

Beyond institutions: Functional integration, cross-border flows, and the limits of European border integration

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Abstract

This article examines the functional dimension of cross-border integration in European border regions, focusing on everyday cross-border flows as key mechanisms shaping territorial integration beyond formal institutional arrangements. It addresses the growing mismatch between dense socio-economic interactions across borders and the often-limited capacity of institutionalized cross-border cooperation to stabilize or govern these processes. Drawing on relational and flow-based perspectives in border studies and regional geography, the article conceptualizes functional integration as a practice-based process rooted in regular mobility, service use, and economic exchange. The analysis is based on a critical synthesis of existing theoretical and policy-oriented literature. It introduces cross-border functional areas as an analytical construct capturing the spatial imprint of stabilized cross-border interactions. Rather than treating these areas as formal territorial units or normative policy objectives, the article highlights their dynamic, sectorally differentiated, and politically contingent character. Particular attention is paid to structural asymmetries between national systems, the selective permeability of borders, and the vulnerability of functional integration in highly regulated policy domains. The main contribution of the article lies in clarifying the analytical value of functionality for understanding both the potential and the limits of cross-border integration. By decoupling functional integration from institutional density, the article provides a conceptual framework for interpreting uneven integration patterns and for future empirical research on cross-border governance and resilience in European borderlands.

Keywords: cross-border integration, cross-border cooperation, cross-border functional areas, border permeability, multi-level governance

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Introduction

Cross-border cooperation (CBC) and related cross-border integration (CBI) have long been regarded as among the most visible manifestations of European integration at the sub-national level (SCOTT, J.W. 1999; PERKMANN, M. 2003; BÖHM, H. 2023). CBI refers to a broader, processual transformation of border regions, in which socio-economic flows, everyday practices, and relational spatial logics increas-

ingly transcend state borders. CBC represents an institutionalized and intentional response to these processes, seeking to manage, stabilize, or steer integration while often lagging behind their uneven, sectorally differentiated dynamics. CBC can be understood as an institutionalized component or dimension of CBI. CBI can occur even without CBC, but CBC without CBI is often formal and has little actual impact (PERKMANN, M. 2003; DURAND, F. and DECOVILLE, A. 2019).

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Since the 1990s, CBC has been promoted as a policy instrument to mitigate the fragmenting effects of state borders, foster territorial cohesion, and enable joint solutions to shared challenges in border regions (MEDEIROS, E. 2011; JEŘÁBEK, M. *et al.* 2018; FOGARASI, J. 2024). Consequently, research on CBI has been strongly shaped by an institution-centered perspective, focusing on the density and formalization of cooperation frameworks such as INTERREG projects, Euroregions, or European Groupings of Territorial Cooperation (EGTCs) (PERKMANN, M. 2007; MEDEIROS, E. 2018; NOFERINI, A. *et al.* 2020; ULRICH, P. 2021). Within this perspective, integration is often implicitly equated with the presence and territorial coordination mechanisms.

However, the increasing differentiation of European border regions raises fundamental questions about the explanatory power of institution-centered approaches to CBI. Areas such as the Greater Region around Luxembourg or sections of the Upper Rhine are perceived as strongly integrated both functionally and institutionally. However, there are border areas that exhibit dense CBI in daily routines, such as commuting, shopping, service use, tourism, and informal economic exchange, despite weaker or fragmented institutional cooperation (e.g. the Austrian–Slovak borderland in the Vienna–Bratislava metropolitan area). Conversely, other regions display highly developed formal structures of CBC while remaining only marginally integrated functionally (e.g. the Spanish–Portuguese borderland) (CHILLA, T. *et al.* 2012; DECOVILLE, A. *et al.* 2013; KAUCIC, J. and SOHN, C. 2021; BÖHM, H. *et al.* 2023). This divergence suggests that institutional cooperation alone is an insufficient proxy for understanding CBI processes.

In response to these limitations, border studies and regional geography have increasingly focused on the functional dimension of CBI, emphasizing routine interactions and cross-border flows as key mechanisms for integrating border regions (SOHN, C. 2014; DURAND, F. and DECOVILLE, A. 2019). From

this perspective, borders are not merely administrative lines separating jurisdictions, but differentiated socio-spatial structures that differentially enable or constrain interaction across policy domains and scales (PAASI, A. 1999; BRUNET-JAILLY, E. 2005; NEWMAN, D. 2006). Functional integration, thus, refers to the degree to which socio-economic processes operate across borders, producing territorially embedded yet institutionally fragmented spaces of interaction.

Despite its growing prominence in academic debates and EU policy discourse, functionality remains conceptually undertheorized within the broader field of CBI. Functional integration is often invoked as a normative objective or technical criterion, while its analytical relationship to institutions, governance capacity, and territorial cohesion remains insufficiently specified (ESPON 2019a, b). In particular, the existence of intense cross-border flows does not automatically lead to institutionalization. Instead, functional integration is shaped by structural asymmetries between national systems, sector-specific regulation, and the enduring authority of the state over key policy domains (PERKMANN, M. 2007; KNIPPSCHILD, R. 2011).

This article suggests that functional integration should be treated not as a supplementary dimension of CBI and a secondary factor in CBC, but as a central analytical entry point for understanding both its possibilities and its limits. It also does not assume a fixed temporal or causal sequence between functional integration and institutionalization. Instead, the two dimensions frequently remain misaligned. By moving beyond institution-centered accounts, the article conceptualizes functional CBI as an outcome of everyday cross-border flows that may condition and at times undermine formal governance frameworks, without necessarily leading to any corresponding institutionalization (PERKMANN, M. 2003; SOHN, C. 2014). The article further contends that the spatial expression of these processes can be captured through the concept of cross-border functional areas (CBFAs), understood not as

fixed territorial units but as dynamic configurations of interaction whose boundaries are fuzzy, sectorally differentiated, and politically contingent (DECOVILLE, A. *et al.* 2013; ESPON 2025).

The originality of this article lies in repositioning functionality as a diagnostic perspective. This perspective enables a reinterpretation of existing empirical research by revealing systematic mismatches between institutional form and functional practice. It highlights analytically significant false positives in governance-rich but functionally weak regions, as well as false negatives in functionally integrated areas lacking strong governance arrangements. From a geographical perspective, functional integration unfolds unevenly across spatial scales, linking micro-level recurrent practices with meso-level regional configurations, while remaining constrained by macro-level state territoriality.

The main objective of this paper is to systematize theoretical approaches to the functional dimension of CBI within the EU context. It seeks to:

- Clarify the conceptual foundations of functional CBI by linking border theory, flow-based approaches, and cross-border governance debates (PAASI, A. 2009; BRUNET-JAILLY, E. 2005; VAN HOUTUM, H. 2000).
- Examine CBFAs as analytical constructs that reveal the uneven and selective nature of integration (DURAND, F. and DECOVILLE, A. 2019; TURNER, C. *et al.* 2022).
- Identify the institutional and systemic constraints that limit the transformation of functional linkages into stable governance arrangements, with particular attention to cross-border public services (CBPS) (OECD 2013; ESPON 2019a). By synthesizing existing theoretical debates, the article contributes to border studies and regional geography by refining the analytical value of functionality and by providing a conceptual framework for future empirical research on European borderlands.

The article adopts a conceptual, theory-driven approach grounded in a critical synthesis of the existing literature on CBI, border

theory, and flow-based spatial perspectives within the European context. The literature review was conducted between October 2025 and December 2025 using Web of Science, Scopus, Google Scholar, and selected policy repositories, including ESPON, OECD, and the Council of Europe. The review focused primarily on publications from 1990 to 2025, reflecting the evolution of European territorial cooperation since the launch of INTERREG. Sources were selected based on their conceptual relevance to CBI/functionality debates, their contribution to border studies and regional governance research, and their empirical relevance to European border regions. Search terms combined keywords related to: CBC, CBI, CBFAs, governance, border permeability, and CBPS. The analytical procedure followed an iterative thematic review and conceptual synthesis, focusing on three recurring dimensions: (1) the relationship between institutional and functional integration, (2) the role of cross-border flows and selective border permeability, and (3) the emergence and limitations of CBFAs. This analytical process informed the development of the conceptual matrices presented in tables 1 and 2 and supported the construction of a theoretically grounded conceptual framework for understanding functional integration in European border regions. Empirical references to European border regions are used illustratively to clarify analytical distinctions rather than to evaluate integration outcomes in specific cases; accordingly, functional integration is treated primarily as an analytical lens while remaining open to operationalization through sector-specific indicators.

From institutions to functionality

This section shifts the analytical focus toward the functional logics through which cross-border space is produced in everyday practice. From a geographical perspective, this production reflects spatially differentiated interaction patterns instead of territorially uniform integration outcomes. The section

clarifies the conceptual distinction between institutional and functional modes of organizing cross-border relations and explains why this distinction is analytically consequential. From a functional perspective, institutions rarely create integration *ex nihilo* but tend to emerge reactively in response to pressures generated by daily cross-border interactions. Where such pressures are weak or sectorally limited, institutional cooperation often remains symbolic and project-based (CHILLA, T. *et al.* 2012; KUROWSKA-PYSZ, J. *et al.* 2018; KAUCIC, J. and SOHN, C. 2021). This project-oriented logic is strongly reinforced by EU funding frameworks such as Interreg, where cooperation frequently depends on temporary project cycles and administrative innovation rather than on durable institutional consolidation (NOVOTNÝ, L. 2026). This functional–institutional asymmetry can be interpreted through Brenner’s concept of state spatial selectivity, which highlights the uneven and sector-specific nature of state intervention across policy domains (e.g. prioritizing labour mobility over health-care integration) (BRENNER, N. 2004).

Cross-border flows are sectorally differentiated and structurally asymmetric, reflecting differences in regulatory regimes and institutional competencies between neighbouring states (SOHN, C. 2014; BÖHM, H. 2019). As MARTINEZ, O.J. (1994) observed, strong functional interdependence does not necessarily translate into corresponding levels of institutional integration. A functional lens, thus, brings into view forms of integration that remain largely invisible in institution-centered analyses, capturing the routinized character of cross-border relations while highlighting their fragility and political contingency. Functional linkages may stabilize over time, but they remain vulnerable to regulatory change, institutional asymmetries, and crisis-driven re-bordering, as demonstrated by recent disruptions of cross-border mobility in Europe (OPIOLA, W. and BÖHM, H. 2022; BÖHM, H. 2023).

Adopting a functional perspective does not imply abandoning institutions as objects of analysis. Instead, institutions are repositioned

within a broader relational configuration. This configuration consists of dynamic cross-border socio-economic interdependencies shaped by flows, everyday practices, and uneven border openness. They are conceptualized not as primary drivers of integration, but as selective and often delayed responses to uneven functional dynamics. When integration is assessed solely through institutional density, this asymmetry between functional interdependence and governance capacity tends to be obscured. As a result, institutionally dense but weakly integrated spaces may be overestimated, while functionally integrated areas lacking strong governance structures remain underestimated (DECOVILLE, A. *et al.* 2013; TURNER, C. *et al.* 2022).

Given the interconnectedness of the functional and institutional dimensions of CBI, it is impossible to identify entirely pure examples. However, for example, the Austrian–Slovak borderland in the Vienna–Bratislava metropolitan area (*Figure 1*) has experienced intensive cross-border commuting, cross-border living, and suburbanization, as well as labour-market integration since the 1990s, despite comparatively fragmented cross-border governance and limited territorial coordination in spatial planning and transport policy. Many institutions exist (e.g. the CENTROPE Initiative, Euroregion Pomoraví/Weinviertel/Záhorie). Still, they have limited institutional capacity and constrained territorial coordination relative to the intensity of functional integration (SOHN, C. and GIFFINGER, R. 2015). Despite ambitious narratives of metropolitan integration, CENTROPE has often been characterized by comparatively weak institutional consolidation, fragmented multi-level governance, and limited implementation capacity. The Euroregion Pomoraví/Weinviertel/Záhorie experienced prolonged organizational stagnation, the effective collapse of its trilateral structure, particularly due to the problems in its Slovak part, and only recent institutional reanimation.

Conversely, several sections of the Spanish–Portuguese borderland exhibit relatively dense institutionalized CBC despite comparatively limited functional integration in every-

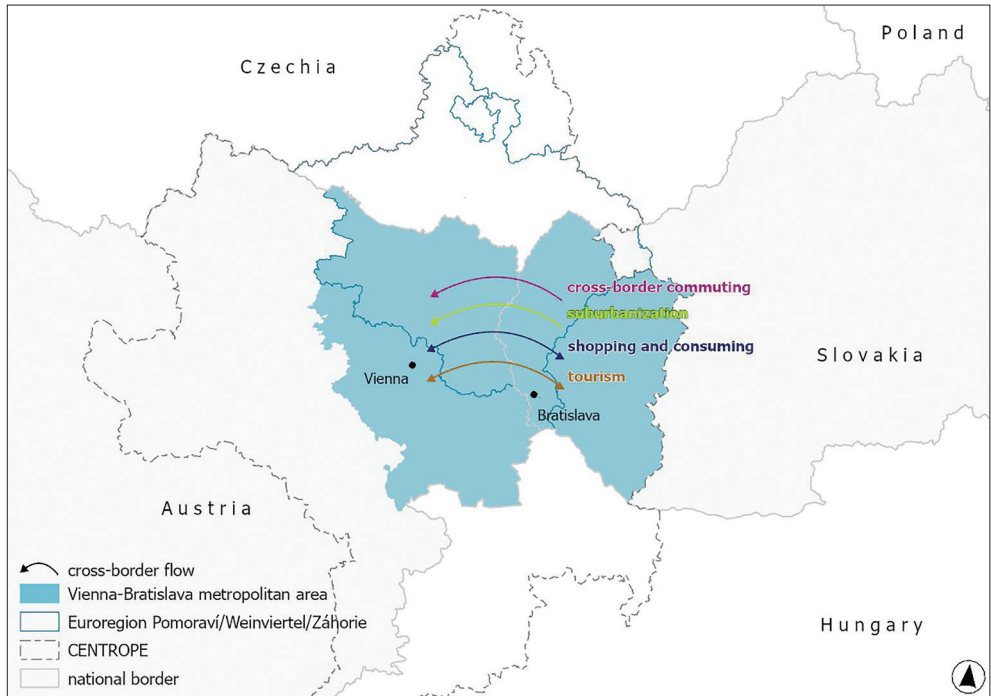


Fig. 1. CBI in the Vienna–Bratislava metropolitan area. Source: Authors' own elaboration.

day socio-economic terms. Since the 1990s, the border has been characterized by extensive institutional frameworks, including multiple Euroregions (e.g. Galicia–Norte de Portugal, EuroACE), EGTCs (e.g. Duero–Douro, Rio Minho), and other CBC structures, which have contributed to a comparatively high degree of formalized cross-border governance and project-based cooperation. In particular, the density of EGTCs is substantially higher than in Central Europe. However, despite this comparatively strong institutional dimension and related capacity, many border sections continue to display relatively weak functional integration characterized by low population density, demographic decline, limited cross-border commuting, weak labour-market integration, and relatively low intensities of ordinary cross-border mobility outside a few metropolitan or coastal areas (PODADERA RIVERA, P. and CALDERÓN Vázquez, F.J. 2018). These contrasting configurations illustrate

that cross-border interdependence and institutional density may develop unevenly and should therefore be treated as analytically distinct dimensions of CBI.

Understanding CBI in functional terms requires moving beyond a static territorial ontology toward a relational conception of borders and borderlands. This analytical shift is summarized in *Table 1*.

Borders as selectively permeable and relational spaces

From a functional perspective, borders cannot be understood merely as residual administrative lines or static geopolitical divisions (PAASI, A. 1999; NEWMAN, D. 2006). Instead, they operate as relational structures that selectively enable, channel, or constrain cross-border interaction. Borders remain analytically relevant not because they separate territories,

Table 1. *Institution-centered vs. functional perspectives on CBI*

Dimension	Institution-centered view	Functional view
Core focus	Formal cooperation structures	Everyday practices and flows
Indicator of integration	Institutional density	Regularity and intensity of flows
Spatial logic	Bounded territories	Relational, fuzzy configurations
Temporality	Project-based	Practice-based, continuous
Sensitivity to asymmetries	Limited	Central
Vulnerability to crisis	Often implicit	Explicit and structural

Source: Authors' own elaboration.

but because they differentially condition the emergence and stability of cross-border practices. Despite formal openness within the EU, borders continue to produce persistent effects, shaping economic behaviour and recurrent mobility in border regions (CAPELLO, R. *et al.* 2018). These effects are uneven across policy domains and governance levels. Borders therefore condition cross-border interaction unevenly across sectors and scales. From a functional viewpoint, the key analytical question is not whether borders are open or closed, but how, for whom, and in which sectors they are permeable. As a result, borderlands emerge as internally differentiated spaces in which integration intensities vary spatially and sectorally.

Relational approaches further highlight that borders act simultaneously as constraints and resources. Actors in specific sectors may strategically mobilize regulatory differences and institutional asymmetries, enabling certain forms of cross-border interaction while constraining others (VAN HOUTUM, H. 2000; SOHN, C. 2014; WASSENBERG, B. and REITEL, B. 2020). However, for the analysis of functional integration, relationality becomes analytically meaningful only when linked to functional differentiation. Without this link, relational conceptions risk obscuring the material and regulatory asymmetries that structure routine cross-border practices.

The concept of selective border permeability provides a crucial explanatory bridge between daily routines and the uneven geography of functional integration. Certain functions, such as commuting, consumption, or tourism, may transcend borders, while au-

thority, regulation, and key public services remain nationally anchored (SASSEN, S. 2006). Functional integration does not dissolve territorial sovereignty but modifies how it operates spatially. Understanding borders as differentiated relational structures reframes CBI as an uneven and adaptive configuration. Borders actively structure which flows stabilize, which remain fragile, and which are blocked altogether. This perspective provides the conceptual groundwork for analyzing cross-border flows as mechanisms of functional integration and for interpreting CBFAs as spatial expressions of selective and uneven permeability.

Cross-border flows as mechanisms of functional integration

Flow-based perspectives conceptualize CBI as emerging from recurrent interaction rather than from territorial design or institutional intent (CASTELLS, M. 1996; BLATTER, J. 2004). From this viewpoint, integration is produced through recurrent interaction that routinely traverse state borders and generate patterned interdependencies without necessarily crystallizing into formal institutional configurations. Cross-border flows, thus, function as constitutive mechanisms of functional integration, actively producing the conditions in which integration takes place (e.g. through daily cross-border commuting that gradually creates shared labour-markets and service linkages even in the absence of formal institutions). These flows typically precede and condition institutional responses.

Empirical research shows that routine mobility practices, such as commuting, shopping, service use, or informal social interaction, often anchor functional integration in borderland lifeworlds while remaining weakly institutionalized. Studies along the Bavarian–Czech border reveal dense socio-spatial interdependencies that are poorly captured by policy instruments (BLOSSFELDT, S. 2025), while analyses of cross-border central places demonstrate how localized practices may stabilize functional linkages without leading to institutional consolidation (BLOSSFELDT, S. 2023). Similar dynamics can also be observed in cross-border rural tourism, where recurring tourist mobility and shared destination practices contribute to functional integration despite relatively limited institutional consolidation (NOVOTNÝ, L. 2025). Functional integration, thus, emerges from below as an everyday process embedded in strategies of individuals and households (VAN HOUTUM, H. and VAN DER VELDE, M. 2004; RUMFORD, C. 2006). Divided and twin towns in Central Europe provide particularly illustrative cases. Settlements such as Komárno/Komárom, Český Těšín/Cieszyn, or Görlitz/Zgorzelec combine intense interaction with persistent institutional fragmentation, making them not only emblematic laboratories of European integration but also functional CBI (DOŁZBŁASZ, S. 2015; JAŃCZAK, J. 2024). Here, cross-border interdependence is sustained primarily through proximity and routine mobility instead of through comprehensive governance alignment.

Theoretically, these dynamics resonate with M. CASTELLS's (1996) notion of the space of flows, which emphasizes mobility, circulation, and networks as key structuring forces of contemporary spatial organization. Applied to

border regions, this perspective foregrounds the tension between territorially bounded governance and functionally organized socio-economic practices. As BLATTER, J. (2004) shows, functional integration unfolds through relational proximities generated by recurrent interaction, often cutting across administrative borders without corresponding institutional consolidation. Within this article, the space-of-flows perspective serves as a metatheoretical backdrop, situating recurrent cross-border flows as analytically central mechanisms of integration.

Economic and mobility-related flows represent the most visible manifestations of functional integration. In cross-border metropolitan regions such as Øresund or the Upper Rhine, intensive commuting has generated pressures for selective coordination in transport, taxation, and social security, illustrating how functional integration may trigger institutional responses (OECD 2013). Yet such trajectories remain contingent and uneven. Even where flows are dense, institutional alignment often lags behind functional realities. Crucially, functional linkages generated through cross-border flows are selective, sector-specific, and structurally asymmetric. They reflect uneven border permeability across policy domains, with high mobility in areas such as consumption or labour-markets coexisting with persistent barriers in health care, education, or professional accreditation (OECD 2013; SOHN, C. 2014; BÖHM, H. 2019). As MARTINEZ, O.J. (1994) already observed, intense interaction can coexist with limited institutional integration, producing patterned interdependence without systemic convergence. The governance sensitivity of different flow types is summarized in *Table 2*.

Table 2. Types of cross-border flows and their governance sensitivity

Type of flow	Governance sensitivity	Typical outcome
Consumption/shopping	Low	Informal, stable
Labour commuting	Medium/high	Partial coordination
Public transport/mobility systems	High	Project-based
Education	Very high	Strong constraints
Health care/emergency services	Very high	Fragile, exceptional

Source: Authors' own elaboration.

This framing allows cross-border flows to be interpreted not as indicators of generalized border erosion, but as diagnostic signals revealing where and how borders continue to matter. The intensity, direction, and stability of flows expose mismatches between everyday functional practices and institutional frameworks, highlighting domains in which integration is driven by practical necessity rather than political intent (DECOVILLE, A. *et al.* 2013; KAUCIC, J. and SOHN, C. 2021). The spatial significance of flows becomes evident in the concept of CBFAs, which represent the territorial imprint of stabilized cross-border interactions defined by the density and regularity of functional linkages (JAKUBOWSKI, A. *et al.* 2022). They capture relational and sector-specific configurations whose contours remain fuzzy and contingent.

At the same time, reliance on flows renders functional integration structurally vulnerable. Because it depends on the continuity of routine interactions under conditions of relative border openness, it remains susceptible to regulatory change and crisis-driven re-bordering. The COVID-19 pandemic demonstrated how quickly established cross-border flows can be disrupted through unilateral state action, revealing the political contingency and limited institutional protection of functional integration (OPIOLA, W. and BÖHM, H. 2022; BÖHM, H. 2023).

Cross-border functional areas as the spatial expression of functionality

CBFAs represent the most explicit spatial expression of functional integration in border regions. Instead of denoting formally constituted territories or stable governance units, CBFAs capture the territorial imprint of recurrent cross-border interactions emerging from daily socio-economic practices (JAKUBOWSKI, A. *et al.* 2022). Their analytical value lies precisely in their non-territorial character. They translate stabilized functional linkages into observable spatial configurations without presuming fixed boundaries, institutional completeness, or territorial closure (*Figure 2*).

This conceptual openness is not merely a consequence of data limitations or methodological ambiguity (ESPON 2025) but reflects a structural mismatch between functionally organized interaction patterns and territorially bounded governance systems. CBFAs are therefore best understood as relational configurations, rather than as entities defined by administrative borders or sovereign competences. These non-territorial networks express themselves through concrete routinized interdependencies, such as cross-border labour commuting, service use, or shared infrastructures (as illustrated by the twin towns or the Vienna–Bratislava metropolitan area) (CEMAT 2017; STUZIENIECKI, T. *et al.* 2024). Their fluid boundaries and sectoral differentiation are not analytical deficiencies, but constitutive features of functional integration under conditions of state sovereignty. CBFAs should not primarily be understood as new territorial levels or embryonic governance units. Where coordination exists, it typically takes the form of loosely coupled arrangements among subnational actors, without the creation of binding cross-border authorities or the transfer of sovereign competences (STUZIENIECKI, T. *et al.* 2024). This institutional lightness is often structural rather than merely transitional. Functional integration unfolds within nationally bounded political systems that limit the scope for durable territorial consolidation.

Interpreting CBFAs as incomplete territories awaiting institutional completion reflects what FALUDI, A. (2018) conceptualizes as a territorialist bias, the tendency to equate governance capacity with bounded, institutionalized territory. A functional perspective challenges this assumption by treating CBFAs as analytical representations of functional interaction rather than normative policy objectives. They make visible where functional integration materializes spatially, while simultaneously exposing its unevenness, fragility, and limited governability (ESPON 2019b).

Analytically, the identification of CBFAs rests on the intersection of two dimensions. The first concerns the existence, intensity, and

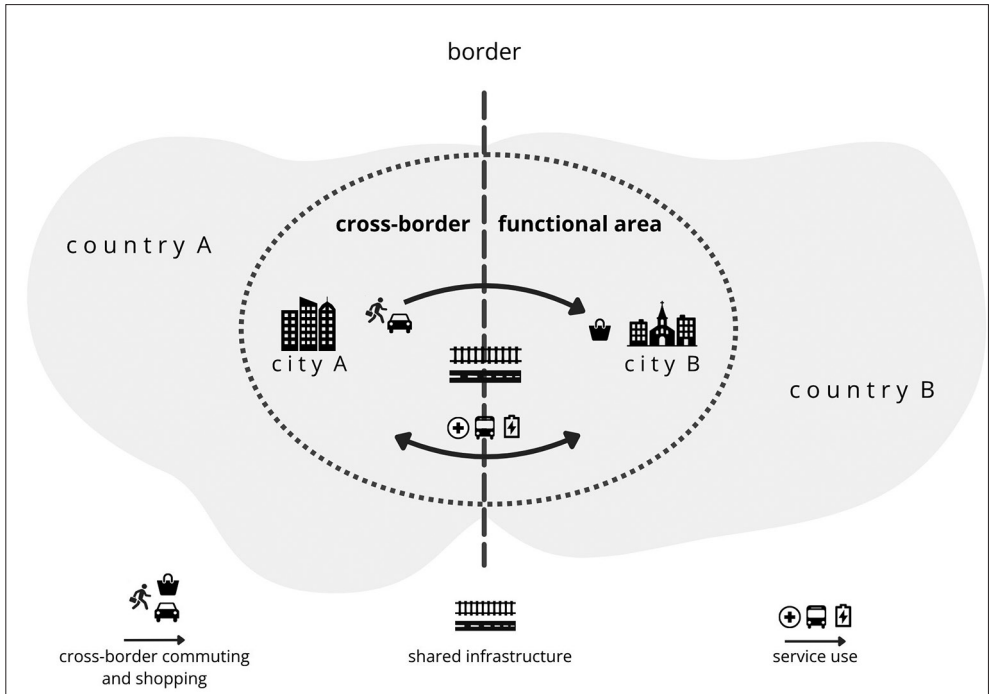


Fig. 2. Conceptual representation of a CBFA. *Source:* Authors' own elaboration.

regularity of cross-border interactions shaped by flows and selective border permeability. The second relates to spatial characteristics across the border, including functional complementarities and structural discontinuities between national systems (ESPON 2019b; NOFERINI, A. *et al.* 2020). Together, these dimensions reinforce the understanding of CBFAs as relational spaces whose coherence is produced through recurrent interaction.

From an empirical perspective, functional integration can be identified through the intensity, regularity, and spatial concentration of cross-border flows and everyday practices. It requires a multidimensional assessment. Relevant indicators may include cross-border commuting, shopping mobility, public transport connectivity, service use, tourism flows, or cross-border school attendance (OECD 2013; ESPON 2019b). Importantly, border

regions may exhibit strong integration in certain sectors while remaining weakly integrated in others. No single indicator can capture functional integration comprehensively because integration intensities vary across sectors, scales, and types of cross-border interaction. CBFAs should therefore be understood not as territorially uniform entities, but as relational and function-specific configurations whose spatial extent varies according to the type of interaction analyzed.

To avoid normative overextension, JAKUBOWSKI, A. *et al.* (2022) distinguish between potential and actually existing CBFAs. While potential CBFAs are characterized by proximity and latent complementarities, existing CBFAs exhibit demonstrable and stabilized cross-border interactions and, in some cases, limited governance arrangements. Crucially, only the highest level of this mod-

el corresponds to strong institutionalization. Many CBFAs remain functionally integrated while governance-light.

Empirical illustrations from cross-border metropolitan regions such as Øresund or the Upper Rhine, and from emerging industrial linkages in the Polish–Czech–Slovak border zone between Katowice, Ostrava, and Žilina, demonstrate that spatial coherence may emerge through flows and networks without formal territorial recognition (ESPON 2024). In such cases, functional integration precedes, bypasses, or only partially translates into institutional design.

Because functional integration frequently exceeds the capacity of existing administrative frameworks, CBFAs often rely on flexible and informal coordination mechanisms. Soft spaces, understood as weakly institutionalized, overlapping arenas of cooperation, may temporarily compensate for governance gaps when formal instruments are constrained (ALLMENDINGER, P. and HAUGHTON, G. 2009; FALUDI, A. 2010; NIENABER, B. and WILLE, C. 2020). However, their reliance on informality reinforces the contingent and fragile character of CBFA functionality, particularly in strongly regulated policy domains.

CBFAs should therefore be understood as relational configurations through which functional integration becomes spatially visible under conditions of territorially bounded governance.

Limits of functional integration: asymmetries, governance, and resilience

Functional integration in border regions unfolds within nationally bounded political and regulatory systems and is therefore inherently constrained. These limits are not temporary deficiencies or incomplete stages of integration, but constitutive features of CBI under conditions of state sovereignty. Functional interdependence may intensify cross-border interaction, yet it remains dependent on regulatory tolerance, political stability, and the conditional openness of

borders, producing uneven and reversible integration outcomes.

A primary source of these limits lies in structural asymmetries between neighbouring states. Differences in economic development, wage levels, regulatory frameworks, welfare systems, administrative cultures, and the distribution of competences actively shape both the emergence and the constraints on functional integration (PERKMANN, M. 2007; KNIPPSCHILD, R. 2011; ESPON 2019b). While such asymmetries often generate cross-border mobility, particularly in labour and consumption, they simultaneously impede territorial coordination, harmonization, and shared service provision, limiting the depth and durability of integration (SOHN, C. 2014; BÖHM, H. 2019). KUROWSKA-PYSZ, J. *et al.* (2018) further demonstrate that cross-border interaction in Euroregions is frequently constrained by administrative asymmetries, fragmented competences, weak political commitment, and uneven stakeholder capacities, particularly in peripheral border regions. This produces a structural misalignment between the functional logic of cross-border space and the territorially bounded organization of governance. Daily practices and flows routinely transcend borders, while decision-making authority remains embedded in national legal and administrative systems. As a result, functional integration advances primarily in weakly regulated or politically less sensitive domains, such as consumption, tourism, or specific segments of labour mobility, while remaining constrained in sovereignty-sensitive sectors, including health care, education, labour law, or social security (OECD 2013; DURAND, F. and DECOVILLE, A. 2019). Functional integration, thus, takes the form of uneven and sector-specific interdependence.

From a governance perspective, these limits become particularly visible in attempts to institutionalize functional linkages. CBC frameworks, including Euroregions and EGTCs, operate within multi-level governance systems that severely restrict their capacity to address asymmetries rooted

in national legislation and state competences (HOOGHE, L. and MARKS, G. 2001; PERKMANN, M. 2007; NOFERINI, A. *et al.* 2020). Institutionalization, therefore, does not automatically follow from functional interdependence. It remains selective, sectorally confined, and politically contingent.

CBPS illustrate these constraints particularly clearly. As the most advanced expression of functional integration, they directly respond to daily needs in border regions, yet continue to be highly fragile. Their functioning depends on complex coordination across governance levels and legal systems, where even minor national-level inflexibilities can suspend service provision (OECD 2013; BÖHM, H. 2019; ESPON 2019a).

Crises render these structural limits visible. Episodes such as the COVID-19 pandemic and the migration crisis demonstrate how quickly states can reassert border control, unilaterally disrupting established cross-border flows and exposing the political contingency of functional integration (KLATT, M. 2020; OPIŁOWSKA, E. 2021; OPIOLA, W. and BÖHM, H. 2022; WEBER, F. 2022; BÖHM, H. 2023). Even in regions characterized by dense everyday interaction, such as Těšín/Cieszyn Silesia on the Czech–Polish border, where an autochthonous Polish minority is present on Czech territory, cross-border interdependence remains poorly protected by institutions.

From an actor-centered perspective, the resilience of functional integration depends less on formal institutional design than on the strategic agency of actors operating across governance gaps (SOTARAUTA, M. 2016). Adaptive capacity emerges through brokerage, coordination, and improvisation by individuals and organizations positioned at the interface of multiple governance systems. Informal networks and soft governance spaces may temporarily sustain coordination under crisis conditions (ALLMENDINGER, P. and HAUGHTON, G. 2009; FALUDI, A. 2010), but their stabilizing capacity remains highly selective and insufficient in strongly regulated sectors. Resilience, thus, functions as an analytical concept rather than a normative objective. It

refers to the capacity of cross-border systems to absorb shocks and maintain minimal functional linkages under conditions of institutional uncertainty (PASCARIU, G.C. *et al.* 2020; ANDERSEN, D.J. and PROKKOLA, E.-K. 2021). However, this capacity is uneven and sectorally differentiated. Sectors such as health care, labour-markets, or professional accreditation remain particularly vulnerable to disruption, with even short-term border closures producing disproportionate effects on borderland populations (OECD 2013; BÖHM, H. 2019; OPIOLA, W. and BÖHM, H. 2022).

Taken together, the limits of functional integration are not failures of CBC, but structural features of integration within multi-level, state-centered governance systems. Functional interdependence may generate pressures for coordination, yet it cannot secure stable governance outcomes. Cross-border regions, thus, emerge as configurations of negotiated and reversible interdependence.

Discussion

This article has challenged the widespread assumption that the density of institutionalized CBC can be treated as a reliable proxy for the depth of CBI. By repositioning functionality as an analytical entry point, the discussion reframes integration as a practice-based, sectorally differentiated, and politically contingent process whose dynamics are only partially captured by formal governance frameworks.

A first key insight concerns the persistent misalignment between institutional density and functional integration. Institution-centered approaches implicitly equate the presence of cooperation frameworks with integration outcomes. Yet, a functional perspective demonstrates that stabilized socio-economic interactions frequently emerge before or after institutional consolidation. This confirms earlier critiques of governance-centered readings of CBI (PERKMANN, M. 2003; CHILLA, T. *et al.* 2012), but advances them by showing that institutional density does not merely underestimate functional integra-

tion. It may actively distort it. Governance-rich regions can appear highly integrated despite limited everyday interaction, while functionally dense but institutionally light configurations remain analytically underestimated. Treating institutional presence as an indicator of integration, therefore, generates systematic false positives and false negatives, obscuring the geography of integration as lived practice. Research on Euroregional cooperation has repeatedly shown that the existence of formal CBC structures does not necessarily translate into intensive socio-economic integration or durable cross-border interaction (KUROWSKA-PYSZ, J. *et al.* 2018).

Second, positioning functionality analytically before institutions reframes the role of CBC within multi-level governance systems. This does not suggest a universal sequence in which functional integration always precedes institutionalization, but rather highlights that the two dimensions may evolve unevenly, independently, or only partially reinforce one another. Instead of acting as a primary driver of integration, CBC appears as a selective and reactive response to integration pressures generated by everyday practices and cross-border flows. This interpretation also resonates with participatory governance perspectives, which emphasize that institutionalized CBC often operates through selective, project-based, and weakly embedded forms of coordination that involve unevenly empowered civil society actors (ULRICH, P. 2021). It further aligns with relational and flow-oriented accounts that conceptualize integration as emerging from recurrent interaction rather than institutional design (BLATTER, J. 2004; SOHN, C. 2014), while clarifying why institutionalization remains partial, delayed, or sectorally confined. Cooperative arrangements typically address specific functional demands while staying constrained by nationally bounded legal competencies and regulatory asymmetries. Such interdependence therefore does not constitute a linear pathway toward institutional consolidation, but unfolds alongside, and sometimes independently of, formal governance arrange-

ments. Similar mismatches between institutional form and functional practice have also been identified in comparative studies of European border regions (DECOVILLE, A. *et al.* 2013; TURNER, C. *et al.* 2022).

Third, the functional perspective repositions CBFAs not as embryonic governance units awaiting institutional completion, but as interaction-based configurations capturing the spatial imprint of stabilized cross-border interaction under conditions of state sovereignty. Rather than extending the primarily delimitation-oriented approach proposed by JAKUBOWSKI, A. *et al.* (2022), this perspective emphasizes the uneven, contingent, and only partially governable character of functional integration. This challenges what Faludi, A. (2018) describes as a territorialist bias, the tendency to equate governance capacity with bounded, institutionalized territory.

Empirical illustrations ranging from cross-border metropolitan regions (Øresund, Upper Rhine) to divided towns in Central Europe and emerging industrial corridors in post-socialist borderlands suggest that functional integration follows no single spatial logic. Instead, it appears wherever habitual cross-border behaviour aligns with selective regulatory tolerance. Spatial coherence is generated not through administrative design, but through recurrent interaction, producing interaction-based configurations whose contours remain adaptive and sectorally differentiated.

The role of crisis further sharpens these insights. From the perspective of critical border studies, crises should not be treated as external disruptions of otherwise stable integration trajectories, but as stress tests that reveal the latent hierarchy between daily cross-border practices and state-centered authority structures (PARKER, N. and VAUGHAN-WILLIAMS, N. 2012; OPIŁOWSKA, E. 2021). Episodes such as the COVID-19 pandemic demonstrated how quickly established cross-border flows can be interrupted through unilateral state action, even in regions characterized by dense daily interaction (OPIŁOŁA, W. and BÖHM, H. 2022; BÖHM, H. 2023). Instead of interrupting integration from the outside, crises expose the

political contingency and limited institutional protection of functional integration. Research from the German–French–Luxembourg border region during the COVID-19 pandemic further demonstrated that, even in highly institutionalized and functionally interconnected border regions, border practices, coordination failures, and tensions between national crisis-management regimes could emerge rapidly (WEBER, F. 2022).

The capacity to sustain minimal cross-border linkages under such conditions depends less on formal arrangements than on informal networks, trust-based coordination, and soft governance spaces, and the involvement of civil society actors operating across institutional boundaries (ALLMENDINGER, P. and HAUGHTON, G. 2009; FALUDI, A. 2010; KUROWSKA-PYSZ, J. *et al.* 2018; ULRICH, P. 2021). While these mechanisms may temporarily compensate for governance gaps, they remain insufficient in strongly regulated sectors such as health care, labour law, or social security. Functional integration, thus, does not erode state authority, but operates conditionally within it, shaped by conditional border openness and enduring national competences.

Overall, the discussion positions functionality as a perspective for interpreting tensions between routine socio-spatial interaction, governance capacity, and state authority. By linking flow-based perspectives with relational border theory, the article moves beyond binary readings of integration versus fragmentation. CBI instead emerges as an uneven process shaped by selective permeability, structural asymmetries, and periodic re-bordering (PAASI, A. 1999; BLATTER, J. 2004; RUMFORD, C. 2006).

While conceptual, the framework developed here has clear implications for empirical research. It suggests that comparative designs should move beyond institutional density as a primary indicator and instead operationalize integration through sector-specific flows, everyday mobility practices, and patterns of selective border permeability. This allows comparisons between institutionally similar border regions with markedly different lev-

els of functional interdependence, helping to identify mismatches between institutional density and functional interdependence. The concept of CBFAs can, thus, be operationalized as relational and sectorally differentiated configurations rather than fixed territorial units, supporting mixed-method approaches that combine mobility and service-use data with qualitative insights into everyday practices and institutional mapping. Finally, the framework invites longitudinal and crisis-sensitive analyses examining how functional linkages persist, adapt, or unravel under conditions of re-bordering, clarifying the resilience and vulnerability of functional integration without presuming linear progress toward institutional consolidation.

Conclusions

This article has argued that integration in European border regions is often shaped more strongly by everyday cross-border practices than by formal governance arrangements. By shifting the analytical focus from institutions to functionality, it has been shown that integration in European border regions is primarily produced through routine cross-border flows and practices that often precede, bypass, or only partially translate into formal institutional configurations. This claim does not imply causal primacy or universal applicability beyond the European governance context.

By reconnecting the distinction between CBI and CBC, the analysis indicates that CBC operates not as the primary driver of integration, but as a selective and reactive response to functional pressures. Cross-border interdependence unfolds unevenly across sectors and scales. Consequently, the presence of formal cooperation structures does not necessarily correspond to the intensity or stability of cross-border interaction. At the same time, dense functional linkages may persist in the absence of strong institutionalization. Institution-centered approaches risk systematically misreading the geography of integration by conflating governance density with func-

tional interdependence. The concept of CBFAs captures the spatial imprint of functional integration by revealing where stabilized cross-border interaction becomes territorially visible despite fragmented governance structures.

The article further emphasizes that functional integration is neither linear nor cumulative. Instead, it oscillates between de-bordering and re-bordering, as daily mobility and interaction coexist with nation-states' enduring capacity to reassert territorial control. Crises such as the COVID-19 pandemic act as stress tests that expose the political contingency and reversibility of functional integration, even in regions characterized by dense everyday cross-border flows. While informal networks and soft governance spaces may temporarily sustain cross-border linkages, their stabilizing capacity remains highly selective and insufficient in strongly regulated domains.

Finally, this article is conceptual and literature-driven rather than empirical. The analytical perspective developed here is explicitly situated within a European governance context shaped by EU-specific institutional conditions. While this clarifies the scope of the framework, it also points to the need for comparative and longitudinal research examining how functional integration interacts with governance structures across sectors and during periods of crisis. In this sense, the functional perspective is not proposed as a substitute for institutional analysis, but as a necessary complement that clarifies both the possibilities and the structural limits of CBI in contemporary Europe.

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