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CONFERENCE PAPER

Quantifying Export Diversification in Kosovo: Methods, Indices, and Sectoral Insights

Fitore Kostanica *

Abstract: *Due to its narrow export base and susceptibility to external economic shocks, enhancing export diversity has become a policy priority for Kosovo. This study investigates diversifications of Kosovo exports, analyzing both the intensive margin in existing products, and the extensive margin with new products and into new markets to gain insights into the structure and evolution of its export sector. Methodologically, the study applies the Theil entropy index, supported by Herfindahl-Hirschman Index, and Gini coefficient to measure export concentration and diversification dynamics. A key feature of the analysis is the decomposition of the Theil index, which separates within-group and between-group components, capturing shifts in export value distribution and the emergence of new product lines. Using finely disaggregated data at the 6-digit level of the Harmonized System (HS) between 2005-2023 the results provide a detailed view of Kosovo's export patterns. The results reveal that, while Kosovo's exports remain concentrated in sectors such as metals, mineral products, and food products, gradual diversification has occurred, especially within the metals sector. Our analysis uncovers a hump-shaped diversification trend, where initial diversification eventually leads to reconcentration as GDP per capita grows. The analysis indicates that there is a change in patterns of diversification with the EU after 20216. This corresponds with the signing of SAA which entered into force in the same year. The study concludes by recommending a dual policy approach for Kosovo: encouraging the development of new export lines to expand the export base while achieving a more balanced distribution within existing exports.*

Keywords: Export Diversification; Intensive Margin; Extensive Margin; Kosovo; Trade Policy

JEL classification: F14, O24, C10, F63, Q17

* University of Prishtina "Hasan Prishtina", Faculty of Economics, Prishtina, Kosovo. Corresponding Author E-Mail: fitore.kostanica@uni-pr.edu

Introduction

Export diversification is widely recognized as a crucial factor in promoting economic growth, resilience, and sustainability, particularly for developing economies. By reducing reliance on a narrow range of products, diversification helps economies become more resilient to external shocks, such as fluctuations in commodity prices or global financial crises. Beyond mitigating risks, export diversification also fosters innovation, boosts productivity, and supports long-term structural transformation. For Kosovo, a country that has historically depended on a limited set of exports, enhancing the diversity of its export base has become a strategic priority for achieving sustainable economic growth and reducing vulnerabilities.

The existing literature underscores the critical role of export diversification in fostering economic growth. Imbs and Wacziarg (2003), Klinger and Lederman (2004), Aditya and Acharyya (2013), Al-Marhubi (2000), and Hesse (2008) highlight the importance of diversification, especially for developing countries, where economies often rely on a narrow range of products or industries. By reducing dependency on a few volatile products, export diversification helps smooth income volatility and improves resilience to economic shocks (Acemoglu and Zilibotti, 1997; Osakwe, 2007). It also promotes long-term stability by reducing fluctuations in export earnings (Ghosh and Ostry, 1994; Hesse, 2008; McMillan, Rodrik, and Verduzco-Gallo, 2014). Economies with a high degree of diversification tend to experience more stable growth, with reduced macroeconomic volatility (Brenton and Newfarmer, 2007; Ramey and Ramey, 1995).

Export diversification can be analyzed through two primary margins: the intensive margin and the extensive margin (Cadot et al., 2011). The intensive margin assesses the distribution of export values among existing products, measuring how much the country is increasing exports within its current product categories. In contrast, the extensive margin refers to the introduction of new products or markets, capturing the breadth of the export portfolio. Understanding these two dimensions of diversification is critical, as it helps determine whether diversification is driven by expanding existing sectors or by introducing entirely new sectors to the export economy (Cadot et al., 2011). This distinction is important because it helps policymakers identify which type of diversification is more sustainable and conducive to long-term economic development.

This study aims to address the following questions: How has Kosovo's export diversification evolved over time in terms of intensive and extensive margins, does it follow a hump-shaped relationship with GDP per capita, and what has been the impact of the Stabilization and Association Agreement (SAA) with the European Union on its export structure? To answer these questions, the study investigates Kosovo's export diversification from 2005 to 2023, focusing on both the intensive and extensive margins of diversification. The objectives of this study are fourfold: (1) to define

and quantify export diversification, explaining its significance for economic growth; (2) to explore the relationship between export diversification and GDP growth from both theoretical and empirical perspectives; (3) to analyze Kosovo's export diversification trends over the period 2005-2023; and (4) to provide actionable policy insights for balancing the extensive and intensive margins of diversification. Ultimately, this study aims to contribute to Kosovo's economic transformation by guiding policies that promote the diversification of exports while enhancing the competitiveness of existing sectors. These objectives are fundamental, as they aim to explore not only the growth of Kosovo's export base but also its deeper structure—what Kosovo exports and the composition of these exports.

To achieve the aforementioned objectives, this study utilizes 6-digit Harmonized System (6HS) trade data collected from the Kosovo Agency of Statistics (KAS) for the period 2005 to 2023. To quantify Kosovo's export diversification, we employ a range of concentration indices, including the Theil index, the Gini coefficient, and the Herfindahl-Hirschman Index (HHI). The Theil index, known for its decomposability, allows us to assess both the intensive margin (the distribution of export values among existing products) and the extensive margin (the introduction of new export products). This provides a comprehensive understanding of Kosovo's export diversification over time. The Gini coefficient and the HHI complement this analysis by offering alternative perspectives on export concentration. The Gini coefficient measures the inequality in the distribution of export values, while the HHI quantifies the degree of concentration in the export market, where higher values suggest more concentration and lower values indicate greater diversification. Together, these indices provide a robust framework for analyzing the evolution of Kosovo's export structure and its alignment with broader trends in economic development.

Kosovo's export dynamics reflect a mix of regional and global engagement, with its top sectors including metals, mineral products, and foodstuffs. Despite facing challenges in boosting competitiveness, Kosovo has managed to establish substantial trade relationships, particularly with the European Union (EU) and the Western Balkans. The World Bank's 2021 report highlights the importance of diversification in sectors like manufacturing and Information and Communication Technology (ICT) to reduce dependency on traditional sectors such as agriculture and mining. Over the period from 2005 to 2023, Kosovo has seen gradual growth in exports, with a significant increase in the number of active export lines, showcasing the positive effects of economic partnerships and trade agreements like the Central European Free Trade Agreement (CEFTA).

The remainder of this paper is structured as follows. Section 2 reviews the literature on export diversification, emphasizing both theoretical and empirical perspectives. Section 3 describes the methodology and data, detailing the indices used to measure export diversification. Section 4 presents the results, analyzing the evolution of Kosovo's export diversification. Section 5 discusses the implications of the

findings, while Section 6 concludes with policy recommendations and future research directions.

Literature review

Export diversification has emerged as a critical pillar in the pursuit of economic development, particularly in developing countries such as Kosovo. Numerous studies have emphasized its role in reducing vulnerability to external shocks, fostering structural transformation, and supporting long-term economic growth. For instance, Al-Marhubi (2000), Imbs and Wacziarg (2003), and Hausmann and Hidalgo (2011) argue that diversification is essential for economies seeking to minimize exposure to price volatility and external disturbances. This insight is particularly relevant for Kosovo, which remains heavily reliant on a narrow range of exports, primarily metals and minerals. Thus, understanding how diversification contributes to resilience and sustainable growth provides a strong conceptual basis for this paper's investigation.

Building on these foundations, Brenton and Newfarmer (2007) and Ramey and Ramey (1995) explore how diversified export structures can mitigate economic fluctuations, a finding directly applicable to Kosovo's challenge of economic instability. Similarly, Acemoglu and Zilibotti (1997), Osakwe (2007), Ghosh and Ostry (1994), and Hesse (2008) emphasize the importance of reducing reliance on primary commodities. These studies collectively support the notion that Kosovo's economic future depends on its ability to diversify into higher-value and more stable export sectors.

A more nuanced perspective is provided by Imbs and Wacziarg (2003), who introduce a hump-shaped relationship between export diversification and GDP per capita. They argue that at lower income levels, economies tend to diversify by expanding their export base (the extensive margin), but as they develop, they reconcentrate into fewer, higher-value products (the intensive margin). This dynamic framework is particularly useful for interpreting Kosovo's current stage of economic development. The empirical validation of this model by Cadot et al. (2011) and Parteka and Tamberi (2013) underscores the relevance of distinguishing between stages of diversification. In this context, Kosovo's limited movement toward high-value exports suggests it has yet to complete the reconcentration phase, highlighting the need for targeted policies to promote both diversification and structural transformation.

Further elaborating on the two dimensions of export diversification—intensive and extensive margins—Cadot et al. (2011), Melitz (2003), and Amurgo-Pacheco and Pierola (2008) stress the importance of expanding the product base and increasing product quality. Their findings support the view that both dimensions must be simultaneously addressed for a robust diversification strategy. In the case of Kosovo, while some new export sectors have emerged, such as ICT and agriculture, existing sectors still exhibit limited value-added transformation. These insights guide the current

study's focus on measuring and interpreting Kosovo's diversification along both margins using quantitative tools.

Hausmann and Hidalgo (2011) introduce the concept of product complexity and its implications for economic growth. Their research highlights that countries exporting technologically sophisticated products experience more rapid and sustained growth. This is especially important for Kosovo, where exports remain low in complexity. Similarly, Lederman and Maloney (2012) argue that diversification into complex products enhances resilience and innovation—factors that are integral to Kosovo's long-term development. These studies reinforce the importance of fostering innovation and building capacity in high-skill sectors as part of a comprehensive export diversification strategy.

In addition to internal factors, Aditya and Acharyya (2013) bring attention to the role of external institutions and agreements in promoting export diversification. This is particularly relevant for Kosovo, whose trade relations are shaped by agreements such as the Stabilization and Association Agreement (SAA) with the EU and CEFTA. These frameworks enhance market access, encourage regulatory harmonization, and stimulate foreign investment—factors that directly contribute to the country's export diversification potential. Thus, this study incorporates the influence of trade policy and institutional context in evaluating Kosovo's export performance.

Despite these opportunities, Kosovo faces persistent structural challenges. Bernard et al. (2009) point out that countries heavily dependent on commodities must prioritize increasing value-added content and expanding their product base. This advice is highly pertinent for Kosovo, where diversification remains shallow and concentrated in low-complexity goods. Their findings, alongside those of Amurgo-Pacheco and Pierola (2008), Imbs and Wacziarg (2003), and Lederman and Maloney (2012), underline the need for strategic investment in sectors such as ICT and agri-processing. These studies frame the rationale for this paper's emphasis on policy implications and sector-specific recommendations.

Finally, measuring export diversification requires robust and nuanced metrics that capture the multi-dimensional nature of trade structures. Cadot et al. (2011) propose a comprehensive framework for assessing diversification across both the extensive and intensive margins, offering clear guidance on how economies evolve through diversification and subsequent specialization. This study adopts and builds on Cadot et al.'s approach by employing the Theil index, a measure recognized in the literature for its ability to quantify dispersion in export shares and capture both dimensions of diversification. While Al-Marhubi (2000) and Parteka and Tamberi (2013) also validate the effectiveness of the Theil index in measuring export concentration, this study prioritizes Cadot et al.'s methodological contributions to ensure alignment with empirical best practices in the analysis of export diversification dynamics. Applying this framework to Kosovo enables us to provide policy-relevant insights into the country's current diversification stage and guide strategic interventions for achieving a more balanced and resilient export structure.

Methodology and Data

In this study, the primary objective is to assess the extent of export diversification in Kosovo from 2005 to 2023, utilizing several key indices to measure both the structure and evolution of Kosovo's export portfolio. To achieve this, the Theil Index is used as the main tool for quantifying export diversification, complemented by other widely recognized indices, namely the Herfindahl-Hirschman Index (HHI) and the Gini Coefficient. These indices are used together to offer a comprehensive understanding of Kosovo's export diversification dynamics over time, evaluating both the diversification and concentration of the country's export activities. The study draws upon export data for Kosovo, which is disaggregated at the 6-digit level of the Harmonized System (HS6), covering the period from 2005 to 2023. This finely detailed data allows for an in-depth analysis of Kosovo's export portfolio, capturing a broad array of export products and their corresponding values. This level of disaggregation also enables a nuanced view of the intensive margin (distribution of export values among existing products) and the extensive margin (introduction of new products and markets), which are key dimensions of export diversification. The data sources include the Kosovo Agency of Statistics (KAS) for export values and the World Bank for GDP per capita values in purchasing power parity (PPP). By analyzing this data, the study aims to assess the evolution of Kosovo's export profile and its implications for economic growth and resilience.

Concentration levels refer to how much a country's export base depends on a limited number of products or sectors. High concentration indicates that a significant portion of exports is dominated by a few products, making the economy more vulnerable to fluctuations in those sectors. Low concentration, on the other hand, suggests a more diversified export structure, which generally reduces risks and enhances stability. Different indices are used to measure concentration. The Herfindahl-Hirschman Index (HHI) reflects concentration by summing the squared shares of each product's export value, where higher values indicate greater concentration. The Gini coefficient measures inequality in the distribution of export values, with higher values indicating more concentration. The Theil index provides a similar measure, where higher values reflect more concentrated export portfolios. These indices collectively offer a comprehensive view of Kosovo's export structure, helping to analyze both concentration and diversification trends. Understanding the differences in how these indices measure concentration is key for interpreting the results and understanding broader trends in Kosovo's export sector.

While the HHI and Gini coefficient are useful for assessing concentration, they were not used in their standardized forms in this study because they do not capture the dynamic nature of Kosovo's export diversification. These measures primarily focus on concentration and fail to account for the shift between the intensive margin (existing products) and the extensive margin (new products or markets), which are

crucial for understanding Kosovo's evolving export structure. The Theil index, in contrast, allows for a more nuanced analysis by decomposing diversification into these two dimensions, providing a more detailed and relevant measure for this study.

The Theil index is particularly valuable because of its ability to capture both the balance of export values across existing products (intensive margin) and the introduction of new export products (extensive margin). A unique feature of the Theil index is its decomposability, which allows for the separation of export diversification into two distinct margins: the intensive margin - the distribution of export values among existing products - and the extensive margin - the introduction of new products or expansion into new markets. This dual breakdown provides a nuanced view of the diversification process and its impact on economic growth.

The Theil index is formally expressed as:

$$T = \frac{1}{n}\sum_{i=1}^{n} \frac{x_i}{\bar{x}} ln\left(\frac{x_i}{\bar{x}}\right) \tag{1}$$

where $\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$ is the average value of total exports, x_i is the export value of product i, $\bar{x}$ is the average value of total exports, and n is the total number of products in the export basket.

The Theil index can be calculated for groups of individuals (export lines) and broken down into two parts: the within-group (T_w) and between-group components (T_b), which together equal the overall index. For the step-by-step derivation of Theil Index, see Cadot et al. 2011.

$$T_w = \sum_{j=1}^{J} \frac{n_j}{n}\frac{\bar{x}_j}{\bar{x}}\left[\frac{1}{n_j}\sum_{i\in j}\frac{x_i}{\bar{x}_j} ln\left(\frac{x_i}{\bar{x}_j}\right)\right] \tag{1.1}$$

$$T_b = \sum_{j=1}^{J} \frac{n_j}{n}\frac{\bar{x}_j}{\bar{x}} ln\left(\frac{x_j}{\bar{x}}\right) \tag{1.2}$$

The Theil index is inversely related to diversification, meaning that it reaches its minimum value of zero when exports are perfectly diversified (i.e., every product has an equal share of total exports). On the other hand, it reaches its maximum value, ln(n), when all exports are concentrated in a single product. A higher Theil index indicates a more concentrated export portfolio, while a lower value suggests greater diversification.

In this study, the Theil index will be the central tool for analyzing Kosovo's export diversification trends, with a particular focus on both the intensive and extensive margins. The Herfindahl-Hirschman Index (HHI) and the Gini coefficient are then used to validate and complement the findings. While the Theil index offers detailed insights into the distribution and balance of Kosovo's exports, the HHI and Gini coefficient provide further context on the concentration levels within Kosovo's export portfolio, offering additional clarity on the country's dependence on a limited number of export products.

The Herfindahl-Hirschman Index (HHI) is another important measure of concentration and is often used to analyze the degree of export specialization or diversification. The HHI is calculated by squaring the market share of each product within the export portfolio and summing these squared values. A higher HHI value indicates a greater concentration of exports in a few sectors, while a lower value suggests a more evenly distributed export structure. The HHI is particularly useful for understanding how concentrated Kosovo's export market is and whether this concentration has changed over time. For Kosovo, the HHI will be calculated using the following formula:

$$HHI = \sum_{i=1}^{n} \left(\frac{x_i}{\sum_{i=1}^{n} x_i} \right)^2 \quad (2)$$

where $\sum_{i=1}^{n} x_i$ represents the total export value across all products, x_i is the export value of product i and n is the number of export products.

A high HHI indicates that Kosovo's exports are concentrated in a few sectors, while a lower HHI indicates that Kosovo has a more diversified export base. A major advantage of the HHI is that it provides a clear indication of market concentration, making it easier to assess whether Kosovo's export profile is too dependent on specific sectors or whether it is becoming more diversified over time. Moreover, to make cross-country comparisons more meaningful, we employ a normalized version of the HHI, which adjusts for the number of export categories in Kosovo's trade portfolio.

The Gini coefficient, on the other hand, is a measure of inequality commonly used to assess the concentration of wealth or income within a population, but it is also applicable to export diversification. The Gini coefficient measures the degree of inequality in the distribution of export values. It ranges from 0 (perfect diversification) to 1 (maximum concentration). The Gini coefficient is calculated based on the Lorenz curve, which represents the cumulative distribution of export shares. For Kosovo, the Gini will be calculated using the following formula:

$$Gini_j = 1 - \sum_{i=1}^{n} \frac{X_{ij} + X_{i-1,j}}{n} \quad (3)$$

where, X_{ij} represents the cumulative export share of the first i export lines within group j, $X_{i-1,j}$ represents the cumulative export share of the first i–1 export lines within group j, and n is the total number of export lines (products).

Despite its usefulness, the Gini coefficient does have limitations. It does not account for overlapping subgroups and requires strict ordering of export values. However, it remains a popular tool for understanding export diversification and providing complementary insights alongside other indices like the Theil index. By analyzing the Gini coefficient, we gain additional insights into whether Kosovo's exports are increasingly dominated by a small number of product categories or whether the export base is becoming more evenly distributed.

Findings

The export diversification analysis of Kosovo from 2005 to 2023 is conducted using key concentration indices, such as the Theil index, Herfindahl-Hirschman Index (HHI), and the Gini coefficient. These tools offer insights into the concentration of Kosovo's export portfolio, highlighting both the overall diversification trend and variations across the intensive and extensive margins. The data presented in Table 1 is crucial for assessing Kosovo's progress in diversifying its export base, specifically in comparison to regional and global trends. Kosovo's export patterns reflect shifts in both margins, which are integral to understanding how diversification has unfolded over the study period.

Table 1: Descriptive statistics on concentration indices (Kosovo, 2005-2023)

	All	EU	WB	Avg. exports by chapter
Avg. exports by chapter	399,9045.39	1,564,012.10	1,626,067.32	2,468,862.87
Theil – overall	4.94	5.77	4.71	5.10
Theil – between	1.25	2.10	1.50	1.58
Theil – within	3.69	3.68	3.21	3.52
Avg. no. active lines by chapter	18.96	10.20	15.36	15.15
Gini – overall	0.93	0.95	0.93	0.94
Herfindahl-Hirschmann – overall	0.54	0.63	0.56	0.58
Observations	3467			

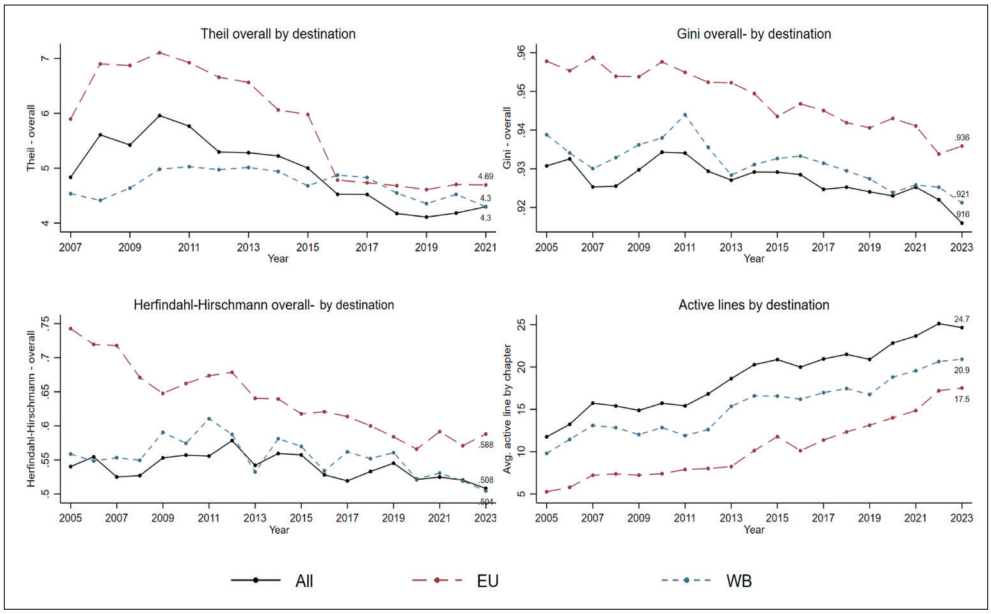
Source: KAS 6-HS data 2005-2023; Author's calculations

The statistics demonstrate significant export concentration within Kosovo's export basket, as reflected by high Theil, Gini, and Herfindahl-Hirschman Index (HHI) results. Specifically, the overall Theil index of 4.94, coupled with a high Gini index of 0.93 and an HHI of 0.54, indicates a pronounced concentration, aligning with Cadot et al.'s findings where the evolution of export diversification often follows a hump-shaped pattern—initial diversification followed by reconcentration at higher levels of economic development. The Theil index for the EU market is notably higher at 5.77, suggesting even greater concentration and pointing towards Kosovo being in the initial stages of diversification, predominantly at the extensive margin. This involves the addition of new export lines rather than increased uniformity in the export values across existing products. Cadot et al. highlight the role of both extensive and intensive margins in shaping a country's export profile. For Kosovo, the predominance of high Theil indices, particularly the between-group component at 1.25 overall, with a significantly higher 2.10 in the EU market, underscores significant disparities between different groups of exports. This indicates potential sectors or markets for diversification efforts, where targeted strategies could help reduce concentration. The between-group

index's variation across markets (1.50 for the WB and a lower 1.25 overall) further highlights uneven diversification efforts across different trading partners.

The average number of active export lines, at 18.96, is a telling indicator of Kosovo's export profile. This figure is derived from detailed descriptive statistics and a trend analysis of active export lines over the years, which reveals a gradual upward trajectory with fluctuations that reflect broader economic and trade dynamics. Comparative benchmarks indicate that Kosovo's figure, while showing progress, still lags regional peers, emphasizing the need for strategic diversification efforts. This finding is consistent with methodologies such as those proposed by Cadot et al., who emphasize the role of active export lines as a key indicator of extensive margin diversification.

Figure 1: Evolution of indices over 2005-2023, disaggregated by destination

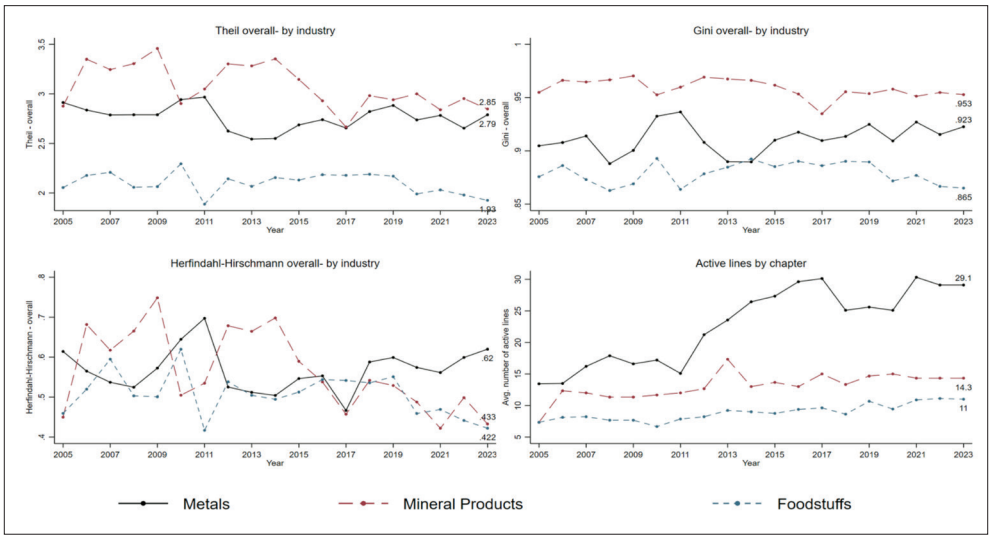


Source: KAS 6-HS data 2005-2023; Author's calculations

Figure 1 illustrates the evolution of the Theil, Gini, and HHI indices measuring Kosovo's export diversification from 2005 to 2023. These indices show a clear decline, particularly the Theil index, which decreased from 5.7 in 2005 to 4.3 in 2023, reflecting a significant reduction in export concentration. The Gini index also dropped from 0.98 to 0.92, and the HHI from 0.7 to 0.58, indicating a move away from reliance on a few dominant exports. The number of active export lines increased from 15 in 2005 to nearly 25 by 2023, marking the success of Kosovo's diversification strategy. Notably, diversification towards the EU has accelerated, with the Theil index for the EU decreasing from 6.8 to 4.3 and the number of active lines growing

from 10 to 18. This diversification can be linked to economic complexity and the role of trade agreements, such as the Stabilization and Association Agreement (SAA), in facilitating knowledge transfer and capacity building. The observed reduction in concentration indices and increase in active export lines demonstrate Kosovo's progress in enhancing its export complexity and reducing vulnerabilities.

Figure 2: Evolution of indices over 2005-2023, disaggregated by top sectors



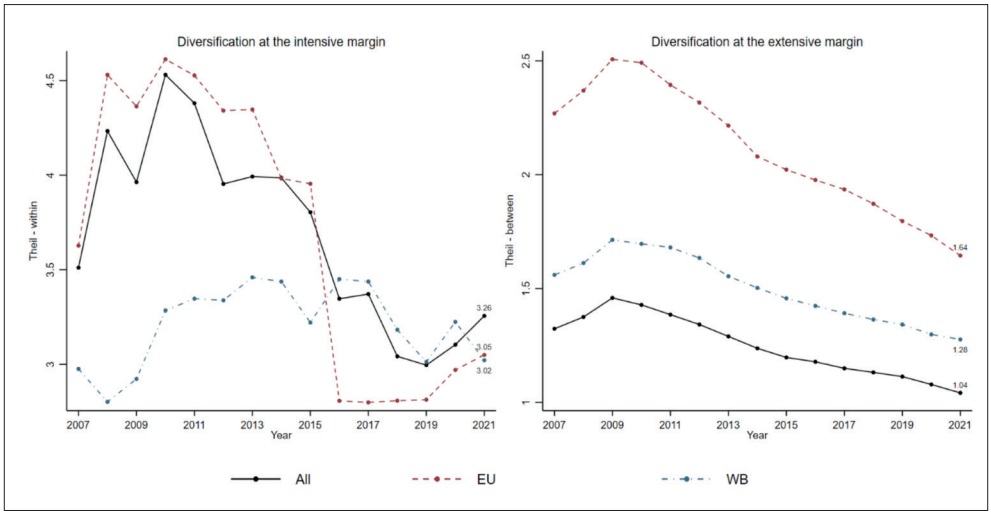
Source: KAS 6-HS data 2005-2023; Author's calculations

Figure 2 shows the evolution of the Theil, Gini, and Herfindahl-Hirschman (HHI) indices from 2005 to 2023 across sectors such as metals, mineral products, and foodstuffs. The metals sector has seen significant diversification, with the Theil index dropping from 3.50 in 2005 to 1.93 in 2023, while the HHI and Gini index also decreased, reflecting a shift towards greater competitiveness and balanced export distribution. Active export lines in this sector increased from 11 in 2005 to 29 in 2023. In contrast, the mineral products sector shows more stability with a slight decline in concentration, as indicated by the HHI and Gini indices. The number of active lines remained stable, suggesting a more cautious diversification approach. The foodstuffs sector saw limited diversification, with the Theil index rising slightly to 2.79 by 2023, but the HHI and Gini indices indicate progress toward greater diversification. Overall, Kosovo's export diversification is progressing, particularly in the metals sector. Despite improvements, the need for further diversification remains, especially in the EU market. The Theil index, with its decomposability, serves as the primary measure for tracking these trends, highlighting the need for targeted policies to enhance both intensive and extensive margin diversification.

Export Diversification: Extensive versus Intensive Margins

It is essential to differentiate between the changes in overall diversification due to the concentration of export value across existing products (intensive margin) and the changes resulting from the addition of new export lines (extensive margin). The Theil index's decomposability into within- and between-components allows for this distinction. The within component reflects changes in diversification at the intensive margin, while the between component captures shifts at the extensive margin.

Figure 3: Evolution of the intensive margin (the within component of the Theil index) and the over 2005-2023



Source: KAS 6-HS data 2005-2023; Author's calculations

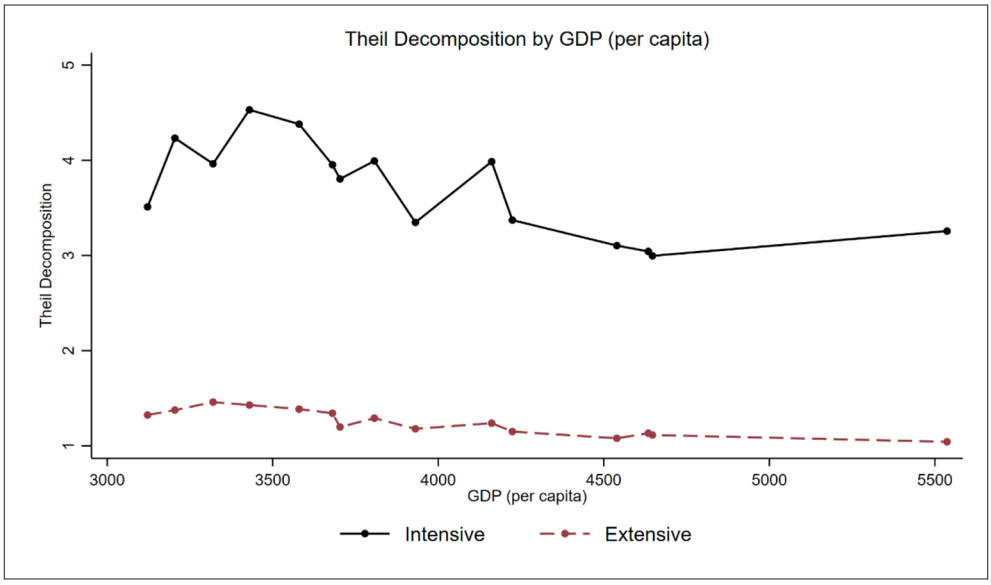
Figure 3 show intensive and extensive margins in Kosovo classified in line with Cadot et. al (2011, 2013). The diversification/concentration of exports in Kosovo is mostly explained by intensive margins, while extensive margins have a relatively limited effect. There has been a fluctuation in export diversification at the intensive margin for Kosovo. Until around 2013, there was a sharp increase, particularly in trade with the EU, indicating that Kosovo was increasing the value of its existing exports to this region. After a drop between 2013 and 2015, there is a general declining trend in diversification at the intensive margin with the EU, settling to a lower level by 2021. This suggests that the growth in the value of existing exports has slowed down. However, the overall diversification at the intensive margin (All) remains relatively stable from 2016 onwards, indicating a consistent export value among existing products across all regions. On the other hand, looking at the extensive margin, we see a steady decline for both the EU and WB from 2007 to 2021. This indicates that

Kosovo has been adding fewer new products to its export list to these regions over time. However, the decline is more pronounced with the EU, suggesting that Kosovo has had a harder time expanding its range of export products to the EU compared to the Western Balkans. By 2021, the extensive margin with the EU is lower than with the Western Balkans, implying a more significant diversification in terms of new products in the latter market.

Theil Decomposition by GDP

It is relevant to examine how GDP per capita impacts export diversification in Kosovo, shedding light on the dynamic relationship between economic growth and the expansion of Kosovo's export base. The analysis provides insights into how increasing diversification contributes to long-term economic stability and growth, reinforcing the importance of fostering a diversified export portfolio for sustained development.

Figure 4: Overall export diversification (i.e. Theil Index) and GDP (average over 2005-2023)

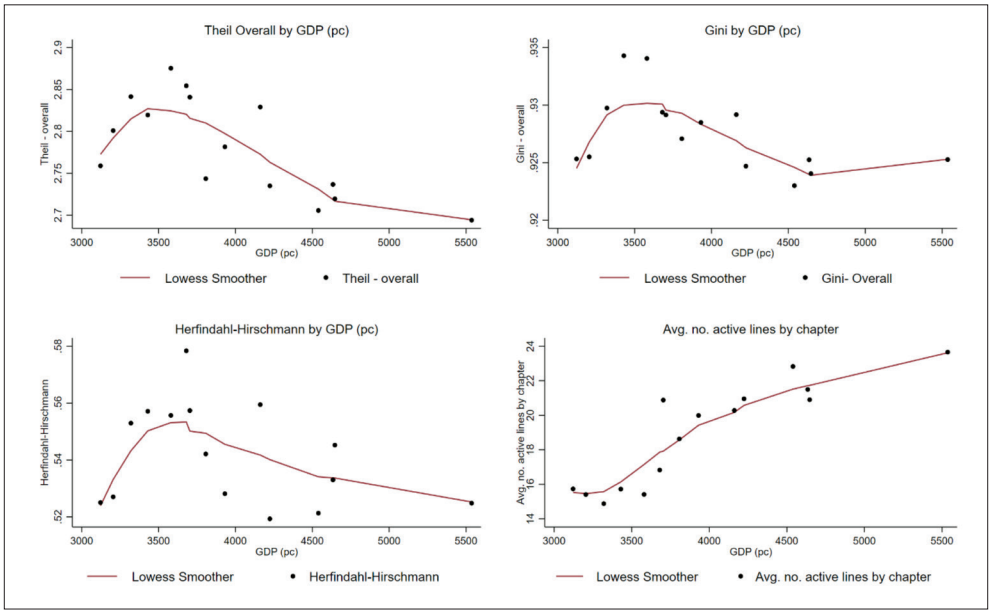


Source: KAS 6-HS data 2005-2023; Author's calculations

Figure 4 illustrates the relationship between export diversification and economic development in Kosovo from 2005 to 2023, showing the decomposition of the Theil index by GDP per capita. The lighter shaded area represents the within Theil index, indicating concentration at the intensive margin, where higher values reflect greater

export concentration among existing products. This suggests that as Kosovo's GDP per capita increases, there is notable concentration within existing export lines. The darker shaded area, representing the between Theil index, indicates diversification at the extensive margin. Although there has been some effort to introduce new export lines, the concentration among these new products suggests room for improvement. At lower GDP levels, the contribution of the extensive margin is more pronounced, reflecting Kosovo's efforts to diversify its exports through new markets and products. This trend highlights the importance of expanding Kosovo's export base and improving the distribution of export values.

Figure 5: Indices against GDP per capita

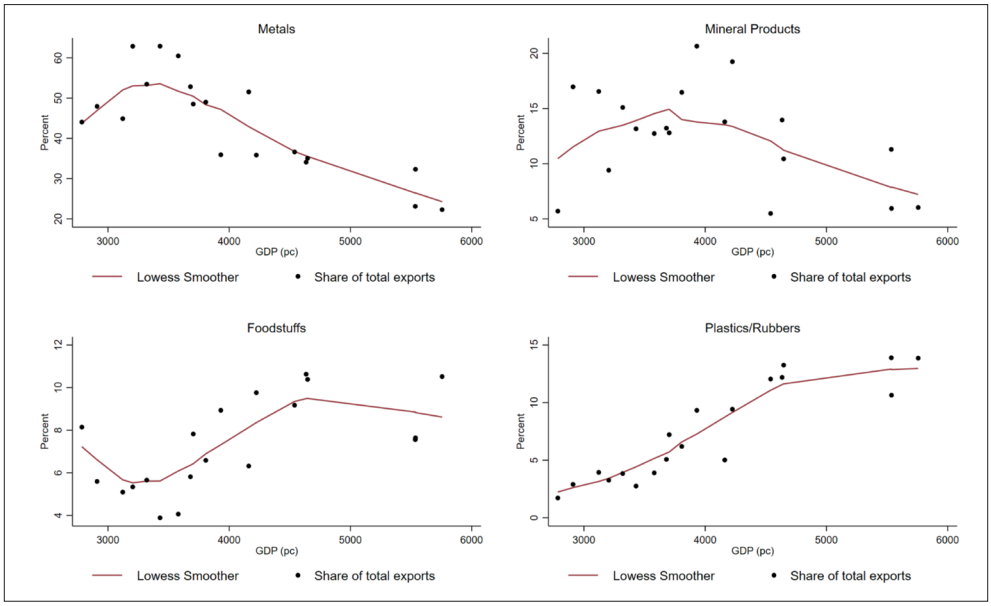


Source: KAS 6-HS data 2005-2023; Author's calculations

Figure 5 illustrates the relationship between export diversification indices and GDP per capita in Kosovo from 2005-2023. The Theil, Gini, and Herfindahl-Hirschman Indices show a hump-shaped pattern, with diversification initially increasing and later reconcentrating as GDP per capita rises, reflecting Kosovo's early stages of economic development. The peak of diversification occurs around 3,500-4,000 EUR GDP per capita, where export concentration is highest. Following this, the country shifts focus to a smaller number of dominant exports. Conversely, the number of active export lines increases steadily, reflecting a broadening export base. These trends align with the findings of Cadot et al. (2011), showing that economic growth leads to both increased diversification (extensive margin) and concentration (intensive margin). For

policymakers, the key is to support both margins of diversification to ensure sustainable economic growth.

Figure 6: Sectoral exports against GDP per capita



Source: KAS 6-HS data 2005-2023; Author's calculations

Figure 6 shows how sectoral exports in Kosovo evolve with GDP per capita from 2005 to 2023. The metals and mineral products sectors display a hump-shaped pattern, with their shares initially rising, peaking around 3,500-4,000 EUR GDP per capita, and then declining as the economy diversifies. This trend aligns with the concept of a hump-shaped diversification path, where initial growth involves expanding exports in a few sectors, followed by a focus on more competitive sectors. Foodstuffs exports also follow a similar pattern but peak slightly later. In contrast, the plastics/rubbers sector exhibits continuous growth in its export share, indicating Kosovo's emerging comparative advantage in this area. These trends reflect Kosovo's shift from broadening exports to concentrating on higher-value sectors as GDP per capita rises.

Conclusions, Policy Implications, and Limitations

This study aimed to define and quantify export diversification, emphasizing its critical role in promoting economic resilience and sustainable growth in Kosovo. By analyzing export trends from 2005 to 2023, the study highlighted the importance of

examining export diversification through both the extensive margin, which captures the introduction of new export lines, and the intensive margin, which reflects the distribution of export values among existing products. Using a robust methodological framework centered on the Theil index, complemented by the Gini coefficient and the Herfindahl-Hirschman Index (HHI), the analysis provided a comprehensive understanding of the dynamics shaping Kosovo's export structure. The dataset, sourced from the Kosovo Agency of Statistics, enabled detailed examinations of export trends across sectors and destination markets, allowing for valuable insights into Kosovo's economic trajectory.

The findings revealed that extensive margin diversification has been crucial in the early stages of Kosovo's economic development, demonstrated by a significant increase in the number of active export lines. Sectoral analysis revealed varied diversification patterns: the metals sector made notable strides in reducing concentration and expanding active export lines, while the mineral products sector remained relatively stable with moderate diversification. The foodstuffs sector showed growth from a lower base, and the plastics/rubbers sector emerged as a promising area for sustained growth and comparative advantage. The study confirmed that Kosovo's export diversification follows the hump-shaped pattern described in the literature, where diversification increases with rising GDP per capita in the early stages, driven by the extensive margin, and later reconcentrates around fewer dominant export lines as the economy matures, emphasizing the intensive margin. A key driver of this diversification, particularly after 2016, was the Stabilization and Association Agreement (SAA) with the European Union, which facilitated greater market access, regulatory alignment, and foreign investment, enhancing the competitiveness of Kosovo's exports.

Based on the findings of this study, several policy recommendations emerge. Policymakers should actively promote and facilitate the introduction of new export products and sectors to broaden Kosovo's export base. Targeted incentives, market research, and fostering innovation in emerging industries could support these efforts. Additionally, enhancing competitiveness by improving product quality, production efficiency, and value-added content within existing exports is essential to reduce vulnerabilities to external economic shocks. Fully utilizing existing trade agreements, particularly the SAA with the European Union, can significantly facilitate market access, technology transfer, and regulatory alignment, thus strengthening Kosovo's export competitiveness. Furthermore, strategic investments in high-potential sectors, including plastics/rubbers, metals, and ICT, accompanied by supportive regulatory frameworks and capacity-building initiatives, are critical for capitalizing on comparative advantages. Finally, enhancing the quality of institutions, governance, and infrastructure is crucial to create a conducive environment for exporters, reduce transaction costs, and attract foreign direct investment. Implementing these integrated and targeted strategies will enable Kosovo to enhance its export diversification, improve economic resilience, and achieve sustained economic growth.

Despite its comprehensive approach, this study has several limitations that should be acknowledged. First, the analysis relies exclusively on quantitative measures, particularly the Theil index, Herfindahl-Hirschman Index (HHI), and Gini coefficient. While these indices effectively capture concentration and diversification, they may not fully represent qualitative aspects such as product sophistication, innovation capacity, or export quality improvements. Incorporating qualitative data through case studies or industry-level analyses could provide deeper insights. Second, the study utilizes export data disaggregated at the 6-digit Harmonized System (HS6) level. Although detailed, this level of aggregation may still obscure heterogeneity within product categories, potentially overlooking diversification dynamics occurring at more granular product levels or within firm-level activities. Future research could employ even more finely disaggregated data or firm-level data to capture such dynamics. Third, the study period (2005–2023) covers significant events, including Kosovo's declaration of independence (2008) and the Stabilization and Association Agreement (2016). While these events have undoubtedly influenced trade dynamics, the current study design does not isolate their individual effects thoroughly. A more explicit econometric approach, such as difference-in-differences or structural break analysis, might better identify causal impacts of such events. Fourth, the analysis focuses primarily on export diversification in relation to GDP per capita, without thoroughly accounting for other influential economic factors such as FDI, exchange rate dynamics, institutional quality, infrastructure, or global economic conditions. Further research incorporating these variables could yield richer insights into the drivers of export diversification. Finally, this study is country-specific and focuses solely on Kosovo, limiting the generalizability of findings. Comparative analyses involving countries with similar economic structures or developmental challenges would enhance the external validity and broader applicability of the conclusions drawn from this research.

Declarations

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Conflicts of interest/Competing interests

There is no conflict of interest/Competing interests.

Availability of data and material

The data that support the findings of this study are openly available from the Kosovo Agency of Statistics (https://ask.rks-gov.net) and the World Bank (https://www.worldbank.org). Export data were obtained at the 6-digit Harmonized System (HS6) level for the period 2005–2023, while GDP per capita data in PPP terms were sourced from the World Bank.

Code Availability

The computer program results are shared through the tables in the manuscript.

Authors' Contributions

The author solely undertook all contributions to this work.

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