12. Comparative Analysis and Discussion

In line with the conceptual architecture, this section comparatively analyses the two selected SICs (*service-oriented* SIC and *representational* SIC). The analysis follows the two-step heuristic framework (section 4.2.3) to answer the overall research question, which is to shed light on the development and the institutionalisation of SICs as distinct instruments of science diplomacy. In that vein, this chapter first discusses the development and (gradual) institutionalisation of these instruments based on the two case studies (section 12.1). The development reveals patterns of similarity and difference that have become visible in the analysis of the instruments' genesis as well as their subsequent evolution. Secondly, following the heuristic framework, this chapter analyses the instrumentation of the SICs by their key stakeholders. This provides a distinctively actor-centred perspective on science diplomacy and points to instrumentation effects that are created and reinforce the (gradual) institutionalisation of the instrument.

These might differ from what had been politically anticipated. To capture this use, the rationales that guide key stakeholders towards participating in SICs were extracted to reflect their sense-making and interpretation (section 12.2). Combined, these two building blocks make it possible for us to conduct a comparative in-depth analysis of the development and institutionalisation of SICs, while revealing explanatory factors. In general terms, this study has found evidence of four aspects that help to explain the development and institutionalisation of the two SICs (in their national contexts). The factors that were extracted across both cases are: a) design principles which were adopted in the SICs' early development and are explained by national system characteristics, b) critical junctures (that led to reorganisation) of the instruments, c) the role of contingent events and timing and d) an appropriation of the instrument by key stakeholders in a predominantly strategic way, though also in terms which reflect distinctive collective logic.

The analysis of this instrument-centred approach enables an empirical understanding of the notion of science diplomacy, while also shedding light on its governance. These findings ultimately enable reflection on the body of knowledge that surrounds science diplomacy and present conclusions

that could enhance and advance the prevailing understanding of this field (section 13.2).

12.1. Institutionalisation Patterns

This section discusses the long-term development (i.e., the careers of the instruments) of the DWIH (Germany) and Swissnex (Switzerland) comparatively in line with the heuristic framework. The analysis of the two cases shows that, while the instruments initially developed differently, they converged over time (see Table 42). In both cases, the genesis is characterised by patterns of difference, such as framework conditions. Furthermore, differences were observed in terms of instrument design, which can be explained by the aspects of timing and contingent events, and the prevailing characteristics of the national systems. To a large degree, the (initial) differences in the development and the shape of the two instruments reflect the national landscape they respond to.

Notably, an alignment of the two instruments becomes apparent over time: both instruments developed according to functional logic and were also subject to critical junctures and increased political steering. Moreover, the analysis shows that initial design principles have remained generally stable. The following section examines the development of the two instruments comparatively by providing a nuanced analysis of the genesis and subsequent evolution that ultimately delineates key elements, which provide insights into the development and current shape of the two SICs.

Table 42 Comparison: Institutionalisation of DWIH and Swissnex

	DWIH (Representational SIC)	Swissnex (Service-Oriented SIC)
Founded	2009 * Within the wider science diplomacy policy package	2000 * Responding to internationalisation and brain drain calls
Genesis	* Top-down logic driving the establishment (promoted by policy entrepreneurs) * The role of key stakeholders: tug of war and struggles over competence in a nested institutional environment * Strategic actors and organisational positioning * Simultaneous opening of SIC locations	* Bottom-up logic driving the establishment * Political momentum, policy entrepreneur driving the idea, and timely private funding * Elements of trust * Ministerial struggles over competences * Incremental (demand-driven) expansion of the network
Critical Junctures & Evolution	* Major reorganisation (governance and funding) and shifts of competences/power within the actor structures due to an audit exercise	* Politically triggered expansion of the network (2007 onwards) and stronger political steering (while keeping autonomy)
	* Development according to a functional logic and by political will * Critical audit exercise * Politically motivated closure of a location (Cairo & Singapore) * Expansion in 2022 * Stakeholder support	
System Characteristics & Contingent Events	* The role of actors reflects the organisation of the German system (strong stakeholders) * Contingency: institutional responsiblity at AA	* Reflecting typical Swiss bottom-up policy style and politics of pragmatism * Contingency and timing: a political window of opportunity and timely events

Source: created by the author.

12.1.1. Genesis: Patterns of Difference

The genesis of the DWIH and Swissnex reflects significant patterns of difference, as summarised in *Table 42*. These differences relate to aspects such as the framework conditions that surrounded each instrument's foundation (i.e., the year of their launch and key objectives), but also to the instrument's design process, the (pre-existing) institutional environment as well as distinct national characteristics.

12.1.1.1. Temporality and Different (Initial) Objectives

An apparent difference between the two models relates to the framework conditions that surrounded each instrument's establishment; this links to aspects of temporality and wider pressures. The instruments were created at different moments in time and being presumably a derivative of that, they respond to different (political) objectives. Swissnex developed as a response to early internationalisation attempts in higher education, science and innovation; this took place at the height of globalisation pressures in the late 1990s and early 2000s. At that time, Swissnex occupied a niche in a newly developing policy area and served as a door-opener for national stakeholders to conduct internationalisation activities. In contrast, the DWIH were launched more than 10 years later, in 2009, as a response to science diplomacy calls since internationalisation (in general) was already central to policy-making (cf. BMBF, 2008). While Swissnex can be seen as an early response to emerging internationalisation pressures in Switzerland, the DWIH were installed to respond to different political objectives. This reflects core assumptions that instruments are "*bearers of 'inter-changeable' ideas*" (D. Braun & Capano, 2010, p. 13) and that they reflect a certain *zeitgeist* (cf. Bemelmans-Videc, 1998). These differences had a structuring effect on the instrument, at least as regards its initial design, as will be demonstrated in the subsequent sections.

12.1.1.2. Timing: (Delayed) Policy Transfer

In connection with the previous point, the data reveals that timing played a decisive role in the development of the two SICs. In the early days of Swissnex, the model was closely inspected by German policy-makers. However, at the time, it was not considered a suitable (or necessary) instrument for Germany's internationalisation activities. Despite this initial reservation, the data shows that a policy transfer that took place between the two cases at a later stage. In 2008, German policy-makers looked to their direct competitors, including Switzerland, to develop (new) ideas to reinforce Germany's position in a competitive environment and to anticipate future developments. Policy-makers were ultimately inspired by the success of the Swissnex model (this underlines the role of contingency, as defined in section 4.1.3). In light of a growing discourse on science diplomacy, the Swiss model seemed to provide an attractive and suitable solution to a) promoting science diplomacy policy objectives (driven by

policy entrepreneurs) and b) creating a joint international representative body that would increase Germany's visibility abroad.

Notably, the data refers to earlier unsuccessful attempts to achieve the same objective. The political momentum at the time enabled a policy transfer to take place; thus, the main idea of Swissnex and its funding principles were transferred into the respective German context. The funding principles of Swissnex (public-private partnership), however, were eventually discarded as they were considered inappropriate in the German context. In combination with the previous aspect (different pressures), this policy transfer underlines the assumption that policy instruments are often disconnected from political goals (Halpern et al., 2008) and instead are responsive to different contexts and ideas (D. Braun & Capano, 2010, p. 13). In this case, the DWIH responded to science diplomacy, rather than to internationalisation, which was the inspiration for developing Swissnex. Despite this, the Swiss model still seemed a useful tool for addressing these objectives. This policy transfer example underpins the idea that timing was a relevant factor in the development of the DWIH. Swissnex has also benefited from contingent events, which have shaped its development, as will be shown in the next section. The data thus indicates that contingency is a significant factor in shaping the development of the instruments.

12.1.1.3. Design Processes: Bottom-Up vs. Top-Down Logic

Another difference between the two models relates to the dominant forms of logic that characterise their early-stage development; this difference can be explained by national characteristics. In the case of the DWIH, the instrument was designed according to top-down logic, while Swissnex was developed in a bottom-up fashion. Both cases assign a crucial role to policy entrepreneurs, who seized a window of opportunity which successfully led to the establishment of the instruments (also constituting a contingent event). In the German case, the discourse was initiated by policy entrepreneurs and the initial idea for the DWIH quickly developed as one element within a wider policy package initiated from the top down. In addition to the DWIH, a mix of other instruments were also implemented with the aim of reinforcing and conveying a coherent science diplomacy strategy. Hence, the initiation of the DWIH did not generally result from an immediate need on the part of stakeholders; on the contrary, it was rather politically advocated. Similarly, in the Swiss case, a political window of opportunity created an opening for policy entrepreneurs' innovative

ideas; they identified room for action to improve Switzerland's international position, while this window also provided an opportunity to increase Switzerland's visibility and combat brain drain.

The idea ultimately took shape thanks to political support, trust and well-timed private funding (a novelty at that time), and this resulted in the creation of the first scientific consulate. The consulate was given significant autonomy and was set up as a trial; it was given a long time to establish itself as it was co-founded by private means which imposed a 10-year minimum operating period. This development also reveals that elements of contingency were at stake in terms of political momentum, which was related to global mega trends and the well-timed private funding, which itself was facilitated by elements of trust and the personal relationships of key actors. Furthermore, the design process of Swissnex seems to reflect the Swiss understanding of how politics is conducted (pragmatism) and the perception of how science is governed: demand-based, bottom-up and reflecting principles of autonomy (Pasternack et al., 2016).

12.1.1.4. Institutional Environment (Domestic and International)

The data also assigns a key role to pre-existing institutional and organisational arrangements (both domestically and internationally), which are relevant for the development of the two instruments. Upon its launch, Swissnex served as a way for national stakeholders to conduct internationalisation activities in international contexts where Swiss science and innovation stakeholders had a limited presence. The idea of Swissnex constituted a novelty at that time, which enabled the instrument to be developed almost from scratch. In contrast, the DWIH developed in light of an existing and even expanding nested institutional infrastructure abroad, and this had a constraining effect (cf. Howlett, 2009 on limiting factors in the design process, section 4.1.3). Key actors, such as the DAAD, had traditionally operated internationally, while other actors were also in the process of opening their own institutional premises abroad or had just opened them. This pre-existing structure abroad presented a different point of departure in the German case; in fact, this limited what could be realised since organisational interests had to be mediated (cf. Haelg et al., 2020, section 4.1.3). Rather than starting from scratch, as in the Swiss case, the design of the DWIH took place in light of these existing structures and arrangements that evolved institutionally.

In addition, there was a deliberate (political) decision to piggy-back on existing structures in order to reduce the financial burden and secure smooth on-site passage. This reflects that the process was politically driven rather than initiated or demanded by stakeholders. In a similar vein, national institutional arrangements also explain the shape of the SICs. In the case of the DWIH, although its implementation can be characterised as a top-down approach, its design was subject to intense discussions among the key stakeholders and resulted in a tug of war. Against a backdrop of strong autonomy and institutional differentiation among key German stakeholders in the research and science landscape (Edler et al., 2010), the data reveals that processes of institutional positioning (which suggest an aggregation effect), struggles over competences and even mistrust among the key stakeholders all played a role. These aspects became visible, for instance, regarding the question of who should oversee the locations on-site and what degree of autonomy should be attributed to these new structures. These struggles over competences and structures during the DWIH's creation are not uncommon, as scholarly literature suggests (cf. Ahrne & Brunsson, 2005). Furthermore, scholarly literature assumes that the design of SICs is impacted by the composition of its members (ibid.). The data observed this as well: the DWIH's design was influenced by institutional mistrust, strong institutional interests and an accidental constellation with the AA (see section 7.2.4). The DWIH were ultimately designed as an additional layer, a separate instrument in an already differentiated system of institutional presences abroad (rather than assigning the DWIH's core tasks to one of these actors in the environment).

In other words, both the existing nested institutional representation of key actors abroad and strategic actors pursuing their own interests in terms of organisational positioning are explanatory factors for the initial design of the DWIH; this points to the significance of national system characteristics. While the German case reflects a strong stakeholder-driven development, in line with these national characteristics, the Swiss case in comparison reveals a lean-actor structure (Pasternack et al., 2016). This is also characteristic for Switzerland (and a comparable degree of actor involvement, as in the German case, would not be in line with Switzerland's self-concept). Accordingly, principles of autonomy and bottom-up governance explain why a comparative situation would not have been encountered in the Swiss case.

12.1.1.5. Ministerial Struggles

The data assigns a key role to aspects of ministerial governance in shaping the SICs; this is most strongly visible in the case of the DWIH. A commonality in the genesis phase relates to struggles over competences between key ministerial actors. Tensions were discerned between the foreign ministry (AA) and the sectoral ministry (BMBF) which related to the governing and steering of the instrument[235]. These struggles seem to have been more severe and encompassing in the case of Germany since key stakeholders also considered themselves to be involved in these discussions. The Swiss case also reflects initial reluctance on the side of the FDFA to accept this new model since it was presented as being a substitution (to some degree) for the traditional science and technology attachés and hence a clear loss of competence over traditional foreign affairs topics. Notably, while ministerial struggles were revealed in both cases, the governance set-up differed in terms of who was responsible. The DWIH were placed under the authority of the AA, having been the political agenda setter (appropriation effect). This division of ministerial responsibility marks an early design principle that was not approved by the BMBF. Sources even suggest that the model would have probably looked different if the BMBF had been in the driver's seat. This governance arrangement has remained in place, despite external pressures (i.e., audit exercise) which led to debates regarding a change of governmental responsibility. This reveals inertia in the early design principles against external pressures. As far as Swissnex is concerned, a converse set-up took root. From the start, Swissnex had strong thematic links to the sectoral ministry (SERI) and also remained under their auspices (while receiving various forms of administrative support from the foreign ministry (FDFA)).

12.1.1.6. Incremental vs. Simultaneous Opening of SICs

Another difference relates to the instruments' initial spread and coverage. Initially, the Swiss model developed organically and in a demand-oriented way and was given significant political autonomy. It developed incrementally in line with its success, while also limited financial means were available to fund this initiative. Hence, the first locations were seen as trial

235 To recall, this ministerial struggle has been found in the development and governance of other instruments in that realm, as well (cf. Raev (2020)).

cases, which operated on very limited public funding yet also needed to demonstrate their impact. In contrast, all (initial) five DWIH locations were launched at the same time; this is presumably explained by the fact that Germany jumped on this trend around eight years later, and certainly aimed to demonstrate a certain degree of political clout, while positioning the DWIH as a cornerstone of a new policy that was supported politically (while securing the support of the key stakeholders). This demand-orientation (Swissnex) is still valid today, as the typology exercise showed.

12.1.1.7. Sub-Conclusion

The comparative analysis of the genesis of the two instruments reveals significant differences, while also a few commonalities were found. The role of timing and contingent events can be considered decisive for the development of the two models. The examples of the policy transfer and the way that Swissnex received initial financial support underline this and underpin that the instruments largely developed at favourable moments in time. A major finding that also accounts for the development of the SICs relates to national system characteristics: the instruments developed in response to their respective environments. This was observed, for instance, in relation to the degree of stakeholder involvement, pre-existing institutional arrangements or policy-making styles. The findings underpin that the two SICs which were analysed seem to constitute derivatives of their (institutional) environment. This corresponds to scholarly findings on policy design processes (see section 4.1.3) and the theoretical premise of conceptualising instruments as institutions. It is assumed that instruments contain knowledge of structures, in the sense that they reflect balances of power relations among different actors (Kassim & Le Galès, 2010). To formulate this differently, instruments contain a "*condensed form of knowledge about social control and ways of exercising it*" (Lascoumes & Le Galès, 2007, p. 3). Similarly, it is argued that instruments are a "*social representation of the overall cultural beliefs in a society and instruments become the representation of such a choice*" (D. Braun & Capano, 2010, p. 13, drawing on Ingram and Schneider). The analysis of the instruments' genesis confirms these assumptions. SICs seem to be magnifiers that reflect and transmit key principles of the relation between the governed and governing, in the sense that they portray these national characteristics.

Furthermore, this became visible by looking at the SICs' governance structures (i.e., bottom-up governance, actor-driven governance or consor-

tia leadership arrangement), the design process, structures of power and core beliefs. To reformulate this, the current models can, to a large degree, be explained by characteristics that are inherent in the national system and transmitted within it. While this constitutes a seemingly natural factor, this might also be counterproductive because "*formal structures of many organizations [...] dramatically reflect the myths of their institutional environments instead of the demands of their work activities*" (Meyer & Rowan, 1977, p. 341). This became evident through the redundancy of existing institutional structures and questions concerning ministerial authority over SICs.

12.1.2. Evolution of the Instrument and Critical Junctures: Patterns of Alignment

While the founding phase has been identified as crucial in explaining the shape of the two SICs, their subsequent evolution also explains their current shapes. The evolution of the network, in contrast to the genesis, depicts a stronger degree of coherence between the two models (see Table 42) and reveals that the development of both models was impacted by critical junctures that led to changes in the instruments' way of working. The findings furthermore show that, over time, both instruments have revealed an increase in (formal) accountability and a development according to functional logic.

12.1.2.1. Increased Political Steering

A commonality between the two models that also explains their development is increased political steering and political control over time. This development is notable in the Swiss case, which was initially endowed with significant autonomy and developed largely in response to policy entrepreneurs. The first locations were seen as unique beacons that could operate relatively independently. In 2007, however, this changed and was reflected by the politically triggered enlargement of the Swissnex network. This enlargement had been politically anticipated and led to an increase in steering: this reversed (to some degree) the initial bottom-up principle that was applied to the selection of key locations. The increased network furthermore led to a stronger degree of steering, thereby impacting the prevailing degree of autonomy that had been in place so far. Another

example of this increased political awareness is the streamlined appearance of the network, which was politically encouraged. In 2008, the common *Swissnex* brand was implemented and seen as a sign of consolidating the instrument. In comparison, the German DWIH reflected ab initio their strong integration into the overall science diplomacy strategy. From the start, their way of operating was characterised by political steering (though in line with and limited by actor demands). However, the DWIH also experienced strengthened political steering following a critical juncture, an audit exercise (see next section).

12.1.2.2. Audit Exercises

Over time, both instruments were subject to audit exercises, which constituted critical junctures in their development. In the German case, the evaluation occurred unexpectedly and soon after the DWIH had opened and begun working. The evaluation had a major impact on the DWIH and triggered a process of reorganisation, which significantly targeted the prevailing governance and funding conditions. To expand on this, funding arrangements that were transferred from the Swiss case, i.e., operating in a self-funded way, were viewed as being flawed. Moreover, given that the governance structures differed widely between locations, the evaluation demanded a streamlined appearance, a revised funding structure, a common governance structure and stronger political anchoring to connected policies, such as the internationalisation strategy (issued by the BMBF). Notably, the overall work of the DWIH was not subject to critique.

The Swiss case reveals parallels to what was encountered in the German case. In 2015/2016, an audit exercise took place that also challenged the instrument, for instance by stressing the need to install performance indicators and calling for demarcations to the work of other Swiss stakeholders abroad and for a better linkage to the official external network. The audit was viewed as highly political and interpreted by ministerial stakeholders as an affront to the instrument. Both audits marked a caesura in the (gradual) development of the instruments in terms of questioning their existence and causing political turbulence. Despite this, the audits can be seen as having led to a certain degree of consolidation, since the actual work of the SICs did not seem to have been significantly challenged by the audits. In the aftermath, both instruments can be considered to have been in safer harbours than before the audits. These evaluative exercises signal functional logic and increased accountability, which are tied to the instruments.

Furthermore, in both cases, the audit exercises were viewed as a highly political issue and were also seen as critique of the administration.

12.1.2.3. Renewed Political Focus

While the audits had formulated conditions for the instruments' continued ways of working, they also triggered a renewed process of political steering. This was expressed differently between the two countries and tackled the structural conditions that were in place before. In the case of the DWIH, a direct implication that followed the audit exercise was the closure of one of its locations (although this was not required in the audit). The Cairo location was closed and this was viewed as a signal that demonstrated the political ability to respond to these points of critique. Accordingly, the closure was seen as sacrificing a pawn for the evaluation. In addition, the Cairo location was contested among the key stakeholders from the start. As a result, the network structurally consolidated itself since (presumably) weaker locations i.e., contested ones, were cut off. The data attributes this to being a direct consequence of the audit. Similar renewed political steering was observed in the Swiss case. In light of an expanding network, 2015 marked an end to that phase given that Swissnex Singapore had been closed. Its closure was politically motivated and marked by a dual narrative: it was presented as a success story in that it had made itself superfluous, and it yielded only limited added value to key stakeholders since they had, in the meantime, established their own networks with the help of Swissnex. While this definition of success can be contested, the data stresses that the closure was meant to revive the network by ensuring flexibility and the ability to prioritise within the external network.

In addition, and pointing to ministerial struggles, it was seen as proving the ability to practise a policy of signalling (in the direction of the foreign ministry). In both cases, these events underline that the instruments were subject to increased political steering over time, while functional concerns were also present. A most recent step in the development is marked by the politically triggered expansion, which coincided for the two SICs. Following a period of consolidation in the aftermaths of the audits, an expansion of the network was scheduled for 2021/2022, when both networks opened new locations in San Francisco (DWIH) and Osaka (Swissnex) respectively. This underlines that the instruments are still alive and perceived by decision makers and by stakeholders as being valuable. Rather than relying on past successes, the expansion, after a long time, can be seen as reviving

the idea of SICs, rather than being stuck in a path-dependency situation where a consolidated instrument has little potential for new growth. Hence, the expansion underlines the instruments' agility, their transformative characters and their political relevance.

12.1.2.4. Stakeholder Support

Apart from the political aspects, the data underlines that the instruments were also placed on a stronger footing by the support of their key stakeholders, and this also explains the institutionalisation of the two SICs. This is remarkable in the case of Germany, where initially severe struggles, linked to power dynamics and mistrust, were encountered. Most obviously, these struggles led to the question of competence division and fears of overdominance by certain actors. This was reflected in the instrument from the start; to counterbalance these aspects, the initial leadership of the DWIH was placed in the hands of a consortium of stakeholders. Over time, the struggles seem to have become consolidated (*aggregation effect*) and they lost their intensity, while the initial mistrust was even overcome. The leadership of the DWIH was ultimately placed in the hands of the DAAD, which had previously proven to be a major issue of dissent (*appropriation effect*). This consolidation might also be explained by the fact that key stakeholders were formally included in the different governance bodies following the reorganisation (pointing to better organisational representation than at the beginning).

Accordingly, struggles over power relations were systematically addressed through the installation of new governance bodies, yet only after the audit. In the Swiss case, a move was also made towards the stronger inclusion of key stakeholders for the purpose of legitimising the instrument. The Swissnex committee was installed to ensure widespread acceptance among the key stakeholders while also serving as a sounding board for ministerial actors. In addition, it was viewed as a tool to allow for structural exchange with the FDFA in order to combat tensions.

12.1.2.5. Sub-Conclusion: Comparing the Institutionalisation

The previous sections uncovered coherence in the development of the two instruments over time. Commonalities in their subsequent development are manifested by a) strengthened political steering over time, b) critical

junctures in the evolution of the instruments that had a lasting impact, c) renewed political attention and d) consolidated stakeholder involvement that placed the instruments on a stronger footing. The last aspect, in particular, suggests that collaborations have been institutionalised, if they are understood as *a process by which individuals create a common definition of a social reality* (Mayntz & Scharpf, 1995)[236]. The evolution of the instruments hence seems to reflect a process of internalisation relative to their environments. This is furthermore reinforced by instrumentation effects that have triggered institutionalisation processes (see Table 43). In line with the conceptual framework, the data shows that the instrumentation effects are most visible in the longevity of the instruments, (Lascoumes & Simard, 2011, p. 14). Despite severe pressures, such as critical junctures and governmental struggles, the instruments seem to have consolidated themselves. Inertia is also seen in terms of the early design principles; this aligns with the theoretical premise which assumes that "*the effects of these decisions are likely to be enduring*" (Kassim & Le Galès, 2010, p. 6). The case studies revealed that, over time, distinct design principles have become deeply interwoven with the SICs' DNA, such as funding arrangements and actor-led governance arrangements. Combing the evidence in the previous sections, the data reveals three effects that reinforced the institutionalisation of the instruments and that have partially been aligned with the theory. To pursue this in a more systematic way, in the case of Germany an *aggregation effect* was encountered. The creation of the DWIH brought together heterogeneous actor groups to work on this topic. Despite severe struggles, initial preferences were modified for the sake of the instrument and eventually a common model was adopted (while also resistance was encountered in terms of mistrust: *appropriation effect*). Swissnex seems to have become institutionalised due to a *representation effect* in the sense that it consolidated itself as a unique instrument over time, both nationally and internationally. It serves as a brand for Switzerland and seems to be tied to a certain degree of explanatory logic, while conveying the values of being a distinct and innovative example that fosters international cooperation. Its external reputation can particularly be seen as reinforcing its institutionalisation because Swissnex is seen as an instrument that inspires third countries, and that Switzerland is envied for this. Additionally, the longevity of

236 Mayntz and Scharpf (1995, p. 42), drawing on Berger and Luckmann (1997): "*Institutionalisierung der Prozeß, durch den Individuen eine gemeinsame Definition der sozialen Wirklichkeit aufbauen*".

Swissnex can be explained by the platform it creates for political reformulations (appropriation effect). Over time, Swissnex has responded to various political objectives, which reflects a process of layering (see section 11.1) (cf. Epping, 2020). Appropriation by key actors, as in the German case study, could not be observed. This is not surprising given that the Swiss case, and Switzerland in general, reveals a different set-up and operates in a service-oriented way. The DWIH, in contrast, reflect various appropriation effects that have reinforced their institutionalisation. The analysis has shown that the DWIH similarly serve as a platform for certain interests, such as political ones. Furthermore, *professional mobilis*ation was encountered on the side of the AA, which used the instrument to acquire new competences, expand its portfolio and position itself in a newly emerging field (despite resistance from the other key actors, such as the BMBF). The DWIH are hence viewed as reinforcing an effect on "*those steering public policy and on the competition that drives them*" (Badout, 2011, p. 93). In a similar vein, the DWIH were viewed by certain actors as a chance to reposition themselves and to strategically approach new topics; this could not be observed in the Swiss case (this will be expanded on in the next section). This underlines the finding of Kassim and Le Galès that *"[a]s institutions instruments confront actors with structures of opportunity, influencing how they behave and privileging certain actors and interests over others"* (2010, p. 4). The data conveys the impression that the instruments create a new arena for various actors to position themselves in. This has been facilitated by certain ideas and norms that are linked to the instrument and reinforce this institutionalisation, as will be shown in the next section.

Table 43 Comparing the Instrumentation

	DWIH	Swissnex
Aggregation Effect	* Strong stakeholder involvement and severe struggles among key players in the genesis that ultimately led to the creation of the DWIH * Inertia & longevity of the instrument despite a critical audit	* Inertia & longevity of the instrument despite a critical audit
Representation Effect	* Stable (political) framing of DWIH as facilitating foreign policy goals	* Framed as a reliable instrument that promotes international cooperation and is known for its focus on innovation (within Switzerland and beyond)
Appropriation Effect	**Affirmation of new competences** * Instrument serves as a platform for AA to expand their portfolio * Instrument is strategically used by actors to approach new topics **Reformulations** * Shift of power due to the reorganisation (DAAD in charge of the network) **Resistance** * Development of the instrument is constrained by strong actor preferences	* Used as a platform for reformulations (and layering) by political actors

Source: created by the author.

12.2. Actor Structures and Key Stakeholder Rationales

To complement the comparative development of the two instruments, it has been argued in scholarly literature that their use should be analysed, as this will shed light on their institutionalisation as instruments of science diplomacy: in other words, their instrumentation. The case studies have already unpacked the differing rationales for stakeholders participating in their respective SICs, while the analysis of institutionalisation processes has also disclosed how stakeholders look at the instrument and position themselves accordingly. Keeping these findings in mind, this section comparatively discusses and analyses the appropriation of the instrument in line with the conceptual premises of meta-organisation theory, which are deployed selectively (see 4.3). This facilitates the development of a distinctively actor-centred perspective on the rationales of actors for participating in SICs, and hence in science diplomacy. To that end, the different actor structures are discussed briefly, before we turn to the political and stakeholder rationales. The analytical comparison reveals instrumentation effects that underpin the development and institutionalisation of SICs, as has been presented previously. The appropriation of the instruments by key actors is identified as being an additional explanatory element for their development and current shape.

12.2.1. Patterns of Difference: Actor Structures and Involvement

A notable difference that has been identified previously is the varying degree of actor involvement and its impact on the development of SICs. While the German case reflects strong actor-driven governance, the Swiss case mirrors a lean actor structure and that Swissnex operates on a contractual basis with key actors. The data reveals that throughout the institutionalisation of the DWIH, key actors from the science and innovation system and business representatives were intensively engaged in and actively shaped the process. Their role has further been consolidated in the DWIH's nested governance structures over time. The strong actor-driven governance has been explained by system characteristics i.e., strong autonomous institutional actors in the German system. This degree of involvement differs strongly from the Swiss case, which in principle also has a differentiated actor structure in its science and research system[237]. However, their engagement in the governance and steering of Swissnex differs significantly. To give an example, stakeholders that are formally involved in the DWIH (for instance the German Council of Science and Humanities, *Wissenschaftsrat (WR)*) are not involved in the governance of Swissnex (*Schweizer Wissenschaftsrat*). This seems to reflect the governance understanding of higher education and science, as well as politics in general (Pasternack et al., 2016). The Swiss model operates in a way that is largely disconnected from these national actor structures, which is also visible in the way that each node is run. While Swissnex has an independent CEO and a supportive team to run each location, the DWIH struggled to agree on a model of leadership; the discussion ranged between opting for a similar structure to Swissnex and installing a model with one key institution being in charge (which is the current model). This trade-off can be explained by the forms of institutional logic that are more strongly present in the German case than the Swiss case. Swissnex instead is viewed as a *shell* that operates on behalf of its clients and for Switzerland as a whole.

237 There are comparable actor structures in both countries, such as research funding organisations (SNF & DFG), rectors' conferences (HRK & swissuniversities), advisory bodies such as the *Wissenschaftsrat* and organisations that facilitate cultural exchange (*Goethe Institutes* and *Pro Helvetia*).

12.2.2. Political Rationales

The analysis of the political objectives which are tied to both SICs reveals a large degree of coherence. This finding is not surprising since policy transfer was observed. In both cases, the specific instrument is seen as a tool for branding and positioning that draws on science and technology as vehicles. In addition, the DWIH responded to economic considerations and was broadly able to be placed in the dynamics of cooperation and competition, while Swissnex responded to similar goals with a stronger focus on innovation and knowledge transfer (Swissnex's spike). While the core objectives have remained relatively stable over time, such as the SICs' role in foreign policy, the analysis showed that the instruments' experienced layering of more nuanced objectives. In other words, some aspects were more relevant in some years than they were in others. This makes it possible to conclude that the instruments serve as a platform for various political goals in the wider field of promoting science, research and technology.

12.2.3. Patterns of Sense-Making: Rationales for Participation

The conceptual premises rely on the assumption that instruments, once they are in place, are subject to interpretation and use by their main actors, and this hence shapes institutionalisation dynamics (Le Galès, 2011, p. 11). In addition, it can be argued that the use of the instrument might differ from what has politically been anticipated and thus constitutes a focal area that reinforces (or even prevents) the institutionalisation of an instrument. The case study findings (chapter 8 and chapter 11) confirm these assumptions and identified distinct narratives and interpretations of the instruments, which will be discussed comparatively here (see a shortened version that focuses on the aggregated dimensions Table 44).

A key finding of the comparison is a strong alignment of rationales for participating in SICs in both case studies. This might, at first glance, be surprising given the SICs' different framework conditions, such as the degree of stakeholder involvement and their set-up (actor-led governance vs. lean governance). Another difference relates to funding: while the DWIH provide limited funding to their supporters to incentivise certain activities to be conducted abroad (under the DWIH umbrella), Swissnex is organised in a contrasting model that depends on its clients to co-finance

it. Nevertheless, the two models are ultimately designed for comparable stakeholder groups: mainly key actors in the national research and science landscape. These stakeholders operate nationally and internationally and are subject to similar environment pressures, such as navigating between the poles of competition and cooperation (J. J. W. Powell, 2018, 2020; Ruffini, 2020a)[238]. The data accordingly finds that actors predominantly use the SICs strategically: stakeholders mainly use the instruments in line with their own agendas.

However, the data also reveals that both instruments create a distinct frame of reference (towards aspects of collectivity), while actors also use the instrument in a way that was politically anticipated, such as competence enhancement. This suggests instrumentation effects that developed independently from initial political objectives. In both cases, the empirical findings reveal three overarching dimensions which structure the use of the SICs: 1) maximising (and reinforcing) the actors' own impact, 2) considerations linked to a sense of collectivity and 3) systemic explanations. Furthermore, both cases revealed distinct limits to the participation in SICs. The next section compares their use analytically.

238 Scholarly literature explains this with isomorphic pressures and the fact that these actors (despite being in a different national context) might be part of a nested organisational field (cf. Hüther and Krücken (2016)). In addition, in terms of stakeholders such as higher education institutions, scholarly literature considers them to be strategic actors that, despite different contexts, behave similarly (Krücken and Meier (2006); Dusdal, Zapp, Marques, and Powell (2021)) and states that a strategic positioning takes place (Fumasoli, Barbato, and Turri (2020)).

Table 44 Comparison: Rationales for Participation

	DWIH	Swissnex
Maximise (and Reinforce) Own Impact	(1) Increasing international visibility (2) Access to resources (3) Opportunity for strategic (re-) positioning (4) Thematic fit and synergies to own work (5) Precautionary reasons	(1) Access to resources (2) Thematic fit and synergies to own work (3) Precautionary reasons
Sense of Collectivity	(1) Support for the general idea (2) Maximise the impact of the wider (science) landscape (3) Responsibility	(1) Support for the general idea
Systemic Aspects	(1) Institutional expectations (2) Nested organisational embeddedness (membership in Alliance)	(1) (Institutional) Expectation to participate
Limits to Participation	(1) Concerns about visibility (2) Cost-benefit considerations (3) Different priorities	(1) Strategic considerations (2) Cost-benefit considerations (3) Different priorities

Source: created by the author.

12.2.4. Strategic Considerations

A distinct commonality which has been revealed in both case studies is the use of the instruments by stakeholders to maximise their own impact. Stakeholders use SICs according to their strategic agendas, which suggests that rational considerations are key to explaining participation (assuming rational actors). This overarching dimension emerged as being highly relevant in both cases and is consistent with a key assumption of meta-organisation theory whereby participation in wider structures may be seen as being motivated by a desire to change patterns of interactions with their environment (for a detailed overview, see Table 45). Furthermore, this is underpinned by a look at the second order themes that emerged from the analysis. The SICs are, in both cases, used as a vehicle for and a multiplier of the stakeholders' own needs. This, for instance, relates to getting access to resources which would otherwise be more difficult to access. Both SICs seem to be used as door-openers in certain situations. Furthermore, the data shows that participation is subject to a thematic fit and must align with actors' priorities and create synergies (meta-organisation theory refers to this as the protection of one's own interests and cost-benefit balances). This reflects the stakeholders' key priorities for using SICs in line with their own logic and requirements. This finding across both cases is not

surprising since stakeholders are more likely to participate in and use SICs if there is a perceived value attached to the instrument. In other words: "*belief-systems and institutions are interdependent: individuals will believe policies are effective only when the structure of the governance institution is congruent with that person's policy-core beliefs*" (Lubell, 2003, p. 309).

Another example of strategic considerations relates to pre-cautionary reasons, which were revealed in both cases. To elaborate this, stakeholders explained their participation in SICs as being in a position that allows them to exert influence and to stay informed, while also being able to prevent undesired developments (cf. Ahrne & Brunsson, 2005). While this use does not primarily reflect a thematic concern, it links to a strategic source of being able to impact and control their environment (in relation to other stakeholders and ministerial authorities). Comparing the two cases, this issue was more prominently mentioned in the German case. This is not surprising and can be explained by differences in how stakeholders use the instrument (representational vs. contractual relations). It is noteworthy that the German case also reflects a more nuanced set of second-order themes. Aspects such as promoting actors' own visibility abroad, which were key to the German case, could not be extracted from the Swiss case that explicitly. This finding is surprising since one would assume that this aspect would also be relevant for Swiss stakeholders as they also participate in a competitive (science and innovation) environment. An explanation for this might be the politics of understatement which are part of the Swiss habitus, rather than the fact this is not a concern for them[239].

Despite a large overlap in the use of the instrument, the German case is slightly more refined in terms of second order themes than the Swiss case. This might be explained by how the instruments are connected to their key stakeholders: a customer relationship that takes place on an ad hoc basis compared to a representational model where the instrument is a strategic resource and stakeholders need to maintain a watching brief to secure their position. This links to another difference in the use of the instruments: as tools for institutional repositioning. In the German case, the instrument is seen as a vehicle through which to expand competences and approach topics that typically lie outside the actors' core domain. This finding suggests that the instrument has a potentially lasting impact on actors and their way of operating if strategically relevant topics can be approached. This again underpins the strategic behaviour that is encountered by stakeholders. In

239 However, a certain sampling bias can also not be excluded.

other words, the instrument is deliberately used in such a way that it tackles the "*balance of power*" (Kassim & Le Galès, 2010, p. 5), which, as a consequence, might impact the overall architecture of the system. This finding is remarkable and underlines the theoretical premises that guide this study: it shows how and that the instruments are used by key stakeholders in a transformative way that exceeds initial political objectives. The DWIH are clearly used as a platform for stakeholders' own goals. Furthermore, this use follows its own logic relative to the interpretation of its users and in fact differs to what policy-makers had anticipated (Le Galès, 2011, pp. 151–152). This finding reasserts that the DWIH (and instruments more generally) create their own context and serve as a platform for interpretation and strategic action.

To conclude on this aspect, the findings show that the instrument is primarily used by stakeholders for strategic considerations that are ultimately aimed at improving and maintaining their position or at least ensuring that the instrument does not threaten them (protection of vested interests). Furthermore, the analysis shows that SICs developed as a platform for uses that had not been politically anticipated, such as a competence development, in other words, a source of repositioning due to the DWIH. The findings therefore underpin the fact that in both cases, the institutionalisation of the instruments is (anchored and) reinforced by an actor structure, which is driven by strategic considerations and finds its own channels for using the instrument. Overall, this strategic dimension of the use of the instruments reaffirms and explains their (structural) development, as portrayed in previous sections.

12.2.5. Sense of Collectivity

Aspects of collectivity are an intertwined yet distinctly separate set of considerations that conceptualise the use of the instrument. Across both cases, it has been revealed that the instruments constitute a source of collective action, which reaffirms the considerations that drive meta-organisation theory (Ahrne & Brunsson, 2005). The use of the instrument seems to trigger a distinct form of sense-making that creates a new context among the actors, nationally as well as internationally. To give an example, the data for the German case reveals that new forms of cooperation between national actors were launched within the framework of the DWIH. This can be seen as a redefinition or reinvention of spaces that takes place and that links

national actors in a stronger way in the light of a common goal. The data furthermore illustrates general support for the instruments that transcends individual rationales (see Table 44). More specifically, stakeholders in both case studies underline their support for the instruments because of their vision and underlying idea: promoting the national science and innovation ecosystem and showcasing the respective countries (as well as more implicit objectives that relate to science diplomacy). What is more, stakeholders fear a loss of visibility to the wider landscape if the SICs were to be suspended. This finding is remarkable given that actors had also indicated that there is no direct need for the instrument for them to conduct their own activities. Accordingly, this seems to underpin and justify the finding that the instrument is not just a technical device; instead, it conveys certain ideas that are also supported by actors, and it ultimately creates its own sense-making (which accounts for the instruments' institutionalisation).

The rationales are again more nuanced in the German case and reveal responsibility for and solidarity with those (weaker) actors that have fewer resources. This has been shown by my drawing on the example of institutional premises abroad. The use and support of the DWIH is justified by collective solidarity and is an added value for the entire ecosystem (actors in fact considered themselves to be part of the wider system). This finding underlines the assumption of meta-organisation theory that these forms of collective action are more relevant for weaker organisations since they have more difficulties organising themselves (Ahrne & Brunsson, 2005, p. 435). However, this collectivity arguably also reinforces actors' own positions (abroad) due to their larger clout (i.e., the opportunity to exert external influence by means of collective action) and this hence reflects a certain symbolic dimension. This indicates that the instrument creates its own context, framework and ideas and that these are more encompassing than strategic considerations alone. In other words, the instruments create certain configurations of (national) actors and possibly interactions that would presumably not have occurred in the absence of the instrument. In addition, this solidarity (sense of collectivity among the actors) was not an explicit objective but instead it developed naturally. This reflects how the instrument is interpreted by key actors that produce their own narratives, thus creating a sense of collectivity (nationally).

In a similar vein, the data shows that, in both cases, stakeholders set aside their core interests, to some degree, in favour of this collective purpose (this confirms considerations which were formulated by scholarly literature, cf. Ahrne & Brunsson, 2005). The data shows, particularly in the

German case, that actors conduct activities that are not their core business for the sake of supporting the DWIH. The same finding was observed in the Swiss case, where mandates are given to Swissnex as a sign of support, rather than being a pressing area for action. To sum up, this underlines that the instrument is supported, not primarily because of the activities that are conducted, but instead because of a) of the idea that is conveyed and b) the perceived value that the instrument might yield for the wider ecosystem due to collective action (though in turn, this is also beneficial for the actors).

12.2.6. Systemic Aspects of Participation

The data furthermore highlights systemic reasons which explain the use of the instruments, more specifically normative considerations, which are explained by the national environment. Across both cases the data points to an expectation of participation[240], which is a form of behavioural compliance, even though 'breaches' cannot be sanctioned. Both cases point to this (implicit) expectation of participation in the instruments, while the frame of reference differs. In the German case, this expectation is formulated in light of other ministerial actors and is explained by a nested governance structure. In turn, non-participation would lead to questions (this links to the logic of appropriateness and institutional expectations, according to meta-organisation theory). Apart from these expectations, most key actors are also part of the Alliance of Science Organisations (presumably some form of meta-organisation), which collectively took the decision to participate in the DWIH during their establishment phase. Although it is similarly mentioned that key actors cannot be forced to participate, despite their membership in the Alliance, this collective decision constitutes its own frame of reference and in turn leads to a certain degree of compliance. These considerations are reflective of the nested governance structure in the fragmented German system (see section 5.2.4.1 and section 6.2).

In addition, the Swiss case refers to institutional expectations as being at stake. These also link to institutional constellations and the logic of appropriateness and even disapproval in the case of non-participation. Although,

240 Please see the work by W. R. Scott (2001), who identifies three dimensions of institutions, among which is a normative one. This concept is deployed by Marques (2018) to enrich the notions of the sociological understanding of policy instruments.

in principle, participation in the DWIH is voluntary, as is also assumed by meta-organisation theory for these forms of collective action, the data reflects that the instrument must be contextualised: national characteristics, such as the nested governance structure and organisational constellations present a certain path-dependency (see section 4.1.3) so that non-participation is, in fact, not opportune. This is because this embeddedness in the respective environments reveals certain norms and entails expectations of compliance. These findings underpin the assumptions which have been borrowed from meta-organisation theory: reasons which explain participation refer to the logic of appropriateness being intertwined with an expectation of participation (Ahrne & Brunsson, 2005, p. 435).

12.2.7. Limits to Participation

Lastly, the analysis makes it possible to reveal factors which limit participation in SICs. In line with meta-organisation theory, a key challenge to participation is a case of too much similarity between the meta-organisations and their members (here SICs and their stakeholders) since this raises the question of boundaries (Ahrne & Brunsson, 2005). The case study data found evidence of this concern. In the German case, stakeholders deliberately refrained from using the DWIH (and thus from promoting collective action) to secure their own visibility first. This finding is not surprising since German actors were keen on maintaining their visibility from the start, as the development showed. In fact, this finding reaffirms the constraints that the DWIH encountered throughout their institutionalisation (and which explain their set-up). In a similar vein, the findings of the Swiss case point to strategic considerations that limit participation. Swiss actors stressed the importance of being more strongly visible in cases of joint cooperation with Swissnex: their logo needed to be bigger than the Swissnex logo.

Another limiting issue that was mentioned in the Swiss case is that of keeping strategically relevant topics and resources close, rather than delegating them. This was decided so that the actors remained in control. In this context, the aspect of resource availability emerges as being crucial. Both cases show that stakeholders that have sufficient resources at their disposal are less dependent on the SICs to maximise their impact, which confirms the assumption of meta-organisation that SICs "*become organizations for the weak rather than the strong*" (Ahrne & Brunsson, 2005, p. 435).

Participation might be better explained instead by one of the other themes (such as collectivity, expectation or even precautionary reasons).

This shows that the transfer of activities towards collective action has limits that are decided upon by stakeholders' strategic behaviour. Constraints to collective action in the SICs are hence linked to cost-benefit considerations (Ahrne & Brunsson, 2005). Since in the Swiss case, cooperation entails a financial contribution by participating actors, there must be clearly articulated and perceived benefits to their use. A last point that was mentioned as limiting participation relates to different priorities. Both cases refer to situations where organisational interests take precedence and stakeholders do not use SICs because the area/topic is not relevant for the actors. To sum up, this section revealed constraints on the use of the instruments. The findings reaffirm that stakeholders have strong vested interests and operate to preserve them.

12.2.8. Sub-Conclusion: Comparing Rationales for Participation

The previous sections analysed the sense-making of key stakeholders in relation to the use of the two SICs comparatively. This was a crucial analytical step, which sheds light on the instrumentation and ultimately the institutionalisation of the instruments. The findings reflect a large overlap and consistency in the use of SICs across the two case studies. Despite differences in their modus operandi, core missions and goals, and their governance structures, their (non-) use by stakeholders reflects a high degree of coherence: key actors act predominantly strategically. This is not surprising since the two SICs are designed for similar stakeholder groups, namely key actors in the research, science and innovation landscape. These stakeholders are embedded in a national environment which is subject to common pressures that are located between the poles of competition and cooperation (J. J. W. Powell, 2018, 2020; Ruffini, 2020a). Accordingly, similar responses and similar behaviour towards these pressures are not uncommon. In addition, the data pointed to a policy transfer between Germany and Switzerland to tackle similar challenges.

Key assumptions, which were extracted from meta-organisation theory, helped to illuminate and explain the findings, such as voluntary participation in this collective action, struggles among members over the organisational set-up and the relevance of these kinds of instruments depending

on the actors' access to resources. The analysis furthermore shows that interpreting the findings from a meta-organisation perspective is useful in explaining stakeholder participation. The theoretical assumptions hold explanatory power as to why stakeholders create, join and participate in SICs (even though the question of whether SICs are themselves meta-organisations has been left aside). This coherence is also reflected in the subsequent overview, which aligns the case study findings with the theory (see Table 45)[241], while also certain assumptions could not be confirmed in these two cases and will be discussed briefly.

Firstly, increased cooperation among SICs' stakeholders was not identified as a key political goal but instead was referred to in the data as a by-product. This can be explained by the nature of SICs' activities. SICs largely operate internationally and aim to impact their environment in such a way as to change interactions with international partners by means of collective action. Intensified national cooperation among the SIC stakeholders might, however, facilitate this. Secondly, gaining social status and prestige were not identified as relevant to explaining the use of SICs. However, this was explained by sampling aspects and a certain bias due to the inclusion of actors involved in the governance of the SICs; these are hence presumably stronger actors. The data in fact shows that stakeholder participation is, to a large degree, independent of the SICs' reputation, since their own brand and reputation is more significant than that of the DWIH or Swissnex (cf. interviews DWIH1, GIS5, SIW2). This might potentially change in the future; it is often assumed that the DWIH are already greater than the sum of their individual parts and hence may (increasingly) carry this prestige. However, this must be contextualised and it holds true for those regions where the actor is already operating. The situation might be different when actors are confronted with unknown territory and, in fact, might draw on the SIC brand to facilitate their own activities, as in the case of Swissnex, and serve as a door-opener in some cases. For less well-equipped actors, the advantages of visibility, prestige and social benefits might in fact be higher, and it should be noted that SICs are ultimately also designed for these cases.

241 That data was analysed in an inductive way to remain close to the original interview data. Therefore, compared to the theory, slightly different yet data-inspired categories were developed, which overall reflect a degree of coherence with the theory (see Table 45).

Table 45 Alignment of Findings to Meta-Organisation Considerations

Reasons to Join a Meta-Organisation		DWIH	Swissnex
Inducements	(1) Support for the organisation's purpose	General support for the idea	General support for the idea
	(2) Cooperation opportunities between members	--- *(not a key concern)*	---
	(3) Change interactions with the environment	Maximise (and reinforce) own impact internationally	Maximise (and reinforce) own impact internationally
	(4) Exert external influence (through collective action)	* Maximise the impact of the whole (science) landscape * General support of the idea	General support for the idea
	(5) Protect own interests	* Push visibility abroad * Access to resources * Opportunities for strategic (re)positioning	* Access to resources * Strategic considerations (limiting)
	(6) Benefit from social status and prestige	---	---
Expected Contribution	(1) Cost-opportunity balance	* Thematic fit & synergies to own work * Concerns about visibility * Cost-benefit considerations	* Thematic fit & synergies to own work * Cost-benefit considerations
Precautionary Reasons	(1) Participate to not be left out	Precautionary reasons	Precautionary reasons
	(2) Prevent undesired developments		
Identity	(1) Logic of appropriateness	* Institutional expectations * Membership	---
	(2) Expectation to participate from environment		*Institutional expectation to participate
	(3) Participation equals an entry criterion	---	---
Availability of alternatives		---	---

Source: created by the author.

Thirdly, in a similar vein, SICs have not yet become institutionalised to the extent that they have become an entry criterion or that they serve as accreditation for participating in certain markets (while admittedly, their structures are advantageous for market entry). This might change in the future and is subject to increased institutionalisation of the SIC brand abroad. Both instruments might develop into meta-brands that serve to accredit actors' work and increase credibility, in a similar way to diplomatic representation, for instance. Stakeholders might benefit from the symbolic power of the instruments, although this also raises questions of desirability, which links to visibility, in particular individual versus collective visibility. Finally, the availability of alternatives did not seem to be a consideration among the actors sampled. All the actors stressed that they are capable of

operating on their own—even in the absence of SICs (this is subject to further validation among other actor groups). The data also stresses the aspect of responsibility, which is not mentioned in the theory on meta-organisations. Stakeholders also participate in SICs to give more visibility to other actors that do not have similar resources in place. While this could be considered general support for the SICs' purpose, it constituted a relevant consideration in the German case and even reflects how the instrument is appropriated. To sum up, the considerations of meta-organisation theory, more specifically its assumptions on organisational behaviour, provide a valuable lens for understanding participation in SICs, with some limits.

12.3. Conclusion

This chapter analysed the two case studies (*service-oriented SIC* and *representational SIC*) comparatively. This was done by me first analysing the development of the instruments comparatively and, secondly, by me defining their instrumentation by key actors. The heuristic framework of the sociological understanding of policy instruments as institutions was deployed, as were considerations from meta-organisation theory (leaving the question aside of whether SICs are themselves meta-organisations). While the development initially differed between the two cases, the subsequent evaluation depicts strong coherence between them and the instrumentation by key actors also shows an alignment. If we aggregate these findings even further, it can be argued that a handful of factors were singled out as being relevant for the SICs to develop, whereas the exact expressions in the national contexts differ and provide a contextualised and nuanced understanding. The following conclusions can be drawn from the comparative analysis in this chapter.

Firstly, the analysis of the two SIC models reveals that they embody and reflect national governance arrangements and inherent system beliefs. Their development and institutionalisation can be understood as being strongly shaped by aspects of timing and contingent events (throughout their development), national characteristics (i.e., their environment) that ultimately determine governance structures, and design principles which have largely remained inert over time. Their development is further explained by critical junctures that had an impact on their workings.

Secondly, the development of the two SICs further depicted instrumentation effects which consolidated the two instruments and which account for

their institutionalisation. The data shows evidence of aggregation effects, representation effects and appropriation effects, which in combination, reinforce a process of institutionalisation and account for the longevity of the instrument.

Thirdly, appropriation effects in particular reveal that the two instruments have created their own contexts, which differ from the apparent objectives that are tied to the SICs. Aspects such as being a platform for their own strategic behaviour or competence advancement (hence reaffirming certain power-relations) have been revealed among key actors (also political actors). This platform creates a new legitimacy for the instrument to be in place and again fuels a process of institutionalisation. In a similar vein, the instrument created a new sense of collectivity (nationally and internationally) and a distinct configuration of stakeholders that led to new and different interactions, which points to a distinct instrumentation effect.

To sum up, in line with the empirical findings which have been presented in this study, it is argued that the development and institutionalisation of the service-oriented SIC and the representational SIC are subject to design principles that were adopted early on and are to a large degree explained by national system characteristics. In addition, both models encountered critical junctures that led to reorganisation of the instruments. Furthermore, contingent events and timing also played a role. Finally, the analysis of both models reveals that appropriation of the instruments by key stakeholders is a significant explanatory factor. Key stakeholders in the science and innovation landscape predominantly use the instrument strategically. However, they also create their own contexts and sense-making, and thus fuel institutionalisation dynamics and explain the SICs' inertia, against outside pressures (Lascoumes & Le Galès, 2007), over time. What is more, ministerial actors use the instruments as a platform for conveying changing (political) objectives. The next section draws conclusions about the research which was conducted and applies these key findings to the scholarship on science diplomacy in order to conceptually advance and reflect on this notion.