




Keeping the momentum in South Africa's intensive export growth margin



Authors:

Nicola van der Merwe¹ 
 Carli Bezuidenhout¹ 
 Ermie A. Steenkamp¹ 

Affiliations:

¹School of Economic Sciences, Faculty of Business Management and Economic Sciences, North-West University, Potchefstroom, South Africa

Corresponding author:

Nicola van der Merwe,
 nicolavandermerwe363@gmail.com

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Background: In the context of South Africa's commitment to export-led growth, attention has traditionally centred on expanding the export base through new products and markets. However, a substantial share of the country's trade performance is driven by intensifying exports of existing products to established partners, an area known as the intensive margin.

Setting: South Africa

Aim: Recognising the importance of the intensive margin, this study investigates which of South Africa's current product-country combinations remain underexploited and warrant strategic focus.

Method: Employing a structured three-phase analytical framework, the research begins by identifying global product-country opportunities based on import demand dynamics and market competitiveness. These are then cross-referenced with South Africa's existing export relationships to isolate underutilised channels within the intensive margin. Finally, a composite Market Attractiveness Index (MAI) is developed to prioritise these opportunities across dimensions such as demand scale, growth trends, accessibility and export competitiveness.

Results: The dominance of Western Europe and Asian markets – especially Germany, China, the Republic of Korea and India – reinforces the importance of deepening existing trade relationships where South Africa already holds competitive advantages. Moreover, the emergence of high-potential combinations across a diverse range of sectors signals that targeted export promotion strategies should not be limited to primary commodities but should also include value-added and niche industrial products.

Conclusion: The study uncovers actionable insights into where South Africa can enhance its export impact.

Contribution: Supporting more efficient, data-driven trade promotion policies within its current global footprint.

Keywords: exports; export-led growth; intensive margin; underutilised; decision support model; Market Attractiveness Index; opportunities; South Africa.

Introduction

The export-led growth model gained traction in the late 1970s, replacing the import-substitution model that had dominated development policy 30 years after World War II (Palley 2012). Over the past few decades, export-led growth has emerged as a key development strategy, particularly for developing countries seeking to enhance productivity, access new technologies and foster economic resilience (Görg & Greenaway 2024:174). Exports motivate productivity, generate innovative opportunities, mitigate uncertainty, reduce vulnerability to commodity shocks and price variations, create positive spillovers from trade in high-technology and high-skill goods, and, consequently, support economic development (Naudé, Bosker & Matthee 2010; Reis & Farole 2012).

South Africa has embraced an export-led growth approach in its trade policy, recognising the pivotal role exports play in driving economic growth, diversification and industrialisation. The South African National Development Committee's goal of achieving 6% annual export growth by 2030 requires a more focused approach to export promotion (South African government - Department of Trade and Industry 2013). According to Jordaan (2015), both the extensive and intensive margins are critical components of export-led growth. Table 1 provides a summary of the export growth margins.

TABLE 1: Differentiation between the intensive and extensive export growth margins.

Level	Intensive growth margin	Extensive growth margin
Product	Increase in value of existing products exported	Broader range of products exported
Country	Long-standing bilateral trading partnership	New bilateral trading relationship
Product-country	Increase in existing export volumes to current trade partners	Exporting a new product to existing trading partners or exporting new and existing products to new trading partners

Source: Author's own compilation based on Amiti and Freund (2010), Evenett and Venables (2002), Helpman, Melitz and Rubinstein (2008), Hummels and Klenow (2005), Matthee, Idsardi and Krugell (2016), Reis and Farole (2012), and Steenkamp (2019).

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Historically, South Africa's export growth has predominantly occurred within the intensive margin – expanding the volume of existing products to existing markets. While government strategies have largely focused on export diversification through the extensive margin, previous studies revealed that up to 77% of South Africa's export growth between 2002 and 2012 stemmed from the intensive margin (Matthee et al. 2015). Despite its significance, this metric has not been updated over the last decade, leaving a critical gap in understanding the current dynamics of South Africa's export performance.

Between 2002 and 2022, the country exported over 148 000 product-country combinations (intensive margin), yet it remains unclear which of these hold more trade potential. Without clear prioritisation, policy efforts risk being spread too thin, missing out on 'low-hanging fruit' that could significantly contribute to export growth.

This study therefore identifies and prioritises underutilised export opportunities within South Africa's intensive margin, where most of the export growth momentum remains. This is achieved by applying a structured three-phased methodology to evaluate potential export markets and construct a composite Market Attractiveness Index (MAI) based on key trade indicators such as demand size, growth, market accessibility and export competitiveness.

This research supports policymakers and trade promotion institutions in developing more targeted and effective export strategies – maximising the growth potential inherent in South Africa's existing trade relationships.

Literature review

Extensive and intensive export growth margins

The extensive margin of trade growth refers to the expansion of exports through either the introduction of new products (product extensive margin) or entering new export markets (geographical extensive margin) (Reis & Farole 2012). This approach is widely supported in trade literature because of its potential to foster diversification, resilience and innovation in developing economies.

Hummels and Klenow (2005) were among the first to quantify the role of the extensive margin in export growth. The authors found that 60% of 126 countries' large economies' export expansion was attributable to new product or market entries between 1980 and 1997. This diversification reduces dependency on a limited range of exports and insulates economies from demand shocks or price volatility. More recently, Young (2024) found that in Nigeria, between 1960 and 2021, the extensive margin delivered larger and more sustained growth benefits compared to the intensive margin.

Exporting new products encourages research, development and innovation, as highlighted by Bernard et al. (2007). These dynamics are essential for improving competitiveness and adapting to international standards. According to Elumalai and Kumar (2025), India's agricultural exports through the extensive margin helped stabilise trade profits, reduce the vulnerability to price shocks, and support sustainable agricultural development. Additionally, Bernard et al. (2007) found that entry into new markets creates employment opportunities in production, logistics and sales and stated that firms must scale up to meet new demand. This, in turn, supports inclusive growth.

Despite its potential, literature highlights high barriers to entry, such as limited information on new markets, high marketing and regulatory compliance costs, and uncertainty regarding consumer preferences (Matthee et al. 2015). These constraints are particularly relevant in developing contexts, where countries may lack the capacity to absorb the risks associated with market expansion (Matthee et al. 2015). Although South African trade policy often prioritises the extensive margin, studies by Steenkamp (2019), Matthee, Idsardi and Krugell (2016) and Vogel (2024) caution that successful diversification in South Africa requires significant investment in infrastructure, skills and market knowledge. Matthee et al. (2015) also found that more than three-quarters of South Africa's export growth momentum was within the intensive margin between 2002 and 2012.

The intensive margin of trade growth involves increasing the volume of existing exports to already established trading partners. This margin is increasingly recognised for its low-risk, cost-efficient and high-impact characteristics.

Several empirical studies confirm the intensive margin as the dominant contributor to export growth in developing countries. Amiti and Freund (2010) observed that the bulk of China's rapid export expansion (between 1992 and 2005) occurred along the intensive margin. Additionally, Fedyunina, Simachev and Drapkin (2023) found that Russia's intensive margin was a significant contributor to economic growth under intensified sanctions between the years 2015 and 2021.

Benefits of intensive margin export growth include economies of scale and process efficiencies, improved trade relationships, better export survival and depth in trade, as well as gaining export experience to build export strength. Unlike the extensive margin, increasing volumes to known markets avoids high fixed costs related to new market entry (Hong & Luparello 2024). Exporters can optimise production and distribution channels, benefiting from economies of scale and process efficiencies (Hong & Luparello 2024). Strengthening existing trade relationships supports diplomatic and economic stability (Besedeš, Moreno-Cruz & Nitsch 2024). Familiarity with customer preferences, legal environments and logistics reduces uncertainty and enhances trust (Albornoz et al. 2012; Besedeš et al. 2024).

Besedeš and Prusa (2011) analysed disaggregated bilateral industrial exports from 46 countries (between 1975 and 2003) and found that trade survival – the ability to maintain export relationships – is essential for long-term export growth. They argued that weak export performance stems from the high failure rate of new trade relationships (70% of new export relationships fail within 2 years). They identify ‘depth’ in trade (increased volumes) as a stronger driver of export expansion than merely forming new trade ties. Carrère and Strauss-Kahn (2017) show that firms with prior export experience – particularly in nearby or accessible markets – are better able to sustain exports to developed economies.

Given the benefits of both export growth margins, a dual approach to export growth is advocated: building export strength through existing channels (intensive margin) while also venturing into new ones (extensive margin).

As a developing country, South Africa may find it more challenging to change structurally, diversify its exports, and find a successful, balanced export mix that requires large investment and infrastructure development (Matthee et al. 2015; Vogel 2024). The country may find it easier to focus on its strengths and, while pursuing export diversification, not forget about its intensive margin (Matthee et al. 2016). Vogel (2024) supports this argument by indicating that developing countries are faced with obstacles such as limited resources, expertise and global connections that may hinder the development of new product-country ties that will withstand market competition. Therefore, they concluded that a developing country’s intensive margin exports should keep growing (Vogel 2024).

The literature does not present the extensive and intensive margins as mutually exclusive but rather as complementary strategies. The extensive margin is vital for long-term structural transformation, innovation and market diversification, while the intensive margin provides immediate gains, stability and resilience – particularly critical for developing economies like South Africa.

Policymakers are thus encouraged to balance both strategies. While the extensive margin ensures future readiness (diversification) and competitiveness, the intensive margin represents momentum in the short to medium term for sustained export-led growth.

This study sets out to identify and prioritise underutilised export opportunities within South Africa’s intensive margin. Having provided an overview of the literature on the export growth margins within the context of South Africa’s specific challenges, an overview of international market selection literature follows.

International market selection methods and market attractiveness criteria

International Market Selection (IMS) refers to the systematic process of identifying, evaluating and prioritising foreign markets that offer the best opportunities for a country or firm to export goods and services. Effective IMS is crucial for developing countries, where resources for export promotion are often limited and must be directed towards markets with the highest potential return (Papadopoulos & Denis 1988).

Selecting the right markets not only improves export performance but also enhances economic growth, industrialisation and trade resilience by allocating efforts and investments towards strategically viable destinations.

Research underscores the consequences of inadequate or ad hoc market selection, such as wasted financial resources in pursuing unviable markets (Rahman 2003); entry into high-risk or saturated markets (Papadopoulos & Denis 1988); failure to achieve sustainable trade relationships (Besedeš & Prusa 2011).

Therefore, scholars and practitioners advocate for structured IMS frameworks that combine multiple dimensions of market potential with quantitative methods for evaluation and prioritisation (Cavusgil 1997; Kumar, Stam & Joachimsthaler 1994). These frameworks typically assess markets based on several dimensions, which are widely supported in the literature. The most common and essential criteria include: (1) import market size; (2) import market growth; (3) market accessibility; and (4) export competitiveness.

Import market size represents current demand for a given product in the target country, with larger markets considered more attractive because of volume potential (Aucamp 2020; Cameron et al. 2021; Cuyvers et al. 1995; Kefi 2021; Kumar et al. 1994).

Import market growth tracks changes in import demand over time – short-term and long-term – and indicates whether a market is dynamic and expanding. A growing market may compensate for smaller current size, making it strategic for future entry (Aucamp 2020; Cameron et al. 2021; Cavusgil 1997; Papadopoulos, Chen & Thomans 2002).

Market accessibility evaluates ease of entry, considering factors like tariff and non-tariff barriers (NTMs), logistics and trade infrastructure and the competitive landscape in the target market. Accessibility is essential for estimating costs, risks and time to entry (Kefi 2021; Rahman 2003).

Finally, export competitiveness indicates whether the exporting country has a competitive edge in producing and supplying a specific product (Cameron et al. 2021; Kefi 2021).

From the empirical literature, recent reports identified export opportunities in different sectors for various regions. In sub-Saharan Africa, there is a rise in consumer goods and agrifood (specifically packaged food, poultry, dairy and personal care products) (DHL 2025). Processed food, transport products and plastic products have export potential in South and East Africa (TIPS Industry Study 2024). In the Caribbean and Latin American regions, nearshoring opportunities in transport products, textiles, pharmaceuticals and renewable energy are expanding rapidly (IDB Report 2022; S&P Global 2025).

Lazaros and Dadakas (2024) found potential for the European Union to expand machinery and transportation exports to countries within the Intergovernmental Authority on Development (IGAD) region of Africa, as well as to countries with whom they have existing trade agreements in the American continent. Moreover, their results revealed trade potential for transportation products in the Middle East (Lazaros & Dadakas 2024). Konstantakopoulou and Tsionas (2024) implemented the Decision Support Model (DSM) to identify realistic export opportunities for the Southern Euro Area countries. Their results showed export opportunities for manufactured goods in all Southern Euro Area countries, machinery and transport products in Italy, Spain and Portugal, and food and live animals in Greece. Cuyvers et al. (2017) also identified realistic export opportunities for Thailand. Their results identified exporting sectors by using the DSM. The authors found that exports in food products, transport products, chemicals and plastics, electronics, rubber and rubber products, machinery, and textiles to Thailand's neighbouring Association of Southeast Asian Nations (ASEAN)+3 countries are in growing demand (Cuyvers et al. 2017). Viviers et al. (2014) used the DSM to identify new export opportunities for South Africa. The authors' results showed that South African exports of minerals, agro-processing food products, machinery, electrical, chemicals and plastics, textiles, and transport products showed export potential (Viviers et al. 2014).

More recently, Ferreira and Steenkamp (2025) explored how sub-Saharan African (SSA) countries can improve intra-regional trade by identifying sector-based export opportunities, drawing lessons from Southeast Asia's integration experience. The authors used the DSM model and found that exports in agro-processing and food products, pharmaceuticals, textiles, chemicals and plastics, construction materials, and lights (consumer) manufacturing products are of high demand in SSA intra-African trade (Ferreira 2020; Ferreira & Steenkamp 2025).

International market selection is a strategic imperative for enhancing export-led growth (Chi, Chang & Chien 2025; Çimen 2025; Cuyvers et al. 2017; Fan, Bei & Hu 2024; Ferreira & Steenkamp 2025; Konstantakopoulou & Tsionas 2024; Naudé & Cameron 2025; Viviers et al. 2014). The literature consistently supports the use of structured, multi-criteria models.

Research method

This study uses a three-phased approach to research the objectives by systematically narrowing the global export landscape by filtering and ranking underutilised, high-potential opportunities within South Africa's existing export relationships. By combining robust international market selection techniques with a multidimensional MAI, the approach ensures that recommendations are grounded in both trade performance data and strategic prioritisation criteria – thereby enhancing the practical relevance and impact of the study. This three-phased approach is illustrated in Figure 1.

Phase 1 identifies export opportunities for South Africa on a detailed product-and-destination country level. In Phase 2, the product-country combinations within South Africa's intensive export margin (existing products to existing markets) are extracted from the export opportunities identified in Phase 1. Lastly, Phase 3 constructs a composite MAI for the underutilised export opportunities with growth potential in South Africa's intensive margin. A more detailed discussion of each phase follows.

Phase 1: Identification of product-country combinations with export potential

From the literature discussed in Section *International market selection methods and market attractiveness criteria*, it is clear that many approaches to international market selection exist. Criteria that are commonly used include the size of

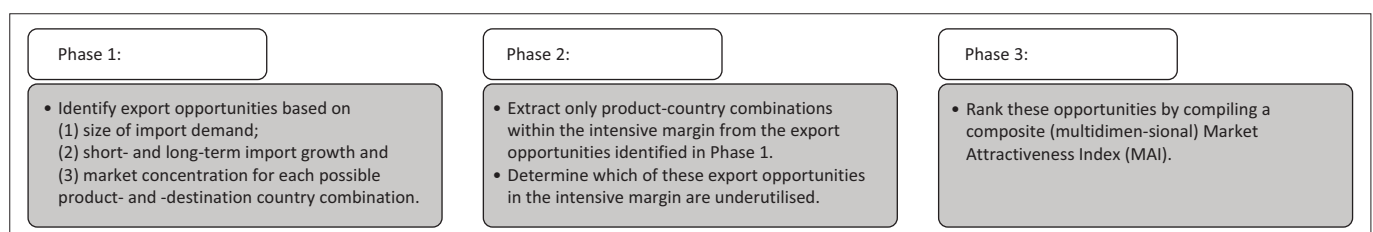


FIGURE 1: Phases 1–3 of the study.

import demand, growth in import demand, market accessibility and the exporter's competitiveness. For the purposes of this study, selected criteria of a quantitative country-level international market selection model called the DSM were used. This method was originally designed by Cuyvers et al. (1995) for Belgian export promotion purposes. The criteria used in the model have since been applied to other countries, including Thailand (Cuyvers et al. 2017); Namibia (Spies, Idsardi & Steenkamp 2014; Teweldemedhin & Chiripanhura 2015); Rwanda (Cameron & Viviers 2017); Louisiana, USA (Oluwade 2018); South Africa (Viviers et al. 2014), China (Cameron et al. 2021); the South Euro Area (Konstantakopoulou & Tsionas 2024); selected African countries (Ferreira 2020; Ferreira & Steenkamp 2020, 2025); and the European Union (Naudè & Cameron 2025). This model was selected because it starts with all possible product-and-destination country combinations worldwide and systematically filters through these (Aucamp 2020; Aucamp, Steenkamp & Bezuidenhout 2025). The model picks winners (by means of an elimination process), which aligns with the purpose of Phase 1 (Ferreira 2020).

The original DSM was developed for government export promotion purposes and comprises four filters. To limit the amount of data to be analysed on a detailed product-level, entire countries were eliminated in Filter 1 based on political and/or commercial risk and macroeconomic indicators. Filter 2 considered the size, short-term and long-term growth in import demand on a product-country level for the remaining destination markets (Cuyvers et al. 1995). In Filter 3, the degree of concentration (Filter 3.1) and trade restrictions or barriers (Filter 3.2) were considered to evaluate the market access conditions in each market (Cuyvers et al. 2012). Filters 2 and 3.1 were also applied in the studies of Ferreira and Steenkamp (2020; 2025), Spies et al. (2014), and Viviers et al. (2014). To inform export promotion strategies, Filter 4 classifies the product-country combinations identified with potential in Filters 1 to 3 by mapping the size and growth of import demand against the exporting country's market share relative to the main competitors in the import market (Cuyvers et al. 2012).

For this study, Filters 2 and 3.1 of the DSM are applied. Because of the developments in information technology since the late 1990s, the early elimination of entire countries in Filter 1 is not necessary, and the analysis can start evaluating import demand on a detailed product-country level (more than 5199 product codes and 227 countries worldwide, totalling almost 1.2 million possibilities to start with). In the original model, Filter 3.2 deals with trade barriers. These are incorporated in Phase 3 of this study (see *Phase 3: Prioritisation among the underutilised, intensive margin export opportunities*). Rather than eliminating product-country combinations based on trade barriers, the approach in this study follows Ferreira and Steenkamp (2020) to keep the opportunity but rank it

lower if high trade barriers exist. Filter 4 involves a categorisation specifically for export promotion purposes and does not attempt a ranking of opportunities. This study, however, aims to prioritise export opportunities in Phase 3.

In Filter 2, short-term import growth, long-term import growth and import market size are reviewed (Cuyvers et al. 1995). Import growth is the rate at which a country's imports of a particular product group are increasing. The value of imports of a specific product group by a particular country is referred to as the import market size. The short-term import growth is considered the most recent year's growth rate in imports, whereas the long-term growth is calculated as the compound average annual percentage growth in imports over 5 years. The third variable, import market size, is calculated by the ratio of imports of country i for product group j and the total imports of all countries that entered this filter of product group j (Cuyvers et al. 1995, Cuyvers 2004). The selection criteria of this filter are based on global averages for import size and growth per product (Cuyvers et al. 2012).

When defining the cut-off values for short- and long-term growth in import demand, a scaling factor (s_j) was calculated to take into consideration South Africa's level of specialisation in exporting product j (Cuyvers 2004:260), as follows (see Equation 1):

$$s_j = 0.8 + \frac{1}{(RCA_{SAj} + 0.85) \exp^{(RCA_{SAj} - 0.01)}} \quad [\text{Eqn 1}]$$

where Revealed Comparative Advantage (RCA_{SAj}) is the revealed comparative advantage of South Africa in exporting product j (Reis & Farole 2012), in Equation 2:

$$RCA_{SAj} = \frac{\left(\frac{X_{SAj}}{X_{wj}} \right)}{\left(\frac{X_{SA,tot}}{X_{w,tot}} \right)} \quad [\text{Eqn 2}]$$

with X_{SAj} and X_{wj} being South Africa's and the world's total exports of product j ; and $X_{SA,tot}$ and $X_{w,tot}$ being total exports of South Africa and the world.

The cut-off values for the growth variables were then expressed as: $g_{ij} \geq G_j$

with g_{ij} the importing country i 's short- or long-term import growth rate of product j ; and:

- $G_j = g_{w,j} s_j$, if $g_{w,j} \geq 0$; or
- $G_j = g_{w,j} / s_j$, if $g_{w,j} < 0$;

and $g_{w,j}$ the growth rate of aggregate world imports of product j .

In terms of import size, the cut-off values are defined as S_j (Cuyvers 2004:260): $M_{ij} \geq S_j$

where M_{ij} is the country i 's total import of product j ; and:

- $S_j = 0.02M_{w,j}$ if $RCA_{SAj} \geq 1$; or
- $S_j = \left[\frac{(3 - RCA_{SAj})}{100} \right] M_{w,j}$ if $RCA_{SAj} < 1$

with $M_{w,j}$ denoting aggregate world imports of product j .

South Africa's competitive advantage in exporting the product is therefore taken into consideration when defining the cut-off values for the growth and size of import demand. This implies that, if South Africa was not yet specialised in exporting the product ($0 \leq RCA_{SAj} < 1$), the destination country's import growth rate ($g_{i,j}$) should be higher than the global average for that product. The growth rate in import demand is allowed to be marginally lower than the world average growth rate, where South Africa had a comparative advantage ($RCA_{SAj} \geq 1$) in exporting the product (Cuyvers et al. 2012:62–63). Similarly, for the size of import demand, the cut-off value is 2% of total world imports of the product if South Africa is specialised in exporting the product, and a bit stricter, at larger than 2% and up to 3% of world imports, if South Africa does not have a comparative advantage in exporting the product (Cuyvers et al. 2012).

For final selection in Filter 2, import growth and size are combined. All markets that qualify in terms of size are selected. Those with short- and long-term growth above the cut-off values are also selected. Then, any market displaying a combination of adequate size and growth (short- and/or long-term) also selects into Filter 3.

Cuyvers et al. (1995:180) stated that choosing a market based on sizable and/or growing import demand (Filter 2) does not ensure that the market will be accessible. Therefore, analysing the level of competition in each import market is also crucial (Filter 3.1). In addition, recent studies like Fan et al. (2024) and Çimen (2025), also used market concentration and competitiveness metrics to identify export opportunities.

Concentrated markets are characterised by a small number of exporting countries (competitors) with significant market shares and expertise in the industry (Vollrath 1991). A market with a high level of concentration is difficult to penetrate. Cuyvers et al. (1995:180) found a negative association between market concentration and exports. As a result, channelling resources into highly concentrated markets may be wasteful, and export survival chances are low. Therefore, Filter 3.1 assesses the accessibility of potential markets by measuring the concentration of competitors using the Herfindahl-Hirschman index (HHI) of Hirschman (1964). The HHI for market concentration of Filter 3.1 was calculated as follows (see Equation 3):

$$HHI_{ij} = \sum \left(\frac{X_{k,ij}}{M_{tot,ij}} \right)^2 \quad [\text{Eqn 3}]$$

where $X_{k,ij}$ represents the exports of product j to country i by country competitors k ; and $M_{tot,ij}$ is the total imports of product j in country i .

An HHI value closer to 1 means that a country sources a particular product from a limited number of suppliers with dominant market shares, indicating a highly concentrated market. On the other hand, HHI values closer to 0 indicate markets characterised by a diverse set of suppliers with relatively small individual shares. As noted by Cuyvers et al. (1995), markets controlled by one or two suppliers are generally more difficult to access compared to those with a broader base of competitors. Cut-off values are defined accordingly.

The data of this phase were obtained from the CEPII BACI database (CEPII 2024a).

Phase 2: Identification of underutilised, intensive margin export opportunities

Phase 2 matches export opportunities for South Africa identified in Phase 1 to the intensive margin product-country combinations based on the CEPII BACI database (2024a). If South Africa exported the product to the destination country in 2012, that combination was regarded as part of South Africa's intensive margin (existing product-country relationship).

Furthermore, a potential export value was calculated for each of the matched markets (based on calculations of Cuyvers et al. [2017] and Ferreira and Steenkamp [2020]). This potential export value was calculated as the average market value of all the competitors (for the product) in the import market. South Africa's existing (or actual) exports were then evaluated against these potential values to identify underutilisation within the intensive export growth margin for South Africa.

Therefore, export opportunities within the intensive margin that were underutilised were obtained at the end of Phase 2.

Phase 3: Prioritisation among the underutilised, intensive margin export opportunities

The purpose of the DSM is to provide a list of interesting markets for further investigation (Cuyvers 2004). Previous attempts to prioritise among the export opportunities identified in the model involved rankings based on the export potential values explained in Phase 2. However, these values only take into account the size of the import demand and the number of competitors. Market attractiveness is, however, a multidimensional concept that also includes other key determinants such as import growth, market accessibility and export competitiveness. This is supported by the international market selection literature covered in Section *Literature review*.

Composite indexing is often used to measure multidimensional concepts (OECD 2019). Therefore, Phase 3 of this study uses this method to construct an MAI to prioritise among the underutilised export opportunities with growth potential in South Africa's intensive margin.

Figure 2 illustrates the dimensions and variables included in compiling the MAI.

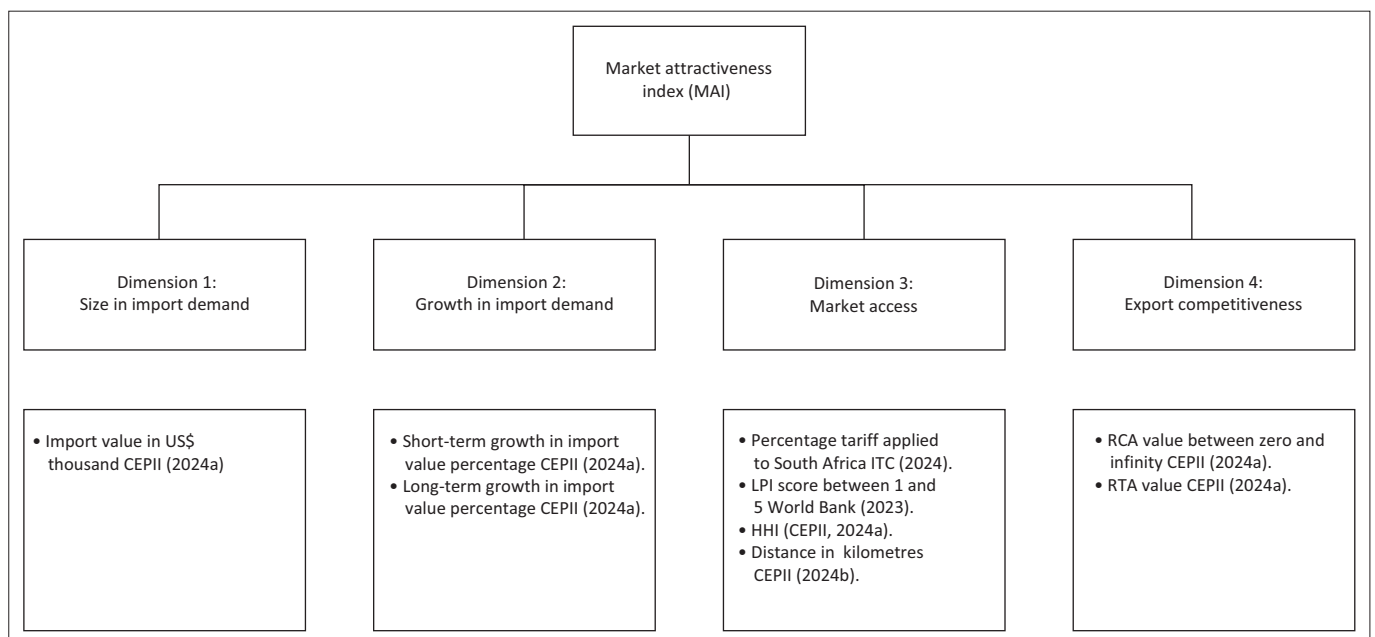
The first dimension, size of import demand, includes the total import value per product-country combination in US\$1000. A weighted 5-year average of these values was used with more recent years weighing more.

The second dimension, growth in import demand, includes the short- and long-term growth in import demand. The short-term growth in import demand is the simple 1-year growth in import value, while the long-term growth is the compounded growth rate over 5 years. Both growth figures were calculated using data from the CEPII BACI database.

The third dimension, market access, includes the ad valorem equivalent tariff applied to South Africa, the World Bank Logistics Performance Index (LPI), market concentration, and distance. The ad valorem equivalent tariff applied to South Africa is the latest available tariff that South Africa faces when exporting a particular product to a specific destination country (ITC 2024). The World Bank LPI measures the on-the-ground efficiency of trade supply chains, as well as the reliability and predictability of the logistic service delivery of a country (World Bank 2023). The World Bank constructed the LPI based on a global survey of logistics professionals, evaluating countries across six key dimensions: (1) the efficiency of customs and border clearance procedures; (2)

the quality of trade and transport infrastructure; (3) the ease of arranging competitively priced international shipments; (4) the competence and quality of logistics services; (5) the ability to track and trace consignments; and (6) the timeliness of shipments reaching their destinations. The performance of each country is determined with the use of a five-point scale, rated from very low (1) to very high (5) in relation to generally accepted industry standards or practices (World Bank 2023). Market concentration is also part of this dimension. It is measured by means of the HHI (see Section *Phase 1: Identification of product-country combinations with export potential*), using data from the CEPII BACI database. Higher HHI values indicate more concentration, which is regarded as lower market access and/or attractiveness. Distance is often used in gravity analysis as a measure of market access (De Benedictis & Taglioni 2011:75). It is measured in kilometres and is calculated by the weighted distance from South Africa to the major city of the importing country, considering the share of each city in the importing country's total population. The data were obtained from the CEPII GeoDist database (CEPII 2024b).

The last dimension, export competitiveness, includes the RCA and Revealed Trade Advantage (RTA) variables for South Africa. The RCA is a metric that indicates whether a country has an advantage in production and export capacity for a particular product (see Section *Phase 1: Identification of product-country combinations with export potential*). Therefore, when RCA is larger than 1, the country is assumed to be a competitive producer and exporter of that product, as opposed to a country producing and exporting that product at or below the global average. The RTA variable includes both exports and imports and is used to determine whether South Africa is a net exporter



RTA, revealed trade advantage; LPI, logistics performance index; HHI, Herfindahl-Hirschman index; RCA, revealed comparative advantage.

FIGURE 2: The market attractiveness index.

(and not a re-exporter) of a particular product (Jessen & Vignoles 2004). The RTA is determined by subtracting a country's RMA (calculated the same as the RCA, only using import data) or a certain product from its RCA (Vollrath 1991). This variable therefore indicated the items that South Africa regularly exports competitively by using the data from the CEPII BACI database. As the international trade environment changes frequently, the most recent 5 years for which data are available at the time of analysis were used in this study (2017–2021). Where applicable, more weight was given to more recent values. The weights assigned were 30% for year 5 (most recent); 25% for year 4; 20% for year 3; 15% for year 2; and 10% for year 1. This weighted average method was used for the size and growth of import demand, market concentration (HHI), RCA and RTA variables.

As the variables included are measured in different units, they must be standardised before they can be included in a composite index (OECD 2019). The standardisation method used in this study was to calculate the distance from the best (100) and worst (0) performers.

The different variables in each dimension were then standardised using the following formula, as seen in Equation 4 (OECD 2019):

$$\frac{(y_j - y_l)}{(y_u - y_l)} \times 100 \quad [\text{Eqn 4}]$$

where y_j is the value of the variable for product j in destination country i ; y_l is the lower threshold; and y_u is the upper threshold as defined below.

The upper threshold is the top 1% of product-country combinations in the applicable variable, and the lower threshold is the bottom 1%. The only exception for these calculations is the tariffs variable. When calculating the index of this variable, the upper threshold was 0% (no tariff applied) and the lower threshold was 30% (considered a high tariff, ITC [2024]).

Finally, equal weights were used within each dimension and among the four dimensions (25% each) to arrive at the MAI. This MAI was then used to prioritise the underutilised export opportunities in South Africa's intensive margin identified in Phases 1 and 2.

Ethical considerations

Ethical clearance to conduct this study was obtained from the North-West University, Economic and Management Sciences Research Ethics Committee (NWU-00675-24-A4).

Results

The analysis starts with 1180173 worldwide possible product-country combinations (5199 products to 227 countries). When Phase 1 is applied, 123431 product-country combinations remain based on the size and

growth of total import demand and concentration of competitors in the import market. Independent of this, South Africa already exports to 148345 product-country combinations in total (intensive margin).

Phase 2 evaluates South Africa's utilisation of the product-country combinations in the intercept between the 123431 export opportunities identified in Phase 1 and the 148345 product-country combinations in South Africa's intensive margin. At the end of Phase 2, a total of 9490 product-country combinations remain as export opportunities that form part of South Africa's intensive margin and are also underutilised.

In Phase 3, these opportunities were prioritised using the MAI, which incorporated four key dimensions from the international market selection literature – import market size, import market growth, market accessibility and export competitiveness (Cameron et al. 2021; Cuyvers et al. 1995; Kumar et al. 1994; Papadopoulos & Denis 1988). The use of multiple weighted criteria aligns with recommendations for structured IMS frameworks in resource-constrained export promotion contexts (Cavusgil 1997; Rahman 2003).

Table 2 lists the top 30 underutilised product-country combinations within South Africa's intensive margin, based on the overall MAI.

Table 2 presents the top 30 underutilised export opportunities within South Africa's intensive margin, ranked according to the MAI. The data reveal a pronounced dominance of primary and resource-based sectors such as minerals, stone and glass, and metals. The products, manganese ores and granulated slag (mostly exported to Germany, Oman and Ghana), feature prominently, underscoring the continued relevance of mineral exports to industrialised economies. This also indicates a strong fit with the intensive margin's cost-efficiency and risk-mitigation characteristics identified in the literature (Amiti & Freund 2010). High-value precious metals such as palladium, rhodium and gold destined for Switzerland, Austria and the USA further illustrate the country's underexploited potential in the stone and glass sector. These results further underscore the argument by Besedeš and Prusa (2011) and Carrère and Strauss-Kahn (2017) that deepening existing trade relationships in established, high-demand markets supports trade survival and volume growth.

The prevalence of minerals in the top rankings is consistent with South Africa's historical comparative advantage in resource-based exports, a factor that literature suggests can be leveraged to achieve short- to medium-term export growth while broader diversification strategies mature (Mathee et al. 2015; Vogel 2024). Furthermore, the focus on well-established industrial markets in Western Europe aligns with the finding that intensive-margin growth is facilitated in markets where exporters already possess institutional familiarity and logistical efficiencies (Besedeš et al. 2024).

TABLE 2: Top 30 product-country combinations with the highest market attractiveness index.

Top 30 Product code	Product description	Country	Region	Sector group	Size rank	Growth rank	Market access rank	Export competitiveness rank	Overall index (0–100)
1	260200 Manganese ores and concentrates, including ferruginous manganese ores and concentrates	Germany	Western Europe	25–27 Minerals	9005	30	2018	14	69.92
2	261800 Slag, granulated (slag sand): from the manufacture of iron or steel	Germany	Western Europe	25–27 Minerals	9297	37	6080	55	65.66
3	261800 Slag, granulated (slag sand): from the manufacture of iron or steel	Germany	Western Europe	25–27 Minerals	9298	38	6081	56	65.66
4	260200 Manganese ores and concentrates, including ferruginous manganese ores and concentrates	Oman	Middle East	25–27 Minerals	7849	24	6945	60	64.68
5	711021 Metals: palladium, unwrought or in powder form	Switzerland	Western Europe	68–71 Stone and Glass	128	1721	2091	150	63.61
6	260120 Iron pyrites: roasted	India	South-Central Asia	25–27 Minerals	7152	19	7834	64	63.23
7	291413 Ketones: acyclic, without other oxygen function, 4-methylpentan-2-one (methyl isobutyl)	Iran	South-Central Asia	28–38 Chemicals	9154	56	5743	51	62.64
8	80261 Nuts, edible: macadamia, fresh or dried, in shell	Thailand	South-Eastern Asia	06–15 Vegetable products	6050	42	8217	70	61.95
9	80262 Nuts, edible: macadamia, fresh or dried, shelled	Belarus	Eastern Europe	06–15 Vegetable products	9126	32	8580	74	61.28
10	711031 Metals: rhodium, unwrought or in powder form	Austria	Western Europe	68–71 Stone and Glass	4263	165	3604	31	58.98
11	290129 Acyclic hydrocarbons: unsaturated, not elsewhere classified in heading no. 2901	Philippines	South-Eastern Asia	28–38 Chemicals	5344	51	5367	146	58.61
12	710813 Metals: gold, semi-manufactured	USA	Northern America	68–71 Stone and Glass	1	3170	128	774	58.38
13	760110 Aluminium: unwrought (not alloyed)	China	Eastern Asia	72–83 Metals	99	293	4575	1417	57.88
14	710813 Metals: gold, semi-manufactured	Azerbaijan	Middle East	68–71 Stone and Glass	167	1	8379	784	57.86
15	261800 Slag, granulated (slag sand): from the manufacture of iron or steel	Ghana	Western Africa	25–27 Minerals	4995	128	5930	53	57.52
16	253010 Vermiculite, perlite and chlorites: unexpanded	Zimbabwe	Eastern Africa	25–27 Minerals	8702	60	7567	118	57.08
17	711021 Metals: palladium, unwrought or in powder form	Turks and Caicos Islands	Central America and Caribbean	68–71 Stone and Glass	242	738	2870	151	56.98
18	270112 Coal: bituminous, whether or not pulverised, but not agglomerated	Republic of Korea	Eastern Asia	25–27 Minerals	2	6553	102	988	56.18
19	710813 Metals: gold, semi-manufactured	Switzerland	Western Europe	68–71 Stone and Glass	3	4082	1434	775	56.02
20	261690 Precious metal ores and concentrates: (excluding silver)	China	Eastern Asia	25–27 Minerals	4	3339	3447	570	55.99
21	261800 Slag, granulated (slag sand): from the manufacture of iron or steel	Canada	Northern America	25–27 Minerals	4863	754	74	1	55.93
22	260111 Iron ores and concentrates: non-agglomerated	Vietnam	South-Eastern Asia	25–27 Minerals	107	170	6395	1958	55.60
23	711011 Metals: platinum, unwrought or in powder form	Turks and Caicos Islands	Central America and Caribbean	68–71 Stone and Glass	288	8762	1958	13	55.28
24	760110 Aluminium: unwrought (not alloyed)	Republic of Korea	Eastern Asia	72–83 Metals	5	6929	98	1408	55.00
25	711292 Waste and scrap of precious metals: of platinum, including metal clad with platinum	USA	Northern America	68–71 Stone and Glass	98	2822	66	2340	54.91
26	711292 Waste and scrap of precious metals: of platinum, including metal clad with platinum	Japan	Eastern Asia	68–71 Stone and Glass	6	663	3333	2342	54.57
27	720110 Iron: non-alloy pig iron containing by weight 0.5% or less of phosphorus, in pigs, blocks or other primary forms	USA	Northern America	72–83 Metals	7	3078	1659	1395	54.11
28	710812 Metals: gold, non-monetary, unwrought (but not powder)	Austria	Western Europe	68–71 Stone and Glass	8	654	5132	1658	53.77
29	870421 Vehicles: compression-ignition internal combustion piston engine (diesel or semi-diesel), with a gross vehicle weight not exceeding 5 tonnes	Netherlands	Western Europe	86–89 Transport products	9	7271	982	1082	53.69
30	270112 Coal: bituminous, whether or not pulverised, but not agglomerated	Germany	Western Europe	25–27 Minerals	10	7995	1179	990	53.61

Source: Product description from CEPII, 2025, BACI, viewed 15 September 2025, from https://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: According to CEPII (2025) BACI provides data on bilateral trade flows for 200 countries at the product level (5000 products).

TABLE 3: Top five product-country combinations in each sector.

Sector	Product	Country
01–05 Animal products sector		
10639	Birds: live, other than birds of prey, Psittaciformes, ostriches and emus (<i>Dromaius novaehollandiae</i>)	Portugal (201)
10632	Birds: live, Psittaciformes	Turkey (227); France (289); Malaysia (308); Japan (337); Germany (359); Vietnam (435)
30474	Fish fillets: frozen, hake (<i>Merluccius</i> spp., <i>Urophycis</i> spp.)	Congo (329)
40310	Dairy produce: yoghurt, whether or not concentrated or containing added sugar or other sweetening matter, fruits, nuts or cocoa	Germany (357)
10632	Birds: live, Psittaciforme0389 Fish: frozen, not elsewhere classified in heading 0303, excluding fillets, livers, roes, and other fish	China (464)
06–15 Vegetable products sector		
80261	Nuts, edible: macadamia, fresh or dried, in shell	Thailand (8); Belarus (9); Czechia (70)
100590	Cereals: maize (corn), other than seed	Republic of Korea (59); Spain (76)
81040	Fruit, edible: cranberries, bilberries and other fruits of the genus <i>Vaccinium</i> , fresh	Turks and Caicos Islands (77)
80610	Fruit, edible: grapes, fresh	USA (103)
80550	Fruit, edible: lemons (<i>Citrus limon</i> , <i>Citrus limonum</i>), limes (<i>Citrus aurantifolia</i> , <i>Citrus latifolia</i>), fresh or dried	Uzbekistan (118)
16–24 Food products sector		
240220	Cigarettes: containing tobacco	Italy (157)
220421	Wine: still, in containers holding 2 litres or less	USA (175)
200971	Juice: apple, of a Brix value not exceeding 20, unfermented (not containing added spirit, whether or not containing added sugar or other sweetening matter)	Malawi (189)
230120	Flours, meals and pellets: of fish or of crustaceans, molluscs or other aquatic invertebrates, fit for human consumption	China (203)
220210	Waters: including mineral and aerated, containing added sugar or other sweetening matter or flavoured, and other non-alcoholic beverages	USA (215)
25–27 Minerals sector		
260200	Manganese ores and concentrates, including ferruginous manganese ores and concentrates	Germany (1); Oman (4)
261800	Slag, granulated (slag sand): from the manufacture of iron or steel	Germany (2); Ghana (15)
260120	Iron pyrites: roasted	India (6)
253010	Vermiculite, perlite and chlorites: unexpanded	Zimbabwe (16)
270112	Coal: bituminous, whether or not pulverised, but not agglomerated	Republic of Korea (18)
28–38 Chemicals sector		
291413	Ketones: acyclic, without other oxygen function, 4-methylpentan-2-one (methyl isobutyl)	Iran (7); Ecuador (53)
290129	Acyclic hydrocarbons: unsaturated, not elsewhere classified in heading no. 2901	Philippines (11)
290513	Alcohols: saturated monohydric, butan-1-ol (n-butyl alcohol)	Ethiopia (34)
282530	Vanadium oxides and hydroxides	Canada (55)
283325	Sulphates: of copper	Germany (78)
39–40 Plastic or rubber sector		
390210	Propylene, other olefin polymers: polypropylene in primary forms	Turkey (84); Italy (177); China (198); Germany (253); Vietnam (360); Burundi (949); Indonesia (1227); Dominican Republic (1301); Brazil (1312); Turks and Caicos Islands (1342)
401199	Rubber: new pneumatic tyres having other than a herring-bone or similar tread, of a kind used on agricultural or forestry vehicles and machines	Turks and Caicos Islands (886); USA (977)
390490	Vinyl chloride, other halogenated olefin polymers: not elsewhere classified in heading no. 3904	Nigeria (1105)
391721	Plastics: tubes, pipes and hoses thereof, rigid, of polymers of ethylene	Germany (1292)
401019	Rubber: vulcanised, conveyor belts or belting (reinforced with other than metal)	Estonia (1514)
41–43 Hides and skins sector		
410692	Tanned or crust hides and skins: of animals other than equine, ovine, bovine, goats or kids, swine and reptiles, without wool or hair on, whether or not split, but not further prepared, in the wet state (including wet blue)	France (146), USA (151), Canada (173), Vietnam (211); Netherlands (350); Hungary (375)
410221	Skins: raw, of sheep or lambs, pickled (but not tanned, parchment-dressed or further preserved), without wool on	Spain (233); India (662); Turkey (680)
411390	Leather: further prepared after tanning or crusting, including parchment-dressed leather	Netherlands (508); Russian Federation (573); Philippines (626); Norway (672); Germany (770); Greece (777); Austria (825)
410390	Hides and skins: raw, of animals not elsewhere classified in this chapter, fresh, salted, dried, limed or otherwise preserved, but not tanned or further prepared	New Zealand (569); Vietnam (1082)
430230	Furskins: tanned or dressed, whole skins and pieces or cuttings thereof, assembled, without the addition of other materials	Bulgaria (1137)
44–49 Wood products sector		
470200	Wood pulp: chemical wood pulp, dissolving grades	Norway (38), Germany (180)
440122	Wood: for fuel, in chips or particles, non-coniferous, whether or not agglomerated	China (64); Indonesia (240)
470329	Wood pulp: chemical wood pulp, soda or sulphate (other than dissolving grades), semi-bleached or bleached	China (188)
480519	Paper and paperboard: uncoated, fluting paper other than semi-chemical or straw, rolled	China (212)
470620	Pulp: of fibres derived from recovered (waste and scrap) paper or paperboard	China (315)

Table 3 continues on the next page →

TABLE 3 (Continues...): Top five product-country combinations in each sector.

Sector	Product	Country
50–63 Textiles and clothing		
510539	Hair: fine animal hair, carded or combed, other than that of Kashmir (cashmere) goats	Sweden (31); Republic of Korea (85); Chile (292)
510111	Wool: (not carded or combed), greasy (including fleece-washed wool), shorn	Switzerland (210)
610413	Suits: women's or girls', of synthetic fibres, knitted or crocheted	Zambia (404)
611599	Hosiery and footwear: without applied soles, of textile materials	Cote d'Ivoire (417)
550690	Fibres: synthetic staple fibres, not elsewhere classified in heading no. 5506	Zambia (486)
64–67 Footwear products		
670100	Skins and other parts of birds with their feathers or down: feathers, parts of feathers, down, and powder down	Morocco (469); Lithuania (693); Hungary (745); Austria (765); Colombia (789); Iceland (873); Finland (911); Poland (916); Canada (997); Republic of Korea (1155); Norway (1293); Slovakia (1406); Japan (1429); Cyprus (1498); Serbia (1550); Czechia (1573); Romania (1938)
660320	Umbrella frames: including frames mounted on shafts (sticks)	Cyprus (1423); France (2124); Kuwait (2534)
640110	Footwear: waterproof with metal toe-cap, rubber or plastic outer soles and uppers	Greece (1563); Netherlands (2130); Poland (2177); Latvia (2454); Germany (2613); France (2812)
640590	Footwear: not elsewhere classified in chapter 64	Israel (2086); Maldives (2148); Netherlands (2368)
640199	Footwear: waterproof, not elsewhere classified in heading no. 6401, rubber or plastic outer soles	Germany (3009)
68–71 Stone and glass		
711021	Metals: palladium, unwrought or in powder form	Switzerland (5), Turks and Caicos Islands (17)
711031	Metals: rhodium, unwrought or in powder form	Austria (10)
710813	Metals: gold, semi-manufactured	USA (12); Azerbaijan (14)
711011	Metals: platinum, unwrought or in powder form	Turks and Caicos Islands (23)
711292	Waste and scrap of precious metals: of platinum, including metal clad with platinum	USA (25)
72–83 Metals		
760110	Aluminium: unwrought (not alloyed)	China (13); Republic of Korea (24); Turkey (36)
720110	Iron: non-alloy pig iron containing by weight 0.5% or less of phosphorus, in pigs, blocks, or other primary forms, containing by weight 0.5% or less of phosphorus	USA (27)
720292	Ferro-alloys: ferro-vanadium	China (46)
720241	Ferro-alloys: ferro-chromium, containing by weight more than 4% of carbon	Bolivia (51); Mozambique (57); Finland (63)
760612	Aluminium: plates, sheets and strip, thickness exceeding 0.2mm, alloys, rectangular	Germany (68)
84–85 Machinery and electrical		
843139	Machinery: parts of the machinery of heading no. 8428 (other than lifts, skip hoist, or escalators, which are machinery for lifting, handling, loading, or unloading)	USA (48); China (122); Panama (197); France (284); Romania (371); Sweden (436); Italy (459); Portugal (462); Poland (470); Germany (502); Malta (655); Singapore (676); Russian Federation (744)
841391	Pumps: parts thereof	USA (61); France (114); Germany (257); China (589); Canada (686)
840999	Engines: parts for internal combustion piston engines (excluding spark-ignition)	France (114); United Kingdom (144); Italy (291); China (332); Netherlands (346); Sweden (505); Spain (567); Poland (568); Japan (661); Mexico (695)
854011	Tubes: cathode-ray television picture tubes, including video monitor cathode-ray tubes	Cote d'Ivoire (544)
841392	Liquid elevators: parts thereof	Guyana (768)
86–89 Transport products		
870421	Vehicles: compression-ignition internal combustion piston engine (diesel or semi-diesel)	Netherlands (29); Italy (44); Australia (182); Chile (193)
870321	Vehicles: spark-ignition internal combustion reciprocating piston engine, cylinder capacity not exceeding 1000cc	Saudi Arabia (35); France (42); Italy (49); Spain (52); Belgium (60); Netherlands (75); United Kingdom (105); USA (194)
870323	Vehicles: spark-ignition internal combustion reciprocating piston engine, cylinder capacity exceeding 1500 cm ³ but not exceeding 3000 cm ³	Canada (110); Poland (117); Mozambique (137); Switzerland (140); United Kingdom (187)
870332	Vehicles: compression-ignition internal combustion piston engine (diesel or semi-diesel) having a cylinder capacity exceeding 1500 cc but not exceeding 2500 cc	Poland (112); France (116); Switzerland (126); Austria (132); Italy (165)
870324	Vehicles: spark-ignition internal combustion reciprocating piston engine, cylinder capacity exceeding 3000 cc	Japan (199)
90–99 Miscellaneous products		
970300	Sculptures and statuary: original, in any material	USA (328)
970190	Artwork: collages and similar decorative plaques	Hungary (362); Portugal (528); Switzerland (701); Denmark (722); China (851); Greece (924)
930690	Ammunition: not elsewhere classified in chapter 93	USA (384); Swaziland (660); United Arab Emirates (690)
970500	Collections and collectors' pieces: of zoological, botanical, mineralogical, anatomical, historical, archaeological, palaeontological, ethnographic or numismatic interest	Luxembourg (586); Ireland (635); Andorra (657)
901510	Range finders	USA (938)

Source: Product descriptions: CEPII, 2025, BACI, viewed 15 September 2025, from https://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

Note: According to CEPII (2025) BACI provides data on bilateral trade flows for 200 countries at the product level (5000 products).

Geographically, the most frequently recurring region is Western Europe, which accounts for over one-third of the top 30 combinations. Germany alone features multiple times, serving as a key market for mineral and metal-based exports. This reflects both the region's industrial demand

and South Africa's established trade relationships, bolstered by preferential access under the European Union and the Southern African Development Community (EU-SADC) Economic Partnership Agreement. Furthermore, it supports the literature's emphasis on market accessibility as a

decisive factor in IMS (Kefi 2021; Rahman 2003). Eastern and South-Eastern Asia also emerge as strategic regions, with the Republic of Korea, China, the Philippines, Thailand, and Vietnam appearing across various sectors including metals, chemicals and vegetable products. This regional spread supports the argument of Hong and Luparello (2024) that the intensive margin allows exporters to scale volumes in markets where entry barriers have already been navigated.

The sectoral distribution of the top 30 product-country combinations reveals a marked concentration, with mineral products (such as manganese, slag and coal) accounting for nearly half of the entries. This is followed by precious metals and aluminium-related goods within the metals, and stone and glass categories. Although chemical and agricultural products, such as methyl isobutyl ketone and macadamia nuts, are also represented, their limited presence suggests potential for broader sectoral diversification. Table 2 highlights many primary goods, particularly minerals. However, the overall results reveal greater depth, encompassing various sectors and products. Table 3 provides examples from each sector.

Table 3 offers a more comprehensive view of opportunities within South Africa's intensive export margin with a sector-by-sector breakdown. The data confirm the predominance of primary and semi-processed goods, with mineral products, such as manganese ores, iron pyrites and coal, featuring consistently among top-ranked combinations.

However, the sectoral breadth illustrated in Table 3 also reflects untapped export potential in non-primary sectors. Machinery and electrical goods, plastics and rubber, food and beverages, textiles, and transport equipment all feature within the top opportunities, albeit to a lesser extent. These findings are significant, as they highlight opportunities for industrial and value-added exports that align with South Africa's goals for structural transformation and industrialisation. The recurrence of specific products, such as polypropylene in the plastics sector and diesel vehicle engines in the transport sector, points to opportunities for scale within niche product lines. It further confirms findings by Konstantakopoulou and Tsionas (2024) on manufactured goods and transport products in Southern European markets.

Moreover, the study's sectoral results can be supported by the research of Viviers et al. (2014), where South Africa's export potential in sectors such as minerals, agro-processing food products, machinery, electrical, chemicals and plastics, textile, and transport products was identified. The findings of Ferreira and Steenkamp (2025) also reinforce the sectoral results of this study, identifying export potential in agro-processing and food products, textiles, and chemicals and plastic products.

The presence of agricultural exports such as macadamia nuts to Thailand and Belarus, maize to the Republic of Korea and Spain, and wine to the USA also aligns with the agrifood opportunities identified in DHL (2025) and TIPS (2024). These sectors offer diversification pathways that complement the stability of mineral exports, reflecting the balanced dual-margin strategy advocated by Matthee et al. (2016).

These results reinforce the argument in the literature that intensive-margin expansion can deliver immediate, cost-effective export gains for developing countries, particularly when targeting markets with established trade relationships, demonstrated demand, and favourable access conditions (Besedeš & Prusa 2011; Carrère & Strauss-Kahn 2017). The identified sectoral and regional patterns provide a clear basis for prioritising export promotion resources towards high-value, underutilised product-market pairs, while still accommodating longer-term diversification objectives through the extensive margin (Matthee et al. 2015; Vogel 2024).

The results reveal specific export opportunities within South Africa's current export expertise, which is critical for strategic trade planning. The sectoral and regional diversity of the top-ranked trade opportunities provides policymakers with strong evidence for targeted export promotion, particularly within high-value, underexploited product-market pairings inside South Africa's intensive margin.

Conclusion and recommendations

South Africa often focuses on discovering new markets or products (the extensive margin), but this can overlook the latent value embedded in existing trade flows (the intensive margin). In a trade environment constrained by limited resources, high entry costs for new markets, and complex global dynamics, South Africa needs a more balanced export strategy that does not neglect the opportunities available within its established trading relationships. Although the main focus of the NEDP is on export-led growth within the extensive margin (export diversification), a substantial portion of South Africa's export growth momentum is concentrated in the intensive margin. Matthee et al. (2015) found that 77% of South Africa's export growth was within the intensive margin between 2002 and 2012. This figure was updated in this study and established that the intensive margin contributed 56% to South Africa's export growth between 2012 and 2021. Although this is lower than in the previous decade, it remains the dominant driver of export performance.

The research was grounded in the broader literature on export growth, which highlights the importance of both expanding into new markets (extensive margin) and deepening existing trade flows (intensive margin) to promote sustainable export and economic growth in developing countries.

While much of the existing literature has focused on diversification as a means to reduce volatility and increase resilience, several studies argue that capitalising on the intensive margin offers more immediate and cost-effective gains – particularly for resource-constrained economies. The literature is therefore clear on the importance of the intensive margin for export survival and depth, building expertise, and especially keeping the export growth momentum in developing countries going. This study therefore contributed towards identifying viable pathways for expanding the intensive margin.

The results underscore the significant underutilised potential within South Africa's intensive export margin, particularly across mineral, metal and precious stone value chains, as well as in select agro-processed, chemical, and manufactured goods. The dominance of Western Europe and Asian markets, especially Germany, China, the Republic of Korea and India, reinforces the importance of deepening existing trade relationships where South Africa already holds competitive advantages. Moreover, the emergence of high-potential combinations across a diverse range of sectors, supported by the literature, signals that targeted export promotion strategies should not be limited to primary commodities but should also include value-added and niche industrial products.

The study's results can guide the effective allocation of export promotion resources to foster export and economic growth. Future studies could incorporate additional variables like trade time, cost and non-tariff measures (NTMs) into the MAI (for which data availability was a limitation in this study), and conduct robustness analyses to validate the results.

Shedding light on the underutilised export opportunities in South Africa's intensive margin can not only contribute to strengthening the country's existing export base but also to discover new avenues within these markets for economic development. This can be a powerful tool for enhancing export growth, generating added development opportunities, and deepening the country's global economic position.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

N.V.D.M., C.B. & E.A.S. contributed towards the conceptualisation, methodology. N.V.D.M. and E.A.S. did formal analysis. C.B. & E.A.S. contributed towards the supervision, validation and writing, reviewing & editing. N.V.D.M. contributed towards writing the original draft. All authors have read and agreed to the published version of the manuscript.

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Data availability

The data that support the findings of this study are not openly available because they contain competitive information on transport cost and will not be made available without the consent of the shipping company concerned. The data that support the findings are available from the corresponding author, N.V.D.M., upon reasonable request.

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