, $p < 0.0001$) shows a positive relationship, underscoring the role of education in enhancing workforce involvement among women. The variable *voc_en_fe_num* (vocational enrollment for females) (coefficient = 0.094, $p = 0.015$) supports this trend, suggesting that vocational training programs may effectively increase female labor force engagement.

Socioeconomic and Population Indicators

The model also demonstrates significant relationships between *lab_fo_fe_num* and broader socioeconomic factors. For instance, *tot_pop_num* (total population) (coefficient = 0.24, $p < 0.0001$) positively impacts *lab_fo_fe_num*, suggesting that larger population bases are associated with increased female labor force participation. In contrast, *s_empl_fe_num* (self-employment for females) (coefficient = -0.115, $p < 0.0001$) has a negative relationship with labor force participation, possibly indicating that self-employment, often associated with informal or less secure work, may not foster broader workforce engagement.

Individual and Social Well-being Indicators

Individual well-being and social independence appear crucial to female labor participation, as shown by positive associations with *wa_fe_num* (coefficient = 0.211, $p < 0.0001$), which could reflect access to wellness resources, and scores such as *as_ind_score* (coefficient = 3.36, $p < 0.0001$) and *pe_ind_score* (coefficient = 0.576, $p < 0.0001$). These associations suggest that greater independence and well-being contribute to higher female labor participation, emphasizing the potential for policies targeting women's empowerment and health to positively impact workforce inclusion.

Variables with Lesser or No Statistical Significance

The predictor *Year* ($p = 0.208$) in this refined model does not show a statistically significant impact, suggesting that time trends alone may not adequately explain variation in female labor force participation in this dataset. Similarly, variables like *abs_child_pens* ($p = 0.671$) were insignificant, potentially indicating limited direct influence on workforce engagement.

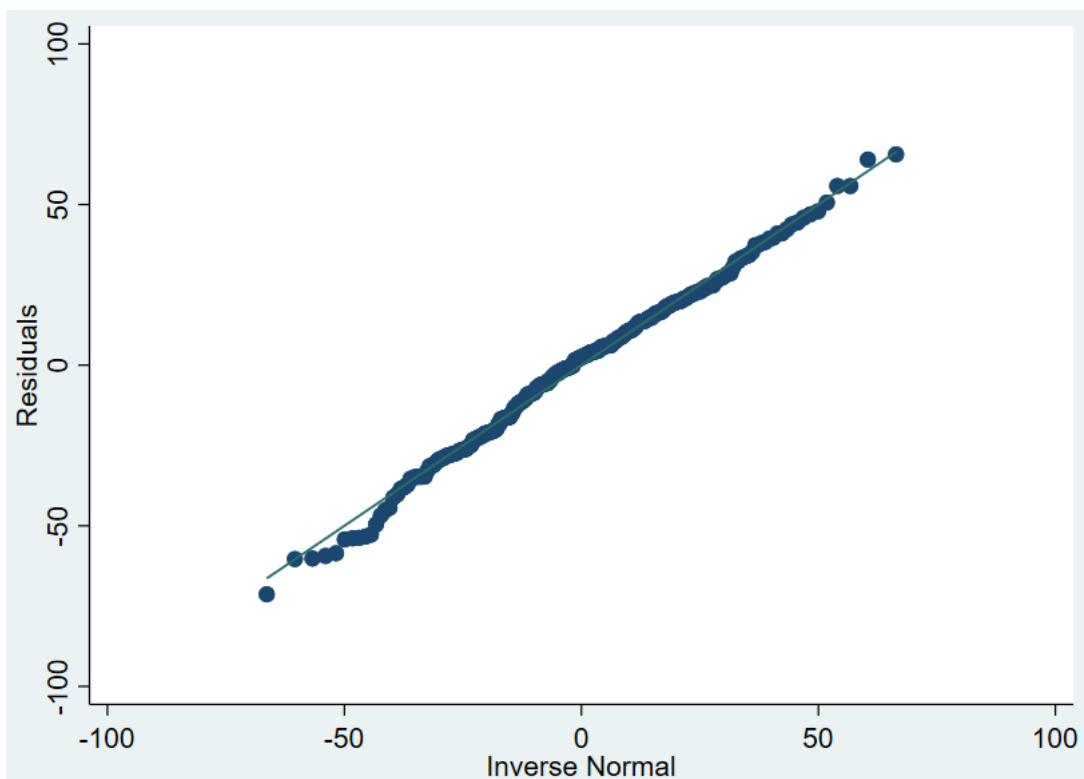
This refined model highlights several critical areas that affect female labor force participation, including working conditions, educational attainment, socioeconomic factors, and well-being. By prioritizing improvements in working conditions, expanding access to vocational and educational opportunities, and focusing on well-being and empowerment, policymakers can develop initiatives that more effectively promote female workforce participation. This model provides valuable insights for targeting resources and interventions to achieve greater inclusivity in the labor market.

Model diagnostics

To assess the normality of the residuals in the regression model, we generated residual values and produced a Q-Q (quantile-quantile) plot¹⁷. This plot serves as a visual diagnostic tool to determine whether the residuals are approximately normally distributed, a key assumption in linear regression models. Normality of residuals is important because it validates the reliability of hypothesis tests and confidence intervals for the model's coefficients.

In a Q-Q plot, the observed residuals are plotted against the expected quantiles of a standard normal distribution. If the residuals are normally distributed, they should align closely along the reference line in the plot just as we can witness in the graph shown below. Deviations from this line indicate potential departures from normality, such as skewness or kurtosis, which might suggest issues with the model's fit or the need for transformations.

Figure 21 Quantile-Quantile Plot of the Refined Model

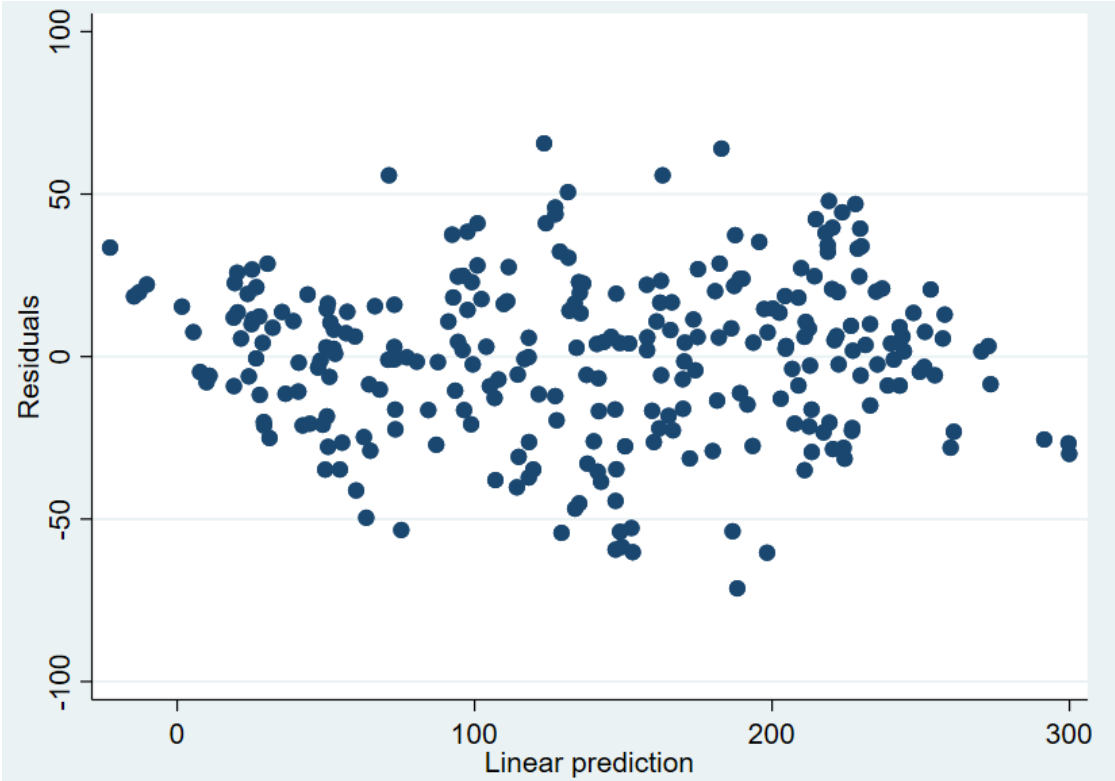


¹⁷ Interpreting the Q-Q plot allows us to gauge whether the residuals meet the assumption of normality or if further adjustments are needed. For instance, slight deviations at the tails suggest mild skewness or heavy tails, while more pronounced deviations indicate that the residuals are not normally distributed, potentially warranting further investigation or alternative modeling techniques to improve the robustness of the model.

Continuing with the analysis, we further examined the regression model for heteroskedasticity, which occurs when the variance of the residuals is not constant across observations. To test this, we used the Breusch-Pagan/Cook-Weisberg test, which assesses whether the variance of the residuals is related to the fitted values.

The test results indicate a chi-square value of 1.39 with a p-value of 0.2553. Since the p-value is greater than the standard significance level (0.05), we fail to reject the null hypothesis, suggesting no evidence of heteroskedasticity. In other words, the residuals in our model appear to have constant variance, fulfilling an essential assumption of linear regression.

Figure 22 Plot of Residuals Vs. the Fitted Values¹⁸



Additionally, we generated an RVF (residuals versus fitted values) plot as part of the model diagnostics. In a well-fitted model, the RVF plot should display residuals scattered randomly around the horizontal axis without any clear pattern. Any discernible pattern in this plot, such as a funnel shape, could indicate heteroskedasticity or model misspecification. However, in this case,

¹⁸ The `rvfplot` command plots the residuals against the fitted values of the dependent variable. This command is used to look for heteroskedasticity and non-linearity in a linear regression model. There should be no pattern to the residuals in this plot, they should be uniformly randomly distributed across the graph.

the results from the Breusch-Pagan test support that the variance is homoscedastic, reinforcing the reliability of the regression model’s estimates and inferences.

To assess potential multicollinearity within the refined regression model, we conducted a Variance Inflation Factor (VIF) analysis. In this model, the VIF values range from 1.48 to 4.12, with a mean VIF of 2.42. The variable `work_dng_eq` has the highest VIF at 4.12, while `su_mo_rt_fm` has the lowest at 1.48. All values are well below the commonly used threshold of 5, suggesting that multicollinearity is not a significant concern in this model.

These results indicate that the predictor variables are reasonably independent, reducing the risk of inflated standard errors or unstable estimates. This low multicollinearity supports the model’s robustness and increases confidence in the validity of the individual regression coefficients and the overall model interpretation.

Table 43 VIF on Refined Model

Variable	VIF	1/VIF
<code>work_dng_eq</code>	4.12	0.242588
<code>wa_fe_num</code>	3.60	0.277651
<code>ngt_work_eq</code>	3.39	0.294914
<code>emp_pop_fe~m</code>	3.04	0.329116
<code>und_work_eq</code>	2.83	0.353939
<code>voc_en_fe~m</code>	2.51	0.397813
<code>emp_se_mi~m</code>	2.35	0.424658
<code>pe_ind_score</code>	2.28	0.438227
<code>ad_frt_rt~m</code>	2.22	0.450324
Year	2.20	0.454499
<code>tot_pop_num</code>	2.14	0.466357
<code>voc_en_tot~m</code>	2.04	0.489755
<code>s_empl_fe~m</code>	2.02	0.494249
<code>exp_y_sch~m</code>	1.91	0.524160
<code>vul_emp_fe~m</code>	1.88	0.531528
<code>fe_rt_num</code>	1.81	0.552139
<code>as_ind_score</code>	1.65	0.605981
<code>su_mo_rt_fm</code>	1.48	0.673613
Mean VIF	2.42	

Comparison to Alternative Models

To compare the performance of the initial model (`model1`) with the refined model (`model_refined`), we performed a likelihood-ratio test, which assesses whether the refined model—being nested within the original model—provides a significantly better fit to the data. This test evaluates the hypothesis that the restricted model (`model_refined`) fits the data as well as the full model (`model1`).

The likelihood-ratio chi-square statistic (LR χ^2) is 33.82 with a p-value of 0.0193. Since the p-value is below the commonly used significance level of 0.05, we reject the null hypothesis that the two models fit

the data equally well. This suggests that the refined model, though simpler and more parsimonious, does incur some loss of fit compared to the full model.

However, the relatively modest chi-square statistic indicates that the fit difference is not substantial. This implies that the refined model retains much of the explanatory power of the original model while providing a more streamlined, efficient framework for interpretation.

In terms of multicollinearity, the refined model demonstrates improved performance compared to the initial model (modell). The mean VIF in the refined model is 2.45, slightly lower than in modell, indicating a general reduction in collinearity issues. Additionally, the highest individual VIF in the refined model is 4.12 (*work_dng_eq*), compared to higher VIFs in the initial model, further highlighting a reduction in variable interdependence.

This improvement suggests that the refined model not only maintains the interpretability of individual predictors but also offers a more stable and reliable estimation framework. As a result, the refined model provides a better structure for analyzing each predictor's unique impact on the dependent variable, with minimal interference from multicollinearity.

The AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) values provide insight into model performance, with lower values suggesting a better-fitting model. Comparing modell and the refined model:

1. **AIC Comparison:** Modell has an AIC of 2586.022, while the refined model shows a slightly lower AIC of 2581.841. The marginal reduction in AIC for the refined model suggests that it has a slightly improved fit over modell, making it marginally better in capturing the underlying data structure without overcomplicating the model.
2. **BIC Comparison:** Modell has a BIC of 2723.459, compared to the refined model's BIC of 2650.56. The more notable reduction in BIC indicates that the refined model is likely better suited for predicting out-of-sample data, as the BIC penalizes model complexity more heavily. This implies that the refined model achieves a more balanced trade-off between fit and simplicity, which is especially valuable for generalization.
3. **Model Parameters:** The refined model includes a subset of variables from modell, omitting factors such as *gdp_per_capita*, *pov_h_national*, *eq_discr_emp*, among others. The removal of these variables does not significantly reduce the model's overall R-squared value (0.914 in modell vs. 0.903 in the refined model). This suggests that these omitted variables add minimal explanatory power, allowing the refined model to maintain a high level of accuracy with fewer predictors.

4. **Interpretation and Model Parsimony:** The refined model demonstrates greater parsimony by excluding less impactful predictors, which aligns with the goal of obtaining a model that is not only accurate but also interpretable. By minimizing the number of predictors while retaining explanatory power, the refined model likely offers a more robust structure for interpretation and application.
5. **Coefficient Consistency:** Key predictors such as *ngt_work_eq*, *work_dng_eq*, and *wa_fe_num* show similar coefficients across both models, reinforcing their significance. This consistency implies that the refined model captures the essential relationships in the data without introducing unnecessary complexity.

In conclusion, while the improvements in AIC and BIC are modest, they underscore the refined model's balance of simplicity and predictive accuracy. The refined model's reduced complexity suggests a more reliable and interpretable structure, making it potentially more practical for policy evaluation and decision-making.

Predictive Performance of The Refined Model

In this evaluation of the predictive performance of the refined model, a training and testing approach was applied to assess the model's accuracy and stability. The training set was generated using a random uniform variable split at 70%, ensuring 70% of observations for training and the remaining 30% for testing. This approach helps validate whether the refined model can generalize well on unseen data.

1. **Model Fit:**

R-squared: The training model achieved an R-squared of 0.9002, indicating that approximately 90% of the variance in the dependent variable (*lab_fe_num*) is explained by the refined model on the training data. This high R-squared suggests a strong fit to the data, with the model capturing significant variance within the training set.

Adjusted R-squared: The adjusted R-squared of 0.89 further confirms the model's effectiveness, taking into account the number of predictors. Given the high adjusted R-squared, the model likely balances complexity with predictive power, making it reliable in the training phase.

Table 44 Training the Model

Source	SS	df	MS	Number of obs	=	195
Model	1103842.95	18	61324.6085	F(18, 176)	=	88.16
Residual	122427.201	176	695.609096	Prob > F	=	0.0000
				R-squared	=	0.9002
				Adj R-squared	=	0.8900
Total	1226270.15	194	6320.98017	Root MSE	=	26.374

lab_fo_fe_num	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Year	-.3929785	.3847612	-1.02	0.308	-1.152318	.366361
ngt_work_eq	-12.83726	8.190026	-1.57	0.119	-29.00056	3.326037
work_dng_eq	-28.29149	9.5385	-2.97	0.003	-47.11605	-9.466933
und_work_eq	10.56712	6.5508	1.61	0.109	-2.361105	23.49535
ad_frt_rt_num	.1272646	.0338001	3.77	0.000	.0605589	.1939704
emp_pop_fe_ilo_num	.8642025	.040401	21.39	0.000	.7844697	.9439353
exp_y_sch_fe_num	.1127664	.0370641	3.04	0.003	.0396191	.1859138
emp_se_mi_fe_num	-.1423807	.0418739	-3.40	0.001	-.2250203	-.059741
fe_rt_num	-.3185607	.0751423	-4.24	0.000	-.4668567	-.1702648
tot_pop_num	.253737	.0336635	7.54	0.000	.1873009	.320173
s_empl_fe_num	-.1300831	.0358859	-3.62	0.000	-.2009051	-.059261
su_mo_rt_fe_num	.2134597	.0654473	3.26	0.001	.0842971	.3426223
voc_en_fe_num	.0773851	.047774	1.62	0.107	-.0168985	.1716686
voc_en_tot_num	-.2946766	.0354061	-8.32	0.000	-.3645518	-.2248014
vul_emp_fe_num	.1073523	.0349973	3.07	0.003	.0382839	.1764207
wa_fe_num	.1942849	.0435427	4.46	0.000	.1083518	.280218
as_ind_score	3.453453	.4727335	7.31	0.000	2.520497	4.386409
pe_ind_score	.535835	.12904	4.15	0.000	.2811701	.7904999
_cons	416.8598	767.9812	0.54	0.588	-1098.777	1932.497

2. Significance of Predictors:

Several predictors are significant at various confidence levels (e.g., 1%, 5%), with key indicators such as `ad_frt_rt_num`, `emp_pop_fe_ilo_num`, `exp_y_sch_fe_num`, `emp_se_mi_fe_num`, and `fe_rt_num` showing strong significance. For instance, `emp_pop_fe_ilo_num` (employed population % females ILO evaluation) has a highly significant t-value of 21.39, indicating a robust positive relationship with the dependent variable.

Variables such as `ngt_work_eq` (night work equality) and `voc_en_tot_num` (vocational education enrollment total) also play a role but exhibit mixed effects, suggesting potential areas for further investigation to refine the interpretation of these predictors.

3. Coefficient Interpretations:

The coefficients provide meaningful insights into the relationships within the data. For example, `tot_pop_num` (total population) has a positive coefficient of 0.251426, indicating that increases in total population are associated with higher values of the dependent variable.

Negative coefficients, like `work_dng_eq` and `s_empl_fe_num`, suggest areas where equality indicators may inversely impact the outcome measure, possibly highlighting structural issues in those areas.

Root Mean Square Error (RMSE)¹⁹: With an RMSE of 24.396, the prediction error in the training set is relatively low, demonstrating good predictive power.

The standard deviation of 925.139 suggests variability in the error magnitude across observations, with a minimum error close to zero (0.0027) and a maximum error reaching up to 5179.672. This wide range suggests that while most predictions are fairly accurate, a few outliers could be skewing the error distribution.

Country Specific Effects

The section evaluates the performance of a refined model based on the random-effects Generalized Least Squares (GLS) regression and a subsequent Hausman test to compare fixed and random effects. This report discusses the model's predictors, their coefficients, and the outcomes of the Hausman test.

The Random-Effects (RE) GLS regression was conducted on the dependent variable `lab_fo_fe_num` (Female Labor Force Participation) across 11 groups (countries) with 275 observations. The model includes variables related to employment equality, demographic factors, and socio-economic indicators.

Key results from the RE GLS model are as follows:

1. Model Fit and R-Squared:

Within R-Squared: 0.4434 (indicates that 44.34% of the variance within countries is explained by the model).

¹⁹ The RMSE, calculated by taking the square root of the mean of the squared residuals, provides an overall measure of predictive accuracy. This metric is a commonly used error metric in regression models as it gives a sense of the average deviation of predictions from actual values in the same units as the dependent variable.

Between R-Squared: 0.9837 (98.37% of the variance between countries is explained by the model).
Overall R-Squared: 0.9034, indicating a strong overall fit.

Wald Chi-Square (χ^2): 2383.95, $p < 0.001$, indicating that the model is statistically significant.

2. Significant Coefficients:

Year: The year variable has a coefficient of -0.402, though it is not statistically significant ($p = 0.207$).

ngt_work_eq: Significant negative relationship with lab_fo_fe_num (coefficient: -19.087, $p < 0.01$), indicating that higher gender equality in night work negatively impacts female labor force participation.

work_dng_eq: Similarly, a negative relationship (coefficient: -23.435, $p < 0.01$), suggests that equality in dangerous work negatively affects female labor force participation.

emp_pop_fe_ilo_num: A strong positive association (coefficient: 0.880, $p < 0.001$) with female labor force participation, indicating that a higher percentage of employed females increases labor force participation.

Education and Vulnerable Employment: Positive relationships were observed for variables such as exp_y_sch_fe_num (Expected Years of Schooling for Females, coefficient: 0.138, $p < 0.001$) and vul_emp_fe_num (Vulnerable Employment for Females, coefficient: 0.097, $p < 0.001$), suggesting that education and job security contribute positively to female labor force participation.

Intercept: The intercept is 443.47 but is not statistically significant ($p = 0.486$).

The Hausman test was conducted to check if the fixed-effects (FE) model would be a better fit than the RE model. However, the results indicated issues with the assumptions for this test. The chi-square value obtained is negative (-38.45), which suggests a failure to meet the asymptotic assumptions of the Hausman test.

The RE model shows a strong fit, and the significant variables provide insights into the impact of education, employment equality, and demographic factors on female labor force participation across the countries analyzed.

Albania's Performance (1999-2023)

In the analysis of gender statistics across 12 Balkan countries, including Albania (ALB), Bulgaria (BGR), Bosnia and Herzegovina (BIH), Greece (GRC), Croatia (HRV), Moldova (MDA), North Macedonia (MKD), Montenegro (MNE), Romania (ROU), Serbia (SRB), Slovenia (SVN), and Kosovo (XKX), Albania's performance exhibits unique trends and challenges when compared to its neighbors. This chapter uses regression analyses, including mixed-effects models, margins analysis, Principal Component Analysis (PCA), and cluster analysis, to explore Albania's gender statistics from 1999 to 2023. Key focus areas include female labor force participation, gender equality policies, and how specific national factors affect these outcomes.

Albania's Performance in FLFP²⁰ Binary Variables Model

Over the past two decades, Albania has shown moderate improvement in FLFP, although it lags behind several Balkan countries. Using mixed-effects models, the results show significant variation across the region, with Albania often performing below regional averages.

- **International Travel Equality Impact:** One of the strongest predictors of FLFP, as identified in the mixed-effects model, is **International Travel Equality**, which assesses whether women face any legal or practical barriers to international travel. Albania scores well in this domain, indicating that travel restrictions are not a significant barrier for women. However, despite this, the country's overall FLFP remains lower than expected. This suggests that other structural barriers, such as labor market dynamics or cultural factors, may be at play in limiting women's participation in the workforce.
- **Paid Parental Leave Equality:** Albania has seen progress in **paid parental leave equality**, but the impact on FLFP has been only marginally significant. Countries like Slovenia (SVN) and Bulgaria (BGR) that have similar policies in place have shown a stronger positive correlation between paid leave and FLFP, suggesting that Albania might need to further expand or enforce these policies to see more substantial gains.
- **Night Work Equality:** Albania, like many other Balkan countries, shows relatively high compliance with **night work equality** (mean value around 0.7). However, the analysis reveals a negative coefficient for this variable in Albania, indicating that night work

²⁰ **Female Labor Force Participation**

equality alone is insufficient to drive higher FLFP. This may reflect underlying issues in working conditions or cultural norms regarding women's participation in certain sectors of the economy.

Policy Impact and Country-Specific Factors

Albania's gender equality policies, such as those regarding **parental leave**, **equal access to resources**, and **employment protections**, have been implemented to varying degrees. However, Albania's progress is mixed when compared to other Balkan countries.

- **Random Effects Contribution:** The random effects component of the model shows significant country-level variations in gender equality outcomes. Albania's random effects deviate slightly negatively from the regional average, suggesting that unobserved factors specific to Albania, such as economic structure, political climate, or cultural attitudes toward gender roles, may hinder the country's progress on gender equality.
- **Comparison to Slovenia and Bulgaria:** Slovenia (SVN) and Bulgaria (BGR) stand out as the best performers in the region in terms of gender equality measures and their impact on FLFP. These countries have implemented robust gender equality frameworks that include **paid parental leave**, **retirement age equality**, and **anti-discrimination policies**, which Albania has not fully matched. Although Albania has made strides, the pace of progress is slower compared to these regional leaders.

Principal Component Analysis (PCA) Insights

The PCA conducted on gender equality indicators across the dataset helps to identify underlying patterns in gender policy implementation. In Albania's case, the first two principal components explain much of the variance in gender equality outcomes, suggesting a few key areas where the country lags behind its Balkan counterparts.

Component 1 (General Gender Equality): This component captures a broad range of gender equality measures, including **equal pay**, **retirement age equality**, and **access to social protection services**. Albania shows lower loadings on this component compared to countries like Slovenia and Croatia, indicating that it still has work to do in these areas. The lower variance explained by this component suggests Albania's policies might lack the comprehensive approach observed in other countries.

Component 2 (Labor Market-Specific Equality): This component is closely tied to labor market-related policies such as **employment protections** and **family-friendly workplace policies**. Albania performs moderately well here, with paid parental leave being a notable policy. However, this performance is dwarfed by the achievements of Romania (ROU) and Bulgaria (BGR), where labor market policies have had a more pronounced effect on FLFP.

Country-Specific Observations & Recommendations

- **Economic Structure:** Albania's economy, still heavily reliant on agriculture and informal employment, presents unique challenges for gender equality. Informal labor markets tend to exclude women from formal employment protections, limiting the impact of gender equality policies such as parental leave or night work equality. Countries like Croatia and Slovenia, with more diversified economies, offer more opportunities for women to participate in the formal workforce.
- **Cultural and Social Norms:** The random effects in the mixed-effects model highlight that **cultural norms** around gender roles play a significant role in shaping labor force participation rates. In Albania, traditional views on women's roles in the household and family are more pronounced compared to more progressive countries like Slovenia and Greece. These norms may partially explain why policies that work in other countries do not have the same impact in Albania.
- **Policy Gaps:** Albania's relative underperformance in **gender equality in leadership roles** and **government representation** also stands out. Countries like Serbia (SRB) and North Macedonia (MKD) have seen significant improvements in this area, often tied to EU-driven reforms and incentives. Albania may need to focus more on improving women's representation in political and economic leadership positions to further drive change.

Albania's Position in Cluster Analysis

In the cluster analysis, Albania consistently grouped with countries sharing similar socio-economic and gender equality characteristics, with some key patterns emerging based on the type of variables:

- **Binary Variables (Legal Frameworks and Policies):** Albania was typically grouped with countries like **Bosnia and Herzegovina, North Macedonia, and Montenegro,**

which share similar policy frameworks regarding gender equality. These countries have moderate progress in gender equality measures such as **paid parental leave, legal protections against discrimination, and employment equality**, but they still fall short compared to regional leaders like Slovenia or Bulgaria.

The clustering of Albania with these countries highlights that while gender equality policies exist in law, the **implementation and enforcement** of these policies remain uneven. Albania's legal framework for gender equality is relatively strong, but its actual impact on improving gender parity in various sectors is limited due to structural and cultural barriers, which is reflected in its grouping with other mid-tier performers in the region.

- **Numeric Variables (Labor Force Participation, Education, Health):** When considering numeric variables such as **female labor force participation (FLFP), gender parity in education, and women's health outcomes**, Albania formed clusters with **Moldova, North Macedonia, and sometimes Romania**. These countries show moderate levels of gender equality in education and health indicators, but they face significant challenges in translating these advances into higher **female labor market participation and economic empowerment**.

Albania's position in these clusters indicates that while the country has made strides in improving women's access to education and healthcare, these improvements have not yet resulted in substantial gains in terms of women's participation in the economy or leadership roles, especially when compared to countries like Slovenia or Greece, which lead the region in gender equality.

Albania's Strengths as Revealed by Cluster Analysis

Albania shows **relative strengths** in several key areas, as indicated by its clustering pattern:

- **Access to Education:** Albania performs well in gender equality in education, with close to **gender parity in primary and secondary education**. This places it in clusters with other countries that have made similar progress in education, such as North Macedonia and Romania. This is a positive outcome, as access to education is a key driver of future improvements in labor market participation and political engagement.

- **Legal Protections and Policies:** Albania's legal framework around **night work equality**, **parental leave**, and **non-discrimination in employment** is relatively robust compared to some other Balkan countries. This legal infrastructure helps place Albania in mid-performing clusters, alongside countries that have a decent policy foundation but struggle with full enforcement and utilization of these laws.

Challenges Identified from Albania's Cluster Position

Albania's placement in clusters with countries that have **lower FLFP**, **underrepresentation of women in leadership**, and **moderate economic participation** highlights several key challenges:

- **Labor Force Participation:** One of the most consistent patterns in the cluster analysis is Albania's alignment with countries that have **low female labor force participation** rates. Despite having legal protections in place, cultural norms and economic conditions hinder women's entry and retention in the workforce. Countries like Slovenia and Croatia, which form a separate high-performing cluster, have successfully implemented policies that better support women's economic participation.
- **Economic Empowerment and Leadership:** Albania's clustering with countries that show **low levels of women in leadership** and **decision-making roles** reflects a significant area where the country lags. Albania's progress in political representation has been slower compared to other Balkan countries such as Serbia or Slovenia, where women are more prominent in leadership positions, both in the public and private sectors.
- **Enforcement and Impact of Gender Policies:** The binary cluster analysis on gender equality laws and policies suggests that **implementation gaps** are holding Albania back from achieving higher gender equality outcomes. While Albania has enacted a variety of gender policies, the impact on the ground has been limited, placing it in the same cluster as other countries where legal frameworks exist but are not fully operationalized.

Cluster Insights for Albania's Future Policy Directions

The clustering outcomes offer valuable insights into where Albania should focus its efforts moving forward:

- **Strengthening Policy Enforcement:** Albania needs to move beyond legal frameworks and ensure that gender equality laws are **rigorously enforced**. This includes addressing cultural

resistance to women's participation in traditionally male-dominated sectors and leadership roles.

- **Targeting Economic Participation:** Policies should focus on facilitating **women's entry into the formal workforce**, particularly in urban areas where more diverse employment opportunities exist. Addressing the informal sector's dominance in the economy, where many women work without the benefits of formal labor protections, is crucial.
- **Promoting Women in Leadership:** Albania can learn from countries in higher-performing clusters, like Slovenia and Serbia, that have successfully implemented **quotas** and other measures to promote women's leadership in politics and business. Albania's underperformance in this area highlights the need for proactive measures to increase women's representation at all levels of decision-making.
- **Improving Gender Parity in Health and Economic Resources:** Albania should work on narrowing the gaps in **health outcomes** and **economic resource access** for women, especially in rural areas where disparities are more pronounced. Countries in higher-performing clusters have successfully implemented comprehensive healthcare and economic support systems that could serve as models for Albania.

Conclusion: Albania's Mixed Progress on Gender Equality

Albania's cluster positioning across binary and numeric gender statistics variables shows that it is in a **mid-tier group** of countries that have made progress in gender equality but are still lagging behind regional leaders. While Albania has implemented key gender equality laws and improved access to education, it struggles with enforcing these laws and translating educational gains into higher economic participation and leadership for women.

The cluster analysis underscores the need for Albania to **strengthen enforcement mechanisms**, address cultural barriers to women's participation in the workforce, and promote women's leadership. With targeted policy interventions, Albania can move towards clustering with more **progressive and high-performing countries** like Slovenia and Bulgaria, which have successfully integrated gender equality into both the legal framework and societal norms.

Regression Results: Comparative Insights

The regression analysis provides a closer look at Albania's performance on various gender equality indicators relative to its Balkan counterparts:

- **Female Employment Opportunities:** Albania exhibits a lower-than-expected FLFP relative to other countries with similar gender equality policies. Countries like Slovenia and Greece achieve significantly higher FLFP due to stronger integration of women in diverse economic sectors, such as services and industry.
- **Education and Economic Empowerment:** While Albania has achieved near-gender parity in primary and secondary education, the translation of educational achievements into workforce participation remains a challenge. Regression analysis shows a positive but weak correlation between education levels and FLFP in Albania, a pattern also observed in Moldova and North Macedonia.
- **Policy Efficacy and Enforcement Gaps:** Regression coefficients for Albania suggest that gender equality laws have a limited effect on actual workforce outcomes, possibly due to weak enforcement. For instance, the coefficients for anti-discrimination policies indicate stronger effects in Bulgaria and Romania, where active policy implementation has a visible impact on women's economic empowerment.

Conclusion and Policy Implications

Albania has made moderate progress in implementing gender equality policies over the past two decades, but its performance lags behind regional leaders like Slovenia and Bulgaria. The analysis of this chapter reveals that while policies like **international travel equality** and **parental leave** are in place, their impact on female labor force participation has been limited by country-specific factors such as economic structure, cultural norms, and enforcement gaps. Albania's strengths lie in its legal frameworks and progress in education, yet these policies have not fully translated into economic and leadership opportunities for women. Structural barriers and cultural norms continue to challenge gender equality efforts, and regression results indicate that policies effective in other Balkan countries may require adaptation for Albania's specific socio-economic context.

Key Policy Recommendations for Albania:

1. **Strengthen Enforcement of Gender Equality Laws:** Ensure that existing policies, such as paid parental leave and anti-discrimination laws, are effectively implemented and monitored.
2. **Support Transition to Formal Employment:** Focus on creating more formal employment opportunities for women, particularly in non-agricultural sectors, to increase FLFP.
3. **Promote Women's Leadership:** Introduce policies and programs that encourage and support women in leadership roles in both politics and business.
4. **Address Cultural Norms:** Invest in public campaigns and educational programs aimed at shifting traditional views on gender roles, particularly in rural areas.
5. **Improve Data Collection:** Enhance data collection efforts on gender statistics to better monitor progress and inform future policy interventions.

By addressing these areas, Albania can close the gender gap and boost female labor force participation, leading to greater overall economic and social development in line with regional and EU gender equality standards.

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