



The value of international assignments through the lens of real-options-reasoning

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ABSTRACT

Studies over several decades demonstrate that international assignments (IAs) are implemented for a variety of reasons and yet their total organizational value is generally not assessed nor theoretically understood. We suggest that a new theoretical approach is needed in order to understand the organizational value of IAs more fully. Using data from the financial services sector we apply real options theory to IAs and identify two organizational real options – for the home and host respectively. We argue that real-options-reasoning offers theoretical clarity to understanding the organizational value of IAs. This paper identifies new practical consequences for managers to maximize the value of their IAs and a series of research propositions to extend our comprehension of IA managerial decision-making.

1. Introduction

Research into the purpose and impact of IAs has existed for more than 40 years (Dabic, González-Loureiro, & Harvey, 2015; Kraimer, Bolino, & Mead, 2016). Indeed, Edström and Galbraith's (1977) seminal paper evaluating the purpose of IAs (Caligiuri & Bonache, 2016) considered IAs to be intrinsic to the business internationalization process. Furthermore, the value of HRM practices is widely acknowledged as important (Malik, Pereira, & Budhwar, 2017). However, International Business (IB) research into the organizational value of IAs tends to consider only recipient host subsidiaries, excluding the (sending) home organization, (see, for example Konopaske, Werner, & Neupert, 2002; Singh, Pattnaik, Lee, & Gaur, 2019) or explores the organization as a whole, ignoring the potential interplay between home and host (Renshaw, Parry, & Dickmann, 2020b). Several literature reviews of the IA field identify very limited investigation into the organizational value of IAs and recommend it as field for further study (Baruch, Altman, & Tung, 2016; Caligiuri & Bonache, 2016; Dabic et al., 2015; Kraimer et al., 2016). This highlights an opportunity to increase our understanding of the value that organizations achieve through IAs.

Extant literature often focuses on components of the organizational value of IAs to the host or home/HQ, e.g. repatriate knowledge transfer (Froese, Stoermer, Reiche, & Klar, 2020), but not the full picture. Without broader theorization, how do we know that these benefits outweigh the costs of the investment to the organization (McNulty &

Tharenou, 2004)? Whilst a thin vein of literature on IA valuation offers some theoretical insights (McNulty & Tharenou, 2004; Renshaw, Parry, & Dickmann, 2020a), attempts to estimate or determine the organizational value in practice are extremely rare (McNulty, De Cieri, & Hutchings, 2009). Consultancy reports consistently identify the same issue, magnified due to the COVID-19 pandemic (e.g. Santa Fe Relocation Services, 2021). This means that practitioners and academics have a limited understanding of the true organizational value of IAs given that any value to the host may be to the detriment of the home (or vice versa). The purpose of this paper is to suggest an alternative theoretical lens in order to shed light on this issue.

In this exploratory research we propose real-options-reasoning as a theoretical lens to improve our understanding of IA organizational value. Through the application of this lens to two sources of interviews (38 in total) and an email questionnaire in the global financial services sector we illustrate how IAs can be interpreted as real options and hence how real-options-reasoning could improve our understanding of the organizational value IAs create. We identify several critical issues that, to our knowledge, have not been addressed previously in the IA literature nor by practitioners. These include the need to determine the anticipated organizational value of IAs on a portfolio basis rather than individually, to reassess this value regularly and to determine who has decision-making control over crystallizing this value.

This paper commences by defining our phenomenon of interest, the organizational value of IAs, before turning to review the literature. This

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demonstrates that the totality of this value is not adequately understood and allows us to position our research objectives. Thereafter, we explain real options theory and real-options-reasoning before establishing how this might apply to IAs. After outlining our method we present the findings to demonstrate the validity of interpreting IAs as real options. We then apply real-options-reasoning to the organizational value of IAs and provide a range of research propositions to extend the knowledge and theoretical understanding of the field through further study. These propositions also provide the basis for practitioner action. The limitations of this research are then summarized prior to our conclusions.

1.1. Defining organizational value and IAs

We define IA organizational value as ‘a calculation regarding an ongoing or completed IA in which the actual and still anticipated direct and indirect financial and non-financial benefits to a part or all of the organization are compared with the actual and still anticipated direct and indirect financial and non-financial costs to that part of the organization. All numbers are adjusted for the time-value-of-money.’ (Renshaw et al., 2020a, p. 23). This identifies the importance of considering value to the different parts of an organization involved in an IA. To identify IAs we follow McNulty and Brewster’s (2017, p. 20) definition of a ‘business expatriate’: ‘legally working individuals who reside temporarily in a country of which they are not a citizen in order to accomplish a career-related goal, being relocated abroad either by an organization, by self-initiation or directly employed within the host-country’. However, we exclude self-initiated expatriation as we anticipate the value dimensions will differ and warrant separate review given that the nature of an organization’s initial investment is distinctly different.

1.2. The value of international assignments

Whilst there are many researched phenomena which are considered to be beneficial organizational outcomes of IAs, for example knowledge transfer (Vlajčić et al., 2019) and leadership development (Rao-Nicholson, Carr, & Smith, 2020), these do not examine the broader phenomenon of organizational value. A recent literature review of IA organizational value identified three core streams of relevant research (Renshaw et al., 2020b).

First, a small vein of IB literature demonstrates that CEOs (and top management teams) with IA experience generate improved business performance which is amplified when firms have a global mind-set (Carpenter, Sanders, & Gregersen, 2001; Roth, 1995). Whilst this supports the belief that IAs are good for international business, it raises conflicts for firms wishing to implement IAs because this research finds that greater value is derived when the CEO has been externally hired and hence gained the international experience at the cost of another firm (Daily, Certo, & Dalton, 2000). Furthermore, this provides limited guidance on the total value of an IA given that the prior implementation costs are excluded from the research such that any implications of the home-host interaction effect are missing.

A second body of IB literature investigates the impact on the performance of overseas subsidiaries by reference to their use of IAs. This sits within a wider analysis of the performance of subsidiaries in general, for example regarding their foreign direct investment strategies (Dunning, 1980). The underlying theme indicates uncertainty with some researchers reporting that an increase in the number of IAs in a subsidiary increases its performance (Gong, 2003; Hyun, Oh, & Paik, 2015) with others reporting the opposite (Distel et al., 2019; Tao, Liu, Gao, & Xia, 2018). Furthermore, findings indicate that certain characteristics are needed for beneficial effects to arise, but provide conflicting evidence. Cultural distance is one such example with Gong (2003) and Gaur, Delios and Singh (2007) finding an increasingly positive effect of IAs as cultural distance increases whereas Colakoglu & Caligiuri (2008) identify the opposite impact. Consistent with the CEO literature

described above, whilst this body of research may promote the use of IAs at the subsidiary level it offers only a partial view of the value of IAs as it excludes the impact of IAs on the home.

Finally, some recent literature researches the measurement of IA value both to the organization and to the assignee. This is generally undertaken using the terminology of ROI (return on investment). Whilst there is recognition that ROI would be better applied as an overarching construct under which several valuation mechanisms may sit (Doherty & Dickmann, 2012), research also offers specific theoretical and simplified formulae for the calculation of ROI (McNulty & Tharenou, 2004). These formulae provide a starting point to understand the dynamics of IA value. However, as the authors acknowledge, they treat the organization as a single entity which simplifies reality.

Whilst conceptual frameworks also exist for the measurement of the organizational level of value, these are not applied in practice (McNulty et al., 2009; Schmidt & Minssen, 2007). This indicates that a new approach may be needed to unpick these different organizational effects. In our search for a theoretical lens that might move our understanding forward, whilst there are numerous theories already used in the field of IA research, we identified the potential of real options theory. Hence our research questions were, can an IA be perceived as a real option? And, if so, how might the application of real-options-reasoning develop our theoretical understanding of the organizational value of IAs?

2. Real options

2.1. Real options theory

Real options theory emphasizes the advantages of maintaining flexibility with respect to investments in a context of uncertainty, both endogenous and exogenous to the organization (Chi, Li, Trigeorgis, & Tsekrekos, 2019; Ragozzino, Reuer, & Trigeorgis, 2016). Such uncertainty is highly familiar to researchers and practitioners alike in the field of IAs (Bader, Schuster, & Dickmann, 2019). Meanwhile, internationalization has been identified as a generator of real options not necessarily possessed by domestic firms (Driouchi & Bennett, 2012). This has led to the use of real options analysis to understand investments in human capital (Bhattacharya, Doty, & Garavan, 2014; Foote & Folta, 2002) and in the practices of HR which operate under uncertainty (Bhattacharya & Wright, 2005; Griffith, Baur, & Buckley, 2019; Maley, 2019; Maley, Moeller, & Ting, 2020), but not yet to understand the organizational value of IAs.

Real options theory is derived from financial options theory and was first identified by Myers (1977). Fundamental to real options theory is the making of an investment (the option) in a non-financial asset (a company, land or a patent for example) in which downside risk is limited whilst still retaining access to upside potential under conditions of uncertainty (Ragozzino et al., 2016; Trigeorgis & Reuer, 2016). An example in the IB literature is when parties create an international joint venture (IJV) to enter a new market. In a 50/50 IJV it is standard practice for the agreement to incorporate an option for each party to buy out the other in the future (J. Li & Li, 2010). This is a real option and is identified as an agreement between a buyer and a seller that gives the purchaser the right to buy or sell (called the right to exercise) an agreed asset or liability at a later date(s) at a price agreed (this is called the exercise or strike price). The payment for such a contract is called the option premium and in the case of the IJV this would form part of the initial shareholders agreement. The exercise price would be set by formula.

The value of a real option is a function of the components of the contract and the uncertainty or volatility of the underlying variable. For example, an option to buy out an IJV partner in a highly unstable industry or geography has higher value compared to a stable situation *ceteris paribus* because the possibility of selling at a gain is higher. Instability creates the potential for significant changes in value whereas stability makes the value more certain and less likely to fluctuate.

Finally, an option is said to be ‘in the money’ at the point in time when exercising it would generate a profit. In this example if an IJV partner could see the likelihood of gain by exercising its option to buy out its partner, this would be considered to be ‘in the money’.

Optionality builds on its usage in standard day-to-day language, i.e. the availability of choice. The core to an option is the right, but not the obligation, to take a future action. At the center of an option sits a fundamental decision asymmetry in relation to making a future decision, e.g. to invest or dispose, only if there is a benefit to the decision maker (Trigeorgis & Reuer, 2016). However, what real options theory identifies is that the greater the uncertainty connected with an investment, the greater its potential value.

Real options theory has two broad applications: real options modelling (also known as real options valuation or real options pricing) and real-options-reasoning (J. Li, 2007). Formal modelling of real options, as arises in the financial and economics literature, has its advantages. These include the requirement to be specific and transparent about the assumptions made to address the multiple sources of uncertainty that can affect the options (Trigeorgis & Reuer, 2016). However, real options valuation requires hyper-rationality assumptions and capabilities that managers may not possess in reality (Miller & Arkan, 2004) such that their practical use could be untenable. This has led to the move, especially within strategy literature, to the use of a qualitative real-options-reasoning approach.

2.2. Real-options-reasoning and strategy

The principles of real options theory have been applied in strategy to overcome the restrictions of a net present value (NPV) based decision-making tool. Such a tool is unable to recognize the benefits of risk and uncertainty given that NPV decreases as risk increases (Chung, Lee, Beamish, Southam, & Nam, 2013; Ragazzino et al., 2016). Given the complexity of strategic decision-making, real option principles have been adapted to create a real options logic (McGrath, 1997) also known as real-options-reasoning. This has generated a strategic mapping procedure rather than a pure valuation exercise through which ‘decision-makers acquire competences for sequencing commitment in a foresightful [sic] and incremental/flexible manner’ (Driouchi & Bennett, 2012, p. 42). The aim is to overcome standard heuristics to minimize risk (Miller & Arkan, 2004) and to favor keeping options open – avoiding irreversibility, given the potential for future value. Real-options-reasoning is effectively a synthesis of the evolutionary descriptive approach to decision-making which recognizes managerial flaws and an options-pricing normative mechanism that assumes there are no such flaws. This approach brings managers’ attention to the key factors which affect the value of their investments which are ‘option like’ (Hunt, Song, Townsend, & Stallkamp, 2021) in order to make effective decisions.

There is now growing evidence of businesses having developed the competences for real options planning (Busby & Pitts, 1997; Trigeorgis, 2005) with a focus on tangible asset investments and research and development. Strategic decision-making using real options theory is generally applied to macro level issues such as forms of governance, outsourcing and strategic bankruptcy (Driouchi & Bennett, 2012; Gao & Driouchi, 2018; Kang, James, & Fabian, 2020). Real-options-reasoning has not achieved scholarly consensus as to its properties, yet it can be an intuitive decision-making metaphor with inherent advantages for resource allocation under conditions of uncertainty (McGrath, Ferrier, & Mendelow, 2004). This means that it has potential for a role in IA management given that this is a clear example of resource allocation in uncertainty.

Emphasis is often placed on the role that options have in limiting downside risk whilst maintaining upside potential. Thus, real-options-reasoning goes beyond traditional risk management which concerns itself with downside protection. This has advantages given the dynamic trade-off that all firms face between commitment (making an irreversible or specific investment) and flexibility (J. Li & Li, 2010; Smit &

Trigeorgis, 2007). The option to defer must generally be traded-off against the learning and strategic benefits of commitment. This includes the value of embedded follow-on options to abandon, grow, or switch the initial investment. This trade-off requires regular careful management to maximize effects. If, for example, first-mover advantage is key, then waiting to exercise an option may be sub-optimal. Hence, the regular reassessment of investments and their anticipated value is vital.

Fundamental to a real option and its valuation is that its exercise will directly affect the value and exercisability of other real options (Ragazzino et al., 2016). If a firm exercises an option to purchase its partner’s stock in an IJV, this reduces that firm’s financial reserves and affects its capability to purchase new technology. This also arises in the classic example of 50/50 joint venture partners described earlier, where each party has the option to buy out the other’s shareholding (Adner & Levinthal, 2004; Trigeorgis & Reuer, 2016). These are known as shared options, i.e. an option over the same underlying variable.

The benefit of real-options-reasoning is that it encourages firms to take on more uncertainty, to stage investments over time (thereby limiting downsides and maintaining upside), to manage their extant options more closely and to take a portfolio approach to their options. It is most appropriate when key value drivers can be identified and conceptually synthesized based on verbal reasoning, yet formal valuation is extremely complex (Trigeorgis & Reuer, 2016).

2.3. IAs, real options and real-options-reasoning

Real-options theory has previously been used within other areas of the HR literature. For example, Bhattacharya and Wright (2005) drew attention to the usefulness of real options theory in HR by proposing a series of practices which could be considered HR Options which Sanyal and Sett (2011a, 2011b) investigated empirically. However, these papers did not apply this perspective to IAs. More recently, Maley et al. (2020) has applied real options theory conceptually to IA programs.

We argue that the implementation of an individual IA is an investment in an intangible asset (the assignee) and the future value of this IA is a function of many complex and inter-related uncertainties, hence the home is creating a real option (which we refer to as an IA Option) each time an IA is established. We illustrate this in Table 1 using the option terminology introduced earlier.

Investing in the home’s employees by sending them on IAs creates

Table 1
An illustration of an IA as a real option to the home.

Option Terminology	Explanation	IA Real Option Illustration for the Home
Premium	Cost of investment	The costs of sending the assignee and their family plus any contributions to remuneration whilst on IA
Value	Present value of all future cashflows generated by the assignee	The value the individual assignee brings to the home upon repatriation less the premium costs
Exercise Date/Time to Expiry	Length of time during which the option has usefulness	To the end of the initially anticipated IA period
Exercise/Strike Price	Cost of subsequent investment which is rarely identifiable with certainty at the outset	Cost of repatriation and new role
In the money	Whenever cumulative returns on the asset exceed cumulative costs	When the value to the home of new skills gained by the assignee during the IA exceeds the premium plus the exercise price
Expiry	Letting the option lapse	Choosing not to repatriate as originally planned
Variance	Riskiness of the asset as affected by exogenous and endogenous uncertainties	The business, country or family circumstances affecting the assignee’s performance

options regarding the future application of these employees, for example by assigning them to a new IA or repatriating them to share new knowledge. The premium could be considered the cost of sending the assignee and the value could be the long-term benefit that the home seeks to achieve. The basic uncertainties involved in this investment are whether the IA will achieve its intended organizational goals. Hence, the future value of this IA to the home is a function of many complex and inter-related uncertainties (variances), such as the volatility of the economy into which the IA is placed, the cultural distance between home and host or the role of HRM. Responses to these uncertainties can happen in numerous ways which appear to align with the five strategies suggested by Trigeorgis (1996), for example: 1. Wait (do nothing); 2. Abandon (end the assignment or fire the employee); 3. Extend (lengthen the assignment); 4. Scale down (shorten the assignment) or 5. Switch (send on a new IA).

Despite the potential to consider IAs as real options, an ‘overly simplistic analogy’ between the two may not be realistic due to the complexity of managerial issues and the necessary assumptions made in financial options to overcome these (Ragozzino et al., 2016, p. 430). A real-options-reasoning approach on the other hand offers valuable insights by raising useful theory-led questions. For example, optionality can be seen when firms seek to identify an assignee’s next role and yet the out-of-sight-out-of-mind syndrome (Caligiuri & Colakoglu, 2007) may cause organizations to fail to recognize this and miss the optimal repatriation point (Schmidt & Minssen, 2007). This is consistent with Kogut and Kulatilaka’s (2001) framing of real options capabilities as dynamic remedies against organizational inertia. In other words, treating individual IAs as real options may draw attention to the benefit of regularly reassessing their potential value and hence enable better decisions (reducing the out-of-sight-out-of-mind situation). We discuss this further in Section 5 below.

The uncertainties affecting the value of real option investments can be considered as exogenous risk, e.g. external markets, external parties and third-party negotiations, or endogenous risk (Chi et al., 2019). Bhattacharya and Wright (2005) conceptualized the source of uncertainty affecting HR options as either the firm, the market or the individual. Hence, in an IA the value is also affected by the assignee’s personal issues and decisions such as the assignee’s ability to leave the firm and seek alternative employment. The assignee, therefore, also holds an option – the option to move employer – which we refer to as the Assignee Option, thereby taking their skills to benefit another firm (Daily et al., 2000). Hence, there is the potential for a complex interplay between these real options over the IA which may be considered shared (as distinct to proprietary) options, i.e. the parties have an ability to exercise an option to access the same pool of value and the exercise of the option by one party affects the value of an option to another party (Busby & Pitts, 1997; Smit & Trigeorgis, 2007).

In summary, an IA may be theoretically explained in real options terms as an organizational investment in an intangible asset (the assignee) offering the organization options for future deployment. The original intention in relation to an IA is to exercise the option at the end of the planned IA term through the strike price of a new role upon repatriation. As, for example, the assignee gains new skills or shares knowledge so the investment may move to be ‘in the money’ and generate net value if exercised. The value of this option is affected by uncertainty such that maintaining organizational flexibility maximizes that value.

Above, we have explained the background to real options theory as well as real-options-reasoning and argued for IAs being considered as real options. We now present our method before demonstrating how our findings address our research questions: can an IA be perceived as a real option? And, if so, how might the application of real-options-reasoning develop our theoretical understanding of the organizational value of IAs?

3. Method

We use a case study approach within the financial services sector. This sector is useful for studying IAs due to its globalization, labor-intensive nature and prevalence of IAs (Boyacigiller, 1990; Doherty & Dickmann, 2009). Accordingly, the UK subsidiary of a global bank was approached for a pilot study providing a contemporary setting with relevant context for a case study design (Yin, 2018). (See Table 2 Part 1 for demographic details of the interviewees).

At the time of the pilot study, the global bank was ranked in the top ten of the world’s biggest banks (Forbes, 2016) and had a history of using IAs throughout its network. It did so both on traditional long-term assignments of more than one year (where the assignee moves physical location and brings their spouse and family funded by the business), as well as on short term assignments either in recognition of high performance or in schemes for high-potential staff. Internationalization had been an active component of the bank’s strategy for several decades.

The purpose of the pilot study was to test the semi-structured interview protocol. Questions were designed based upon the relevant IA literature. Questions investigated interviewees’ perspectives of organizational value to explore views on what that value is, how it is created and how it is retained. Interviewees were not advised as to the research objectives regarding real options. The pilot study resulted in only minor changes to the interview protocol given that, as explained below, responses supported the principles of real options. We draw on these responses in our findings below.

Following the pilot study, an extensive study was undertaken at one of the bodies responsible for the European Union’s financial regulatory system. This public sector body, created after the 2008 global financial crisis, has under 300 employees and has hosted long term international assignees since inception amounting to approximately 10–15% of its staff at any one time. We refer to this organization as the CSO (Case Study Organization) in order to anonymize the entity in line with its agreement to take part in this research. We draw on 34 semi-structured interviews: 27 face-to-face plus seven phone-based interviews between February 2017 and February 2018. The interviewees included 13 current international assignees, seven individuals who had recently completed IAs, nine line-managers/HR professionals involved in sending assignees to the host and five such people involved in receiving assignees at the host. Demographic details of this group are shown in Table 2 Part 2. After these interviews were completed, a questionnaire was sent by email to each of the 34 interviewees seeking their open-ended responses on the application of real options theory to interpret IAs (see Appendix 1). Given the technical financial regulatory role of the CSO we anticipated they might be familiar with option terminology. Detailed responses were received from eight individuals, which was considered a good response in view of the 12-month delay in sending the questionnaire for the earlier interviewees and the significant career impact that the UK’s exit from the European Union was having on these individuals at the time.

A combined total of 38 interviews plus eight questionnaire responses is comfortably above the norms for theorizing within qualitative research more generally (Boddy, 2016; Easton, 2000) and specifically within the field of IA research where a threshold of 30 interviews has been identified (Tharenou, 2015). Furthermore, as an exploratory study, the homogeneous nature of the participants is consistent with an ongoing research process (Alvesson & Ashcraft, 2012).

All interviews were recorded and professionally transcribed. The data were then coded against the key terminology for real options and real-options-reasoning, i.e. those shown in Table 1 above. The codes were then subdivided because separate options were identified for each of the home, host and assignee (as further described below). Additional codes were added to differentiate between the many different types of uncertainty affecting the IA value. Responses to the questionnaire all included direct reference to real options and real option terminology as this was invited through the questions (see Appendix 1). Quotes that are

Table 2

Demographic interviewee data.

Part 1: Demographic data of pilot study interviewees						
Interviewee	Seniority	Male/Female	Assignee	Managing Expats	Reporting into Expats	Country of Origin
B-001	Middle manager (Hi-Po)	Male	Yes. Currently	No	Yes, previously	Spain
B-002	Executive	Male	Yes. Previously	Yes, previously and currently	Yes, previously and currently	UK
B-003	Executive	Male	Yes. Previously	Yes, previously and currently	Yes, previously and currently	UK
B-004	Junior manager (Hi-Po)	Male	Yes. Currently	No	N/K	Brazil
Part 2: Demographic data of CSO (Case Study Organization) interviewees						
Total Number of CSO Interviewees				34		
Number of Assignees				Current Assignees – 13 Ex Assignees – 7		
Number of Home country interviewees (excl. Assignees/ex Assignees)				Assignee Line-manager – 5 HR Line-manager – 4		
Number of Host country interviewees (excl. Assignees/ex Assignees)				Assignee Line-manager – 4 HR Line-manager – 1		
Time spent as Assignee at time of interview				Min 3 months - Max 72 Months Average 22.9 Months		
Male/Female Ratio				21/13		
Average Interview length				1 hour		
Time spent by interviewees working in Govt				Min 3 years – Max 38 years Average 11.3 years		
Age range of interviewees				20 – 29: 1 30 – 39: 10 40 – 49: 17 50 – 59: 6		
Number of CSO Interviewees responding to written questionnaire post interview				8		
Number of countries sending Assignees to CSO				9		
Number of organizations sending Assignees to CSO				14		
Number of Home country organizations from which line-managers were interviewed				6		

drawn from the questionnaire are identified as such below. As noted below, however, some interviewees referred to optionality without invitation. The findings are detailed next.

4. Findings - the case for interpreting IAs as real options

Without any directly related questions nor a description of our theoretical expectations, interviewees made comments about the organizational value of IAs supporting the theoretical significance of real options:

‘it’s optionality it gives you...optionality’ (B-002).

‘There are all these embedded options for me to go to the [home]’ [IP02].

We now explain how our findings demonstrate support for interpreting IAs as real options using the headings from Table 1 above.

Option Premium and Option Value: The results suggested that investing in human capital by sending an individual overseas on an IA is consistent with a real option. The underlying variable (asset) being the assignee. Consistent with, say, a technology investment decision (McGrath, 1997) the option premium could be considered as the costs over time of the planned assignment or over the assignee’s career with the employer. For example, in the questionnaire one respondent proposed that: *‘The premium would be the salary that the [Home] pays to the*

assignee. In this sense the Home would be the buyer of an option, the value of the option increases as the [assignee] gains the skills the [Home] is interested in’ [IP13]. Giving a specific example of such a skill, another interviewee commented that the business *‘will have executive managers that will be able to take better decisions for the organization’ (B-001).*

The interviewees indicated that the home has an option regarding what to do with the assignee at the end of the IA. For example, *‘When I return to the Home let’s see if they give me more responsibility or if they want me to do something else in view of what I have learned here. If they give me this opportunity, the value could be really really high. [IP31].’* This suggests that implementing that decision represents the home exercising its option and that applying the assignee’s new knowledge judiciously can create high value to the home. As described by one questionnaire respondent:

‘The asset may [be] the bundle of the (stochastic) cost (e.g. salary) and benefits (e.g. work output) of the [assignee] of working for a particular organization. At the end of the initial contract (=exercise date) the home organization has the option to obtain the [assignee’s] bundle. Its exercise price could be conceptualized as the opportunity cost of making this choice, e.g. not having an alternative person at the position that the returning [assignee] would fill and not allowing the [assignee] to learn even more at the [host]’ [IP19].

The findings identified that the IA Option could be considered as two options as both the home and the host have competing desires over the future employment of the assignee; we name these the Home IA Option and the Host IA Option respectively. To illustrate this, one interviewee noted in the questionnaire that: *‘if the [host] exercises the real option and offers [a permanent local] position to the secondee, then the Home has made a loss-making investment.’* [IP39]. Furthermore, another respondent wrote that: *‘this is not a unilateral option. Because many [assignees] do not want to stay [at the host]’* [IP01] indicating that the assignee also holds a real option. One interviewee explained: *‘It buys optionality on both sides’* (B-003). In other words, an organization cannot ultimately control their human capital assets because employees can leave to work elsewhere. According to one interviewee: *‘a concern of [home] of course, [is] that they won’t come back because they see they can earn more money elsewhere or, I don’t know, a better position elsewhere. ... when there is a reluctance to send people, that’s a main concern that they won’t come back.’* [IP06]. This is consistent with the increase in career capital arising during an assignment enabling boundaryless careers (Dickmann & Doherty, 2010; Stahl, Miller, & Tung, 2002). We call this the Assignee Option. Hence the Host IA Option, the Home IA Option and the Assignee Option are shared options over the same underlying asset, the assignee.

Option Exercise Date/Time to Expiry: Conceptually the findings indicated that the date of exercise for the Home and Host IA Options was the end of the defined IA period normally established at the outset. However, these periods are often extended. For example: *‘My initial contract was 18 months, but that time has been extended another 18 months’* [IP14]. Another interviewee added *‘and then [my contract] literally rolled and rolled’* [IP08]. These extensions could represent the creation of new real options as well as exercising the right to defer the original option. Whether or not the assignee remains an employee, through exercising the Assignee Option, was indicated to be a boundary for the exercisability of the IA Home and Host Options.

The results suggest that there is considerable skill needed in deciding when to exercise the IA Options, as their value is affected by the passage of time and the underlying volatility of the investment. One interviewee explained that *‘our whole HR policy is to try and map the talent or map the people to ... particular situations’* (B-002). This may not be a straight line relationship and some evidence from the literature suggests it may be curvilinear, e.g. at some point extending the length of time on assignment may have a negative impact on an individual’s learning or value to the home if they ‘go native’ (Nguyen, Felfe, & Fookien, 2012). This is further complicated given the implication that there is competition between the Home and Host IA Options. For example, one interviewee declared that *‘something that would increase the value to the host would be potentially longer IA periods and clearer ability to turn it into permanent contracts, but the counterpoint of that is from the home’s perspective that they would want to have a clear limitation on the possibility of the assignee becoming permanent at the host.’* [IP12].

The value of an IA Option was shown to be a function of not just when it was exercised, but also where it was exercised. This meant, as described above, that the assignee could be placed in a range of different new roles across new departments, geographies and subsidiaries, by either the home or the host. Consistent with this complexity one interviewee suggested: *‘Probably the only way ... to get all the value of the IAs is that the decision after the secondment, where you are going to employ this person, has to be clarified’* [IP03].

Option Exercise/Strike Price: The findings suggested that the cost of providing a new role to the assignee represented the strike (or exercise) price of the Home and Host IA Options. This is the cost of placing the assignee in a future role that may take advantage of the anticipated increased skills and competencies from the IA whilst being acceptable to the assignee, e.g. in terms of career growth. For example, one interviewee explained that: *‘if I want to go back...I should be able to have a space that is relatively similar in terms of seniority that I am here...In spite of what is the reality of the business’* (B-004). This strike price and the point of exercise may differ in the home and host’s respective shared IA Options.

For example, as described in one questionnaire response *‘For the host organization the strike can come ... in the initial months of the [assignee’s] contract duration wherein a [permanent local] position becomes available in line with projected headcount growth’* [IP12].

Whilst financial options anticipate a known fixed strike price, real-options-reasoning in strategic planning acknowledges that this may not be the case for real options (Adner & Levinthal, 2004; Barnett, 2008). This is consistent with IAs. One questionnaire response explained that *‘when the underlying is a piece of human resources, then this underlying has an incidence on the strike price, since the strike price is the price it will accept in the future to return or stay at the [host], and such price may not be determinable ex ante’* [IP39]. Nevertheless, the results suggest that analysis and experience should allow identification of the IA strike price at any point in time akin to succession planning mechanisms. For example, the strike price may be low if the organization expects to have a shortage of internal talent for these future roles as it need not search hard to find it nor displace another employee in doing so. Of course, this still relies on the assignee’s reactions and the Assignee Option. For example, one interviewee proposed that: *‘from a home perspective [the value] is of course conditional upon me staying at the home and working there.’* [IP02].

‘In the money’: The results suggest that, with an IA Option, when the assignee has achieved their organizational goals (the upfront uncertainty) or improved a certain level of competencies, networks or knowledge from the assignment, the organization should be ‘in the money’. In other words, if the IA Option is exercised at that time there will be an overall benefit achieved from the investment. However, the timing is suggested to differ between the Home and Host IA Options given that interviewees described the value to the host being primarily during the IA and the value to the home being predominantly after it.

The move away from the balance-sheet salary method to more local packages for IA compensation (Toh & DeNisi, 2005) effectively seeks to bring forward the point at which an IA Option is ‘in the money’ because the purchase price of the option has fallen. Some IA Options may never be ‘in the money’ for the Home or the Host. For example, *‘First three months he absolutely loved it, but he then, six months later, couldn’t wait to get out’* (B-002). Continuing to leave an ‘in the money’ option unexercised may generate additional future value. The duration before exercising it depends upon the circumstance of each individual IA Option. One interviewee explained that: *‘I have a two years contract and it might take me two years to arrive or to make myself known to the organization, so if you really want to benefit from having me here you probably need to give me more time to do this’.* [IP04].

Option Expiry: IA research consistently reports that companies fail to find suitable opportunities post assignment for the individuals to use their new skills (Lazarova & Caligiuri, 2001). In other words, the Home fails to exercise its Home IA Option. As one interviewee said, *‘you have to make sure you retain those people’* (B-003). In this scenario the Home IA Option expires, especially if the new skills are forgotten about (McNulty, 2014). In the extreme, the individual exercises the Assignee Option and leaves the employer.

Variance: A wide range of exogenous and endogenous risk factors were identified by interviewees which create variance and uncertainty and hence have the potential to affect the value of all these IA options. Private sector pay level variations and employment trends were seen as relevant to the CSO as a public sector employer. The financial regulatory system in its broadest sense, alongside political factors such as the UK’s exit from the EU were all seen as having the potential to affect the expected value of the Home and Host IA Option and the Assignee Option. Also, unexpected budgetary pressures at each of the Home or the Host could have unexpected impacts on their future plans for the assignee. Similarly Host staff turnover was suggested as having the potential to affect the desire to exercise the Host IA Option. An extensive list of uncertainties was described as affecting the value of these IAs.

In conclusion, and in relation to our first research objective, the evidence strongly suggests that IAs can be considered as a form of real

option, as they represent shared options held by the home, the host and the assignee.

5. Discussion: applying real-options-reasoning to IAs – A research agenda

Using the real options lens draws attention to several important factors regarding the organizational value of IAs and may help to explain various IA practices. Perhaps most critically the results suggest that previous discussions of the assignees' ability to take actions for their own benefit which may undermine the value to the organization, such as 'going native' or resigning (Ahlvik, Smale, & Sumelius, 2016; McNulty, De Cieri, & Hutchings, 2013), overlook the potential conflict between the home and the host. For example, the main organizational goal which triggered an IA may have been to develop the assignee's leadership capabilities for the long-term benefit of the home. Despite this, the host may find conflicting ways to increase its own value (the Host IA Option), e.g. by diverting the assignee's daily tasks to a different area or by persuading the assignee to become a local employee. In such a case the host, rather than the home, may become the primary organizational beneficiary. If the home funded the original option investment (e.g. via centralized elements such as the administration processes of an HR Global Mobility function) this increases the materiality of these changes. The distinction is potentially greater if one considers an IA between sister subsidiaries in competition with each other, rather than an HQ-subsidiary assignment. This means that tracking the costs of implementing and managing IAs is critical to understanding the value of each IA Option and how individual IA line-managers may choose to influence the value to the host and home. Very little research has sought to explicate the cost side of the IA value dilemma (for a rare discussion, see Nowak & Linder, 2016) and the impact of analyzing these issues from the separate Home IA and Host IA Option may offer new insights.

One of the conundrums of IA research is the continuing investment in IAs despite the significant cost premium compared to using local hires (Bonache Pérez & Pla-Barber, 2005). On the face of it, an IA may appear to be an investment in a project with a negative NPV (net present value) contrary to traditional financial investment theory (Trigeorgis, 2005). However, real options theory explains these issues given that the investment operates in a volatile environment and is infused with uncertainty – it is this very uncertainty that generates value in the real option and justifies the investment. For example, continuing doubts as to the effectiveness of repatriation processes (Caligiuri & Bonache, 2016) questions the value achieved through IAs. However, this may be a decision to let the option to repatriate expire as the original investment is already 'in the money', i.e. sufficient value has been generated during the IA such that repatriation is not required.

In addition to the factors identified above through the application of real-options-reasoning to IAs, there are several other useful interpretations which raise new issues for practitioners and researchers alike. They also provide potential explanations for existing practices. We have summarized key items by reference to the norms in extant IA literature in Table 3. We now review some of these important examples and offer propositions for further research.

5.1. Option portfolio analysis in international assignments

Given the interactive effect of real options on each other as shared options, it is important to evaluate options on a portfolio basis (de Andrés et al., 2021; Trigeorgis, 2005; Zhao, Parente, Song, & Wenger, 2020). Evaluating each internal option separately and presuming their values are linear and additive is a mistake (Ipsmiller, Broutthers, & Dikova, 2019; McGrath & Boisot, 2005) therefore IA Options should be evaluated on such a portfolio basis. For example, sending additional IAs may cause the positive effect of existing IAs in the same host to drop or even disappear (Dutta & Beamish, 2013). Hence a portfolio approach to IA Options is vital to value maximization which, to our knowledge, is not

Table 3

The Impact of Real Options Reasoning on Typical IA Value Considerations.

Typical IA Value Assessment in Organizations (as per IA Value literature)	Applying Real-Options-Reasoning	Impact of Real-Options-Reasoning
Value to Host or Organization evaluated separately. Home not considered	Assessment from all perspectives (Home, Host and Organization)	Potential for conflict between Home and Host identified. Decision-making relationship uncertainties between business leaders and HR identified
Cost analysis not explicitly addressed	Cost identified specifically as premium investment	Clarity of cost factors
Cost management of IAs, e.g. increasing use of 'local terms' driven by organizational-level generic demands	Cost management of IAs interpreted through overall value lens	Clarity on long term impacts of IA cost management
One off decision before IA with a fixed return date	Regular reassessment of value including return date	Decisions explicitly incorporate uncertainty. Challenges the 'out-of-sight-out-of-mind' problem
Home involved at outset and upon repatriation	Home and Host continuously reassess value	Potential for conflict between Home and Host identified
Assignee ability to resign and influence value underplayed	Assignee Option key component of understanding value	Greater clarity of increased uncertainties and potentially conflicting agendas
Decisions to trigger and evaluate IAs predominantly to individual assignments	Portfolio analysis recommended, incorporating effects of individual assignments, plus home, host and organization.	Greater understanding of interconnected nature of the value of IAs
Focus on core IA goal, e.g. underlying task versus personal development	All goals and impacts on others considered to evaluate uncertainties involved	Broader view of IA goals, stakeholders and impacts

considered by the practitioner community.

When applying such a portfolio approach to IAs, a critical question is, who has primary internal accountability for managing an IA – HR or the Business? The role of Global Mobility and the HR function in IAs is notoriously separated from the strategic drivers of many businesses (RES Forum, 2018). Whilst HR may be the most aware as to the high value of a Home IA Option, those with the ability to exercise it in the business operations, constrained by bounded rationality, may not have that same level of understanding. Furthermore, HR may be seeking to exercise the Home IA Option whilst business operations control the Host IA Option. Hence a fissure between HR and business operations (Perkins & Daste, 2007) may trigger organizations to create these IA Options and yet fail to exercise them judiciously. This could explain the paradox of increasing IAs alongside a perceived inability to value them. Hence, taking a real-options-reasoning approach we suggest:

PROPOSITION 1a: Firms taking a coordinated global portfolio approach to the management of its IAs (incorporating both the Home IA Options and the Host IA Options) will achieve greater organizational value than those businesses taking a decentralized approach, within which the HR function has a primarily administrative role.

PROPOSITION 1b: Firms taking a coordinated global portfolio approach to the management of its IAs including both HR and business professionals in decision-making, will achieve greater organizational value than those businesses taking alternative approaches.

5.2. Regular IA option evaluation

Given the open and intense complexity of the system within which

such calculations sit, accurate real options valuations for each individual IA could be highly time-consuming and subject to unrealistic assumptions. However, real-options-reasoning engenders a simple managerial mind-set (Ragozzino et al., 2016) which can increase the likelihood of improved returns by encouraging a focus on the factors that may affect the value of an investment and managing them appropriately. If any investment is ignored and its potential value not reconsidered on a regular basis, the opportunity to exercise embedded options may be missed (Coff & Laverty, 2007; McGrath et al., 2004). Therefore, a careful and regular assessment of a business's IA Options is required to generate the maximum value to the organization. Otherwise the widely-recognized 'out-of-sight-out-of-mind' approach to IAs may prevail (Breitenmoser & Bader, 2016), creating a hidden 'shadow option' (Barnett, 2005) and causing value to be lost. Consistent with this, Adner and Levinthal (2004) argued that real options need to include the existence of clear written rules for exercising them to address the inconsistency of managerial actions. Applying and monitoring such rules is not discussed within the practitioner community and yet this would help to address the out-of-sight-out-of-mind syndrome. Hence, taking a real-options-reasoning approach we suggest:

PROPOSITION 2: Regular evaluation and reassessment of the potential total value of an IA by reference to initial expectations will increase the IA's total organizational value compared to less regular evaluation.

5.3. Shared options of home, host and assignee

Given that we have identified three shared options (Y. Li, James, Madhavan, & Mahoney, 2007) over the same underlying intangible asset, it is important to consider the many potential interactions between them when evaluating them. This could offer more systematic explanations for some global mobility practices. The potential tensions between home and host exercising options are relatively neglected in the literature. A real-options-reasoning approach illuminates such tensions and can lead to more informed decision making. Consider, for example, the interactions when the original options are reaching their maturity dates.

There is increasing evidence that IAs are triggered by employee desires to live overseas for personal reasons (Santa Fe Relocation Services, 2020) which could suggest that extending the length of IAs (which arises often (Dickmann & Baruch, 2011)) may benefit the employees. However, in option theory terms extending the length of an IA can be explained as a hysteresis or inertia effect (Trigeorgis, 2005) due to the fact that repatriation may be difficult to reverse (e.g. because spouses and families have successfully relocated and do not wish to move again). Similarly, the difficulties in finding the assignee a new post upon repatriation (Schmidt & Minssen, 2007) may also make it easier to extend the original assignment. Whilst it may be much more expensive to keep an assignee and their family overseas compared to bringing in a local employee, the uncertainty of the longer-term business effect may also justify the delay especially if the IA is part-funded centrally which reduces the cost to the host and incentivizes the host to keep the assignee. In each case, the original organizational options are being extended or, in real-options-reasoning terms, being allowed to lapse and new options taken out. As such, applying real-options-reasoning, the decision not to repatriate may be an appropriate firm-level decision rather than a failure, i.e. a decision to let the IA Home and Host Options expire. Adner and Levinthal (2004) have argued that using real options analysis can be detrimental as it generates incentives to keep projects alive given that the majority of costs are sunk costs and there may appear to be more upside if the option is not exercised. In other words, it causes IAs to be extended inappropriately as the original costs of assignment are in the past. This may also be exacerbated if the assignee is moved to cheaper 'local terms', which may be policy-driven rather than based on the individual, making the cost of repatriation worth avoiding or delaying.

The consequences of extending the length of an IA may not be

perceived positively by the assignee (Dickmann & Baruch, 2011) and, if ignored, may trigger exercise of the shared Assignee Option, i.e. the assignee joins a new employer. If these IA extensions are viewed by the assignee as increasing uncertainty with respect to their future, so the likelihood of triggering the departure of the assignee increases. This would have a catastrophic effect on the Home IA Option.

This problem may be exacerbated due to the Host IA Option. For example, if the host considers there to be a lack of alternative talent or if any cost premium of the assignee is subsidized by the home, the host may seek to influence the decision to delay repatriation. Whilst the host may wish to maximize its future potential value by delaying the decision to repatriate the assignee, this flexibility may be perceived as a lack of commitment to the assignee who may then exercise its Assignee Option and leave the organization. Hence, taking a real-options-reasoning approach we suggest:

PROPOSITION 3: The longer an assignee remains overseas beyond the originally agreed IA end date (the IA Option Expiry Date), the greater the probability that the assignee will leave to find a new employer.

5.4. Volatility in global mobility

Several factors may affect firm-specific volatility and option maturity creating the heterogeneous value of IA Options. Considering IAs in terms of real options draws attention to the many contextual factors which affect their value and yet may otherwise appear to be unconnected. An example would be a firm with volatility in its staff turnover due to highly competitive environments. Such a firm can gain greater value by maintaining flexibility in its terms of employment, including the hiring of more temporary workers (Foote & Folta, 2002) or implementing job rotation programs (Bhattacharya & Wright, 2005). This relates to the value of IAs because a firm that promotes the continuing rotation of job roles generates greater opportunities for assignees to be found new roles at the end of their IA. In real options terms, this increased flexibility and uncertainty has extra value to the organization. Furthermore, there is an increased probability that the assignee can be found the role most appropriate to the long-term benefit of the firm, rather than only being able to offer whatever role is available at the time (Schmidt & Minssen, 2007). Accordingly, the value of the Home and Host IA Options increases, explaining why job rotation may be a valuable HR practice. Hence, taking a real-options-reasoning approach we suggest:

PROPOSITION 4: Firms with greater internal job rotation will derive greater total organizational value from IAs than those with less internal job rotation.

5.5. Option premium of international assignments

Whilst the very existence of uncertainty increases the value of real options due to the possibility of greater benefits, increasing the uncertainty of the cost of the option (i.e. its premium) has the opposite effect and reduces its value (McGrath, 1997). Consultancy-based surveys indicate an increasing level of sophistication regarding the cost management of IAs (Brookfield Global Relocation Services, 2016; Santa Fe Relocation Services, 2020). It could be argued that this cost sophistication is the nemesis of value generation as HR is perceived to specialize in the former not the latter. In real options terms, however, the value of IA Options increases as the certainty of cost management grows and hence IA numbers may continue to grow irrespective of any uncertainty in global trade. Hence, whilst firms may have very limited understanding of IA value (McNulty et al., 2013), real options theory suggests that a focus on reducing costs will increase that value and contribute to increasing numbers of IAs. Whilst a unique focus on cost may sometimes be perceived as having a negative impact on value, that is not the case here. Hence, taking a real-options-reasoning approach we suggest:

PROPOSITION 5: Firms with more sophisticated IA cost management capabilities will generate higher organizational value from their IAs.

5.6. Degree of irreversibility in international assignments

As we have noted already, with higher volatility in the variables of uncertainty, the value of real options increases, including of HR options (Sanyal & Sett, 2011b). Volatility in the context of an IA Option includes external factors such as exchange rate variations and country political issues or internal factors such as organizational politics. With respect to exogenous factors, a business is less likely to commit to permanent non-local employees or longer-term IAs in a marketplace with high volatility because they are harder to reverse (Foote & Folta, 2002; Kogut & Kulatilaka, 2001) and hence have less optionality than short-term assignments. Firms are, therefore, more likely to use short-term assignments or business travelers than long-term IAs in highly volatile countries and industries. The same interpretation might also explain in part the significant reduction in new long-term assignments during the COVID19 pandemic, i.e. the spike in uncertainty led to the use of virtual assignments or short-term use of local hires which are easier to reverse than long-term assignments. Taking a real-options-reasoning approach may therefore explain the low levels of traditional IAs in highly volatile contexts such as hostile environments. While IA research on hostile environments has predominantly focused on the mechanisms involved (Bader, Schuster & Dickmann, 2019), real-option-reasoning delivers an integrated perspective on the reasoning of key stakeholders. It thereby advances our expatriation insights and, in line with our research objectives, may serve to refine our theoretical understanding. We suggest:

PROPOSITION 6: The greater the business volatility or uncertainty in a host country the lower the use of long-term IAs and the higher the use of alternative approaches such as business commuters, virtual assignments and local staff.

6. Conclusion and limitations

We set out to bring greater clarity to both the theoretical and practical understanding of the organizational value of IAs. Extant literature has tended to focus on component parts of this value (e.g. to recipient subsidiary hosts or knowledge transfer) or to the overall value without an appreciation for the dynamics of the home and host interactions upon this value. In our exploratory research we sought a theoretical lens that might add to our comprehension of these issues. We aimed to identify whether IAs can be perceived as real options and, if they can, to apply real-options-reasoning to improve our understanding of their organizational value. In addressing these objectives we have contributed to theory by applying real-options-reasoning at the micro level of IAs to investigate value at the organizational level, i.e. a meso level approach (Rousseau & House, 1994). This supports Barnett's (2003) view that real-options-reasoning is better suited to project level activities rather than strategic decision-making.

Our data have demonstrated the existence of competing organizational options held by the home and host respectively, generating important insight into the total organizational value of IAs in comparison to extant IB literature. Real-options-reasoning has enabled us to suggest theoretical explanations for the IA phenomena that practitioners describe (e.g. failed repatriation) and to identify important new steps to manage IAs and maximize their value. This demonstrates, for example, the importance of recognizing the interplay between the Home and Host IA Options with the Assignee Option. In addition, our work identifies the need for regular IA portfolio value reassessments and decision-making. Moreover, we suggest that organizational actors should identify and manage the impact of endogenous and exogenous factors on the organizational value that IAs offer such as job rotations and cost management. This research suggests that the real-options-reasoning heuristic offers an approach to interpret a wide spectrum of IA decision-making scenarios which allows a more holistic understanding of the issues compared to the various perspectives identified in the field to date (Dowling et al., 2013). It also provides the opportunity for practitioners to design a tool identifying the relevant uncertainties with respect to

their IAs in order to manage each of these uncertainties. This might also enable management of their IAs on a portfolio basis. Furthermore, this tool could be applied across the expatriation cycle, i.e. before, during and after an IA (Sparrow, Brewster, & Harris, 2004). We hope that identifying the theoretical application of real options theory is a significant step to resolving the uncertainty around IA organizational value and to enabling practitioners to manage this value more effectively. Nonetheless, other varied theoretical lenses may offer useful insights to the underlying issue including, for example, those involved with talent management, retention or attrition.

This paper is limited by its use of a small data set in the financial services sector – additional research data in the same and other sectors might add to or change our interpretations. In addition, our participants may have had unusual levels of familiarity with options and this very familiarity may have increased the applicability of real-options-reasoning compared to organizations without a similar level of financial awareness. However, whilst the theory of real-options-reasoning may be unfamiliar to HR practitioners we do not believe it is too complex a concept to understand and, as with strategy practitioners who were not previously familiar with it, it offers useful outcomes. Furthermore, HR practitioners are increasingly required to understand more complex numerical phenomena, for example through data analytics, and cannot shy away from addressing this critical valuation question. Indeed, consultancy reports identify that they want help with this (Santa Fe Relocation Services, 2021). Hence, through becoming familiar with the real-options-reasoning construct and the underlying practical actions it recommends, this is likely to benefit organizations.

Having argued for the use of real-options-reasoning to understand the IA value phenomenon, further research may consider calculating the value using this approach including, potentially, the application of financial modelling. There is also the opportunity to extend the application of real options theory to focus on the value to the individuals involved in each of the numerous different types of IA now recognized in the literature (Baruch, Dickmann, Altman, & Bournois, 2013) including, for example, inpatriates or commuter assignments. Finally there is an opportunity to explore in depth how the different parties' responses to changes in the context of their options, align with the five principal response strategies identified by Trigeorgis (1996). Given the existing uncertainty regarding the maximization of IA value, we consider there is much to be gained from the application of real-options-reasoning and the underlying ideas and practices that it draws attention to.

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CRedit authorship contribution statement

Phil St John Renshaw: Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Investigation, Formal analysis, Methodology, Resources, Project administration. **Michael Dickmann:** Writing – review & editing, Resources, Supervision. **Emma Parry:** Writing – review & editing, Resources, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Email questions on IAs and real options

QUESTIONS

The use and value of IAs could be managed as real options (definition

below). Each of the Home (sending organization), Host (receiving organization) and the assignee themselves can be considered to hold a real option over the assignment with potentially aligned or conflicting implications. For example,

- The 'Home IA option' is an investment designed to increase certain skills or generate new knowledge of the Host's operations. The value of the option may fluctuate based on the type of skills gained and the opportunity to use them. The option is exercised when the assignee repatriates to an appropriate new role.
 - The 'Host IA option' is an investment in technical skills. The value of the option might be increased through extending the contract's length. The option might be exercised through offering a permanent position to the assignee. Alternatively, the option might be allowed to lapse.
1. What reactions or ideas do you have that might support or refute this conceptualization?
 2. To what extent do you think that your Home and Host organizations might derive a different level of value from IAs if they treated them as real options? Please provide examples.
 3. How might the holders of these different options determine the most effective exercise dates? What is the strike price?
 4. To what extent might the application of real options logic to IAs explain which Home organizations send them and which do not send them to the Host?

Note: the name of the Host and nomenclature specific to the Host and Home organizations have been adjusted to protect anonymity.

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