PwC research: do updates in the Standard Industrial Classification reflect the most significant economic developments?
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When value moves, statistical codes lag

The hidden dynamics of the Dutch economy

How do changes in statistical sector codes reflect deeper shifts in the Dutch economy? This analysis investigates whether frequent revisions to SBI codes – used to classify businesses by activity – signal mere administrative updates or reveal dynamic sectoral growth patterns. By examining 17 years of CBS data, we uncover how classification instability relates to sectoral growth, volatility, and the evolving structure of the economy.

- High-instability divisions grew 8.5 times faster than low-instability ones, showing that frequent code changes are strongly linked to dynamic sectoral expansion. The classification changes are therefore more than an administrative adjustment, as they point to sectoral growth.
- The effect remains statistically significant even after controlling for sector size; instability is a distinct driver of growth, not just a byproduct of large divisions.
- Traditional sector-based analysis is increasingly inadequate. As value increasingly moves across sector boundaries – through complex value chains and business ecosystems – future statistics and policy analysis should reflect this Value in Motion, focusing on how companies create, transfer, and transform value beyond conventional sector classifications.

Do updates in the Standard Industrial Classification reflect the most significant economic developments?

Over the past thirty years, the Dutch economy has undergone a profound transformation, driven by technological innovation, globalization, and the rise of new business models. To monitor and analyze these developments, Statistics Netherlands (CBS) provides sectoral data structured around the SBI code: the Standaard Bedrijfsindeling, or Standard Industrial Classification. Every business in the Netherlands is assigned an SBI code that reflects its primary economic activity, serving both statistical and administrative purposes. A restaurant is SBI 56.10, a software consultancy 62.01, and an accountant 69.20.

This SBI system is periodically updated to reflect shifts in the structure of the economy and to ensure continued relevance in a changing business landscape. The evolution of the SBI – from its original version in 1974, through major revisions in 1993 and 2008, to the newly updated 2025 version – offers a valuable lens on how the structure of the Dutch economy has shifted over time. Because SBI codes are widely used by governments, tax authorities, financial institutions, and other stakeholders, we examine the changes introduced in SBI2025 and assess the extent to which these updates reflect the most significant economic developments of the past 15 years and beyond.

What's new in SBI2025: key changes explained

Back in 1974 – and even in 1993 – the Dutch economy was far more straightforward than it is today. Economic sectors were clearly delineated; companies typically stuck to their core business, and digitalisation was still in its infancy. At the time, the CBS classification system was relatively coarse: businesses were grouped using broad codes based. This approach worked well in an era when sectors such as retail, manufacturing, and services operated largely in isolation or locally.

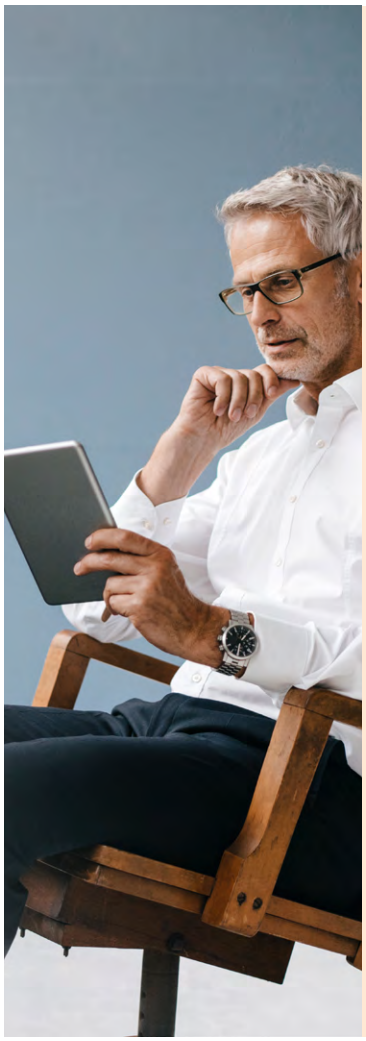
Today, the economic landscape has evolved significantly. It is increasingly granular and dynamic, with blurred sector boundaries and hybrid business models. In response to these changes, the SBI was already thoroughly revised in 2008 to align with the European NACE standard and the global ISIC framework of the United Nations.[1] Yet, after more than fifteen years, it became clear that a new update was necessary.

1 ISIC is short for 'International Standard Industrial Classification', and NACE for 'Nomenclature statistique des Activités économiques dans la Communauté Européenne'.

The economy has once again undergone a profound transformation, driven by platform companies, digitalisation, sustainability, and new forms of entrepreneurship. To reflect this new reality, SBI 2025 introduced a number of notable changes, effective from September 2025. **Box 1** provides an overview of some of the most striking updates.

Some activities are made more visible in SBI 2025, yet they do not receive their own dedicated classification codes. This applies to areas such as fintech, circular business models, and biobased enterprises.

Classification is based on the service a company provides, rather than the technology it uses. For example, activities within the sharing economy are classified under 'rental and leasing of tangible goods'; the conversion of biomass into energy falls under 'production and distribution of electricity, gas, steam and cooled air'; and fintech companies offering insurance services are classified under the existing insurance codes.



Key updates in SBI2025

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- **New structure for information and communication:** Formerly grouped under section J, all information and communication activities are now split into two new sections. One covers publishing, broadcasting, production, and distribution; the other includes telecommunications, computer services, and information services. This change acknowledges rapid growth and diversification within the digital economy.
- **Retail sector reclassification:** In SBI 2008, separate codes existed for different sales channels, such as physical stores, market trade, and online or mail-order retail. This distinction has now been removed, as more retailers operate through both physical and digital channels – the so-called 'bricks and clicks' model. Customers browse online and buy in-store, or vice versa. Businesses are no longer purely online or offline; they operate integrated, omnichannel retail strategies.
- **Restructuring of the vehicle sector:** The trade and repair of vehicles will no longer be classified as a separate division. Instead, these activities are integrated into wholesale, retail, and repair categories. This reflects current market practices, where sales and maintenance are increasingly combined, and the boundaries between wholesale, retail, and services are becoming less distinct.
- **Dedicated classification for intermediary services:** The rise of digital platforms and intermediary services – such as marketplaces, booking sites, and comparison platforms – is now explicitly recognised. New groups and classes have been introduced for intermediary activities across various sectors, from energy and healthcare to transport and personal services. This reflects the growing number of businesses that create value by connecting supply and demand, without owning the goods or services themselves.

The hypothesis behind SBI code dynamics

Between 2008 and 2025, more than half of Dutch industries – specifically 52.3% or 45 out of 86 two-digit SBI divisions – underwent substantial definitional changes. New categories were introduced, existing ones consolidated, and several sectors experienced repeated structural revisions. For example, the accommodation sector (division 55) was split, merged, and re-split over time, reflecting shifting boundaries and evolving business models. In contrast, a small subset of divisions – just five, representing 5.8% of the total – remained unchanged for nearly three decades. Agriculture (division 01), tobacco manufacturing (division 12), sewerage (division 37), and a few extractive industries retained their original codes from 1993 onward.

This raises a central question: do these classification changes merely reflect administrative adjustments, or do they signal dynamic sectoral growth?

The prevailing assumption is that frequent revisions in industry classification are indicative of underlying transformation. Sectors subject to multiple SBI code changes are presumed to be undergoing structural shifts, driven by new business models, mergers, regulatory shifts, and technological disruptions. Under this logic, high-instability sectors should exhibit rapid but volatile growth, while stable sectors are expected to follow a more predictable, steady trajectory.

Analyses of seventeen years of CBS data

To test this hypothesis, we analysed 17 years of CBS data (2008–2025), encompassing approximately 5.8 million firm-year observations across 86 two-digit SBI divisions.[2] Each division was grouped into one of four categories – stable, low instability, medium instability, or high instability – based on the frequency and nature of classification changes during the period. Stable divisions showed no changes, including annual updates or label modifications. Low-instability divisions experienced only minor textual edits or a single intermediate update without structural impact. Medium-instability divisions underwent one major change – such as a split, merge, or scope redefinition – or multiple minor updates that collectively altered their classification. High-instability divisions were subject to repeated and complex revisions, including many-to-many remappings and successive restructurings. These thresholds were established through a systematic review of both the frequency and substantive impact of SBI code changes, in alignment with CBS criteria for distinguishing major from minor updates.

Results: growth follows instability

When we plotted the average annual growth in the number of companies per division (2009–2023) against its SBI classification stability, a clear upward trend emerged. Divisions with higher classification instability – those subject to frequent structural revisions – showed significantly stronger growth. Specifically, high-instability divisions grew by an average of 3.83% per year, compared to just 0.45% in low-instability divisions, representing an 8.5-fold difference.

To quantify this relationship, we applied the Spearman rank correlation, a non-parametric statistical measure that assesses monotonic relationships and is robust to outliers. The result was a positive correlation coefficient of $\rho = +0.356$, with a Holm-corrected p-value of 0.018, indicating statistical significance. The Holm correction adjusts for multiple comparisons to reduce the risk of false positives.

2 Data on the number of companies was only available for 86 out of the 88 divisions (1,290 division-year observations (86 divisions × 15 years, 2009–2023)). Data on financials (added value and turnover) was available for 66 divisions (990 division-year observations (66 divisions × 15 years; 20 divisions lack financial data)).

It is important to note that the number of companies includes self-employed individuals without personnel (zzp'ers), whose share has increased substantially over the period. Between 2009 and 2023, the total number of registered self-employed persons rose from approximately 750,000 to over 1.1 million. This growth is unevenly distributed across sectors, with higher concentrations of zzp'ers in agriculture, construction, and professional services.[3] The analysis does not control for the influence of self-employment, which may amplify growth figures in certain divisions.

Remarkably, sectors in the 'stable' category exhibited higher average growth than those with low instability, which runs counter to the original hypothesis that greater instability would lead to higher growth. This anomaly is likely due to the small number of divisions in the stable group (n=5), making the results sensitive to outliers. Additionally, the low group contains several divisions with low or negative growth, which lowers the median. However, this does not undermine the overall robustness of the result: there is a consistent and statistically significant pattern of stronger company growth in sectors that have undergone more frequent classification changes.[4]

The same trend was observed when analysing other performance indicators. For value added growth (average year-on-year percentage growth in gross value added, available for 64 divisions), the Spearman correlation was again $\rho = +0.356$. For net turnover growth (average year-on-year percentage growth in net revenue, available for 65 divisions), the correlation was $\rho = +0.294$. These findings reinforce the conclusion that classification instability is associated with dynamic sectoral development.

The conclusion is that the classification changes are more than an administrative adjustment, as they indicate sectoral growth. This does not mean that there were no changes in sectors with few classification changes, such as telecommunications and the pharmaceutical industry, but rather that these did not lead to strong growth in the number of companies. In sectors where SBI codes were frequently adjusted, such as in manufacturing and IT services, the number of companies is rising sharply. The appendix provides an overview of all sectors divided into the different categories (stable, low, medium, and high instability).

3 Source: https://www.cbs.nl/nl-nl/faq/zzp/wat-voor-werk-doen-zzp-ers-

4 We validated the trend using the Jonckheere–Terpstra test, a non-parametric method designed to detect ordered differences across multiple groups. This test confirmed a statistically significant monotonic increase in company growth across the four stability categories (Stable → Low → Medium → High), with a test statistic A = 0.676, p = 0.00044, based on all 86 divisions.

Table 1: Testing the hypothesis of classification instability

Stability category	Median annual growth (%)	Number of divisions
Stable	1.49	5
Low	0.45	11
Medium	2.05	25
High	3.83	45

Big divisions, big effect?

High-instability divisions are significantly larger than stable ones. The median number of companies in high-instability sectors is 8,098, compared to just 262 in stable sectors – a 31-fold difference. This raises a critical question: is the observed correlation between classification instability and company growth simply a reflection of sector size? Larger sectors may naturally grow faster due to economies of scale, network effects, or broader market appeal. They may also attract more attention from CBS, resulting in more frequent reclassifications. If so, the correlation could be spurious, driven by size rather than genuine instability.

To test this, we conducted two statistical analyses (**box 2**). Taken together, these findings confirm that classification instability is associated with company growth, even after accounting for sector size. While larger divisions do grow faster on average, instability remains a distinct and statistically significant factor.

Two tests for the size effect

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Test 1: Partial Correlation (Controlling for Baseline Size)

We calculated each division's baseline size using the average number of companies between 2009 and 2011, before most of the observed growth occurred. We then applied a partial correlation, a method that isolates the relationship between two variables while controlling for the influence of a third, in this case, initial sector size. The result was a reduced but still significant correlation: $\rho = +0.282$ ($p = 0.011$). This represents a 21% attenuation from the original correlation of +0.356, indicating that size explains part of the effect, but not all.

Test 2: Tercile Stratification

We divided the 86 sectors into three equally sized groups based on their baseline size: small, medium, and large. Within each group, we re-tested the correlation between classification instability and company growth using the Spearman rank correlation, a non-parametric method suitable for ordinal data and robust to outliers. The results revealed a non-linear pattern. The correlation was absent in small sectors, strongest in medium-sized sectors ($\rho = +0.523$), and moderate in large ones. This suggests that the overall correlation is diluted by aggregation: the mid-sized group drives the effect most clearly, while heterogeneity across groups masks the strength of the relationship when viewed in aggregate. See table 2.

Table 2: Disentangling size from instability

Size tercile	ρ	p-value	n
Small divisions (<1,000 companies)	+0.082	0.663 (n.s.)	29
Mid-sized divisions (1,000-10,0000 companies)	+0.523	0.005**	28
Large divisions (>10,000)	+0.424	0.025*	29

Volatility paradox: big revisions, steady growth

Contrary to expectations, divisions with high classification instability exhibit lower year-over-year growth volatility than more stable ones. When comparing the standard deviation of annual growth rates across SBI stability categories, high-instability divisions show a median volatility of just 3.76%. This is lower than the volatility observed in stable divisions (4.64%), low-instability divisions (4.55%), and even medium-instability divisions (2.85%). These findings challenge the intuitive assumption that frequent reclassification signals sector-level uncertainty or risk.

To interpret this, it's important to understand what volatility measures. In this context, we use the standard deviation of annual growth rates as a proxy for how erratic or stable sectoral expansion has been over time. A lower standard deviation indicates more consistent growth, while a higher one suggests fluctuations or boom-bust cycles.

Two notable exceptions illustrate the complexity behind the relationship between classification instability and volatility.

First, division 55 (Accommodation Services) underwent four major reclassifications between 2008 and 2025. These included the separation of hotels, B&Bs, and vacation rentals; the introduction of short-term rental platforms; a temporary consolidation due to regulatory ambiguity; and a final split into emerging categories like glamping and co-living. Despite this administrative turbulence, the sector grew steadily at 4% annually, with a remarkably low volatility of just 1.8%. The reclassifications reflected evolving business models, but the underlying growth remained stable.

Second, division 59 (Motion Picture, Video & TV Production) was also labeled as high-instability. Yet it experienced strong and consistent growth, 7% annually with only 1.5% volatility. The surge in streaming platforms, both global and local, drove expansion under existing codes. CBS refined the classification only after the market had already transformed, meaning the instability followed the growth, not the other way around.

Conversely, some divisions with stable or low-instability classifications showed explosive growth. Division 85 (Education), for example, retained the same SBI code since 1993. Despite this, the number of registered education providers grew by 9% annually between 2009 and 2023, reaching nearly 300,000 entities. The code covers a wide range of activities, from universities and driving schools to online platforms, yoga instructors, and coding bootcamps. CBS never introduced separate categories for edtech, micro-credentialing, or online education, meaning the classification remained static while the sector diversified dramatically.

A similar pattern is seen in division 80 (Security & Investigation Services), which has had low classification instability since 2008. Yet it grew at an average rate of 11% annually, driven by the rise of private security firms, including cybersecurity consultancies and event protection services—none of which were reflected in updated codes.

These cases underscore a key insight: classification instability does not necessarily indicate economic volatility. In some cases, it reflects CBS's effort to catch up with sectoral transformation. In others, stable codes mask rapid and diverse growth. The relationship between administrative change and economic dynamics is more nuanced than expected.

Beyond sector thinking

For decades, sectors have been the cornerstone of economic analysis. Statistics, policy frameworks, and even business strategies were built around sectoral classifications: industry, trade, agriculture, services. The SBI codes are a direct reflection of this approach. They offer structure and comparability, making it possible to monitor and interpret economic developments.

Yet, sector-based thinking has become outdated. Today's economy no longer fits neatly into separate boxes. Companies increasingly operate within complex value chains that span multiple sectors. A manufacturer collaborates with IT firms, logistics providers, and marketing agencies – often across borders. In addition, business ecosystems are emerging: networks of companies, suppliers, customers, and even competitors that co-create value and drive innovation.

While statistics are still available at the sector level – and will likely remain so for the foreseeable future – this classification no longer fully captures economic reality. There's a risk of overlooking key trends and dependencies, especially in areas like innovation, digital transformation, and supply chain vulnerabilities.

The Dutch economy is increasingly characterized by Value in Motion: the continuous flow and transformation of value across sector boundaries. Companies now operate within complex ecosystems, collaborating and innovating beyond traditional industry lines. This dynamic movement of value challenges static sector classifications and calls for new approaches to economic analysis. To truly understand where and how value is created, transferred, and captured, future statistics and policy frameworks must reflect this reality of interconnected, evolving business models.

It would be a meaningful step if, in a future revision, Statistics Netherlands (CBS) goes beyond sectors and begins to incorporate value chains and ecosystems into its data collection. By gathering insights into how companies collaborate, where value is added, and how networks function, we would gain a much richer and more accurate picture of the economy. This would empower policymakers, researchers, and businesses to respond more effectively to today's challenges and opportunities. After all, the economy is no longer a collection of isolated sectors. Instead it is a dynamic web of interconnected actors. It's time our statistics reflect that reality.

Appendix

In this appendix, all sectors (divisions) are broken down into the categories stable (no adjustments), low instability (few adjustments), and medium and high instability.

Category	Code	Division
Stable	02	Forestry
	03	Fishing
	06	Extraction of crude petroleum and natural gas
	08	Mining of minerals (excluding oil and gas)
	09	Support services for mining
Low	01	Agriculture
	12	Tobacco industry
	15	Leather and footwear industry
	17	Paper industry
	21	Pharmaceutical industry
	24	Basic metal industry
	37	Wastewater collection and treatment
	46	Wholesale and trade brokerage
	61	Telecommunications
	71	Architectural and engineering firms
	75	Veterinary services
Medium	10	Food industry
	11	Beverage industry
	13	Textile industry
	16	Wood industry
	18	Printing industry
	23	Building materials industry
	25	Metal products industry
	36	Water supply companies

Category	Code	Division
Medium	50	Water transport
	55	Accommodation services
	56	Food and beverage establishments
	58	Publishing houses
	59	Film and TV production; sound recording
	64	Banking sector
	65	Insurance and pension funds
	66	Other financial services
	69	Legal services and administration
	70	Holdings and management consulting firms
	84	Public administration and government services
	91	Libraries, museums, and nature conservation
	94	Non-profit, advocacy, and hobby associations
	95	Repair of consumer goods
	97	Households with staff
	98	Household production for own use
	99	Extraterritorial organizations
High	14	Clothing industry
	19	Petroleum industry
	20	Chemical industry
	22	Rubber and plastics industry
	26	Electrical engineering industry
	27	Electrical appliances industry
	28	Machinery industry
	29	Automotive and trailer industry
	30	Other transport equipment industry
	31	Furniture industry
	32	Other industries
	33	Repair and installation of machinery
	35	Energy companies
	38	Waste treatment and recycling

Category	Code	Division
High	39	Remediation and other waste management
	41	General construction and project development
	42	Civil engineering (ground, water, and road construction)
	43	Specialized construction
	45	Car trade and repair
	47	Retail trade (excluding cars)
	49	Land transport
	51	Air transport
	52	Storage and transport services
	53	Postal and courier services
	60	Radio and television broadcasting
	62	IT services
	63	Information services
	68	Real estate rental and trade
	72	Research
	73	Advertising and market research
	74	Design, photography, translation agencies
	77	Rental of movable goods
	78	Employment agencies and job placement
	79	Travel agencies and travel information
	80	Security and investigation services
	81	Cleaning companies, gardeners, etc.
	82	Other business services
	85	Education
	86	Healthcare
	87	Nursing and overnight care
	88	Social care without overnight stay
	90	Art
	92	Lotteries and gambling
	93	Sports and recreation
	96	Other personal services

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