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Regional assets and network switching: shifting geographies of ownership, control and capital in UK offshore oil

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Evolutionary approaches to strategic coupling show how regions harness and match assets, then negotiate their alignment with lead firms. For regions intersected by multiple networks in the same industry, however, the reconfiguration of network-territory relations can have aggregate, co-evolutionary effects that exceed coupling to a single lead firm. In such cases network switching rather than asset matching can be a primary driver of regional transformation, as assets transferred from one lead firm to another become embedded in qualitatively different production networks with contrasting power dynamics and logics of value capture. We analyse transformation in UK offshore oil to reveal three trajectories of change—in ownership, control, and capital—arising from the transfer of regional assets between different categories of lead firm; and identify simultaneous processes of globalisation and localisation in network geographies. We argue that network switching—guided by a heuristic of 're-territorialisation'—can complement strategic coupling.

Keywords: strategic coupling, territorialisation, regional assets, oil and gas, North Sea
JEL classification: L14, N54, O13, Q35

Introduction

Research on value chains and global production networks has developed a rich conceptual vocabulary for analysing the formation and evolution of network-territory relations. For global production network (GPN) researchers, the concept of strategic coupling highlights how regional assets become aligned with the strategies of lead firms in global networks (Coe et al., 2004; Coe and Yeung, 2015; Yeung, 2015). An evolutionary perspective on strategic coupling shows how regions match territorial assets and negotiate their alignment with the strategies of lead firms, and acknowledges multiple trajectories (coupling, decoupling, recoupling) at the nexus of networks and territory (Dawley et al., 2019; MacKinnon, 2012; Yeung, 2021). Empirically this work has focused on regions intersected by one or two lead firms (typically a large, publicly-traded firm headquartered in the global North), and attributes regional transformation to the process of coupling—i.e. to the alignment of assets with the strategy of the lead

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firm in question. For regions intersected by several lead firms, however, the reconfiguration of network-territory relations can have *aggregate and co-evolutionary effects* that exceed coupling to a single lead firm. Regions embedded in multiple networks within the same industrial sector can experience a complex process of transformation from the way investment and divestment strategies of lead firms realign regional assets between different types of network, rather than from single moments of coupling or decoupling. This process of switching, where assets are transferred from one production network to another within the same industrial sector (by, for example, corporate mergers and acquisitions), embeds regional assets in alternative network geographies and exposes them to different power dynamics and logics of value capture. Regional transformation, then, can occur as a cumulative and aggregate effect of multiple moments of coupling and decoupling by lead firms, which see regional assets switched between qualitatively different networks and recombined within them. Furthermore, these multiple moments of network-asset recombination can occur more or less simultaneously rather than in a linear evolutionary sequence, and so may have significant interactive and co-evolutionary effects (Gong and Hassink, 2019). A focus on network switching may be particularly relevant for research on regional transformation trajectories characterised by limited sectoral diversification, as the transfer of regional assets among networks in the same industry can promote regional lock-in.

We address this problem through the case of the firms and networks that constitute the UK's offshore oil sector. UK governments have promoted oil and gas extraction from the UK Continental Shelf (UKCS) for over half a century. From the outset, this 'national' extractive economy has taken shape by aligning regional assets with the investment strategies of global lead firms. Significantly, *multiple* lead firms now intersect with the UKCS so that the upstream 'UK oil sector'—increasingly an object of national policy in relation to industrial strategy, energy security and decarbonisation—is better understood as a temporary (if also rather durable) alignment of regional assets with lead firms in a diverse set of global networks. Investment continues to flow into oil and gas production on the UKCS, but the composition of this sector has changed in the context of declining overall production, a global shift in oil demand away from Europe, and growing action to accelerate low carbon transition. Transnational oil firms with long-standing ties to the UK (such as Chevron, Marathon, Exxon, BP and Shell) have steadily reduced their presence, while a diverse set of new actors have acquired access to regional assets on the UKCS. These include smaller private (i.e. not publicly-listed) firms including international forms of private equity, and state-owned companies from Asia and the Middle East (e.g. Chrysaor, Siccar Point, TAQA and CNOOC). We analyse this reconfiguration of network-territory relations, focusing on how UKCS assets are re-territorialised across a multiplicity of networks over time. By paying particular attention to the 'territorial' quality of regional assets, we show how GPN research can explain how assets discarded by one production network are subsequently re-incorporated into other networks, and the mechanisms and mutual dependencies on which this repurposing of territorial assets relies. Furthermore, we show how a heuristic of *re-territorialisation* can complement the specific focus of 'strategic coupling' (on how regional assets become matched to lead firm strategy), by naming the cumulative effects of transferring regional assets among production networks in the same sector.

The rest of the paper proceeds in three steps. In the next section, we review recent developments around the GPN concept of strategic coupling. We highlight how research on modes and types of strategic coupling focuses on regions intersected by one or two lead firms; and how analytical attention to agency, and the

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active 'aligning' of regional assets and firm strategy, shapes accounts of coupling as a sequential and negotiated process centred on a relatively small number of actors. We highlight a need for complementary analyses of regional transformation that address the aggregate and co-evolutionary consequences of investment/divestment decisions by multiple extra-regional actors within the same industrial sector. This focus, on how regional transformation occurs via the re-territorialisation of sector-specific assets as they are switched between production networks, illustrates how global oil production networks are being reconstituted—rather than disassembled—as lead firms adjust the geographical and material composition of their portfolios in the context of price volatility, market uncertainties and climate risk. We explore how the exit of well-established transnational, publicly-owned lead firms in this sector has neither produced shorter, 'domestic' production networks (i.e. globalisation in reverse) nor facilitated industrial diversification, but led to assets being switched among global chains and networks in the same sector. We then introduce the empirical case of the offshore oil sector in the UK, highlighting three significant trajectories of change—in ownership, geographies of control and capital. We show how these transformations are not only about the entry and exit of different firms but also—and more fundamentally—about how UK regional assets have been switched among qualitatively different production networks over time. Significantly, while these networks share the same industry or product category—oil and/or gas production—there is considerable variation among them in terms of ownership, geographies of control and mechanisms of value capture. Our analysis contributes new insights into the regional dynamics of global production networks by considering how structural changes in the composition of the UK oil and gas sector, which arise from the re-territorialisation of regional assets among different networks, are driven by the intersection of long-term, sector-wide trends with particular events. We argue that understanding the new network geographies within which regional assets are embedded, and the '*underlying political-economic forces that shape (their) ongoing formation and reconfiguration*' is an important task (Coe and Yeung, 2019, 779). The final section concludes.

From strategic coupling to network switching: the recombination of regional assets in global networks

The coupling heuristic—with its focus on the bargaining processes through which regional assets are brought into alignment (i.e. matched) with the strategic objectives of a lead firm—can obscure how regional transformations arise from the recombination of regional assets across multiple networks within the same industrial sector. In such cases, we argue, network switching—rather than asset matching—is the primary driver of regional transformation. Network switching matters because the transfer of existing regional assets between firms can embed these assets in qualitatively different production networks with contrasting power dynamics and logics of value capture. Our focus on network switching capitalises on GPN's long-standing insight that regional assets are *simultaneously* embedded in territories and networks. However, rather than draw attention to how regional actors bring assets into alignment with lead firms—which has been a core concern of recent work on strategic coupling—it highlights the (territorially-embedded) processes by which regional assets are transferred from one production network to another, the specific ways that regional assets enable value capture for controlling firms, and the cumulative regional consequences of this process. The recombination of existing assets across different production network has aggregate and co-evolutionary effects on regional development that go beyond those

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described by strategic coupling. We agree with Breul et al. (2019: 829) that identifying the 'territorial configuration of GPNs' consequent to the switching of regional assets across networks can 'yield considerable explanatory power,' and suggest that re-territorialisation is a useful heuristic to guide this complementary direction of enquiry. The focus of re-territorialisation on the transfer and reconfiguration of regional assets across extensive geographical networks can complement strategic coupling's intensive focus on the negotiated alignment of regional assets with lead firm strategy.

Strategic coupling: matching regional assets with lead firm strategies

A primary concern of GPN research has been to understand how—and with what consequences—global production networks become tied to, and embedded within, the characteristics and conditions of particular places (Coe et al., 2004). Early reflections on the 'discontinuously territorial' character of global manufacturing networks (Cabus and Hess, 2000; Henderson et al., 2002) subsequently spawned a range of work on networks' ties to territory and, in turn, to understanding how territorial ties constitute global networks in important ways (Bridge, 2008; Coe et al., 2004). Indeed, one of GPN's contributions has been a conceptual vocabulary for describing the mutual constitution of networks and regions, that now includes territorial embeddedness, strategic localisation and, the most widely developed, strategic coupling (MacKinnon, 2012; Yeung, 2016).

Strategic coupling is central to GPN's desire to understand regional development as an outcome of the way regional assets are integrated with (or excluded from) global production networks. The value of the concept lies in its analytical focus on 'mutually-constitutive relationships' at the 'firm-territory nexus' (Dicken and Malmberg, 2001: 346–347). In its classic formulation, for example, strategic coupling highlighted how East Asian manufacturing firms developed strategic partnerships with global firms, and weakened ties to domestic political-economic structures, in ways that effectively globalised regional development (Coe et al., 2004; Yeung, 2016). Subsequent work acknowledges not all coupling may be strategic—some may be 'unintentional or inadvertent' and rationales for coupling can change over time (van Grunsven and Hutchinson, 2016)—and researchers have found it useful to identify several distinctive coupling 'modes.' MacKinnon (2012) distinguished between structural, strategic and organic forms of coupling, identifying important variations of structural (core-periphery) power against which coupling processes play out; while Yeung (2009, 2015) theorised three similar 'modes'—organic, structural and functional—in order to explain 'the role of transregional mechanisms in shaping development trajectories in core, emerging and peripheral regions' (Yeung, 2021: 998). Research on extractive GPNs (like oil and gas) associates commodity production with structural or functional modes of coupling (Breul and Revilla Diez, 2018; MacKinnon, 2013; Phelps et al., 2015). However, it also highlights the significance of network geographies in the extractive sector, and a corresponding research need to 'intensify the appreciation of the particular territorial configuration of GPNs' (Breul and Revilla Diez, 2019: 829).

Initially a rather vague term, strategic coupling nonetheless has always highlighted a particular set of circumstances: strategic coupling '***only occurs*** *when regional assets complement the strategic needs of companies operating in GPNs*' (Breul et al., 2019: 831; Coe et al., 2004; Coe and Hess, 2010, emphasis added). Because this complementary alignment between firms and regions is specific—GPN research frequently describes it as a process of 'matching'[1]—the concept of strategic coupling has become an invitation to examine the conditions and processes in, and through, which coupling occurs. A significant strand of recent GPN scholarship has sought to develop dynamic and

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multi-scalar understandings of alignment at the network-territory nexus via an evolutionary perspective. In early GPN accounts, strategic coupling was relatively static and paid '*little attention to the historical evolution and transformation of production networks and regional assets over time*' (MacKinnon, 2012). More longitudinal and temporally dynamic perspectives on coupling processes have subsequently emerged, via a cross-fertilisation of GPN with Evolutionary Economic Geography (EEG). In an early and significant development, for example, MacKinnon (2012) adapted concepts of path dependence and lock-in from the EEG literature on regional institutions to identify the '*range of coupling, recoupling and decoupling processes that take place between regions and GPNs*' (e.g. Boschma and Martin, 2007; MacKinnon et al., 2009). Subsequent research (e.g. Barratt and Ellem, 2019; Dawley et al., 2019; Horner, 2014) takes this further, adopting a dynamic formulation of strategic coupling centred on '*sequential processes of coupling, decoupling and recoupling*' and their role in '*driving both positive and negative economic developmental outcomes*' (Coe and Yeung, 2019, 780). In work on wind power manufacturing in eastern England, for example, Dawley et al. (2019) unpack coupling processes between a leading global manufacturing firm and the Humber region to reveal three 'episodes of coupling creation' that unfold uncertainly over a protracted period: a period of 'harnessing and matching' that first pairs regional assets to the requirements of the investing firm; a second period of brokering and negotiating; and a final episode of 'valorising and materialising the coupling' as manufacturing begins.

Recent work on strategic coupling shows it to be a negotiated outcome between regions and one or two global lead firms, shaped by the agency of individuals, non-state actors and the state. Fu and Lim (2021)'s recent work on Sino-German production networks for environmental goods and services exemplifies this perspective. The authors examine how a coalition of firms in Guangdong overcame the limitations of structural coupling by renegotiating the role of regional assets for German lead firms. Their analysis highlights not only the episodic evolution of strategic coupling but also the constitutive role of state structures in negotiating 'more balanced coupling relations' with German-led production networks (Fu and Lim, 2021: 1).

Yeung (2021) similarly adopts an evolutionary perspective on strategic coupling/decoupling but positions coupling at the heart of regional diversification trajectories. He highlights how regions decoupling from low-value industries facing divestment can diversify into higher value-industries by mobilising their knowledge base to couple to GPNs in different industrial sectors. Rodriguez-Pose (2021) challenges this claim for underestimating the costs of engaging networks in new sectors: such costs can promote regional lock-in by blocking development of the knowledge absorption and innovation pathways that can enable regional diversification via accessing extra-regional networks.

Our empirical analysis of dynamic network-territory relations builds on these considerable insights. Nonetheless, we find 'coupling' analytically limiting for understanding the aggregate character of regional transformation—i.e. as a product of the simultaneous (and co-evolutionary) recombination of regional assets across multiple networks.[2] Strategic coupling's focus on the collaborative, negotiated process through which regional assets are matched to the strategic needs of lead firms can be fruitfully complemented, we argue, by attending to the switching of regional assets across different networks within the same industrial sector, and foregrounding the new network geographies produced as a result.

From asset matching to network switching: accounting for the cumulative and co-evolutionary effects of network-territory reconfiguration

To fully account for the dynamic reconfiguration of network-territory relations arising from globalisation and/or regionalisation of

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production networks, it is necessary to complement the intensive focus of strategic coupling—which addresses the process of aligning regional assets with lead firm strategy—with an extensive account of strategic coupling's cumulative and co-evolutionary effects. We suggest this is true as a general case, although our particular concern here is with regions intersected by multiple lead firms: in these settings, regional transformation occurs not only as a consequence of whether (or not) regional assets are aligned with the strategies of a single extra-local actor, but as an aggregate effect of switching regional assets among multiple networks within the same industrial sector. 'Switching' here describes the multiple actions of investment/divestment by regional and extra-regional firms in relation to a class of assets that define an industry or sector. These assets are industry specific so that '*while (the production networks formed around them) will necessarily exhibit industry traits, at the same time there will be considerable variation between global production networks...in the same industry or product category*' (Coe and Yeung, 2019: 778). To focus on network switching, then, is to highlight the territorial processes by which multiple regional assets are transferred between qualitatively different networks; to document the cumulative scale and scope of this process; and to assess the geographies of control and ownership to which it gives rise.

The specificity of network switching for understanding the regional consequences of geo-economic change lies in how it highlights the relational geographies of ownership and/or control that converge on regional assets, and the logics of value capture within which they become embedded. It offers an account of how places are integrated into GPNs that foregrounds the compound effects of network relations rather than, say, the role of endogenous innovation (Kim and Lee, 2022) or exogenous sources in new path development (Trippl et al., 2018). Furthermore, network-switching can point to how regions remain locked-in to specific industrial sectors despite divestment from lead firms with long-standing ties to these regions. It demonstrates how regions can attract different (sometimes more precarious) kinds of investment to maintain capital flows within the same industry. In other words, a focus on how regional assets are switched among networks in the same industrial sector can highlight the consequences of this process for regional development.

Kleibert's (2016) integration of GPN research with the literature on branch plant economies (in the context of offshore services in the Philippines) shows how focussing on dimensions of ownership, and the position of assets within corporate networks, can reveal cumulative features of regional transformation. We share Kleibert's interest in identifying the network position of firms that own or control key regional assets and determining how that position influences their approaches to value capture. Furthermore, we suggest the broad (and sparsely defined) GPN category of 'regional asset' has some residual analytical potential as it can foreground quite precisely *how* regional features become assets, *for whom* they function in this way, and *in what ways/to what ends* these assets are managed. We find Birch's (2017) formulation of assets as 'capitalised property' useful here: it captures the simultaneous embeddedness of assets in territorial frameworks of property and in networks of value and capital accumulation (thereby suggesting how regional transformation can occur through the recombination of assets across both territory and network dimensions); and, at the same time, it draws attention to the specific (and plural) ways in which firms derive value from territorial property claims.

There are three insights here of value for GPN research. First, GPN has long recognised territorial embeddedness, but a focus on the territorial embeddedness *of assets* opens the historical processes by which regional phenomena are made *qua* assets for lead firms through their enrolment in territorial structures for analysis.[3] It discloses how asset status (i.e. capacity

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to generate future revenue) is not pre-given, but derives in part from territorial structures and institutions (see, for example, Zheng et al. (2021) on the role of 'territorial intermediaries' in linking regional assets to global production networks on the Thai-China border). Second, attention to the specificity of how regional phenomena perform *qua* assets for lead firms can highlight significant qualitative shifts in how regions are embedded in networks, even while they ostensibly remain 'coupled' via the investment strategies of lead firms. It can thereby reveal how regional transformation results, not from episodes of coupling or decoupling but from how the territorial qualities of an asset, are valued by different lead firms, and the type of network and associated geographies of control.

Third, a focus on network switching (as distinct from the 'asset matching' lens of strategic coupling) can reveal important processes of change in the composition and identity of a regional or national industry that may otherwise be hidden. A cumulative and co-evolutionary process of network switching can be experienced regionally as a de-territorialising assemblage, in which long-standing ties between corporate actors, state and territory start to fray. It can be accompanied by a re-territorialisation process, however, as new actors and their networks—and different orientations to generating value via territorial assets—reshape the form and identity of a 'national industry.' As regional assets are switched from one network to another, established configurations of network-territory relations can be fundamentally transformed even while, at an industry level, assets and operations ostensibly endure.

North Sea oil and the reconfiguration of global network-territory relations

We adopt a case-study approach to examine how the reconfiguration of network-territory relations can have aggregate effects beyond regional coupling to a single lead firm. As others have argued (Hendrikse et al., 2020; Scholvin, 2020), case studies '*enjoy a natural advantage in research of an exploratory nature*' and are appropriate when a '*subject is being encountered for the first time or…considered in a fundamentally new way*' (Gerring, 2006: 39–40). Our case is the UK's offshore oil sector, which we conceptualise in GPN terms as a (temporary) alignment of territorial assets with the value-capture objectives of lead firms in global oil production networks. The composition of this 'national' oil industry has been transformed since oil production peaked over two decades ago (Figure 1), with investment and divestment by global lead firms in the UK's North Sea transferring regional assets (hydrocarbon endowments on the UK Continental Shelf) among different production networks. A case study methodology is appropriate because our research goals, following Gerring (2006), are to gain casual insight into mechanisms and processes, and to generate conjectures rather than refute hypotheses. The single case study approach is well-suited as it combines temporal variation (in this case, investment/divestment over time) with in-case variation (among firms and networks). The UK's offshore oil sector presents a relatively bounded phenomenon in which the transfer of regional assets from one production network to another may be observed over time.

Oil and gas reserves on the UKCS constitute a classic 'regional asset' for lead firms in global oil and gas networks (Maskel and Malmberg, 1999). Since the 1960s successive UK governments have promoted the North Sea as a site for inward investment, alongside 'national champions' like Shell and BP (Marriott and Macalister, 2021). As Cumbers (2012: 229) points out, the UK sought 'to develop North Sea resources as fast as possible' to serve macro-economic policy objectives rather than develop a domestic industrial strategy so that, from the beginning, '*local oil developments have become embedded within much wider global networks, predominantly those dominated by foreign multinational interests*' (p.231). As a result, offshore oil and gas development has been

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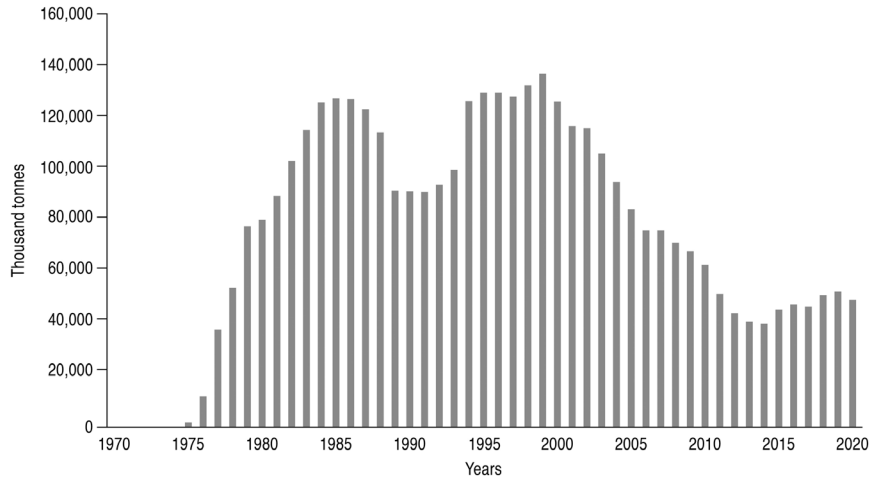

Figure 1. *UK Production of Crude Oil and Natural Gas Liquids, 1970 to 2020.*
Data from DUKES (2021, Table 3.1.1).

characterised by a series of inward investment waves emanating from different countries over time, reflecting the periodic embedding of the UKCS in different production networks.

Now regarded as a mature basin, the UKCS continues to see substantial investment in exploration, field development and production for both oil and gas.[4] In the early 2000s the UK Government promoted new investment to offset declining exploration and production. It targeted investment by smaller companies with geotechnical ability but limited financial resources (e.g. the Promote Licence (2003))[5]; and encouraged exploration in the deeper waters and more difficult geologies west of the Shetland Islands (e.g. the Frontier Licence (2004)). Further efforts to attract investment followed the Wood Review (2014, 5), which identified how a regulatory environment designed for '*large fields and large operators must now be evolved to take account of a basin with over 300 fields, much smaller new discoveries, many marginal fields and much greater inter-dependence in exploration, development and production.*' The UK Government also created a new arm's length body (the Oil and Gas Authority)[6] charged with pursuing a formal strategy of Maximising Economic Recovery, and parallel fiscal reforms were enacted facilitating inward investment, corporate acquisition and asset transfer in the context of a sharp fall in oil prices in 2014/2015 (HMRC, 2016; Weszkalnys and Otchere-Darko, 2021).[7] In short, the UK state has actively enabled the highly globalised and networked character of the UK offshore oil sector. In this sense, it is an architect of the shifting network geographies examined here (space constraints preclude the detailed examination this role deserves, although see Boué, 2020; Cumbers, 2000, 2012; Kemp, 2013).

While the decline of North Sea production is well known, less attention has been paid to the cumulative consequences of investment and divestment in the 'post-peak' period which has seen significant shifts in the provenance and type of investment. To assess the changing position of the UK in global oil networks we examined recent histories of petroleum licence ownership and asset sales on the UKCS. Offshore petroleum licences provide access for investing firms to the geological endowment and, therefore, are a necessary condition for endowments of oil and gas on the UKCS to become assets for lead firms.[8] Understanding who holds or control licences is key to understanding

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the networks within which territorial assets on the UKCS are embedded. An individual licence area is frequently fragmented across more than one company (i.e. ownership can be expressed as an equity share), and a specific company typically has equity in more than one licence area. Developing an aggregate picture of licence ownership, then, requires summing these multiple fractional ownership shares.[9]

To assess the differentiated and changing structure of licence ownership, we combined two sources of publicly available data. We sourced data on equity history (i.e. share of licence areas attributable to specific companies) for all areas licensed for petroleum development on the UKCS (available since 1964) from the UK Oil and Gas Authority, via the National Data Repository.[10] We sourced company ownership data from Orbis, focusing on companies identified as having an equity stake on the UKCS (going back to 1990).[11] We merged data on company ownership with data on licence equity, and used pivot tables to calculate the aggregate sum of equity percentages for a particular company (e.g. BP) and identify the most significant licence owners on the UKCS at specific points in time. We created aggregate categories to group-specific companies, adapting conventional oil industry classifications (e.g. International Oil Companies (IOCs), National Oil Companies (NOCs), independents) by adding geographical identifiers and distinguishing between companies that are privately held, publicly-listed or financed by private equity. We drew on industry reporting to assess the scale and nature of asset sales on the UKCS (e.g. Energy Voice, Oil and Gas Journal, Rystad) and supplemented this with information available in Orbis.

By drawing on these sources, our analysis highlights (i) the multiplicity of lead firms that intersect with territorialised assets of the UKCS, and the different network geographies with which these firms are associated; (ii) a process of network switching (occurring via asset sales, mergers and new licence acquisition) that sees regional assets recombined within qualitatively different networks over time, in ways that have transformed the composition of the 'national' oil sector' in the UK; and (iii) the cumulative and co-evolutionary consequences of network switching, in the shape of new geographies of ownership and control that characterise the UK oil sector and the qualitatively different forms of capital now seeking value from assets on the UKCS.

Fraying ties: network switching and the changing composition of the UK oil sector

Regional assets on the UKCS have for a long time played an important role for some of the largest lead firms in the global oil sector. This is particularly true for the 'majors'—vertically integrated, publicly-listed International Oil Companies (IOCs) headquartered in the US and in Europe (e.g. Exxon, Chevron, Total, Shell, BP). The IOCs found their access to reserves worldwide increasingly squeezed from the 1970s onwards (Bridge and Le Billon, 2017), and the UKCS provided them with a stable source of 'equity oil:' operating on the UKCS, these firms could generate cash via ownership of oil production rather than via a service contract (which was how majors continued operating in parts of the world where reserves they once controlled had been nationalised.[12] Furthermore, the ability to 'book' hydrocarbon reserves on the UKCS became an important source of financial value, in a context where an oil company's reserve-replacement ratio was a key performance metric for investment markets.[13] In the formative years of the basin's development (i.e. from 1975 to the late 1990s) it was the 'majors' who controlled the large fields, who accounted for most North Sea oil output, and who dominated the licensing rounds awarding new acreage for exploration and production. US lead firms, in particular, played a substantial role in this period so that, from technology choices to labour relations, the way the UK first emerged as a global oil province was

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shaped in important ways by the geographies of production embraced by US lead firms. Low oil prices in the 1990s drove a wave of mergers and acquisitions and production licences on the UKCS became increasingly concentrated in a handful of lead firms (mainly US and European IOCs) (Guo et al., 2021; Stevens, 2016).[14]

This established pattern of network-territory alignments began to unravel after UK crude oil production peaked in 1999. Mergers and acquisitions in the early 2000s made the structural challenge of reserves replacement for IOCs more difficult, and significantly increased the overhead costs of field exploration and development. In response, IOCs focussed on exploration and development of larger oil and gas fields, primarily in new frontiers such as Russia, Kazakhstan, the Gulf of Mexico and East Africa, with exploration and development on the UKCS pitched against these new frontiers in an intra-firm competition for capital (Bridge and Le Billon, 2017; Stevens, 2016). At the same time, the IOC business model had come under significant pressure, particularly after the 2014 collapse in oil price associated with the growth of US shale output and a consequent struggle (with OPEC and Russia) for market share. Low prices for oil (driven by the new abundance of oil and gas) destroyed the economic value of many reserves held by IOCs, forcing many to 'de-book' reserves and write-off investments (Cowan and Williams-Derry, 2021; Hipple et al., 2020). Poor performance on stock markets has driven IOCs to find ways to boost dividends and raise share prices, such as share buybacks. With cash flows from core operations insufficient to finance dividend payments and share buybacks, IOCs have turned to raising debt and selling assets to cover the difference.

In this context, selling late-life and marginal assets on the UKCS is one of the ways IOCs have sought to optimise their asset portfolios. Long-established players on the UKCS have enacted multibillion-dollar divestment plans, with the intent of shedding mature or late-life assets and consolidating their positions in key basins—a process of optimising the portfolio referred to as 'high grading'.[15] While elements of this process have been underway for almost two decades, assets sales on the UKCS by the IOCs have accelerated rapidly in the last few years (Table 1). Nearly all the US majors (Occidental, Exxon, Hess, Marathon, ConocoPhillips) have now divested their UKCS assets, with Chevron retaining a non-operating stake in a single project.[16] European IOCs maintain a sizeable position on the UKCS (notably Total, BP and Shell), although all have divested from

Table 1. *Selected upstream and midstream asset sales on the UKCS by IOCs since 1999. Source: compiled by the authors.*

Year	Seller	Buyer	Reported Value (US$)
2003	BP (Forties)	Apache	1.3 billion
2005	Kerr-McGee	Maersk and Centrica	3.5 billion
2010	Hess	SSE	423 million
2012	Exxon	Apache	1.75 billion
2014	BP (Southern North Sea Gas)	Perenco	400 million
2015	Total (FUKA and SIRGE gas pipelines)	MidStream Partners	905 million
2017	Shell	Chrysaor and Tailwind	3.8 billion
2019	ConocoPhillips	Chrysaor	2.7 billion
2019	Chevron	Ithaca	2 billion
2019	Total	NEO Energy	635 million
2019	Marathon	Rockrose	75 million
2020	Exxon	NEO Energy	1 billion

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maturing fields, and upstream and midstream infrastructure (Figure 2).

Overall, then, the role and value of the UKCS has declined within the portfolios of the IOCs who were a foundation of the basin's development. To take BP as an example, UK production accounted for over a quarter of the company's oil output in 2000 but this had fallen to less than 5% in 2020. Similarly, the UK accounted for 21% of the company's crude oil reserves in 2000 (and 13% of its gas reserves) but by 2020 this had fallen in both absolute and relative terms, representing only 3% of the company's reserves of crude (and less than 1% of gas).[17] The aggregate effect of this reallocation of investment capital away from the UKCS is that the share of total oil production by IOCs on the UKCS has declined. BP, for example, produced over 550,000 barrels per day of oil in 1999 (close to a fifth of all UKCS production) but only around 100,000 barrels in 2020 (when it represented less than a tenth of national output).

Associated with the well-known decline of production on the UKCS, therefore, is a process of network switching, in which asset sales, corporate acquisitions and new licensing rounds transfer regional assets between different networks within the global oil sector. The next section demonstrates empirically the recombination of existing assets across different production networks, and shows how the aggregate and co-evolutionary effects of this network switching process exceed those described by strategic coupling.

Trajectories of transformation in network-territory relations

Asset sales by the IOCs have created opportunities for a range of firms to enter the UK offshore, facilitated by modifications to the licensing and taxation regime designed to spur investment in a mature basin (see above). Firms entering the UKCS bring new connections, financial logics and short-term and long-term strategies, and their acquisition of territorial assets inserts the UKCS into different global production networks. The aggregate effect has been to reconstitute the composition of the 'UK oil and gas sector' in substantial ways. In this section, we identify three trajectories of change arising from the entry of new firms and the associated re-combination of territorial assets in global networks: an ownership transition, a more diversified geography of controlling ownership, and a capital transition that is exposing assets on the UKCS to different power dynamics and logics of value capture.

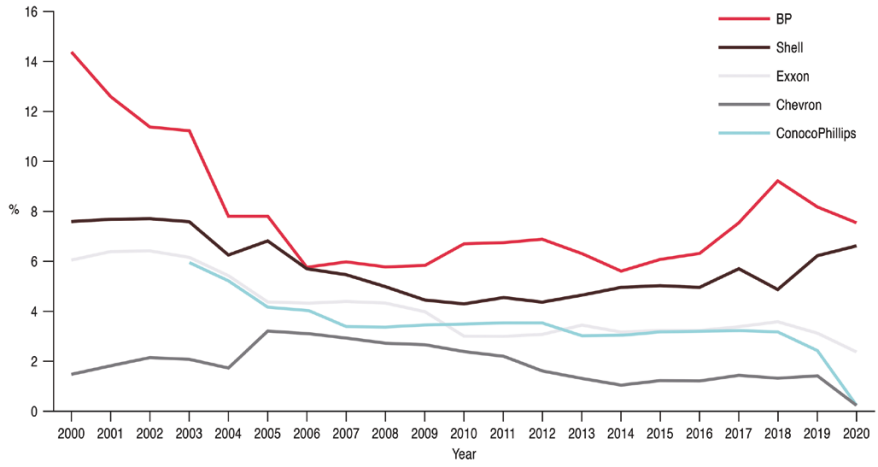

Figure 2. *Acreage share (total area equity) on the UKCS controlled by selected IOCs, 2000–2020.*

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An ownership transition

Figure 3 demonstrates a significant shift in the composition of ownership on the UKCS since 1995, evidencing the transfer of regional assets among lead firms in different organisational networks.[18] The proportion of the UKCS controlled by US and European IOCs declined from over 80% at the height of production to less than 40% today (based on our sample of the 20 companies holding the largest acreage position), with most of this decline driven by divestment activity of US IOCs. The proportion controlled by European IOCs has also decreased, although the shrinking significance of European IOCs has been mitigated by the growing role of gas (vs. oil) in their production portfolios, nearly all of which is sold into the UK market. Figure 3 highlights the growing significance of independents after 2000, which carved out positions by focusing on assets the majors were selling or had overlooked. An example is the US independent Apache, which acquired the Forties field from BP along with other North Sea assets in 2003. Forties was one of the largest finds in the 1970s (producing over half a million barrels per day at its peak), and BP's divestment—at a point when production from the field had declined by over 90%—was part of its strategy to dispose of non-core assets following pressure from investors.[19] Many smaller independent O&G companies also started exploration activities on the UKCS, particularly following changes to the licensing regime in 2004 which introduced the Promote and Frontier licences (see above).

Figure 3 shows a growing diversification in who holds licences after 2010, with the share of total area equity on the UKCS held by upstream independents declining by about a third. Corporate acquisitions in this period by several (non-European) state-owned oil companies brought regional assets on the UKCS into the control of a qualitatively different type of firm: in 2010, the Korean National Oil Company (KNOC) acquired Dana Petroleum (a UK-based independent listed on the LSE in 1996); in 2012 China's state-owned Sinopec acquired a 49% stake in the UK subsidiary of

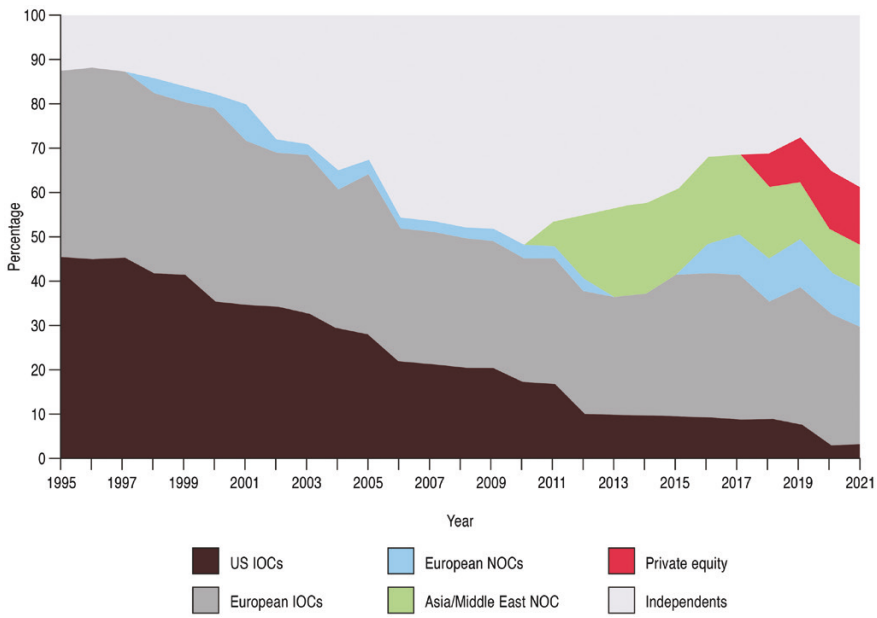

Figure 3. *The shifting composition of ownership on the UKCS (1995–2021): acreage share by category of company, for leading 20 companies.*

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Talisman, a Canadian-based independent; and in 2013, the Canadian independent Nexen was acquired by the Chinese National Offshore Oil Corporation (CNOOC) in a $15 billion dollar deal which included Nexen's UK assets (Lim, 2018). Diversification of ownership and network switching have continued following the 2014 oil price crash, with a group of new entrants backed by private equity that included Neo Energy, Neptune, Chrysaor, Zennor Petroleum and Siccar Point. Chrysaor, for example, was previously a small firm with only 20 employees but was used by Global EIG Partners to acquire a large package of assets from Royal Dutch Shell that were part of the latter's $30 billion divestment program. This transformed Chrysaor into one of the largest operators on the UKCS, positioning it for a subsequent reverse take-over of Premier Oil in 2020 to create Harbour Energy—now the largest oil and gas producer on the UKCS (see Figure 4).

Figure 4 illustrates the result of this ownership transition. Based on production data for oil and gas, it shows the multiplicity and organisational diversity of firms currently operating on the UKCS.[20] Of the 75 or so firms currently producing oil and gas on the UKCS, many do not have the 'industrial position' (i.e. market power) associated with global lead firms, although several have the characteristic capacity of a lead firm '*to coordinate and control directly its production network*' (Coe and Yeung, 2015: 40).[21] Notably this capacity cuts across the organisational categories (IOCs, NOCs and independents) by which firms in the oil industry are conventionally described. Thus Figure 4 shows how lead firms holding UKCS assets include IOCs (depicted in black—e.g. BP, Shell and Total, with smaller roles for Repsol, ENI and Chevron), where the capacity to control different parts of the production chain takes the form of a 'vertically integrated network of intra-firm affiliates' (Coe and Yeung, 2015: 40); and

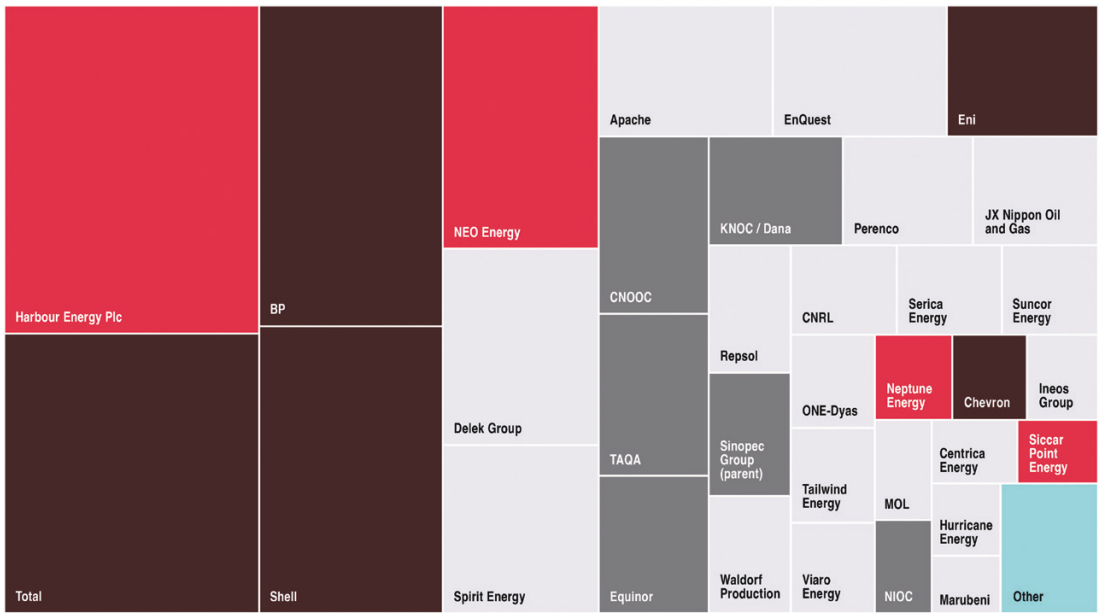

Figure 4. *Hydrocarbon Production on the UKCS (2021), by Company (IOCs shown in black, NOCs in dark grey, Independents in light grey, and Private Equity in red).*

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NOCs owned and controlled by foreign states (in dark grey—e.g. TAQA, CNOOC, Equinor, KNOC and Sinopec) that, like the IOCs, have integrated upstream and downstream operations and considerable market power.

In addition to the above, several other firms holding UKCS assets have a significant multinational presence so that their UK assets are embedded in a wider network of operations, logics and strategies. These include, for example, a second-tier group of 'new' IOCs (e.g. the Hungarian-based MOL, and the privately-owned INEOS), as well as publicly-listed (e.g. EnQuest, Apache, Serica) and privately-owned independents (Perenco, ONE-Dyas) both shown in light grey in Figure 4, and a growing number of operators backed by private equity (shown in red—e.g. Harbour, NEO, Neptune, Siccar Point).

Geographies of control: re-territorializing regional assets

Geographies of control over regional assets on the UKCS have shifted over time, as assets once held by US IOCs (and, to a lesser extent, their European counterparts) have been transferred to different lead firms and their networks. Figure 5 shows changes between 1995 and 2021, focusing on the twenty companies holding the largest acreage positions on the UKCS and attributing the geography of control to where the company is headquartered. It illustrates the declining significance of the US, as measured by country of headquarters, and how many of the new entrants since 1999 have been headquartered in Canada and Europe (e.g. Talisman, Nexen and Mærsk Oil). It also shows how geographies of control further diversified after the financial crisis in 2008 with the entry of state-owned oil companies from Asia (KNOC, CNOOC, Sinopec) and the middle East (TAQA).

However, Figure 5 also shows that a growing proportion of acreage on the UKCS is owned by companies headquartered in the UK, increasing from around 35% to around 65%. Many of the companies that have recently acquired assets on the UKCS, such as Neo Energy, Neptune Energy, Chrysaor and Zennor Petroleum are

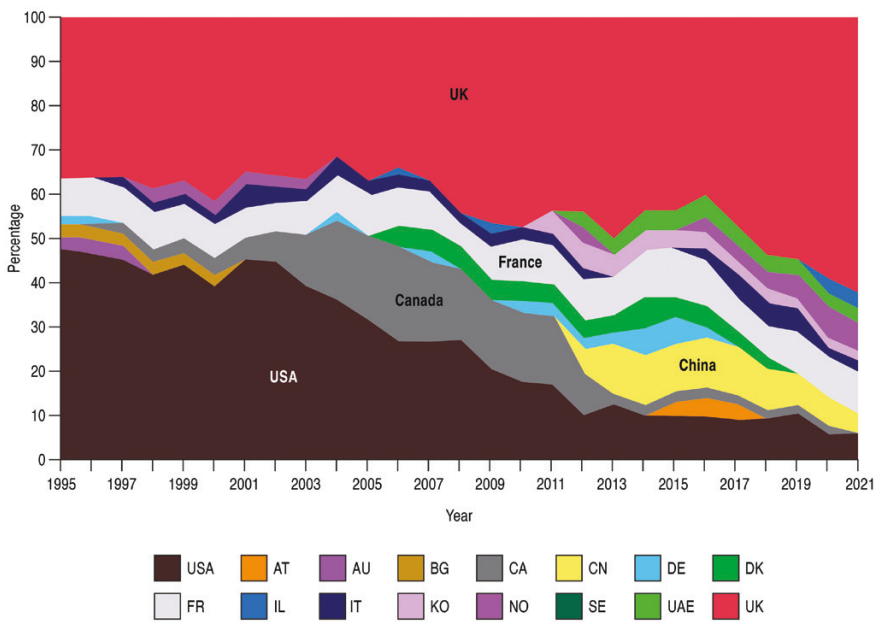

Figure 5. *Globalisation in Reverse? Corporate headquarter location of companies operating on the UKCS (1995–2021) for leading 20 companies.*

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UK registered companies for whom the UKCS is the primary (in some cases, only) territory in which they hold assets. This might appear to suggest a case of strategic decoupling by US multinationals and a 'reverse globalisation' as UK headquartered firms become more prominent. However, many are owned and/or controlled by some of the largest global private equity groups in the world (see Table 2).

An important trajectory of change in network-territory relations on the UKCS, therefore, is that regional assets once embedded in the geographically extensive production networks of lead oil firms such as Shell, Chevron, and Exxon are now embedded in the financial networks of globally significant private equity firms (like Blackrock, Carlyle Group and CVC Capital Partners) and subject to qualitatively different logics of value capture (while remaining in the same industrial sector of oil and gas production). Private equity investors tend to play a much greater role in the decision-making of their portfolio companies, and representatives from international private equity groups are also directors on the boards of the UK oil and gas companies they finance. But rather than coordinating and controlling an extensive production network, the focus of private equity is on managing regional assets to generate a target internal rate of return or a multiple of invested capital, often with an eye to the timing of exit (Gompers et al., 2016). These financial networks operate through holding companies registered in offshore tax havens that are then incorporated into the various 'funds' that private equity groups market towards their investors. Table 3 below shows that many of the companies holding significant

Table 2. *Private equity backers of upstream independents operating on the UKCS.*

Oil Company	Private-Equity Group(s)	Group Headquarters
Siccar Point	Blackstone	New York
	Blue Water Energy LLP	London
Neptune Energy	Carlyle Group (30.6% equity)	Washington DC
	CVC Capital Partners (20.4% equity)	Luxembourg
	China Investment Corporation (49%)][1]	Beijing
Chrysaor	Global EIG Energy Partners	Washington DC
Neo Energy	Hitecvision	Stavanger, Norway
Zennor Petroleum	Kerogen Capital	Hong Kong

[1]China Investment Corporation holds the largest stake in Neptune. It is not a private equity group, but a sovereign wealth fund from the Peoples Republic of China.

Table 3. *Holding company ownership and offshore status of upstream independents operating on the UKCS.*

Company	Holding Company	Offshore Tax Haven
INEOS	INEOS HOLDINGS S.A.	Luxemborg
Chrysaor (before reverse IPO)	Chrysaor Holdings LTD	Cayman Islands
Perenco	Perenco S.A.	Bahamas
Siccar Point	Siccar Point Luxembourg S.C.A.	Luxembourg
One-Dyas	SHV Holdings NV	Curacao
Tailwind Energy/Mercuria	Mercuria Energy Group Holdings	British Virgin Islands

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acreage on the UKCS are managed by holding companies based offshore, extending not only to private equity but other privately-owned companies like INEOS, Perenco, and Tailwind. In sum, the apparent 'localisation' of firms to the UK following the decoupling of regional assets from the production networks of US IOCs is not a case of 'globalisation in reverse.' Rather, it represents a switching of these regional assets from the vertically integrated structures of IOCs into international financial networks, and heralds a more financialised form of international investment in UK oil and gas.

Capital transition: assets for whom?

The significance of the network switching outlined above extends beyond the introduction of new network geographies to include the methods of financing, logics of value, and governance structures within which regional assets on the UKCS are becoming embedded. Companies acquiring assets on the UKCS bring with them different expectations and time-horizons regarding return on investment compared to IOCs, along with different mechanisms for raising investment capital. A growing proportion of operators are privately held and not subject to the same short-term expectations about share price, or governance requirements, as public equities listed on stock exchanges. Figure 6 allocates acreage on the UKCS to four categories of firm—public equity, state-owned, privately held, and private equity. It shows publicly controlled corporations continue to account for around 60% of total area equity on the UKCS, but that this share has been declining since the 2008 financial crisis. Figure 6 also shows significant growth in acreage by state-owned firms in the same period and, more recently, the emergence of private equity. These new entrants bring with them new capital raising structures and financial logics, signifying not only an ownership transition but also a capital transition (Knight 2021). The declining share of public-equity ownership in the UKCS reflects a wider international trend in oil and gas, where financing for fossil-fuel projects is increasingly secured outside global stock markets, through private equity funds, loans from commercial and public banks, privately issued bonds, and state ownership (Christophers, 2021).

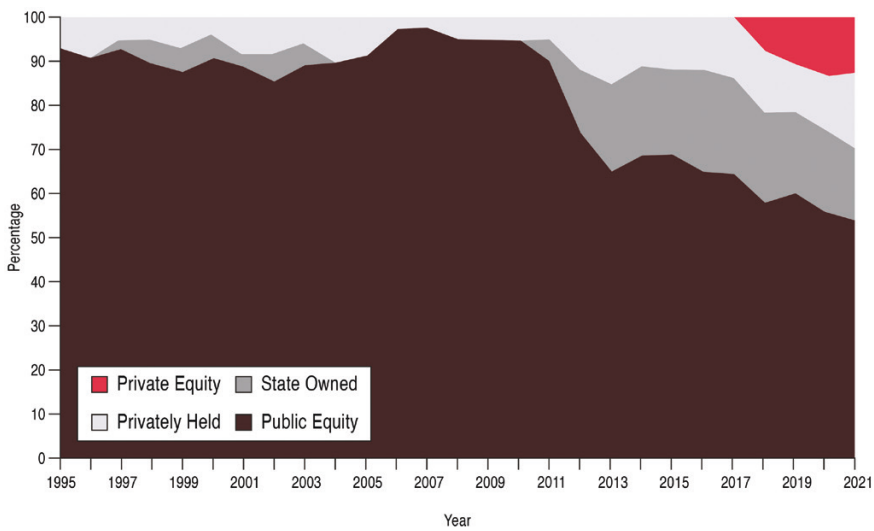

Figure 6. *A Capital Transition: acreage share on the UKCS by type of capital (1995–2021), for leading 20 companies.*

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Network switching, then, increasingly means regional assets on the UKCS are being valued for the way they deliver value to state-owned firms, state-backed investment vehicles (from Asia), and to firms that are privately held or backed by private equity. The entry of private equity sees regional assets on the UKCS being re-territorialised within the financial networks of US pension funds, university foundations and other investors which channel investment capital into large private equity firms like those backing NEO Energy or Chrysaor. NEO Energy, for example, recently completed a $660 million North Sea Opportunity Fund which taps US sources of capital for investment in offshore operations in the UK and Norway. Like the IOCs, these firms are production focussed and often target the reduction of costs associated with producing oil and gas: significantly, however, they value regional assets by reference to the costs of capital rather than to a price given to the assets on the market. To this end, private equity frequently uses bank debt to fund the purchase of a business: to purchase UKCS assets from Total, Exxon and Zennor, for example, NEO Energy concluded a $2billion reserve-based loan facility secured against the undeveloped reserves of the borrowing company, one of the largest such facilities to date (Knight, 2021).[22] The main objective of private equity is to maximise the value of the companies they acquire with the intent of generating a return on investment through an eventual exit—either by reselling the company or through an initial public offering.

At the same time, the growing significance of state-owned oil companies on the UKCS sees regional assets tied to the strategic development objectives of sovereign wealth funds and/or foreign state interests in national economic security. In some cases, these two non-traditional forms of finance on the UKCS combine: for example, Neptune Energy is backed by the private-equity groups Carlyle group and CVC Partners and by China Investment Corporation, one of the world's largest sovereign wealth funds owned by the Chinese government (Table 2). These arrangements challenge some of the presumptions of GPN: as Lim (2018) argues with reference to CNOOC's acquisition of Nexen, the growing 'imbrication of GPNs and state capitalism' requires more attention to the role of regional assets in transnational, state-driven capital accumulation projects. In addition to the processes outlined above, the UKCS is experiencing the entry of global commodity traders as owners of key upstream assets, so that decisions about exploration and production are increasingly made by reference to these companies' wider logistics portfolio. When the US publicly-traded independent EOG Resources sold its UKCS assets in 2018, they were acquired by Tailwind Energy, a privately-held firm backed by the global commodities and energy group, Mercuria (Mercuria is based in Switzerland, while the holding group which owns Mercuria is based in the British Virgin Islands).[23] In sum, through the ownership transition identified earlier, the UKCS is also experiencing a capital transition characterised by a growing diversification of debt capital. The mechanisms for raising debt, and the owners of debt raised against UKCS assets, are significant features of the recombination of network-territory relations, and they tie regional assets to new financial logics and expectations.

Conclusion: network switching and the re-territorialisation of network-territory relations

Strategic coupling is a powerful heuristic for understanding the formation, maintenance and consequences of network-territory relations. However, its focus on how regional assets are matched with the strategic objectives of one or two lead firms requires a complementary perspective on network switching if we are to fully account for the consequences of reconfiguring global value chains and production networks. For regions intersected by multiple lead firms there is no single locus of coupling/

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uncoupling: reconfiguration of the network-territory relations that constitute regional or national sectors is cumulative and simultaneous, rather than discrete and sequential. In these settings, regional transformation is less a matter of matching assets with the needs of a single lead firm and more a cumulative consequence of the way assets are transferred among multiple networks within the same industrial sector. The kind of geographical reconfiguration of value chains and production networks that appears to throw globalisation into reverse, therefore, can occur via the re-territorialisation of regional assets across existing networks, with different capital structures, and geographies of ownership and control. Network switching draws attention to the relational geographies of ownership and/or control that converge on regional assets, and the logics of value capture within which these assets are embedded. We have suggested 're-territorialisation' can offer a handy heuristic to guide research towards the cumulative effects of network switching as it foregrounds the creation of new network geographies and ties between places. Moreover, we have shown how this approach can probe and potentially challenge accounts of re-shoring and the 'domestication' of transnational value chains, by identifying the wider networks of finance within which lead firms and regional assets are embedded. In short, our paper has critically revisited one of economic geography's signature concepts for understanding the globalisation of economic activities—strategic coupling—and identified the value of asset re-territorialisation as a complementary approach.

We have deployed this perspective to examine network-territory relations in the UK's offshore oil and gas sector. We have shown empirically how the UK sector is constituted through the investment activities of multiple lead firms and how, over the past two decades, network-territory relations have been transformed in substantial ways as a consequence of the intersection of long-term trends with specific events. We have highlighted three dimensions of regional transformation, arising from the recombination of assets across multiple networks in the same industry: an ownership transition, shifts in geographies of control, and a capital transition that embeds assets in new logics of value capture. These shifts are, in part, a consequence of UK government policy which has promoted inward investment into a mature oil and gas basin. We have shown how these transitions now embed regional assets on the UKCS in corporate and financial networks substantially different to those associated with the IOCs that characterised the development and growth of the sector.

Understanding how and for whom regional assets on the UKCS have value is increasingly important in the context of energy transition and net-zero commitments. Shifts in ownership and geographies of control raise pertinent questions about how the benefits and risks of offshore oil and gas development are distributed, particularly between UK taxpayers and (overseas) shareholders/investors. Facile arguments about offshore oil and gas development being in the 'national' interest require scrutiny: our analysis of network switching shows that, despite an apparent 're-localisation' of ownership, an increasing proportion of regional assets on the UKCS are controlled by state firms and private capital from outside the UK. We hope further research will explore the utility of this perspective in other empirical settings, the range of mechanisms through which network switching promotes regional lock-in around specific (e.g. high carbon) industrial sectors, and the consequences for regional development of switching to networks driven by different financial logics.

Endnotes

[1] On strategic coupling as a 'matching' process see, for example, 'regional actors and institutions match regional assets to the strategic needs of investors' (Dawley et al., 2019: 857).

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[2] 'Co-evolution' here refers to the reciprocal and bi-directional relationships through which the evolutionary trajectories of different networks are linked (Gong and Hassink, 2019; Schamp, 2010).

[3] This includes the sovereign authority of the state and institutions of regulation and property deriving from it, but also the historically accumulated mutual dependencies among firms working within a given territory (including business associations, links to key higher education institutes etc). In short, it de-naturalises the tie between asset and territory.

[4] The UK Government's recent North Sea Transition Deal envisages a future in which an increasing proportion of activity shifts to carbon management services, renewable energy generation and the production of hydrogen (Department for Business Energy & Industrial Strategy, 2021). Significantly, however, it neither restricts new oil and gas development nor imposes an end date for either licensing or production.

[5] These were designed 'to allow ideas to be worked exclusively, realising value by marketing' and, to that end, were accompanied by Successful Prospect Fairs where companies holding Promote licences 'could show and potentially sell their ideas' (Brzozowska, 2007, 6).

[6] The OGA was renamed the North Sea Transition Authority in March 2022.

[7] The latter included permanently zero-rating the petroleum revenue tax and reducing the supplementary charge for oil and gas fields in the UK (Boué, 2020).

[8] The licence underpins the transformation of territorial parcels on the UKCS (rendered in geological terms) into commercial production, and into projections of future revenue which, in turn, make it possible to leverage debt and acquire obligations to investors (Bridge et al., 2020). It is in this sense that the licence constitutes a form of capitalised property (Birch, 2017).

[9] We use the term 'ownership' here to refer to the rights ('to search and bore for and get Petroleum in the seabed and subsoil') that a Petroleum licence for the UKCS conveys to the holder. Companies acquire a licence by applying to the OGA/NSTA or by buying a company that currently holds a licence. Strictly speaking licences are not owned by companies as all rights to petroleum are vested in the Crown. We use the term ownership here in a general way, to signal the control (a temporary monopoly on access) it affords the licensee and the way the licence functions as an asset for the company that holds it.

[10] Licence areas reference an underpinning cadastral grid that divides the UKCS into numbered quadrants with dimensions of 1° latitude by 1° longitude. Each quadrant is divided into 30 numbered Blocks, with each block containing (multiple) Sub-areas. Petroleum Licences reference these Quadrant/Block/Sub-areas. Equity holders are recorded by NSTA/OGA at the Sub-area level (i.e. at the most granular spatial designation). We used this sub-area level information to create an aggregate figure—total area equity—attributable to specific companies which can then be compared and expressed as a proportion of the total area under licence on the UKCS. Our calculated figure of total area equity for a company represents that company's acreage or 'patch' i.e. a geographical expression of its access to and control over subsurface assets on the UKCS.

[11] https://www.bvdinfo.com/en-gb/our-products/data/international/orbis

[12] The history of the UKCS, however, has always been plural and not only the IOCs have sought value in the North Sea's reserves of oil and gas. A number of UK and North American 'independents'—i.e. oil firms focused on exploration and production, and without integrated refining or retailing divisions—also sought value from the UKCS and acquired assets as a way to grow reserves and production.

[13] Defined as the amount added to its reserves divided by the amount extracted.

[14] For example, BP merged with Amoco (1998), Exxon merged with Mobil (1999), and in 2000 Arco became a subsidiary of BP; Elf merged with Total (2000), Texaco merged with Chevron (2001) and in 2002 Conoco merged with Phillips to form ConocoPhillips which then acquired Kerr-McGee and Burlington Resources in 2005.

[15] For example, when Kerr McGee sold $3.5 billion of North Sea assets to Maersk and Centrica in 2005—responsible for 77,000 barrels of oil equivalent per day or 21 per cent of Kerr-McGee's total output—the company described it as a 'strategic plan to high grade our oil and gas portfolio' (FT August 8 2005) https://www.ft.com/content/c91555c2-07df-11da-97a6-00000e2511c8

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[16] Exxon retains a marketing share of production, having sold its assets to private equity backed NEO in 2020.

[17] Derived by comparing annual reports: specifically BP 2000 (p.15 and p.63, available at https://core.ac.uk/download/pdf/33158411.pdf) with BP 2020 (p.313–316, available at https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-annual-report-and-form-20f-2020.pdf).

[18] The data in Figure 3 , Figure 5 and Figure 6 are for the leading 20 companies only (i.e. those companies with the largest acreage). The total area equity of the top 20 companies accounts for between 60 and 80% of total area equity, depending on the year.

[19] Other notable acquisitions by independents include the entry of Canadian capital in the form of PanCanadian (EnCana), CNR and Nexen (which acquired Encana's UK subsidiary in 2004 for USD 2.1 billion).

[20] Figure 4 was compiled by the authors using production and resource data from Rystad's UCube database.

[21] Coe and Yeung (2015: 40) add a 'sufficiency' criterion: at least three organisational roles have to be externalised to different/independent firms (e.g. strategic partners, specialised suppliers, key customers).

[22] Similarly, to purchase assets from Shell, Chrysaor and Global EIG put together a $1.5bn reserve-based loan facility, underwritten by BMO Capital Markets, BNP Paribas, Citibank, DNB and ING.

[23] In a similar way, SSE's North Sea assets were acquired in 2020 by Viaro Energy, a London-headquartered company that has its roots in an oil and petroleum product trading company.

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