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Regional Resources
and Democratic Secessionism

Kai Gehring & Stephan A. Schneider

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Kai Gehring *

Stephan A. Schneider **

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Abstract:
We argue that region-specific resources are crucial to understanding the success of democratic secessionist movements. Exploiting oil discoveries off the Scottish coast as a natural experiment, we estimate the causal effect of regional resources in a difference-in-differences design with Wales as the counterfactual. Using election results at the constituency level from 1945 to 2001, we show that each additional giant oil discovery has a significant positive effect on the Scottish National Party's vote share of about 2 percentage points. A triple-differences design using changes in world oil prices as additional exogenous variation supports the causal interpretation of this finding.

* **Kai Gehring**, University of Zürich: mail@kai-gehring.net. Webpage: http://www.kai-gehring.net.
** **Stephan A. Schneider**, Heidelberg University: mail@schneiderst.de.

"The foolish ones said to the wise, 'Give us some of your oil; our lamps are going out.' 'No,' they replied, 'there may not be enough for both us and you. Instead, go to those who sell oil and buy some for yourselves.'"

Matthew 25, 8-9 – *The Parable of the Wise and Foolish Virgins*

1 Introduction

Many regions around the world have experienced a surge in the vote share and success of secessionist parties, while others with comparable levels of cultural heterogeneity have not. This cannot be explained by the existing literature on the optimal size of nations which has mostly focused on scale advantages like improved trade opportunities as the main benefits from larger states, and preference heterogeneity as the most severe factor benefiting secession and smaller entities. Those factors are obviously important, but we argue that regional resources and their changing value are crucial to explain the success of secessionist parties. This relates to an existing literature showing that in developing countries increases in natural resource wealth in individual regions affect state stability and democracy (see, e.g., Arezki & Brückner, 2012, 2011). The emerging distributional conflicts often culminate in armed conflicts and severe civil wars (e.g., Collier, 2010; Rosser, 2006; Ross, 2004a), which is unlikely in countries with a stable democratic system. Instead, we argue that secessionist tendencies find their expression in a different way. The redistribution and usage of the gains from regional resources can be instrumentalized by secessionist parties to boost their vote shares.

Our simple probabilistic voting model builds on the assumptions and relevant factors highlighted by authors like Alesina & Spolaore (1997) and augments them by integrating differences in resource endowment and their redistribution across regions. This also relates our study to the literature on fiscal federalism and within-country transfers (e.g., Dixit & Londregan, 1998; Persson & Tabellini, 1996). We use extensive anecdotal evidence to demonstrate that changes in resource value are decisive in influencing the rise and fall of secessionist movements around the world. Ranging from Flanders in Belgium, to Québec in Canada, and Greenland in Denmark, the cases we describe document the widespread relevance of regional resources. Moreover, they demonstrate that regional resources should not narrowly be defined as containing only natural resources, but rather that regional differences in human capital, institutional quality or geography are also relevant. Based on Alesina & Spolaore (1997) and Persson & Tabellini (2002), we derive analytically that increases in the value of regional resources are related to a higher approval rate for secession, which should be visible, ceteris paribus, in a higher vote share for secessionist parties.

Based on the model, we identify the challenges and necessary prerequisites for identifying a causal effect of regional resources. While the qualitative examples underline the general importance and external validity of the hypothesized mechanism, they only provide anecdotal and correlational evidence how regional

resources and changes in their value help to fuel secessionist movements. Ideally, we want to compare two regions that exhibit comparable trends with regard to those factors that we identified as influencing support for secession; for instance, preference heterogeneity from the majority in the country. Moreover, both regions must feature a comparable secessionist party and the vote share of these parties is required to follow a common trend in absence of the treatment. We identify such a case in the United Kingdom and make use of the fact that the bulk of the UK's North Sea oil reserves was exclusively found off the Scottish coast to compare the performance of the two major secessionist parties in Scotland and Wales in a difference-in-differences (DiD) framework. This is feasible as extensive evidence supports the notion that the *Scottish National Party* (*SNP*) and the Welsh *Plaid Cymru* as well as both regions in general are sufficiently comparable for our purpose (see, e.g., Levy, 1995). Moreover, the first Scottish oil discoveries in 1970 were an unexpected and considerably large exogenous shock (MacKay & Mackay, 1975), which makes them salient to voters and allows a clear distinction between pre- and post-treatment period.

Our analysis, based on a panel dataset containing 1883 observations from UK general elections and by-elections on the constituency-level which we assembled for the 1945 to 2001 period, exploits this natural experiment. While oil did not play an important role in the political calculus of secessionist parties in Scotland and Wales initially, the situation fundamentally changed for the Scots by the initial oil discoveries in 'their' maritime area. Hereafter, politicians from the *SNP* have tried to instrumentalize the large potential oil revenues as an argument for Scottish independence, and support for the party has increased sharply (McGuinness *et al.*, 2012).[1] The slogan "It's Scotland's oil", invented in 1972 and often quoted even today (Harvie, 1995), reflects concisely how politically relevant the oil discoveries were and still are for the *SNP* (Collier & Hoeffler, 2006; MacKay & Mackay, 1975).

Our results show that voters are indeed receptive to these arguments: in elections after oil discoveries, the *SNP*'s vote share significantly increased by about two percentage points for each additional giant oil discovery. The result is robust to various different specifications, is further supported by exploiting the exogenous changes in world oil prices and a placebo test, and varies with constituency characteristics to some degree. This augments the qualitative evidence that we collected for numerous other countries, and highlights that regional resources are a crucial factor to better understand the success and failure of secessionist parties.

The paper is structured as follows: section 2 relates our contribution to the existing literature on secessionism in developing countries and the size of nations as well as presents our theoretical model. We

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[1] Support for independence provisionally culminated in the referendum held on 18th September 2014, in which the Scottish people faced the choice of separating from the rest of the United Kingdom or staying unified. Even though a close majority of the Scottish people voted against independence, the fact that an independence referendum was held in a stable West-European country with a wealthy society is remarkable in itself. The official electoral outcome of the referendum is as follows; yes: 1,617,989 (44.5 percent); no: 2,001,926 (55.5 percent); turnout: 84.6 percent. The question asked on the ballot paper was: "Should Scotland be an independent country?" (see http://www.scotreferendum.com/information/, last accessed on 21st February 2017). But Scotland is no isolated case: in Québec, for instance, an independence referendum closely failed the majority in 1995 (Holitscher & Suter, 1999; Lynch, 2003).

demonstrate the importance of regional resources and the external validity of our findings with detailed anecdotal evidence from various secessionist parties around the world (3.1). Subsequently, we provide a brief overview of the historical and political background of the Scottish and Welsh independence movements (3.2), and develop the hypotheses tested in part 5. Sections 4.1 and 4.2 provide a comprehensive data description and details about the identification strategy. Section 5 then presents regression results and discusses the robustness of the estimates. Section 6 concludes.

2   Linking Resources and Secessionism

2.1   The Political Economy of Resources and Conflict

There is a large strand of literature which examines the positive and negative economic consequences of resource endowments and discoveries for economic development in the context of developing countries (for an overview see, e.g., Caselli *et al.*, 2015; Ploeg, 2011; Rosser, 2006). Numerous studies focus specifically on political consequences and suggest that an abundance of natural resources leads to more corruption, lower levels of democracy, and civil war (see, e.g., Rosser, 2006). Secessionist civil wars represent a violent form of secessionism which often arises due to distributional conflicts about resources (see, e.g., Ross, 2004b; Collier & Hoeffler, 2004).[2] Lei & Michaels (2014), for instance, show that the discovery of oil enhances the probability of internal armed conflicts by 5 to 8 percent within 4 to 8 years after the respective discovery.

In addition to grievances and oppression in the respective regions, various authors highlight the relevance of an economic calculus to explain the onset of a civil war. Lei & Michaels (2014) and Morelli & Rohner (2015) argue that the winner of a civil war gains control over the resource repositories in the contested area. If these expected revenues are sufficiently high and the expected costs sufficiently low, a secessionist conflict is likely to arise. Collier & Hoeffler (2004) support this so-called greed hypothesis: their results indicate that beyond ethnic differences, potential separatist movements in developing countries also need prospective economic gains from separation. A rebellion is more likely to be initiated when it is both financially feasible and potentially rewarding (see also Collier & Hoeffler, 2006; Ross, 2004b).

Still, it appears as if it is neither only greed nor solely grievance which fuels secessionist conflicts. As we will argue in the context of democratic countries below, ethnic, cultural or linguistic differences are important factors that can affect the emergence of secessionist movements. However, the degree to which they effectively carry over into real actions is often depending on the economic circumstances revolving around resource distribution. This becomes apparent in the study by Morelli & Rohner (2015). When interacting resource and ethnicity concentration, they demonstrate that a civil war is more likely to occur

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[2] Anecdotal evidence for this relationship is abundant: examples of civil wars related to resource wealth can be found in Angola, Colombia, Iraq, Sudan, Indonesia, Nigeria, or the Congo (Casertano, 2013; Lei & Michaels, 2014).

when both factors are densely concentrated (see also Casertano, 2013; Collier & Hoeffler, 2006). More specifically, resources need to be geographically concentrated and the different groups within the country need to be distinct enough to enable group leaders to instrumentalize the unequal distribution for their purpose.

Economic arguments are often plausible mechanisms to explain separatist wars because they increase the perceived value of independence in the resource rich region (Ross, 2004a).[3] Morelli & Rohner (2015) also show that a shift from full oil equality to full oil inequality, ceteris paribus, quadruples the baseline risk of civil war. Thus, we can learn from the developing country context that the distribution of region-specific resources in the respective state is a crucial factor causing secessionist wars. We argue that the framework applied to the context of the onset of civil war can be adapted to reflect the case of non-violent secessionism as well. This idea is supported by Collier & Hoeffler (2006), who already hint at the possibility to transfer the knowledge about secessionist wars to non-violent secessionist movements. They also qualitatively discuss the potential relationship between the Scottish independence movement and geographically concentrated oil discoveries off the Scottish coast as a prime example of democratic secessionism Collier & Hoeffler (2006).

2.2   Economic Voting and Secessionism

2.2.1   Benefits and Costs of a Union

In his book on the relationship between the economy and electoral outcomes, Tufte (1978, p. 65) appeals to the reader: "When you think economics, think elections; When you think elections, think economics." On average, economic changes explain about one third of the vote (Lewis-Beck & Stegmaier, 2000).[4] Analyses that estimate the effect of economic indicators on the governing party's chances to get re-elected (see, e.g., Brender & Drazen, 2008; Jordahl, 2006) reveal that voters especially react retrospectively to changes in macroeconomic indicators like the unemployment rate and inflation in the years prior to an election and thus tend to take a sociotropic perspective (Lewis-Beck & Stegmaier, 2000). When it comes to situations that alter the voter's economic expectations about the future, for instance due to the discovery of resources or a change in their value and the expected benefits of its exploitation, it seems only natural to assume

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[3] This claim fits empirical evidence and case studies. Explaining possible chains of effects, Ross (2004a) provides case study evidence for three separatist wars where a resource rich region wanted to secede. In a sample of 127 separatist wars between 1945 and 1999, Popiden (2011) demonstrates a positive relationship between dependence on the export of non-renewable energy resources and the onset of separatist wars. In addition, she shows that dependence on oil exports is a greater risk factor for the onset of a separatist war than a non-separatist war. Results presented by Collier & Hoeffler (2006) also support the notion that natural resources rather fuel secessionist conflicts than ideological wars.

[4] The three indicators unemployment, growth, and inflation are generally deemed as the most important since they are among the few publicly recognized economic indicators (see, e.g., Lewis-Beck & Stegmaier, 2000, p. 114; Powell & Whitten, 1993, p. 395).

that voters also adopt a prospective view (see Kuklinski & West, 1981, p. 437). In one of the few cross-sectional analyses of secessionism, Sorens (2005) shows correlational evidence that voters do take cost-benefit-considerations into account when voting for a secessionist party.[5]

From Alesina & Spolaore (1997) to recent contributions like Boffa *et al.* (2016), a large literature in economics has both theoretically and empirically evaluated the reasons behind regional integration and disintegration. In the initial seminal paper, Alesina & Spolaore (1997) argue that the equilibrium number of nations is a result of the trade-off between the costs and benefits of being a member of a larger political entity. Other important papers include Goyal & Staal (2004) who highlight the role of size, location and diversity within regions, and Buchanan & Faith (1987) who argue that the secession option places an upper limit on the tax burden that a ruling majority can impose on the minority. Bordignon & Brusco (2001) consider whether federal constitutions should allow peaceful secession options. In an alternative model, Bolton & Roland (1997) concentrate on the fact that people in different regions might exhibit different preferences on income redistribution within the chosen political entity. In contrast to their paper, we are mostly interested in differences in resource allocation and distribution amongst regions, though we also highlight the role of economic considerations. A simple model helps to understand how economic arguments about the distribution of regional resources can explain the electoral success (or failure) of secessionist parties.

Assume that the utility of the representative citizen of a region r in a union of R regions contains costs and benefits of integration in the union (nation state). The level of integration is indicated by $I_r \in [0, 1]$, with 1 indicating full integration into the nation state and 0 indicating complete separation. As we are interested in secession, we focus on the cases where $I_r = 0$ and $I_r = 1$. As in the framework of Alesina & Spolaore (1997), citizens bear heterogeneity costs C_r of integrating into larger units. These costs are defined as:

$$C_r = h_r(I_r) \tag{1}$$

Costs from heterogeneity exist due to a deviation from r's preferences from the rest of the nation. The term refers to preference heterogeneity within the nation and can be expressed as the Euclidean norm:

$$h_r = ||p_r - p_{\bar{N}}|| \cdot I_r,$$

where $\boldsymbol{p}_r$ is a vector representing the preferences and values of the average citizen in region r. $\boldsymbol{p}_{\bar{N}}$ can be understood as representing either the preferences of the majority in the nation, the pivotal region in bargaining processes or the median voter. Hence, heterogeneity costs increase with a larger difference between preferences in region r and the national majority ($h_{\bar{N}}$). These costs are often forgotten in the political dis-

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[5] Note that "secessionism is a [...] demand for formal withdrawal from a central political authority by a member unit or units on the basis of a claim to independent sovereign status" (Wood, 1981, p. 110). Parties advocating secession are also often referred to as regionalist, separatist or autonomist. In our definition, separatism is the pursuit of more independence from the central state which might but does not need to culminate in secession. We keep the differences in mind, but mostly use all terms interchangeably throughout the paper.

cussion because they are non-monetary and non-quantifiable as they relate to regional sentiments, common values, cultures, and norms (Alesina *et al.*, 1995). Secession can provide the advantage of, for instance, the provision of public goods (Alesina & Spolaore, 1997) and redistribution (Bolton & Roland, 1997) more in line with regional preferences.

Citizens also derive benefits B_r from national integration from, e.g., trade, other economies of scale or enhanced public good provision. These benefits are defined as:

$$B_r = b_r(I_r) + \frac{\sum_{i=1}^{R} V_i}{R}, \tag{2}$$

with $V_i = x_i \times p_i$ and $b'(I_r) \geq 0$. Large jurisdictions generate economies of scale in shared public institutions and infrastructure, such as administration or national defence (Alesina *et al.*, 1995). A large, diversified economy and its respective welfare state also offers better protection against economic shocks and a more efficient provision of public goods since, as for any non-rival public good, the per capita costs are lower (Alesina & Spolaore, 1997, pp. 1028-1029). Another relevant factor in the case of a secession is the potential loss of trade advantages which exist within large jurisdictions (Alesina & Spolaore, 1997; Young, 2014).[6]

The value of regional resources (V_i) is simply modeled as the quantity of resources available (x_i) times the price of the resource (p_i). Note that there might be more than one resource in reality, but this would simply mean to instead take the sum of the respective resource values. Resources can be important for the secession decision in various ways. When we think of the costs of public good provision, resource revenues can enable regional governments to secure a similar or even higher level of public goods provision than in the case of remaining in the union. Another argument in the existing literature is that setting up and operating a complete state apparatus leads to huge direct monetary costs of uncertain extent, which might only be feasible if enough resources are available (Young, 2014; Lynch, 2003). Regarding the effect of differences in wealth levels, the political science literature has shown a correlation between the relative wealth of a region and separatist tendencies in democracies (Sorens, 2004; Van Houten, 2007). One cited reason is that wealthier regions are often the net-contributors in a union which subsidize other regions.We choose a simple option to integrate resources and surplus sharing in the model as there is not much additional analytical value from further complications for our purpose. It assumes that resource revenues are pooled

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[6] In this respect, the European Union is important for secessionist movements in member states. The *SNP* and *Plaid Cymru* actively aim at making use of the political and economic advantages of the EU, which would primarily provide them with external economic security in case of a secession (Nagel, 2004). Alex Salmond, a former *SNP* leader, stated: "the whole debate on independence has been changed by a single idea, [...] and that's the European Union" (see *Washington Post* following the link `http://www.washingtonpost.com/archive/politics/2000/12/12/eus-potential-lifts-scots-hope-of-independence/f5c65ca8-3c3d-417c-bffd-620c32225337/`, last accessed on 21st February 2017). In contrast to the general EU scepticism in England, Scotland and Wales today run their own representations in Brussels to promote their national self-interests (Paquin, 2002). Gehring & Schneider (forthcoming) show that minor European states can achieve significant economic gains by making targeted use of EU key positions.

and then evenly redistributed among all regions.[7]

For a given level of integration, citizens optimize in terms of consumption, leisure, etc. The indirect utility for the representative citizen in region r is then given by $W_r = W_r(B_r, C_r) = W_r(b_r(I_r), V_r, \sum_{j \neq r}^{R} V_j, h_r)$. In case the region remains a part of the union or the nation state, the utility is:

$$W_r^N = b_r(I_r) + \frac{\sum_{i=1}^{R} V_i}{R} - h_r(I_r) \tag{3}$$

In the case of secession, the region can keep all the benefits derived from the resources. We focus on complete secession $I_r = 0$ with $b(0) = 0$ and $h_r(0) = 0$, so that we get

$$W_r^S = V_r. \tag{4}$$

2.2.2   Support for Secession

Assume citizens can vote to either stay in the nation-state ($I_r = 1$) and get W_r^S or vote for secession which means choosing $I_r = 0$ and getting W_r^N. A citizen from region r will agree to secede and choose $I_r = 0$ if

$$W_r^S > W_r^N + \sigma_{i,r} \Leftrightarrow \sigma_{i,r} < W_r^S - W_r^N \tag{5}$$

where W_r^S indicates the indirect utility for the representative citizen in region R. $\sigma_{i,r}$ is the citizens' idiosyncratic strength of regional identity and follows a uniform distribution on $-\lambda_r/\phi$ and $(1 - \lambda_r)/\phi$, with $0 < \phi \leq 1$ (for details on the probabilistic voting model, see Persson & Tabellini, 2002). The parameter $\lambda_r \in (0, 1)$ can be understood as a baseline approval for secession and affects the position and width of the distribution. In each region there is a threshold value $\sigma_r = W_r^S - W_r^N$ for which citizens are indifferent between secession and the *status quo*. Plugging (3) and (4) into the equation we get

$$\sigma_r = W_r^S - W_r^N = V_r - b_r(I_r) - \frac{\sum_{i=1}^{R} V_i}{R} + h_r(I_r)$$

$$\Leftrightarrow W_r^S - W_r^N = \frac{R-1}{R} V_r + h_r(I_r) - \frac{\sum_{i \neq r}^{R} V_i}{R} - b_r(I_r) \tag{6}$$

The share of people π who support the secessionist party in region r is then given by $\pi_r = Pr[\sigma_{i,r} <$

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[7] One straightforward extension would be to integrate the usage of the resources and assume that they are spent on a public good. In the case of a true public good, there might be benefits from pooling resources at the national level. Still, due to the differences in preferences captured by h_r, the level of the public good would deviate from the optimal level of region r. Another extension for a more complex model would be to consider the impact of resource wealth on the bargaining power regarding within-country redistribution. This could augment the existing literature like Dixit & Londregan (1998) and Persson & Tabellini (1996). Our model can also be understood as assuming certain secession probability and fixed sharing arrangements. Morelli & Rohner (2015) provide a bargaining model with two regions and show that the fact that regions possess different threats (in their case types of conflict) makes reaching a stable bargaining equilibrium hard due to commitment problems. While they do not consider democratic processes, similar problems plausibly exist for democracies. The model of Perez-Sebastian & Raveh (2016) indicates that resource booms would cause more centralization due to risk-sharing preferences of the regions. Regarding secession, it relies on the relatively strong assumption that a secession-attempt decision has to be taken prior to knowing the resource distribution.

$W_r^S - W_r^N$]. This yields

$$\pi_r = \lambda_r + \phi[\frac{R-1}{R}V_r + h_r(I_r) - \frac{\sum_{j \neq r}^{R} V_j}{R} - b_r(I_r)].\tag{7}$$

We can now use comparative statics to derive the influence of regional resources and the other main factors that drive secessionism. This also helps to establish which prerequisites need to be met to find a suitable treatment and counterfactual group. A higher value for λ_r shifts the distribution of $\sigma_{i,r}$ to the left and increases baseline approval for secession. λ_r can be considered the region specific strength of regionalism (see Dehdari & Gehring, 2016). Regions' costs from preference heterogeneity can also differ strongly based, for instance, on the length of common history with the other regions and the extent and salience of factors that distinguish it from the rest. Hence, one of the main empirical challenges is to find a treatment and counterfactual which are sufficiently comparable in these respects to enable us to isolate the effect of regional resources.

It is straightforward to see that $\frac{d\pi_r}{dV_r} > 0$. If the value of resources in region r increases, secession becomes the more attractive option for a larger share of people.[8] The decisive question is whether changes in regional resource value really help to explain the emergence and success of secessionist parties. The assumption we make in transitioning from the model to the empirical application is that higher support for secession translates into higher vote shares for secessionist parties. This is supported by Jolly (2014) and Sorens (2005).

3   Empirical Relevance

3.1   Anecdotal Evidence from Around the World

Secessionist movements naturally depend on a combination of multiple factors such as high group identification and the ability to solve collective action problems to be successful (Hechter, 1992, p. 269). In addition to having a geographically concentrated culturally homogeneous social group (Wood, 1981, p. 112), rational economic arguments can be pivotal. Authors like Casertano (2013), Collier & Hoeffler (2006), and Sorens (2005) even argue that group identification is sometimes only artificially created: "ethnic identity can provide a sense of separateness, but voters consider this separateness relevant only when it can be mobilized to achieve political and economic goals that are important to them" (Sorens, 2005, p. 307). In a cross-sectional analysis, Sorens (2005) shows that identity variables like a region-specific minority

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[8]   Note that a potential alternative to secession would be decentralization and more autonomy for the region which experiences an increase in resource value. For such adaptions within federal systems it is extremely hard to reach an agreement, especially if all regions are required to agree, and it usually takes many years for a change to be implemented. A model of referendums on secession and their effect on bargaining about transfer payments is provided by Eerola *et al.* (2004). Another question that we do not further consider are the fixed costs of seceding.

language or a recent history of independence matter, but that economic variables account for the larger part of secessionist party support and particularly for its variation.

This section provides an overview over various cases of regions where increases in regional resources or their respective value relate to secessionist movements. The main purpose of this section is to highlight the relevance of regional resources, before we proceed with our causally identified main estimation. It also demonstrates that the mechanisms are relevant for various kinds of regional resources, including human capital and land endowments (Appendix A provides further details and sources). Democratic secessionist movements that we observe around the world can be broadly grouped into three categories. First, there are of course movements where economic arguments do not play a role or at least only a very minor one. For instance, while several parties and organizations promote independence in Kashmir in India, it is ethnic motives and protest against suppression that seem to be driving these movements which also tend to be more violent in nature. While cases falling in this category are rather infrequent in democratic countries, it is important to remember that this is in line with our model: secessionist tendencies can arise in the absence of any regional resource differences.

The second category contains regions where economic arguments play a major role for the separatist discourse and are widely used in party campaigns, but where the value of regional resources does not vary enough over time to clearly distinguish their influence from other factors. Useful examples include Northern Italy, Silesia in Poland, and Istria in Croatia. Consider the main separatist (formerly secessionist) party in Italy, the *Lega Nord* (*LN*). One of its central political goals is more autonomy (and even independence until 2006) for the North of Italy, which possesses higher human and physical capital compared to other regions in Italy. Accordingly, it is the most developed and productive area in Italy. The tax revenues generated by superior regional resources are redistributed within Italy via a system of transfer payments. Protests against these transfers were a major reason for the call for a secession referendum in the 1990s.[9] Another interesting fact is that the movement "is not based in an area that has historic claims to nationhood. Instead, the *LN* has attempted to invent an ethnicity for the North of Italy in order to justify its political claims for the protection of the economic interests of the region" (Cento Bull & Gilbert, 2001, p. 446).

Another example is Silesia in Poland. The *Silesian Autonomy Movement* exploits the fact that the region possesses extensive coal and lignite deposits and is rich in zinc, lead, and iron. The movement's homepage states that the revenues from these regional resources should "[...] remain at our disposal. The inhabitants of the land will decide on the distribution of these funds."[10] In Croatia, the region Istria is endowed with beautiful beaches as well a flourishing processing and shipping industry. The *Istrian Democratic Assembly* and the separatist *Istrian Democratic Forum* instrumentalize the redistribution of the money generated from

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[9] See, e.g., *The Economist* from 27th May 1997 at http://www.economist.com/node/150513, last accessed 21st February 2017.

[10] See the FAQ section on the webpage of the Silesian Autonomy Movement at http://www.autonomia.pl/faq/, last accessed 21st February 2017.

these resources to foster their electoral success. Observers agree that "Istrian regionalism was not motivated primarily by ethnic or national belonging. Such movements [...] are driven more by economic concerns than by cultural or ethnic criteria" (Ashbrook & Ashbrook, 2008, p. 151). Other cases where economic arguments clearly contributed to secessionist parties' behavior are the *Pro Santa Cruz Committee* in the Santa Cruz region in Bolivia which possesses the second largest natural gas deposit in South America, and the *Republika Srpska Movement* in Bosnia-Herzegovina, which is rich in minerals reaching from bauxite, to marble, and silica sand. People in the region Baluchistan in Pakistan complain that their resources "including coal as well as gas, have been exploited by the central government without adequate compensation to the province."[11]

These examples highlight the importance of economic concerns for democratic secessionism and suggest that the relevant type of resources does not only comprise of natural resources. The third category of regions feature more variation in regional resource value over time. In line with our theory, these regions exhibit a positive correlation between secessionist party success and the value of regional resources. Consider New Caledonia first: the former colony is a part of France, but since the 1980s it features several parties like the *Kanak and Socialist National Liberation Front* which promote independence. The rising popularity of these parties has developed along with the rise of New Caledonia, which holds roughly a quarter of the world's nickel reserves, ranking 5th among the nickel-producing countries worldwide. A joint venture with a Canadian multinational to exploit more of their resources is regarded by many Kanak as making separation more feasible and economically attractive. In particular, the *Koniambo Project*, a nickel mine in which the company invested \$6 billion, has further instilled hopes for independence in the local population. As one observer puts it "resource sovereignty in New Caledonia has come to be seen by independence leaders as a path to political independence" (Horowitz, 2004, p. 287).

The French-speaking Canadian region Québec clearly differs from the rest of Canada linguistically and also to some degree culturally. It features the *Parti Québécois* and the *Bloc Québecois* which represent separatist interests on the national and state level. It is an interesting case, as the cultural differences are mostly constant over time, whereas the parties' success varies strongly. Historically, Québec was rich in natural resources like gold, iron, copper, and wood. Accordingly, a central party claim revolved around the fact that the Québecois transfer more than C\$53 billion per year to the federal redistributive system. The electoral success of the separatist parties diminished over the years, however, as Québec's economy only managed to grow significantly less than the rest of Canada. Simultaneously, we observe a decline in the parties' shares in the national (from 13.5 percent to 4.7 percent) and the regional parliament (from 49.3 percent to 19.3 percent) over the 1993 to 2015 period (see Appendix A, Figure 2).

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[11] See *The Economist* from 5th May 2005 at http://www.economist.com/node/3941524?story_id=3941, last accessed 21st February 2017.

Other cases also provide plausible exogenous within-country variation. Greenland enjoys far-reaching autonomy but remains a part of Denmark in several respects including justice, defense, and foreign affairs. In Greenland's parliament, the *Inuit Ataqatigiit* and the *Forward Party* represent the struggle for more autonomy or full independence from Denmark. As Greenland's mostly fishing-based economy was stagnant for a long time period and almost half of public spending was financed by grants from Denmark, their electoral success was limited. The discovery of oil and the fact that, due to the melting of the Arctic ice, larger areas become feasible for mining (rare metals and radioactive substances), the secessionist parties gained support at the expense of the largely Danish *Democrat Party* in the 2009 elections.[12] In 2008, a non-binding referendum on more self-governance won in a landslide with 21,355 votes to 6,663.[13] However, the drastic collapse in crude oil prices since 2015 has made most Arctic oil unprofitable to exploit and led "Greenland to put off plans to split from Denmark."[14]

All cases in this second category indicate a positive relationship using variation over time within the same country. Ideally, however, we would find a suitable counterfactual region within the same country. Two examples that partly fulfill the criteria are Galicia and Catalonia in Spain, and Flanders and Wallonia in Belgium. Galicia and Catalonia both feature separatist and secessionist parties: the *Galician Nationalist Bloc* and *Compromiso por Galicia* in Galicia, and the *Republican Left of Catalonia*, the *Democratic Convergence of Catalonia*, as well as the *Popular Unity Candidacy* in Catalonia. Both regions' preferences differ significantly from the rest of Spain as they possess, for instance, a distinct history and a language which linguists describe as unintelligible to Castilian Spanish (Lewis *et al.*, 2009). However, the success of secessionist parties differs drastically between the two regions. While newspapers are filled with articles covering secessionist party success in Catalonia, the Galician regionalist parties jointly receive not more than 20 percent of the votes. The most obvious difference between Catalonia and Galicia is that Catalonia has the highest regional GDP in Spain, based on a strong industrial base and superior human capital endowment, exemplified by its leading position in high-tech exports. According to the *Democratic Convergence of Catalonia's* manifesto, Catalonia contributed 19.5 percent to the total resources of the central state, but received only 14 percent of the spending. The manifesto of the *Republican Left* complains about the usage of Catalan resources to finance public goods like high-speed trains, airports, and defense, and highlights the potential benefits of being able to manage and keep Catalonia's resources to themselves. As the *Financial Times* reports, a

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[12] See *The Economist* from 15th July 2012 at http://www.economist.com/blogs/graphicdetail/2012/06/daily-chart-9 and from 31st March 2013 at http://www.economist.com/blogs/newsbook/2013/03/economist-explains-why-greenland-election-global-implications, last accessed 21st February 2017.

[13] See *The New York Times* from 26th November 2008 at http://www.nytimes.com/2008/11/27/world/europe/27greenland.html?_r=0, last accessed 21st February 2017.

[14] See *The Economist* from 21st January 2015 at http://www.economist.com/news/europe/21640224-falling-crude-prices-are-forcing-greenland-put-plans-split-denmark-independence-ice, last accessed 21st February 2017.

majority of Catalans feels that "Madrid takes too much of local income to redistribute elsewhere."[15]

The Belgian case comes closer to our ideal scenario. Basically, Belgium comprises two ethnically and culturally distinct regions: a French speaking part, Wallonia, and a Flemish (Dutch) speaking part, Flanders. There is extensive variation in the relative value of their respective regional resources over time, which we can observe along with the strength of secessionism and secessionist parties. Up to the 1960s, Wallonia was one of the richest regions in Europe due to natural resources like coal and a comparative advantage in the leading sectors at that time (such as coal mining, steel making, and related activities; see Mnookin & Verbeke, 2009). While there were Flemish independence movements building on the suppression of the Flemish language and the political dominance of the smaller French part since the foundation of Belgium in 1830, support for secessionism never really took off until the economic situation reversed. Declining demand for coal and steel on the one side, and modernization and the increased value of possessing the important port of Antwerp on the other side made Flanders' regional resources relatively more valuable compared to Wallonia's. As our model would predict, this reversal of fortunes correlates strongly with the increasing vote share for secessionist parties and general support for secession in Flanders. In 2012, the secessionist *New Flemish Alliance* even became the largest party in the Belgian federal elections. It argues that "wealthy Flanders should not be subsidizing poorer Wallonia, whose regional government is alleged to be wasting money. Flemish nationalists feel strongly that their region is not receiving its fair share of the revenues that it contributes to the national economy."[16]

The abundance of anecdotal, correlational evidence further convinces us in our assessment that economic considerations indeed play an important role in explaining the success of democratic secessionism, and that regional resources in various categories and the distribution of the associated revenues are the key economic factors. The listed cases show that richer regions feature stronger secessionist parties, that changes in resource value over time correlate with the success of these parties, and, as Spain and Belgium demonstrate, that comparable regions exhibit drastically different support for secessionism based on the value of regional resources. We now turn to Wales and Scotland in the United Kingdom to quantitatively evaluate whether this relationship can be shown to be causal.

3.2   Scottish Versus Welsh Independence and the Discovery of North Sea Oil

The Scottish "nationalist discourse traditionally has had a weak cultural dimension. Instead, nationalist claims are based on rather practical arguments about institutions, policy and accountability" (Holitscher &

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[15] See the *Financial Times* from 26th September 2012 at https://www.ft.com/content/bad90798-07f4-11e2-9df2-00144feabdc0, last accessed on 21st February 2017.

[16] See http://knowledge.wharton.upenn.edu/article/secession-answer-case-catalonia-flanders-scotland/, last accessed 21st February 2017.

Suter, 1999, p. 272).[17] Out of economic and political weakness, Scotland opted for the union with England in 1707 in order to belong to (what was) the strongest and most influential nation in the world at that time (Bryant, 2006, p. 80). Although the majority of the Scots have not dominantly developed strong 'British' national sentiments since then (Bryant, 2006, p. 5), there was no need to pursue a secessionist strategy due to the economic and military strength of the Empire (Bryant, 2006, p. 62-65; Gourevitch, 1979). The *SNP*, established in the 1930s, had little political relevance before and in the first years after the Second World War. Similarly in Wales, the *Plaid Cymru*, founded in 1925, has self-government and secession on its political agenda, but failed to gain much ground beyond narrowly defined supporter groups.

Things began to change in the 1960s. Owing to the peaceful political developments in Europe and the decline of the British economy, safety issues were increasingly replaced by economic concerns (Holitscher & Suter, 1999; Paquin, 2002). Neither the unloved Tories nor the Labour governments from 1964 onwards managed to improve the economic situation (Gourevitch, 1979; Paquin, 2002). As a consequence, the *SNP* and similarly *Plaid Cymru* in Wales gained their first small electoral successes in by-elections by the end of the 1960s.

It was around that time when the first oil was discovered in the North Sea.[18] After the Geneva Convention (1958) confirmed the nations' coastal rights, and offshore gas was discovered by the Netherlands in the early 1960s, "[t]he hunt was on for North Sea oil" (MacKay & Mackay, 1975, p. 184). After several years of unsuccessful exploratory drillings in the British Sector, "oil companies were becoming disillusioned with the prospects of finding oil in the North Sea" and commonly gave up (Whaley, 2010, p. 77). Against this background, the discovery of the *Forties* oil field off the Scottish coast appears even more like an exogenous shock, upon which further giant discoveries would follow.[19] A summary table containing all (giant) discoveries in the Scottish sector is provided in Appendix B.

To calculate the Scottish share of British oil, a maritime border which is equidistant in all points to the Scottish and English coast, being also used to define Scottish fishery grounds, is generally applied (UK Statistics Authority, 2013, pp. 6-7, see also Figure 1).[20] There is no doubt that an independent Scotland would own the mineral rights for the mentioned sector (MacKay & Mackay, 1975, p. 168). Building on this

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[17] For details on the historical and cultural background, see Bryant (2006), McCrone (1992), and Paquin (2002). Wales has already been in the union with England by annexation since the 16th century (Bryant, 2006).

[18] As Scotland and England both have a significant amount of natural gas (about 50 percent of the UK gas are in Scottish waters; see Kemp & Stephen, 2000, pp. 9-12) and the value of oil is by far higher (Brocklehurst, 2013), the discussions and campaigns have always explicitly been about the oil on which we will also concentrate in our analysis.

[19] See, e.g., *The Guardian* following the link http://www.theguardian.com/business/2014/oct/12/forties-oil-field-50-north-sea-uk-offshore-bp, last accessed on 21st February 2017: "BP discovered gas in the North Sea in 1964, but it was not until 1970 that it [...] had found signs of hydrocarbons more than 3,000 metres below the seabed around 110 miles from Aberdeen."

[20] Other plausible alternative borders would presumably not change the results much as "there are just a handful of fields, and not very important ones now" between the imaginable lines (Brocklehurst, 2013). However, our choice is the most conservative as the alternative would additionally localize further southern oil fields in the Scottish sector. More details are provided in Appendix E.

foundation, the hypothetical share of oil production in Scottish waters has generally exceeded 90 percent of the total UK oil production (see Kemp & Stephen, 2000, and figures in Appendix E).
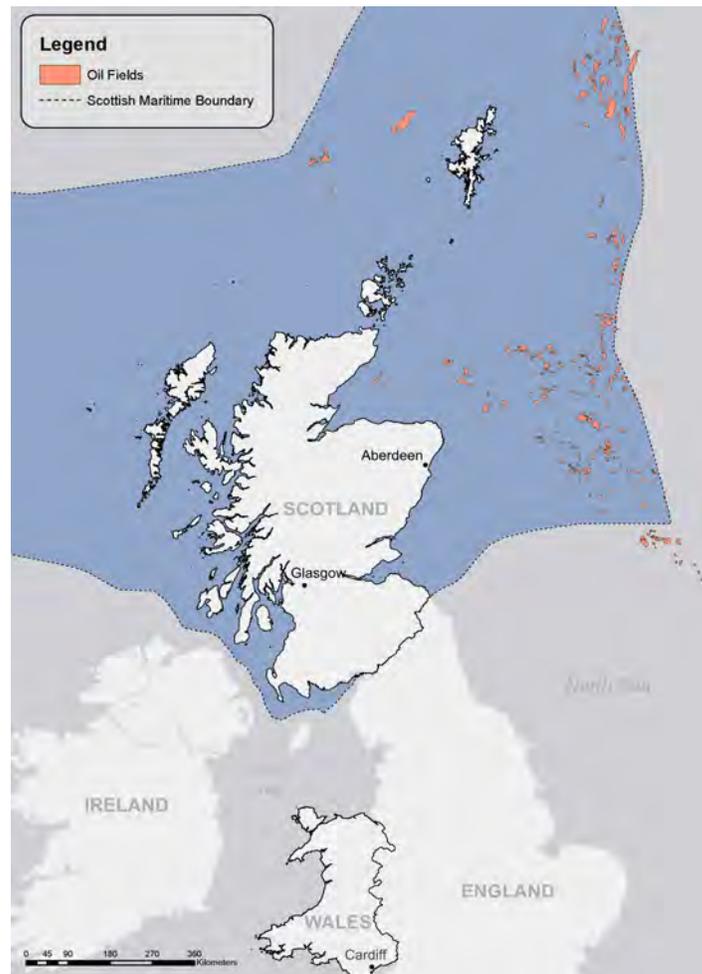
Figure 1: **Oil Fields**

The map shows the hypothetical Scottish maritime boundaries as well as the locations of the oil fields discovered in the UK sector. Oil fields are displayed in the map by using ArcGIS.

The monetary revenue of North Sea oil is mainly represented by government tax receipts, which make up about 75 percent of the gross revenue (Kemp et al., 1983, pp. 120-125). "In the early 1980's when oil prices peaked the share exceeded 98 percent" (Kemp & Stephen, 2000, p. 8).[21] The known remaining oil reserves are estimated with a current monetary value of around £120 billion (UK Statistics Authority, 2013, p. 32). In recent years, oil revenues would represent 10-20 percent of the total tax revenue in an independent Scotland (UK Statistics Authority, 2013, p. 31).

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[21] An official report for the 2014 referendum by the (UK Statistics Authority, 2013, p. 31) reveals that the UK Treasury's tax revenues from the Scottish oil sector have been volatile, being "as high as £27 billion in 1984-85, as low as £1.5 billion in 1991-2 and most recently at £11.2 billion in 2011-12 in current prices." Opponents of independence frequently use the described volatility as an argument against Scotland's subsistence (Lynch, 2003).

For the most part, the direct economic impact of the oil sector was concentrated in Scotland (Scott, 2004, p. 339). It is estimated that up to 90,000 new jobs were created (Lee, 1995; MacKay & Mackay, 1975, p. 136), particularly in the rural areas of Grampian and Highlands as well as Aberdeen (Lee, 1995). The country profits from a large amount of money invested in the oil sector and its multiplier effects (Kemp & Stephen, 2000, p. 1), which lead to increased income and GDP. Due to the high amount of oil-related exports, an independent Scotland is supposed to have a strong balance of payments (Kemp *et al.*, 1983; MacKay & Mackay, 1975, p.173).

The *SNP* had been very successful in making political capital out of the situation in the early 1970s.[22] Their distinctive "It's Scotland's oil" campaign, their bold and simple per capita calculations of oil revenue (Lee, 1976, pp. 307-314), and the claims the Westminster politicians would sell out 'Scottish oil' (Lee, 1976, p. 312) by exploiting the fields too rapidly (MacKay & Mackay, 1975, pp. 24-30) struck a nerve in Scotland. Consequentially, the party's rise has often been related to the oil: Most prominently, Gordon Brown, the later British Prime Minister suggested in an essay in 1975 that "the rise of modern Scottish nationalism is less an assertion of Scotland's permanence as a nation than a response to Scotland's uneven development [...] and their (oil-fired) expectations at a Scottish level" (Brown, 1975). Indeed, it is tenable to assume that the locally concentrated oil discoveries help the *SNP* to create a picture of an independent Scotland being among the richest nations in the world (Collier & Hoeffler, 2006; Jolly, 2007). Hence, the main hypothesis to be tested in our analysis is whether the electorate would increasingly vote for the national party after oil fields have been discovered. Lynch (2003, p. 6) concludes that "for the *SNP*, nothing has ever replaced oil in its economic case for independence."[23] The nature of resource discoveries possibly could have strengthened the *SNP*'s momentum even more:

> "[Natural resources] are usually 'discovered' at a particular moment, [...] perhaps being a gold rush. [T]he prices of natural resources are volatile, with periodic spikes, so that there are precise moments when the economic value of a particular resource becomes dramatically valuable." Collier & Hoeffler (2006, p. 5)

Led by this argument, we also expect a stronger influence of oil discoveries on nationalist party support when the oil price – and simultaneously the current value of the discovered oil reserves – is higher. Before testing the hypotheses in section 5, we describe the dataset used for analysis in the subsequent section, starting with the panel structure of the data.

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[22] According to Lynch (2003), the SNP already began to explore the potential impact of an oil discovery in years before oil actually was discovered: "the party's research officer had studied the economic benefits of oil development in Canada [...]. The SNP gathered a considerable amount of statistical data in the field of oil and oil development, [...] superior to the UK government and some of the oil companies themselves. SNP estimates and projections of oil deposits in the North Sea, along with future oil revenues and economic development associated with oil, became regular features of media coverage, especially as the SNP focused on the economics of independence" (Lynch, 2003, p. 5).

[23] There are also few authors like Miller *et al.* (1977, p. 226) and Miller (1981) who rate the influence of oil not so high and deem it rather as a supportive factor than the trigger for the party's success, arguing that the *SNP*'s electoral success began with a by-election in 1967 (Mitchell *et al.*, 2012, p. 61).

4   Data and Empirical Strategy

4.1   Data

There is no doubt that an independent Scotland would own the mineral rights for the sector mentioned in the previous section (e.g., MacKay & Mackay, 1975, p. 168). Building on this foundation, we analyze the electoral outcomes for 72 Scottish and 40 Welsh constituencies in British general elections (GEs) over the 1945-2001 period. There are several reasons for choosing this time period.[24] First, we are able to rely on such a long period since we managed to collect election results on the constituency level for both Scotland and Wales back to 1945. This helps us to reliably establish whether the parallel trends assumption is indeed justified. Second, the long period is informative as the respective nationalist parties in both countries – *SNP* and *Plaid Cymru* – were clearly the most prominent organized groups supporting independence during the whole period and did not experience unifications or split-ups. In addition, both have in common that they played only a minor role in Westminster politics until the 1960s (Paquin, 2002).

Third, we did not include election results after the 2001 GE because – as a consequence of the implementation of further local government competencies – the number of constituencies changed and Scotland lost 13 of its previous 72 seats in the House of Commons (McGuinness *et al.*, 2012, p. 11). Our panel design is only identical to a DiD approach, and enables us to draw causal inferences, with the consistent inclusion of time and unit fixed effects. Note that the period from 2001 onwards coincides with both rising oil prices and increases in the vote share of the SNP; including it would thus most likely strengthen our results.[25] Constituency boundaries have also been changed several times within our sample period.[26] From 1945 to 2001, the amendments of five redistribution rounds have come into force: in 1947, 1954, 1969, 1983, and 1995. As a result, the number of constituencies ranges between 71 and 72 for Scotland and 35 and 40 for Wales. We resolve this issue by projecting the election results to the constituency boundaries in the 2001 GE, on which we draw on for our estimations. The detailed algorithm used to match the constituencies and results is described in Appendix C.

The final dataset comprises data on 16 GEs held in the UK since 1945, which were collected from Brancati

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[24] We do not use local elections: massive changes in local government organization in the early 1970s make the pre- and post-treatment period unreliable comparisons. Generally, both *SNP* and *Plaid Cymru* have always performed better in local elections (see McGuinness *et al.*, 2012; Sorens, 2004) where other factors dominate election campaigns than in GEs (Sorens, 2005).

[25] Political Scientists also argue that voting patterns changed after 2001 as the increase in competencies for the regional governments decreased the relative importance of British GEs (Jones & Scully, 2006, p. 129). If this would affect Scotland differently than Wales (as a time varying variable which is not orthogonal to the treatment), it could contaminate our results.

[26] Constituency boundaries are reviewed by Boundary Commissions in each of the four UK regions (see http://www.parliament.uk/about/how/elections-and-voting/constituencies/, last accessed on 21st February 2017). These commissions publish reports on the constituencies and recommend changes to the parliament, if deemed necessary. In order to maintain continuity of constituencies as well as equal parliamentary representation in terms of population, the commissions are supposed to recommend changes only if unequal population distribution exceeds a certain threshold. For details about the redistribution process, see http://aceproject.org/ace-en/topics/bd/bdy/bdy_gb, last accessed on 21st February 2017.

(2015) and Outlaw (2012).[27] We also include 91 by-elections which were held in either Scottish or Welsh constituencies when an incumbent had to be replaced (e.g., due to death or resignation).[28] The dependent variable *Nationalist vote share* is defined as the percentage share of votes received by the *SNP* or *Plaid Cymru* in UK GEs and by-elections in a constituency i at time t. If no nationalist candidate stands for election, *Nationalist vote share* is coded as 0.[29]
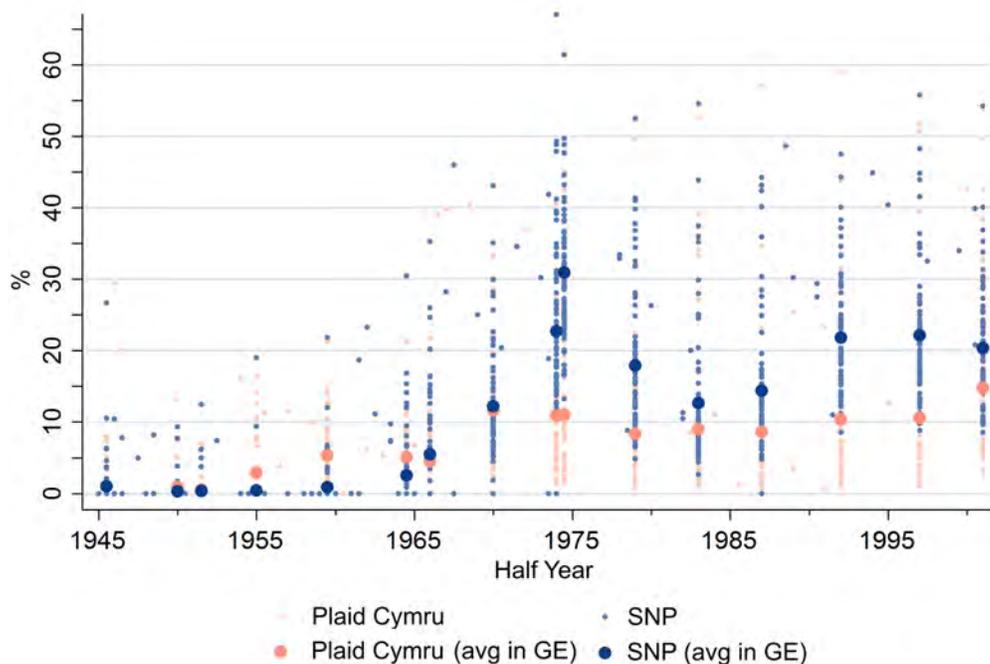

Figure 2: **Election Results**

Share of votes received by SNP/Plaid Cymru in GEs and Westminster by-elections. The graphic displays constituency results and the total average vote share of the two parties in GEs.

Figure 2 displays the shares of *Plaid Cymru* (in light red) and the *SNP* (in dark blue). Both parties received only a small share of votes in the first years of the observation period. Single by-election victories in 1966 (*Plaid Cymru*) and 1967 (*SNP*) marked the beginning of the parties' ascent. Subsequently, the *SNP* was more successful, receiving more than 30 percent of the Scottish vote in October 1974; *Plaid Cymru*'s culmination point was 14.3 percent in the 2001 GE (McGuinness *et al.*, 2012). The time interval in our study is biannually, but some of the control or treatment variables are only available at a yearly frequency. Note that if only one by-election was held in a particular half-year, this observation is fully captured by the biannual-FE.

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[27] GEs have been held in 1945, 1950, 1951, 1955, 1959, 1964, 1966, 1970, 1974 (February), 1974 (October), 1979, 1983, 1987, 1992, 1997, and 2001 McGuinness *et al.* (2012).

[28] Data for by-election results are provided by Pippa Norris following the link https://sites.google.com/site/pippanorris3/research/data, last accessed on 21st February 2017. For the importance of by-elections see, e.g., Miller *et al.* (1977); McGuinness *et al.* (2012); Harvie (1995); Mitchell *et al.* (2012).

[29] Miller *et al.* (1977) show that independence is the main criterion to vote for the nationalist parties. Hence, the share of votes for a nationalist party is commonly taken as a proxy for the public support for independence (Sorens, 2005). Brand *et al.* (1994) notes that the amount of protest voters can be neglected.

We collected data on oil discoveries mainly from UK government websites.[30] We used GIS software as well as various other sources to verify the size and date of each individual discovery, which was reported there. Sources are listed in Appendix B. With regards to oil discoveries, we distinguish between giant oil fields, which include all fields above 500 million stock tank barrels (MMstb.), and all oil fields, which include all fields above 50 MMstb. *Discovery (giant)* and *Discovery (all)* indicate the number of giant/all oil fields that have been discovered in the year of and the year before an election. An oil field is classified as 'giant' if it contains estimated ultimate recoveries of 500 million barrels of oil or more before extraction begins (Ivanhoe & Leckie, 1993).[31]
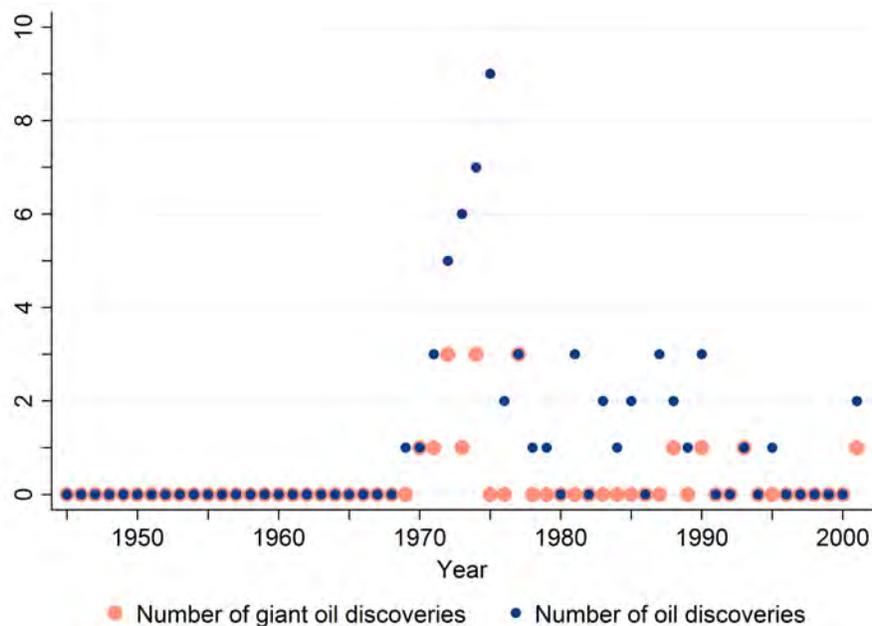
Figure 3: **Distribution of Oil Discoveries over Time**

Giant oil discoveries include all fields above 500 million stock tank barrels (MMstb.), and oil discoveries all fields above 50 MMstb. The main data source is the government of the United Kingdom, but we verified each discovery, its discovery data and size using various sources. Details about individual discoveries and all sources are specified in Appendix B.

Giant oil fields in contrast to small oil discoveries signal "significant increases in production possibilities in the future" and massive windfall profits Lei & Michaels (2014). They are also "arguably exogenous and unexpected due to the uncertainty surrounding oil and gas exploration" (Arezki *et al.*, forthcoming). Nevertheless, we demonstrate that all our results hold when using all discoveries, and the amount of discovered reserves as well. Figure 3 shows the distribution of oil discoveries over time. While many discoveries occurred in the 1970s, it is apparent that there were both small and large discoveries over the whole sample

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[30] A main data source for the oil discoveries was `https://www.gov.uk/guidance/oil-and-gas-uk-field-data#uk-oil-and-gas-reserves-and-resources`, last accessed on 21st February 2017.

[31] Worldwide 'giants' are estimated to account for 74 percent of the estimated global oil reserves although less than 1 percent of all oil fields are 'giants' (Ivanhoe & Leckie, 1993). As we only know the year and not the exact month of each discovery, we consider discoveries in the year of and the year before the election in our baseline specification.

period. Appendix B lists all included individual discoveries and their size. In addition to the number of discoveries, we also collected and coded the amount of oil discovered within a year t (*Amount of new reserves*). The variable *Oil price* is the real price of *Brent crude* oil in constant 2001-US\$, which is the major benchmark for oil produced in the North Sea. *Oil price* is coded as the annual average of the *Brent* price.[32]

Table 1: **Descriptive Statistics**

	N	Mean	SD	Min	Max
Nationalist vote share	1883	10.25	11.89	0	67.05
Discoveries (giant)	1883	0.62	1.31	0	4
Discoveries (all)	1883	1.40	2.26	0	7
Amount of new reserves	1883	1.49	2.65	0	8.90
Scotland	1883	0.65	0.48	0	1
Oil price	1883	25.83	19.10	7.62	81.39
Unemployment rate	1883	4.95	3.11	1.80	13.10
GDP per capita	1883	90.58	5.21	78.50	102.40
Near border (50)	1883	0.25	0.43	0	1
Near border (75)	1883	0.40	0.49	0	1
Near border (100)	1883	0.58	0.49	0	1
Coastal access	1883	0.57	0.49	0	1
Distance to Aberdeen	1883	311.11	207.57	3.19	641.06
Avg. soil suitability	1883	3.76	1.26	0.17	5.32
Ruggedness index	1883	53.37	36.72	1.93	170.47

The table shows descriptive statictics for all variables used in the analysis over the 1945-2001 period. N = number of observations, Mean = arithmetic mean, SD = standard deviation, Min = minimum value, Max = maximum value. *Amount of new reserves* is measured in million stock tank barrels (MMstb.) in period t and t-1. *Discoveries (giant/all)* denotes the number of giant/all oil fields discovered in t and t-1. Distances are in kilometers. For details on the other variables see Appendix D.

In most specifications, we also control for the most important macro developments for which regional data are available, as deviating non-linear trends between Scotland and Wales could affect our estimates. *Unemployment rate* indicates the rate of registered unemployed ("Claimant Count") for Scotland and Wales, respectively, as a yearly average.[33] In opinion polls, voters regularly mention unemployment as the most important economic issue influencing their voting decision (Zirakzadeh, 1989). Following Scott (2004), we can also interpret it as a rough proxy for public welfare, as it correlates with other indicators like "incomes, the quality of jobs available, the proportion of lone-parent families, crime, health and housing conditions" (Scott, 2004, p. 333). In a similar vein, *Regional GDP per capita*, which measures the Scottish/Welsh GDP

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[32] The oil price is taken from Baumeister & Peersman (2013) who provide a monthly series for *Brent*, dating back to 1957. For previous years, the *Brent* price is projected using the price for the sort *WTI*. These data are provided by the Federal Reserve Bank of St. Louis (`https://research.stlouisfed.org/fred2/series/OILPRICE/`, last accessed on 21st February 2017.). Details on the coding of the variables are provided in Appendix D.

[33] Data for *Unemployment rate* are retrieved from Mitchell (1988), for all years prior to 1965, and the Office for National Statistics (ONS) following the link `http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/june-2015/dataset--labour-market-statistics.html`, last accessed on 21st February 2017, for the subsequent years.

per capita as a percentage share of the UK average, proved to be an important factor as well (see section 2.2).[34] Relative government expenditure, which might also be relevant, is only accessible for the period after 1979 (see Heald, 1994).[35]

Adding below-national level covariates should mostly result in more efficient estimation. Note that our results do not depend on including control variables; if anything, adding controls seems to lead to smaller, more conservative coefficient estimates. We also compute further variables to test for heterogeneous effects, which are described in section 5.2. Descriptive statistics for all variables are provided in Table 1.

4.2   Empirical Strategy

We use a difference-in-differences (DiD) approach with Scotland as the treated group and Wales as the control group to estimate the causal effect of oil discoveries on the vote share of nationalist parties. This is inspired by Collier & Hoeffler (2006), who briefly discuss that Wales would form a suitable counterfactual. The need to rely on DiD arises from potential omitted variable bias when using only over-time variation within Scotland, as the treatment can obviously coincide with other time-specific events. DiD enables a causal estimation based on the assumption of common trends between treated units and counterfactuals, and is – as we argue – well applicable to this case. First, prior to the earliest discoveries, oil played as little a role for the *SNP* as for the Welsh *Plaid Cymru*. This is supported by historical evidence which shows that no one expected large discoveries prior to 1969. Myles Bowen from Shell is quoted as saying: "in May 1969 the view was that all the worthwhile gas fields in the Southern North Sea had been found, while the search for oil in the north was doomed to failure" (Whaley, 2010, p. 77). We do not rely only on the binary distinction between the pre- and post discovery period, but use the number and extent of discoveries over time in a panel framework. While the probability of finding a new oil field could correlate with previous finds in areas nearby (Lei & Michaels, 2014; MacKay & Mackay, 1975), the degree of uncertainty is high and giant discoveries are scarce, which is why the individual discovery and discovery year can be regarded as exogenous (Arezki *et al.*, forthcoming; Lei & Michaels, 2014).

Second, there is no doubt that an independent Scotland would own the mineral rights of the aforementioned sector (Kemp & Stephen, 2000; MacKay & Mackay, 1975). A document by the UK Statistics Authority (2013, p. 31) reveals that the UK Treasury's tax revenues from the Scottish oil sector have been as high as

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[34] Data sources: Regional Accounts (Office for National Statistics), for 1971-2001; Scott (2004, p. 338), for 1951, 1954, 1958, 1962, 1966; Lee (1995, pp. 53-57), for 1945-1970 (for Scotland; approximately from graphic); missing values for Wales in the 1940s, 1950s, and 1960s are filled using a linear approximation. Values for Wales before 1951 are assumed as constant.

[35] Lee (1995, p. 140) remarks that "it is clearly not possible to compute an exact net surplus or loss" for the regions. Yet, estimates suggest that, even after the introduction of the so-called Barnett-Formula in 1978 – a determined mechanism that was supposed to yield cohesion of central government expenditure and was installed in order to prevent internal disputes on this topic (Bryant, 2006, p. 54) – Scotland still receives more expenditure than other regions (Heald, 1994, p. 157). See Bryant (2006, pp. 54-55) and Heald (1994) for details about the impact and amendments of the Barnett-Formula.

£27 billion in 1984/85. These locally concentrated oil resources helped the SNP to create a picture of an independent Scotland being among the richest nations in the world (Jolly, 2007, p. 123), as the Scots' per capita oil revenues "would rise ten-fold if the other 45 million people were excluded" (Collier & Hoeffler, 2006, p. 7). As described in section 3.2, almost all British oil has been discovered in the Scottish North Sea sector (see Figure 1).[36] The Welsh voters' preferences about independence should thus not be affected by concerns about oil.

Third, both countries have independence movements manifested in nationalist parties (Jolly, 2007, p. 121). Thus, an observable and comparable dependent variable *Nationalist vote share* can be coded for both regions. *SNP* and *Plaid Cymru* are also sufficiently alike to regard them as a treatment and control group facing – to a large extent – similar success in elections in absence of the treatment. More specifically, the common trend assumption requires that the nationalist party's electoral performance in Scotland would not differ from the Welsh nationalist party's counterfactual trend in absence of the treatment. To examine this assumption, Figure 4 shows the constituency level electoral results prior to the first oil discovery in 1970, as well as their average trend separately for Wales (light red) and Scotland (dark blue). We observe nearly indistinguishable linear parallel trends. If anything, the trend of *Plaid Cymru* is a little more positive, which would bias against finding a significant positive effect for the *SNP* after the oil discoveries following 1970. Regressing a Scotland-specific linear time trend on *Nationalist vote share* prior to 1970 yields an insignificant coefficient (p-value = 0.699). Note that the DiD estimation with multiple time periods also assumes that the treatment "has the same effect in every year" (Wooldridge, 2010, p. 151).

Besides these technical arguments, it is also reassuring that, based on a qualitative comparison, the two parties exhibit many similarities, particularly with regards to their motivation and goals. Both movements emphasize the fact that Britain is not a homogeneous nation, and that their regions have cultural identities distinct from England (Fusaro, 1979). Both *SNP* and *Plaid Cymru* are geographically limited parties, which are the biggest movements promoting their regional interest and full independence for their respective region (Fusaro, 1979). The *SNP* and *Plaid Cymru* can be classified as nationalist left-of-centre parties (Mitchell *et al.*, 2012; Levy, 1995), usually strongly opposing what they call "English Tory government" (Levy, 1995, p. 296). Both parties promise, for instance, to strengthen the social welfare system and aim for more social equality. With regards to their regions' connection to England, they build up a picture of 'internal colonialism' (Fusaro, 1979; Nagel, 2004). The notion that the two parties can be treated as belonging to the same kindred group is not far-fetched: after the 1974 GE, the *Plaid Cymru* leader Gwynfor Evans stated in Westminster that there would now be "more nationalists in the House than Liberals" (Fusaro, 1979, p. 365).

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[36] There was one discovery off the Welsh coast in 1990. The *Douglas* field is however rather small with an estimated 225 MMstb., and it seems highly unlikely that one single discovery could be exploited succesfully by *Plaid Cymru*.
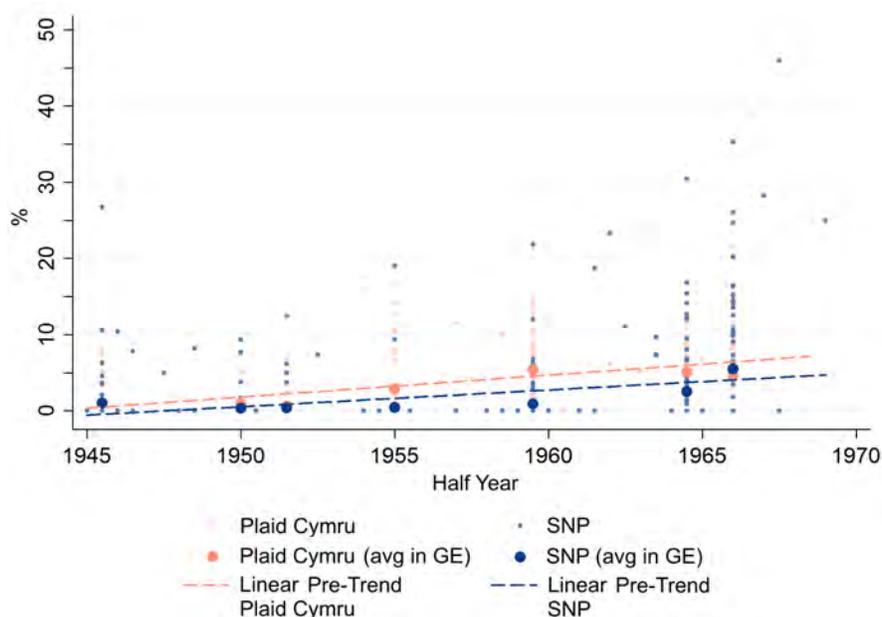
Figure 4: **Linear Pre-Trends**

The graphic shows the share of votes received by the *SNP/Plaid Cymru* in elections before 1970. The dashed lines indicate the linear trends of the two parties in the period prior to the first oil discoveries. The unconditional linear trend of *Plaid Cymru*'s vote results is stronger than the trend of the *SNP*.

Based on the model in section 2.2, we would assume that prior to the resource discoveries the strength of regional identity (proxying for preference heterogeneity) was the main driver of secessionist party success. The pre-trends in Figure 4 suggest that there were no systematically differing trends in Scottish or Welsh identity prior to the first discovery. It is still possible that, due to unobserved time-specific factors, Scottish identity increased simultaneously to the beginning of the oil discoveries. While there is no time-varying measure that allows us to control for regional identity in the regression itself, we can make use of survey data from the Scottish and Welsh election study in 1979 to compute Scottish and Welsh regional identity about 9 years after the first large discoveries. Table 2 shows that almost a decade after the first discoveries, regional identity was still stronger in Wales. Compared to Scotland, a larger share of people consider themselves to be Welsh, and the share of people stating a regional instead of British identity is also higher in Wales.[37]

This is plausible as Welsh nationalism also relates to preserving Welsh culture and language (Fusaro, 1979; Lee, 1995). In contrast to the unusual Gaelic in Scotland, which is only spoken by about 1 percent of the population (Sorens, 2005, p. 306), Welsh is the dominating spoken language in significant parts of the

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[37] It is possible that as an effect of becoming a resource-rich region, Scottish identity might have become stronger in the long run.

Table 2: **Regional Versus National Identity**

	Percentage Share of Regional Identity 1979	Percentage Share of National Identity 1979	Ratio of Regional/ National Identity 1979
Scotland	23%	15%	1.47
Wales	56%	32%	1.75

Based on the Scottish and Welsh election study in 1979. The exact survey question we use was: "Do you consider yourself to be British or Scottish or English or Irish or something else? [If you had to choose one, which would you say you were?]". In the case of Scotland (Wales), we coded the people answering "Scottish" ("Welsh") and set them in relation to those answering "British".

region.[38] The fact that in 1979 Welsh regional identity was still stronger nine years after the first discovery is reassuring evidence that there were no problematic unobserved trends in regional identity that bias our results. There is no reason for assuming that Welsh voters or the *Plaid Cymru* would react to oil discoveries off the Welsh coast in a different way than the Scottish did.

Two anecdotal examples underline this. Firstly, *Plaid Cymru* also (unsuccessfully) attempted to run election campaigns on the issue of natural resources. Proclaiming the slogan 'Hands off Welsh water', it decried the overexploitation of Welsh springs to supply English cities (Collier & Hoeffler, 2006, p. 7) and also protested against rising water charges in Wales (Levy, 1995). Secondly, in the 1970s the already quoted *Plaid Cymru* leader Gwynfor Evans "constantly affirm[ed] that oil lies under the Celtic Sea, as if trying to wish it and Welsh independence into existence" (Lee, 1976, p. 307). This demonstrates that *Plaid Cymru* recognized the potential electoral gains from arguments based on regional resources that voters in their respective region could claim for themselves.

Based on this evidence supporting the validity of the identifying assumptions, our main estimation equation is as follows:

$$\textit{Nationalist vote share}_{i,c,t} = \delta \, \textit{Discoveries (giant)}_t \times \textit{Scotland}_c + X'_{c,i,t}\gamma + \lambda_{c/i} + \vartheta_t + \varepsilon_{i,t},$$

with *Nationalist vote share* being the vote share of the respective nationalist party in constituency i in country $c \in \{\textit{Scotland; Wales}\}$ at time t. The treatment effect is measured as δ, the coefficient of the interaction term of *Discoveries (giant)* and *Scotland* (the binary indicator for Scotland). The main effect of *Discoveries (giant)* is fully captured by biannual-FE ϑ. Depending on the specification, the main effect of *Scotland* is either captured directly by a binary variable λ_c or by fixed effects λ_i for each constituency. Using λ in the panel DiD-setting mainly serves to increase efficiency, but would also pick up any constituency-specific characteristics that are time-invariant, e.g., a specific culture or the degree of urbanity. The same holds for the two time-variant controls. X' is the vector containing the control variables and γ the respective coefficient vector. ε is the error term.

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[38] This is among the only significant differences between the nationalist tendencies in the two countries as the political positions and aims of the parties are quite similar (Bryant, 2006, p. 291). The cultural uniqueness of Scotland can instead be spotted in the greater conservation of original Scottish institutions, e.g., an education system differing from the rest of the UK (Fusaro, 1979).

We will also show results from equations of the form:

$$Nationalist\ Vote\ Share_{i,c,t} = \delta\ Discoveries\ (giant)_t \times Scotland_c + X'_{i,t}\gamma + \lambda_i + \vartheta_t + \tau_{i/c}T + \varepsilon_{i,t},$$

where T is a linear trend variable, and $\tau_{i/c}$ is a country- or constituency-specific trend coefficient. As our treatment is "randomly" switched on and off when oil is discovered, we cannot as easily test for pre- and post-treatment effects as in more simple settings. Allowing for country-specific trends relaxes the common trend assumption as they allow linear country specific deviations from the trend.[39]

Our approach differs from simple two-period DiD in including multiple time periods and having a non-binary treatment variable *Discoveries (giant)* (Wooldridge, 2010). This assumes a linear effect of discoveries, while it is possible that each additional discovery has a diminishing effect. Note that this would again bias against finding a significant treatment effect compared to using a simple dummy variable. We opt for this choice as it contains more information which we use to interpret the results. δ is thus the average treatment effect on the treated (ATT); the additional vote share of the *SNP* caused by one additional oil discovery compared to the counterfactual trend indicated by the performance of *Plaid Cymru*. Standard errors (two-way clustered, using the implementation by Baum *et al.*, 2010) allow for arbitrary correlation both within constituencies and across units at one point in time. The results are robust to alternative clustering choices, as we discuss in detail later. The data cover the 1945-2001 period and include a maximum of 1883 constituency-half-year observations.

5   Results

5.1   Main Results

We start by looking at the simple fixed effects regression of the *SNP* vote share on the number of giant oil discoveries in the year of and the year before the election, focusing on within-Scotland variation only. This estimation includes time-fixed effects and the two time-varying control variables *Unemployment rate* and *GDP per capita*. Constituency-fixed effects pick up any time-invariant omitted variables, but the estimates could still be biased by time-varying omitted factors. The conditional correlation is clearly positive. It indicates a treatment effect for *Discoveries (giant)* of 4.494, which is significant at the 1-percent level. One additional giant oil discovery would thus be linked to an increase of about 4.5 percentage points for the *SNP*. This treatment effect estimate might obviously be biased, as there could be omitted variables which are correlated with oil discoveries and affect the vote share of the *SNP*.

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[39] Technically, including treatment-specific trends relaxes the common trend assumption, which refers to the change, i.e. the first derivative of the dependent variable. Instead, we only need to assume parallel growth between treated and untreated units, i.e. the same second derivative, while the first derivative is allowed to differ. Note as well that all our results hold in a balanced panel excluding by-elections (see Appendix Table 7).

Table 3: **Regression Results**

Dependent Variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.261 [0.799]	2.862 [0.744]	1.923 [0.882]	1.926 [0.898]
Scotland	-	2.263 [1.762]	−3.500 [1.439]	-	-
Discoveries (giant)	4.494 [0.253]	-	-	-	-
Unemployment rate	0.977 [0.099]	-	-	1.737 [1.097]	1.754 [1.206]
GDP per capita	1.185 [0.093]	-	-	0.725 [0.214]	0.721 [0.231]
p-value: Scotland × Discoveries (giant)	-	0.000	0.000	0.029	0.032
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.58	0.50	0.52	0.74	0.83
Number of observations	1216	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. *Discoveries (giant)* denotes the number of giant oil fields discovered in *t* and *t-1*. The unit of analysis is the constituency-half-year level and the sample covers the 1945-2001 period.

Hence, we turn to the first DiD estimation in column 2. This specification includes Welsh constituencies, as well as time-fixed effects, a binary variable that takes on the value of 1 for all constituencies within Scotland, and the interaction of this variable and the oil discoveries (*Discoveries (giant)* × *Scotland*). We focus on this interaction term, which is our treatment variable in the DiD setting. The DiD treatment effect δ slightly decreases from 4.494 to 3.262, but remains significant at the 1-percent level. Column 3 relaxes the common trend assumption to some extent by adding a treatment-specific time trend which would capture any linear deviation from the common trend assumption. The coefficient decreases only slightly to 2.862 and remains significant at the 1-percent level. Column 4 adds the country-specific control variables and constituency-fixed effects. Note that as any potential bias affecting the treatment effect would have to occur at the country level, constituency-fixed effects mainly serve to increase the efficiency of the estimations. Including constituency-fixed effects and control variables is related to a smaller treatment effect estimate of 1.923, which is significant at the 5-percent level. If our assumptions hold, inserting constituency-specific time trends in column 5 should also not affect the coefficient, as these would only capture the treatment specific trend more precisely. Indeed, the coefficient remains almost identical. Giant oil discoveries thus lead to an increase in the vote share of nationalist parties of about 2 percentage points. To take a conservative approach, we choose column 4 which yields the smallest treatment effect estimate as

our preferred specification for all further tests.[40]

This supports our hypothesis that nationalist parties can exploit the discoveries as a signal about the potential benefits of secession, which they try to communicate to voters and instrumentalize in their campaigns. It seems likely that voters also take the other years prior to the election into account when making their electoral choices. We examine this in two ways. First, we code variables that count the number of giant discoveries over the last 2, 3, and 4 years prior to the election in year t. A priori, we would expect that the effect is decreasing the longer the time period over which they accumulate. Voters most likely only incompletely remember all past events, so that a certain share will not take them into account in their optimization decision any more as time passes by. This is exactly what we observe: the treatment effect decreases from 1.923 in column 1 to 1.309 in column 4 (but the standard errors decrease even more). We interpret this as a sign that the salience of the discovery is important for its effect.

Table 4: **Regression Results – Sum and Average Number of Oil Discoveries**

Dependent Variable: *Nationalist vote share*	$t=\{-1,0\}$	$t=\{-2,-1,0\}$	$t=\{-3,...,0\}$	$t=\{-4,...,0\}$
$\sum$ *Discoveries (giant)$_t$ $\times$ Scotland*	1.923	1.555	1.365	1.309
	[0.882]	[0.483]	[0.425]	[0.390]
Discoveries per year (giant)$_t$ $\times$ Scotland	3.847	4.664	5.462	6.545
	[1.765]	[1.448]	[1.701]	[1.949]
	$t=\{-1,0\}$	$t=\{-2,-1,0\}$	$t=\{-3,...,0\}$	$t=\{-4,...,0\}$
$\sum$ *Discoveries (all)$_t$ $\times$ Scotland*	0.718	0.585	0.521	0.483
	[0.266]	[0.193]	[0.165]	[0.135]
Discoveries per year (all)$_t$ $\times$ Scotland	1.437	1.754	2.083	2.414
	[0.533]	[0.580]	[0.660]	[0.676]

The table displays coefficients of 16 individual regressions with standard errors in brackets. All estimations also include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. $t = \{-x, 0\}$ denotes the sum/average number of (giant) oil discoveries in t and the x years prior to t. The sample covers the 1945-2001 period and the number of observations is 1883 at the constituency-half-year level.

While this prior test shows a decreasing coefficient for cumulative discoveries, we are interested in knowing whether voters react stronger if the number of additional discoveries per year is stable over the course of several years. A steady series of oil discoveries affirms voters that there are real potential benefits of secession. Row 2 in Table 4 shows the coefficients of the individual regressions. The treatment effect increases from 3.487 for average discoveries in the election year and the year prior to election, to 6.545 if the number of discoveries per years is confirmed over the four years prior to an election. This is to some

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[40] Using a naive post-1970 dummy and interacting it with the Scotland dummy yields a point estimate of 10.523 and a p-value of 0.000. This could be interpreted as the average effect of all oil discoveries, but is not a consistent estimate due to the fact that Scotland is subject to multiple treatments during the sample period.

degree mechanical and what we would expect: compared to considering the average discoveries over the last two years, an increase by one unit in average discoveries over the course of four years means that there were twice as many additional discoveries in total. It is also plausible that voters react more cautiously to single discoveries until further finds reduce the uncertainty about the long-term economic benefits of these regional resources which the *SNP* claims in their campaigns. A graphical illustration of these results is presented in Figure 5.
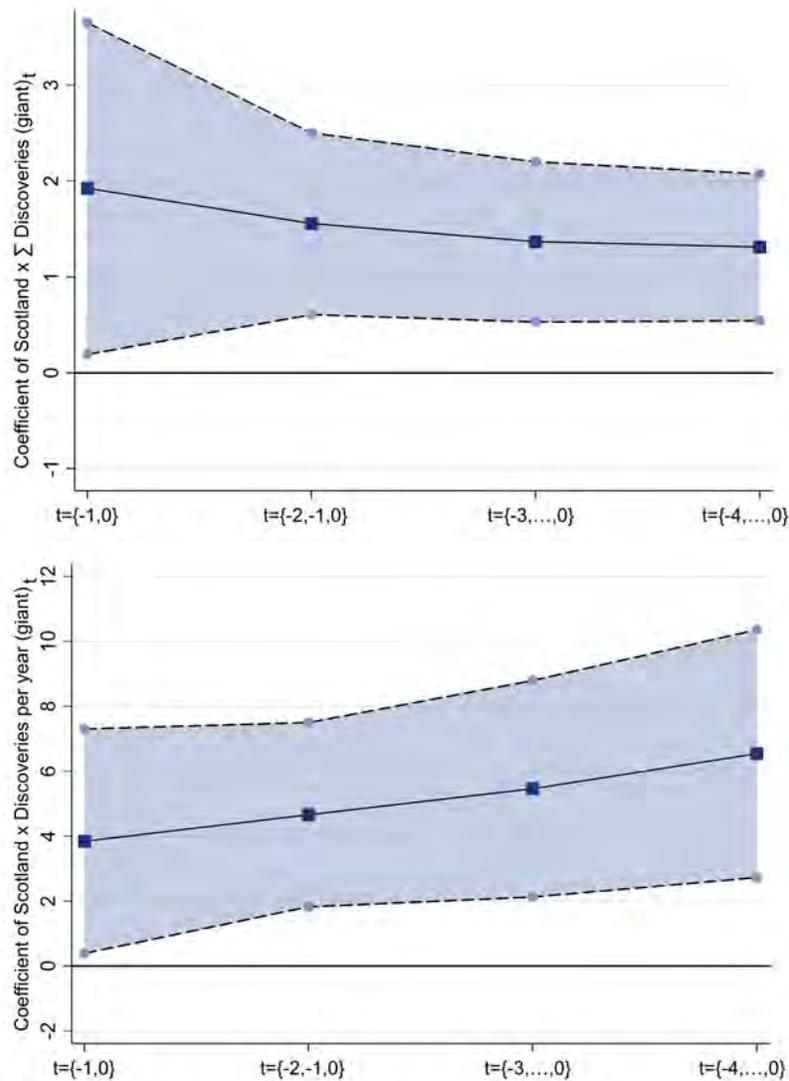
Figure 5: **Effect of the Sum of Giant Discoveries and Giant Discoveries per Year**

The upper graph shows the estimated coefficients and the respective 95-percent confidence interval from the first row in Table 4. The lower graph displays the estimates from the second row reported in Table 4.

Rows 3 and 4 in Table 4 serve as a robustness tests using the number of all discoveries (*Discoveries (all)* × *Scotland* in row 3, and *Discoveries per year (all)* × *Scotland*, row 4). While it is common in the literature to use giant oil discoveries which are more likely to be noticed (see, e.g., Lei & Michaels, 2014), it would

increase our confidence in the results if they hold for a larger sample of discoveries as well. We use all discoveries above 50 MMstb., as smaller ones are unlikely to have any economic significance. As expected, row 3 and 4 show lower coefficients compared to row 1 and 2. Anything else would have been surprising: as the average discovery is now much smaller in size, the additional effect of an additional discovery on *Nationalist vote share* should be smaller in a linear regression framework. However, all coefficients are significant at the 1-percent level. Moreover, they further support the pattern we observed before, with larger coefficients for a steady flow of discoveries over several years (columns 2-4).

It seems intuitive that voters react to the number of discoveries, and more so to giant discoveries which cross a certain threshold to make it into the news regardless of being instrumentalized by the nationalist party or not. Still, it is also informative whether voters also react to the amount of oil that is discovered. This is less obvious than it seems: while more oil is related to higher benefits of secession, it is unlikely that voters gather detailed information about the exact extent of the oil resources. The effect might thus not be linear in *Amount of new reserves*, or at least it is a less precise measure of the signal that the voters actually receive.

Table 5: **Regression Results – Amount of New Oil Reserves**

Dependent Variable: *Nationalist vote share*	$t=\{-1,0\}$	$t=\{-2,-1,0\}$	$t=\{-3,...,0\}$	$t=\{-4,...,0\}$
$\sum$ *Amount of new reserves$_t$* $\times$ *Scotland*	0.735	0.787	0.655	0.532
	[0.494]	[0.277]	[0.217]	[0.168]
Amount of new reserves per year$_t$ $\times$ *Scotland*	1.470	2.362	2.621	2.661
	[0.988]	[0.831]	[0.869]	[0.838]

The table displays coefficients of 8 individual regressions with standard errors in brackets. All estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. $t=\{-x,0\}$ denotes the sum/average amount of new discovered oil reserves in t and the x years prior to t. The sample covers the 1945-2001 period and the number of observations is 1883 at the constituency-half-year level.

Table 5 shows the results focusing again first on the cumulative amount of oil discovered (row 1), in all discovered oil fields, and then on the average amount of oil discovered per year (row 2). The coefficients remain positive throughout in both cases. They become statistically significant at the 1-percent level when the amount of oil discovered is confirmed over a course of at least three years. Again, the results are in line with the hypothesis that voters react more strongly when the signals are confirmed over a longer period of time. Exploring the coefficients and standard errors also indicates that the exact amount of oil discovered is a much noisier measure of what voters actually perceive. This is again in line with Lei & Michaels (2014) who argue that it is best to use the number of discoveries as a proxy. Discovering an additional 1000 MMstb. of oil per year over the previous four year period leads to an increase in the *SNP's* vote share of about 2.5 percentage points. In terms of economic significance, a simple back-of-the-envelope calculation suggests

that average discoveries of 4000 MMstb. (within the scope of discoveries in the early 1970s) contributed around 10 percentage points to the *SNP*'s increasing vote shares.

To sum up the findings and their interpretations so far; there is a strong positive correlation between *Discoveries (giant)* and the vote share of the nationalist *SNP* party in a standard FE regression. The causal average treatment effect on the treated from the DiD design, using Wales as a control group, yields a slightly lower, but still highly significant coefficient. One additional giant oil discovery in the year of or the year prior to an election leads to an increase in *Nationalist vote share* of about 2 percentage points. We interpret this as the voters' reaction to the change in the benefits of separation. Further tests, taking into account several years prior to an election, support the robustness of our results and show that the effect becomes stronger if there is a steady series of discoveries over a longer course of time.

5.2   Heterogeneous Effects

This section examines whether there are heterogeneous effects across constituencies within Scotland. In Table 6 we aim to assess which voters are more receptive to secessionist claims based on regional resources. We consider three areas on which heterogeneous effects could be based to learn more about voter behavior: differences in other benefits from a larger union, the salience of regional resources, and economic geography. Note that this goes beyond what our theoretical model captures, which assumes that factors like benefits from trade or preference heterogeneity are constant within regions.

If constituencies differ within regions, this could moderate the effect of increased regional resource value. Within a certain distance, commuting to work in England is feasible for people in Scotland or Wales and there will be more direct short-distance trade. Those voters are then involved in different discussions at work, get partly different media outlets, and are less exposed to *SNP* campaigns. To test this hypothesis, we coded whether a constituency was within 50, 75 or 100 km of the English border, and interacted these dummy variables with the treatment effect. Columns 1-3 show the results. The coefficient of the interaction term is about -1.5 for both the 50 and 75 km buffer, with standard errors around 0.5. In line with our expectations, the effect becomes smaller when our binary indicator also includes those within 75 to 100 km distance, decreases to -0.456 and becomes statistically indistinguishable from zero. Taking into account the main effect, the marginal effect is close to zero for those living in constituencies with close proximity to England. We take this as an indication for the importance of information acquisition and media exposure.

Table 6: **Regression Results**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	1.634 [0.870]	2.313 [0.848]	2.104 [0.947]	0.831 [1.098]	5.718 [1.076]	2.508 [1.186]	2.339 [0.846]
Scotland × Discoveries (giant) × Near border (50)	−1.417 [0.577]	-	-	-	-	-	-
Scotland × Discoveries (giant) × Near border (75)	-	−1.498 [0.423]	-	-	-	-	-
Scotland × Discoveries (giant) × Near border (100)	-	-	−0.456 [0.686]	-	-	-	-
Scotland × Discoveries (giant) × Coastal access	-	-	-	1.716 [0.615]	-	-	-
Scotland × Discoveries (giant) × Distance to Aberdeen	-	-	-	-	−0.009 [0.004]	-	-
Scotland × Discoveries (giant) × Avg. soil suitability	-	-	-	-	-	−0.201 [0.291]	-
Scotland × Discoveries (giant) × Ruggedness index	-	-	-	-	-	-	−0.006 [0.006]
Biannual fixed effects	yes	yes	yes	yes	yes	yes	yes
Constituency-fixed effects	yes	yes	yes	yes	yes	yes	yes
Linear time trend Scotland	yes	yes	yes	yes	yes	yes	yes
Adj. R-squared	0.75	0.75	0.74	0.75	0.75	0.74	0.75
Number of observations	1883	1883	1883	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. All estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. The main effects of the variables capturing potential heterogeneity are captured by the constituency-fixed effects. *Discoveries (giant)* denotes the number of giant oil fields discovered in *t* and *t-1*. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Secondly, we want to examine whether voters which are more directly affected by oil processing and whose jobs are potentially tied to the oil industry react differently with regards to nationalist party support. Column 4 shows the interaction of the treatment effect with a binary variable indicating coastal access of a constituency. This broadly captures whether there is a port from which ships could leave to the oil rigs and whether there are jobs related to the oil industry. While the main treatment effect remains positive, the positive interaction term with a point estimate of 1.716 and a standard error of 0.615 indicates that the effect of an oil discovery is higher if a constituency possesses coastal access. The simple binary measure still exhibits quite a bit of measurement error, e.g., as the Western coast of Scotland is not directly affected by oil regardless of its coastal access. Therefore, we also computed the distance to Aberdeen as a more precise measure and interact it in the same manner. Aberdeen is the main port serving offshore oil rigs and is often called the *Oil Capital of Europe*,[41] with about half a million jobs being estimated to depend on the energy sector. The interaction term is negative with a point estimate of 0.009 and statistically highly significant.

Hence, the closer to Aberdeen a constituency is, the stronger the effect of additional oil discoveries. Note that this finding does not necessarily signal that people closer to Aberdeen care more about their pure self-interest. Whether their jobs would become more or less secure in an independent Scotland is uncertain. A more straightforward interpretation would be related to the issue salience hypothesis. According to that theory in political science, parties have issue reputations. I.e., in our context, when people think of North Sea Oil, the *SNP* is perceived as the party with the highest competence to handle this issue.

The effect of an issue reputation on voter behavior is moderated by the attention and perceived importance of the respective issue (Bélanger & Meguid, 2008). Thus, one interpretation of our findings is that for voters with coastal access and those closer to Aberdeen the issue of oil revenues and their distribution is more salient. Hence, the positive effect of each discovery on secessionist party support is more pronounced. This indicates that the degree to which secessionist parties are able to instrumentalize regional resources might be moderated by the salience of the issue for voters.

Thirdly, we test whether the economic geography of constituencies affects our treatment effect. For that matter, we compute how suitable a district is to produce one of three main agricultural crops (potato, wheat, barley) and how rugged and therefore difficult to access and travel the constituency is. It seems possible that districts which are very suitable for agriculture would care less about revenues from other resources, and more rugged districts could be differentially affected for various reasons. In both cases, the interaction terms does not suggest that this influences the treatment effect. Both terms are negative, but far from conventional levels of significance. Thus, the effect of oil discoveries is not significantly altered by these considerations. Across the whole table, the main treatment effect always remains positive.

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[41] See, e.g., *BBC* from 27th May 1997 at http://news.bbc.co.uk/2/hi/business/3236703.stm, last accessed on 21st February 2017.

5.3 Addressing Potential Threats to Identification

Finally, we want to consider remaining concerns regarding the causal interpretation of our results. While they are remarkably robust so far, some possible threats to identification exist. First, while our main estimations cluster standard errors on the constituency and time level, other choices could also plausibly be argued for, which can be critical in a DiD framework (Bertrand *et al.*, 2004). This is why we test for the robustness of the main results in Table 3 to alternative assumptions about the structure of the error terms.

The two potential concerns in the DiD framework are serial correlation in the outcome and in the treatment variable. Our setup contains two regions and the treatment is region-year-specific and affects all Scottish constituencies at the same time. Based on the argumentation in Arezki *et al.* (forthcoming) and Lei & Michaels (2014), serial correlation in the oil discoveries should be a minor concern, at least for the plausibly exogenous giant discoveries.

This leaves us with serial correlation in the outcome as the main remaining potential issue. The logic behind our initial choice was that clustering at the constituency level allows for such serial correlation given that the voting results are constituency-specific. Clustering at the time level in addition allows for outcomes to be also correlated across all constituencies due to time-specific common shocks. Nevertheless, secessionist party success could also be correlated within a whole region for each election. If, for instance, a regionalist party runs a particularly successful campaign, this might affect all constituencies in the respective region. Clustering on the region × time level allows for this possibility.

Another possibility is that error terms are correlated not only within the region at a specific point in time, but also over time within the region. Not taking this into account could lead to an underestimation of standard errors. There is no consistent estimator for standard errors with only two clusters, hence we are facing a trade-off between better properties of the estimator for more clusters and allowing for more correlation within the cluster over a longer time period. Accordingly, we also categorize our sample period in five time categories and cluster on the region × time-category level. This allows error terms to be correlated within the whole region and over approximately one decade, which leaves us with ten clusters. It is similar to assuming that there is region-wide serial correlation but that the correlation diminishes over time and does not extend beyond one decade. To account for potential problems related to relatively few clusters, we also apply a wild-cluster bootstrap procedure with 10,000 repetitions, using the two most conservative specifications. Simulation evidence indicates that this yields consistent estimates for these numbers of clusters (Cameron & Miller, 2015). For completeness and transparency reasons, we also run specifications that cluster solely on the constituency or time level, and we use panel-corrected standard errors which model auto-correlation more specifically. In all specifications, the null hypothesis of the coefficient of the variable of interest being zero is rejected with p-values of at least 0.05 or less and with

p-values between 0.066 and 0.100 for the wild-cluster simulations (see Appendix F, Table 1-6).

Second, the distribution of the oil discoveries is skewed over time, with more discoveries in the 1970s than in later decades.[42] Moreover, the relatively better development of the *SNP* and the oil discoveries since 1970 could coincide with a change to a better party leadership. To confirm that the effect we measure is really driven by economic concerns, we make use of another plausibly exogenous variation. If the signal on which voters react is measuring the benefits of secession, as we hypothesized, the monetary value of the discovered oil should also be positively related to *Nationalist vote share*. We use the interaction between the average yearly world market price for oil and the amount of discovered oil times the Scotland dummy to test this hypothesis.[43]

While there could be a small correlation between Scottish oil discoveries and the oil price, we follow the bulk of the existing literature and treat changes in the world market oil price as exogenous (Arezki & Brückner, 2012, 2011). One potential concern would be that both supply and demand in Scotland are related to both the oil price and secessionist party success. This is a valid concern for large producers like the Arab countries, or countries that represent a sizeable share of world demand like the US (Kilian & Park, 2009), but it seems justifiable that the effect of variations in Scottish oil production and demand are negligible over the course of a year. If regional resource value is driving nationalist party success, oil discoveries should matter more when the oil price is higher, i.e., when their net value as a potential benefit of secession is larger. The regression equation now becomes:

$$Nationalist\ Vote\ Share_{i,c,t} = \delta\ Discoveries_t \times Scotland_c + \theta\ Scotland_c \times Price_t$$
$$+\ \eta\ Discoveries_t \times Scotland_c \times Price_t + X'_{i,t}\gamma + \lambda_i + \vartheta_t + \tau_c T + \varepsilon_{i,t},$$

and we focus on the triple interaction coefficient η. We show results for the interaction with all the different proxies for the positive oil shocks that we have used so far (*Discoveries (all)*, *Discoveries (giant)*, *Amount of new reserves (all)*, and *Amount of new reserves (giant)* in the year of and the year before the election). This ensures that the effect is not due to the choice of the proxy variable.

Table 7 shows the results of these triple-differences specifications. Column 1 displays the effect for *Discoveries (all)* and column 2 for *Discoveries (giant)* in the year of and the year before the election. The effect of an additional oil discovery is 0.078 percentage points higher if the oil price is \$1 higher, and the effect of an additional giant oil discovery 0.174 percentage points higher. This is a sizable difference. It would mean that the positive effect of one additional giant discovery is about 10 percentage points higher if the oil price is \$100 instead of \$40.

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[42] Note that our main results even hold when excluding the 1970s period completely, but this would obviously be a crude specification.

[43] We choose the price for *Brent Crude* which is suitable for North Sea oil. *Brent* trades at a higher price than the other major classification *West Texas Intermediate* (*WTI*), but as both are close substitutes, the prices are strongly correlated. Even if one assumes that the oil price is endogenous, we can interpret the interaction between an exogenous variable and an endogenous variable as causal under relatively mild assumptions (c.f., Dreher *et al.*, 2016).

Table 7: **Regression Results – Triple-Differences with World Oil Price**

Dependent variable: *Nationalist vote share*	*Discoveries* *(all)*	*Discoveries* *(giant)*	*Amount of* *new reserves*	*Amount of new* *reserves (giant)*
$X \times Scotland \times Oil\ price$	0.078	0.174	0.045	0.047
	[0.021]	[0.064]	[0.013]	[0.014]
p-value: $X \times Scotland \times Oil\ price$	0.000	0.007	0.000	0.001

The table displays coefficients of 8 individual regressions with standard errors in brackets. *X* refers to the proxy for discoveries that is used in the respective column. All estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4), and all main effects. Appendix F, Table 8 shows the full table. The price is for Brent Crude oil in 2001 constant US$. Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. The sample covers the 1945-2001 period and the number of observations is 1883 at the constituency-half-year level.

We find the same positive relationship when considering the interaction with the amount of discovered oil, no matter whether we include all discovered oil or only the amount in giant oil fields. All triple-interaction effects are statistically significant with p-values all below or equal to 0.007. The results supports our prior DiD results that regional resource value fuels secessionism. Voters react more strongly when the "price" they receive for secession at the moment of voting is more lucrative. This is in line with the literature on the nexus between development aid or natural resources and conflict, where an increased "price" is linked to more separatist conflicts (e.g., Morelli & Rohner, 2015). As we hypothesized, it seems that very similar mechanisms are at play within democratic systems which have been overlooked so far. Appendix 9 shows that the results also holds when considering the amount of oil and the different time horizons used in Table 5.[44]

The triple-differences design offers another advantage. We can make use of it to implement a placebo test which also implicitly tests the DiD assumptions. If the differences between Scotland and Wales are really caused by an increase in the value of regional resources and not by some unobserved other factor, we would expect that the oil price has a positive effect after the first discovery. On the contrary, we should observe no effect before the first oil was discovered. Table 8 shows the results of two models: the first column includes all observations before the discovery of the first oil field in 1970; the second column covers all observations from 1970 onwards.

The results are very reassuring. Before 1970, there is no significant positive effect of the oil price for Scotland. In fact the coefficient is negative, but far from any conventional level of significance. At the same

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[44] Note that, in accordance with our prior approach, we use new discoveries instead of the stock of discovered oil. We find it more plausible that voters react to changes in the value of newly discovered oil. Remembering or estimating the cumulative amount of discovered oil and subtracting already exploited oil imposes higher search and information costs on the voters. We also compute the amount of discovered and unexploited oil for each point in time. It shows only little variation over much of the sample period, as oil production is relatively small most of the time compared to the stock of oil. Even with this limited variation in the treatment variable, the interaction with the indicator for Scotland and the oil price is positive in the whole sample and becomes significant at the 5-percent level when we use the standard specification without the additional Scotland-specific time trend.

Table 8: **Pre- and Post-1970 Effect of the Oil Price**

Dependent Variable Observation period	*Nationalist vote share* 1945-1969	*Nationalist vote share* 1970-2001
Oil price × Scotland	−0.268	0.125
	[0.251]	[0.045]
p-value: *Oil price × Scotland*	0.286	0.005
Adj. R-squared	0.54	0.81
Number of observations	841	1042

The table displays regression coefficients with standard errors in brackets. The first (giant) oil discoveries were in 1970. Both estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. The unit of analysis is the constituency-half-year level.

time, the coefficient is positive and highly significant in the period after the first discovery. This further confirms our confidence in the causal interpretation of our main results. The post-1970 results suggest that an oil price of $40 instead of $100 alone would lead to a drop in *SNP* electoral support of 7.5 percentage points. Relating to the unsuccessful Scottish independence referendum in 2014, in which the "no-option" gained 55.3 percent of the votes, the low oil price might have played a crucial role.

Overall, across a wide range of specifications and proxy variables, we reject the notion that resource wealth only matters in the context of developing countries where it leads to secessionist conflicts (see, e.g., Collier, 2010; Ross, 2004a). It also contributes to the success of secessionist parties in established democracies.

6   Conclusions

Our paper augments the existing literature on the size of nations and sheds light on the factors that determine the success of secessionist parties. The main argument is that citizens take the value of regional resources into account when deciding whether to support secession or not. Secessionist parties can successfully exploit regional resources to increase their vote share. Based on a simple theoretical model, we demonstrate with numerous cases that there clearly exists such a positive correlation in various countries and regions. Importantly, we employ a broader definition of resources, which does not only comprise natural resources, but also the value of geographically concentrated human capital, land suitability, and other factor endowments. Building on these cases, we turned to the United Kingdom to test whether we can establish a causal relationship between resource value and secessionist party vote share.

As we argue, Scotland and Wales are suitable counterfactuals, so that we can use the discoveries of North Sea oil as a natural experiment. Our constituency level analysis covering all UK elections over the 1945-2001 period shows that Scottish voters react in a significant way to oil discoveries which increase the perceived

benefits of secession. In a DiD setting with *Plaid Cymru* in Wales as the counterfactual, the vote share of the *Scottish National Party*, the main advocate of a secession of Scotland from the UK, significantly increased by about 2 percentage points after the discovery of giant oil fields off the Scottish coast. We argue in-depth why the Welsh *Plaid Cymru* and the Scottish *SNP* form a suitable control and treatment group with no visible differences in pre-trends. Besides this quantitative argumentation, we also provided qualitative arguments why both parties are comparable and followed a similar trend prior to the first oil discovery.

Overall, this adds an important dimension to the literature on democratic secessionism and the size of nations. It also connects the literature from the developing country context with established democracies. Showing a causal effect of a change in regional resource wealth indicates that it is not solely ethnic or cultural differences that determine the strength of democratic secessionism. Based on the evidence from Sorens (2005) and Van Houten (2007), cultural factors like language and the weak dynamics of ethnic group affiliation may define a certain baseline but do not seem to account for the larger part of the variation in support for Scottish independence. Brand *et al.* (1994, p. 629) put this in a nutshell: "If the *SNP* were to emphasize its *Scottishness* over its concern for the prosperity of the country, it would lose the vast majority of its voters, members, and probably most of its leaders." The numerous other examples where changes in regional resource value correlate with secessionist party success indicate that the mechanisms we outlined matter beyond this one case which allowed as a clear causal identification.

Certain requirements for this to matter have to be met. First, the resource value must be so significant that it alters the costs and benefits of secession in a sizeable way. Second, it must be geographically concentrated in a region that regards itself as a group with some kind of pre-existing common group identity on which a campaign can be built. Third, the economic gains from the respective regional resource are to some degree being re-distributed within the country. Exploring these questions in more detail, and also evaluating on the choice between secession or decentralization, should provide a fruitful area for future research.

Within Scotland, the failed referendum in 2015 indicates that in times of low oil prices the mere cultural differences are not enough to convince voters of the benefits of secession. The future will show whether a potential second attempt will prove more successful for the Scots. Ironically, there might be another dynamic developing in such a case. As some Westminster politicians like to argue, the Shetland Islands could subsequently aim at a secession from mainland Scotland motivated by the fact that large parts of the oil resources actually lie within their theoretical maritime borders. Hence, regional resources and their distribution will continue to matter in the near and distant future. In light of these potentially turbulent future secession dynamics, we revisit and continue the initial quotation from the *The Parable of the Wise and Foolish Virgins*:

> "Therefore keep watch, because you do not know the day or the hour." – Matthew 25, 13

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Appendix

Contents

A   Region Profiles

Flanders

- Seeking independence from Belgium

- Political parties: *New Flemish Alliance* (secessionist), *Libertair Direct Democratisch* (secessionist), *Vlaams Belang* (secessionist), *Identity, Tradition, Sovereignty* (secessionist, defunct since 2007)

Logo of the New Flemish Alliance (Nieuw-Vlaamse Alliantie)

- Resources: Flanders was the poorer region in Belgium up until the Second World War, as it was the last Belgian region to industrialize, and relied strongly on the agricultural sector (1). This changed radically in the past 60 years due to Flanders' successful transformation to a knowledge-based economy with highly developed service and high-tech sectors (2). Today, supposedly 6 billion EUR per year are transferred to Wallonia and Brussels (3). Antwerp is home to the second largest European sea port by cargo volume and per capita GDP is 32,700 EUR compared to Wallonia's 26,100 EUR (2).

  Electoral success and party strategies: The secessionist *New Flemish Alliance* presents the high regional transfers to Wallonia and Brussels as a key argument for independence, devoting an entire brochure titled "Vlaanderen betaalt de Belgische factuur" ("Flanders pays the Belgian bill") to the topic. Moreover, the support for regionalist and separatist parties steadily increased from only 5 percent in 1961 to almost 45 percent in 2010, correlating with Flanders' economic rise and a steady increase in regional transfers, despite the granting of equal linguistic rights in the 1950s (4). In particular, the abrupt increase from 7.3 to 7.9 billion EUR following the 2008 financial crisis goes hand in hand with a sharp upsurge in support for regionalist and secessionist parties (see figures below).

FIGURE 1
THE AGGREGATED SCORE OF REGIONALIST AND SEPARATIST PARTIES IN
FLANDERS SINCE 1961
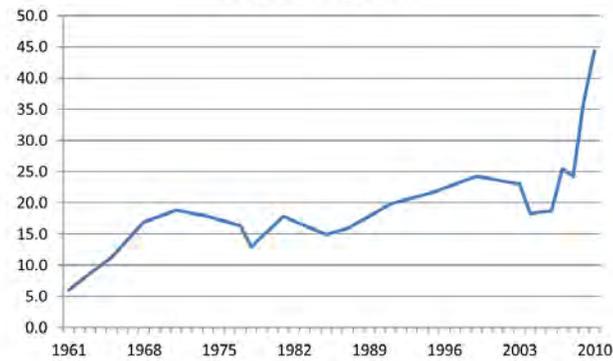
Source: Deschouwer (2013, p, 349)

Source: "Flanders Pays the Belgian Bill", New Flemish Alliance at `https://www.n-va.be/sites/default/files/generated/files/brochure-attachment/brochure_vlaanderen_betaalt_de_belgische_factuur.pdf` (p. 12), last accessed on 21st February 2017

Sources:

(1) See the Financial Times from 3rd November 2015 at `https://www.ft.com/content/c45dfbd4-7349-11e5-bdb1-e6e4767162cc`, last accessed on 21st February 2017

(2) See Knowledge@Wharton from 2nd December 2013 at `http://knowledge.wharton.upenn.edu/article/secession-answer-case-catalonia-flanders-scotland/`, last accessed on 21st February 2017

(3) See Hermans (2015)

- Quotes:

   "The most dramatic example [of economic contrast] is in Belgium, where the growing gap between

Flanders and French-speaking Wallonia has exacerbated political and cultural tensions. The NVA party, which rules Flanders, believes that wealthy Flanders should not be subsidizing poorer Wallonia, whose regional government is alleged to be wasting money. Flemish nationalists feel strongly that their region is not receiving its fair share of the revenues that it contributes to the national economy." (Knowledge@Wharton from 2nd December 2013 at `http://knowledge.wharton.upenn.edu/article/secession-answer-case-catalonia-flanders-scotland/`, last accessed on 21st February 2017)

"Wallonia was among the first regions in northern Europe to industrialise in the 19th century, with industries such as glass making and coal mining. By contrast, the largely agrarian Flanders fell behind. But Flanders boomed in the postwar era, attracting much foreign investment." (Financial Times from 3rd November 2015 at `https://www.ft.com/content/c45dfbd4-7349-11e5-bdb1-e6e4767162cc`, last accessed on 21st February 2017)

"To this strong Flemish identity, an economic component has also been added over the course of recent decades. During the nineteenth and the first half of the twentieth century Wallonia was the economically stronger region. That changed after the Second World War as a result of industrial decline in the south and the development of new economic activities in the north. Today, Flanders is the stronger region. However, the relative wealth of Flanders, combined with the operation of the welfare state put into place after the Second World War, has meant that a system of social redistribution has effectively become a system of territorial redistribution. When one aggregates per region the amount of money paid into the system and the amount of money received from the system, Flanders is a net contributor and Wallonia (and increasingly also Brussels) is a net recipient" (Deschouwer, 2013).

"Billions of euros in transfers are going to from Flanders to Wallonia and Brussels. And yet ordinary people in Wallonia and Brussels are not better off because of them. And the worse it gets for them, the higher the transfers are. Policymakers are therefore not at all encouraged to even change their actions. Achieving improvement inevitably means: less transfers, less money." ("Flanders Pays the Belgian Bill", New Flemish Alliance at `https://www.n-va.be/sites/default/files/generated/files/brochure-attachment/brochure_vlaanderen_betaalt_de_belgische_factuur.pdf`, last accessed on 21st February 2017)

Wallonia

- Seeking independence from Belgium

- Political parties: *Rassemblement Wallonie France* (formerly federalist, secessionist since 1985)

Logo of the Rassemblement Wallonie France (Rally Wallonia France)

- Resources: Wallonia was the the first Belgian region to industrialize in the 19th century (1), rendering it the richer part of Belgium up to the 1960s due to comparative advantages in steel production and coal mining (2). The steel crises of the 1970s and the general decline of the heavy industries in Europe caused Wallonia to experience strong economic decline(2). Today, Wallonia is the significantly poorer region with a per capita GDP of only 26,100 EUR compared to Flanders' 32,700 EUR and receives high transfers from Flanders (3).

Electoral success and party strategies: The first Walloon independence movements emerged in the 19th century, coinciding with the region's industrialization. However, unlike the Flemish nationalist parties, pro-independence parties in Wallonia never gained significant traction. One possible explanation in line with our theory is that although Wallonia was the significantly richer region up to the 1960s, there never was a perceived economic benefit of secession for Walloons. This is due to the fact that "[n]either in the nineteenth, nor in the twentieth century did a Walloon tax surplus flow to Flanders", as the Flemish historian Prof. em. Juul Hannes postulates (4), which can be explained by the absence of a welfare state prior to the Second World War. The construction of the welfare state in the post-war area in effect imposed a system of regional redistribution, with a Flemish tax surplus of approximately 150 million EUR flowing to Wallonia as early as 1955 (4). Accordingly, the *Rassemblement wallon* (RW), the main pro-autonomy party in the 20th century, received only 7 percent of the vote at its peek in the 1970s. Today, the *Walloon Rally* usually stays below the 2 percent mark in federal elections (5). Sources:

(1) See the Financial Times from 3rd November 2015 at https://www.ft.com/content/c45dfbd4-7349-11e5-bdb1-e6e4767162cc, last accessed on 21st February 2017

(2) See, e.g., Reid & Musyck (2000) and Witte (1992)

(3) See Knowledge@Wharton from 2nd December 2013 at `http://knowledge.wharton.upen
n.edu/article/secession-answer-case-catalonia-flanders-scotland/`, last accessed on
21st February 2017

(4) "Flanders Pays the Belgian Bill", New Flemish Alliance at `https://www.n-va.be/sites/defau
lt/files/generated/files/brochure-attachment/brochure_vlaanderen_betaalt_de_bel
gische_factuur.pdf`, last accessed on 21st February 2017

(5) Duerr (2016, p. 12)

- Quotes:

"In the century and a half up to the 1960s, the Walloon economy was one of the most prosper-
ous in Europe. [...] At the time of the first industrial revolution, Wallonia was equipped with
numerous comparative advantages in the leading sectors of the epoch: coal mining, steel making
and their spin-off activities. Natural resources, a highly skilled workforce and the dynamism of its
engineers were the foundations on which Wallonia built its prosperity." (Reid & Musyck, 2000, p. 183)

"Wallonia was among the first regions in northern Europe to industrialise in the 19th century, with
industries such as glass making and coal mining. By contrast, the largely agrarian Flanders fell behind.
But Flanders boomed in the postwar era, attracting much foreign investment. The Walloon economy,
meanwhile, collapsed as the region's main heavy industries faltered. Between 1980 and 2010, the
number of jobs in manufacturing halved from one in four to just one in 10."
(Financial Times from 3rd November 2015 at `https://www.ft.com/content/c45dfbd4-7349-11e
5-bdb1-e6e4767162cc`, last accessed on 21st February 2017)

"The region's economic numbers are dire. Wallonia's share of GDP is small and heading in the
wrong direction. The region counts for a third of Belgium's 11m population but less than a quarter of
its GDP – and this number is falling."
(Financial Tomes from 6th November 2014 `https://www.ft.com/content/7ee4c346-52e1-11e
4-9221-00144feab7de`, last accessed on 21st February 2017)

"The unequal economic situation is one of the most striking aspects of this. Wallonia still has
to face up to the problems of restructuring its old branches of industry and the Walloon economy has
done relatively little towards setting up 'high-tech' sectors"(Witte, 1992, p. 109).

Catalonia

- Seeking independence from Spain

- Political parties: *Republican Left of Catalonia* (secessionist), *Democratic Convergence of Catalonia* (secessionist), *Popular Unity Candidacy* (secessionist)

Logo of the Esquerra Republicana de Catalunya (Republican Left of Catalonia)

- Resources: Historically, Catalonia was among the first Spanish regions to industrialize and featured a strong industrial as early as the beginning of the 19th century. Today, the region sets itself apart from the rest of Spain as the richest and most successful exporting region. Exports generate 28.1 percent of the regional GDP, compared with just 12 percent in Madrid. A new record was reached in 2012, with exports amounting to 58.2 billion EUR which is 15.4 percent higher than before the economic crisis (1).

Electoral success and party strategies: The economic crisis has strengthened resentment towards the Spanish system of regional redistribution which annually transfers 8 percent to 9 percent of Catalonia's GDP to less prosperous Spanish regions (1, 3). Secessionist parties like *Esquerra (Republican Left of Catalonia)* argue that Catalonia would benefit from complete fiscal autonomy, as part of Catalonia's debt can be blamed on the "wasteful central state" (4).

Sources:

(1) See Knowledge@Wharton from 2nd December 2013 at http://knowledge.wharton.upenn.edu/article/secession-answer-case-catalonia-flanders-scotland/, last accessed on 21st February 2017

(2) See Instituto Nacional de Estadística at http://www.ine.es/en/daco/daco42/cre00/b2010/homog/dacocre_base2010h_en.htm, last accessed on 21st February 2017

(3) See the Financial Times from 26th September 2012 at https://www.ft.com/content/bad90798-07f4-11e2-9df2-00144feabdc0, last accessed on 21st February 2017

(4) See Election Manifesto 2016, Republican Left of Catalonia (p. 4) at http://www.esquerra.cat/partit/programes/e2016-programa.pdf, last accessed on 21st February 2017

- Quotes:

  "We suffer from the effects of a wasteful central state that, in addition to a 16,000 million annual fiscal deficit, throws out our resources for the AVE [high-speed rail in Spain] without passengers, airports without airplanes and military spending. We want a welfare state for ourselves, managing our resources and to ensure the construction of the infrastructure, because we need to go forward."
  (Election Manifesto 2016, Republican Left of Catalonia (p. 4) at http://www.esquerra.cat/parti t/programes/e2016-programa.pdf, last accessed on 21st February 2017)

  "A majority of Catalans feels Madrid takes too much of local income to redistribute elsewhere. The clamour for independence has become mainstream."
  (Financial Times from 26th September 2012 at https://www.ft.com/content/bad90798-07f 4-11e2-9df2-00144feabdc0, last accessed on 21st February 2017)

  "The perception that an independent Catalonia would perform better economically, based on the idea that the current fiscal relationship is detrimental to Catalonia's interests, partly explains current support for independence." (Muñoz & Tormos, 2012, p. 316)

Galicia

- Seeking independence from Spain

- Political parties: *Galician Nationalist Bloc* (separatist), *Compromiso por Galicia* (separatist)

Logo of the Bloque Nacionalista Galego (Galician Nationalist Bloc)

- Resources: Galicia's resources are negligible in comparison to Catalonia's resources. Its average share of Spain's GDP between 2000 and 2010 was 5.2 percent, which is less than a third of Catalonia's share (1).

- Electoral success and party strategies: Support for independence has been much less intense than in Catalonia, with the *Galician Nationalist Bloc* receiving only 10 to 20 percent of the vote. For this reason, Duerr (2016) classifies Galicia's case as a "second–tier" secessionist movement (2).
  Sources:
  (1) See Instituto Nacional de Estadística at http://www.ine.es/en/daco/daco42/cre00/b2010/homog/dacocre_base2010h_en.htm, last accessed on 21st February 2017
  (2) See Duerr (2016, p. 11)

- Quotes:
  "Although a direct comparison of Galicia and Catalonia is challenging, there are points of comparison that can be made. Support for BNG has fluctuated between 10-20 percent, but never has the party attained the level of CiU and ERC combined. Even though regional elections were held in different years, a comparison of voter support for independence shows that Galician pro-independence support has remained stagnant; whereas, support for Catalan secession has grown, especially with the aforementioned switch by CDC to pro-independence positions" (Duerr, 2016, p. 11)

Greenland

- Seeking independence from Denmark

- Political parties: *Inuit Ataqatigiit* (separatist), *Forward* (separatist), *Inuit Party* (separatist)

INUIT ATAQATIGIIT

Logo of the Inuit Ataqatigiit (Community of the People)

- Resources: The sparsely populated island (56,648 inhabitants) still strongly relies on the historic fish industry as the largest income earner (1), which does not generate enough revenue to finance Greenland's public expenditures, wherefore a Danish grant of 3.6 billion kroner ($604m) accounts for over half of Greenland's revenues (2). The development of mining (rare metals and radioactive substances since 2013 (3)) and oil industries (discoveries by Carin Energy in 2010 (4)) spurred independence movements (3), but falling crude prices rendered independence less financially viable, with recent studies estimating that Greenland will depend on Danish grants for at least another 25 years (2).

Electoral success and party strategies: The recent oil discoveries instilled hopes for financial independence in separatist leaders, with the former prime minister Aleqa Hammond claiming that independence is possible "within her lifetime". But falling crude prices have made the new prime minister unequivocally less optimistic, and studies estimate that Greenland will remain financially dependent on Denmark for at least another 25 years (2).

Sources:

(1) Government of Greenland, Economy and Industry in Greenland at http://naalakkersuisut.gl/en/About-government-of-greenland/About-Greenland/Economy-and-Industry-in-Greenland, last accessed on 21st February 2017

(2) See The Economist from 21st January 2015 at http://www.economist.com/news/europe/21640224-falling-crude-prices-are-forcing-greenland-put-plans-split-denmark-independence-ice, last accessed on 21st February 2017

(3) The Economist from 31st March 2013 http://www.economist.com/blogs/newsbook/2013/03/economist-explains-why-greenland-election-global-implications, last accessed on

21st February 2017

(4) See The Economist from 26th August 2010 at `http://www.economist.com/node/16889623`, last accessed on 21st February 2017

- Quotes:

"When Cairn Energy, a British petrochemicals company, discovered traces of oil beneath Greenland's territorial waters in 2010, it seemed the secessionists' prayers had been answered. Oil and other minerals including aluminum and gold, it was hoped, would give the territory of just 56,200 inhabitants the financial clout to go it alone"
(The Economist from 21st January 2015 at `http://www.economist.com/news/europe/21640224-falling-crude-prices-are-forcing-greenland-put-plans-split-denmark-independence-ice`, last accessed on 21st February 2017)

"Greenland's politicians were emboldened by the prospect of petrodollars. Aleqa Hammond, who served as her country's first female prime minister between April 2013 and September 2014 (when a corruption scandal drove her from office), said independence was possible "within her lifetime". […] One year later, the political rhetoric has dropped a few tones. At a press conference on January 9th in Copenhagen, the new prime minister, Kim Kielsen, said the "light of independence burned within" but he was unsure if it would be realised in his lifetime. Mr Kielsen is 48, suggesting that the timeline has been pushed back a few decades."
(The Economist from 21st January 2015 at `http://www.economist.com/news/europe/21640224-falling-crude-prices-are-forcing-greenland-put-plans-split-denmark-independence-ice`, last accessed on 21st February 2017)

"The world may not often be very interested in Greenland but it is fascinated by what lies beneath it. As the country's ice cap melts, hidden mineral wealth is coming tantalisingly within reach. The country's riches include "rare earth" metals that are essential in the production of many electronic devices, from electric-car batteries to television screens. Metals such as cerium (used in glass manufacturing) and yttrium (which goes into electronic displays) are among those that are hidden under the ice."
(See The Economist from 31st March 2013 `http://www.economist.com/blogs/newsbook/2013/03/economist-explains-why-greenland-election-global-implications`, last accessed on 21st February 2017)

Québec

- Seeking independence from Canada

- Political parties: *Parti Québécois* (separatist), *Bloc Québécois* (separatist), *Québec Solidaire* (separatist), *Option nationale* (separatist), *Parti indépendantiste* (separatist), *Marxist–Leninist Party of Quebec* (separatist)

Logo of the Parti Québécois

- Resources: Québec's share of the national GDP has decreased more or less steadily from 20.8 percent in 1993 to 19.4 percent in 2006. It then increased by 0.7 percent from 2006 to 2009 before falling back to 19.1 percent in 2014, the lowest value in the last 20 years (1). Supposedly almost $ 53 billion are transferred to the federal system, which are then redistributed across Canada (2).
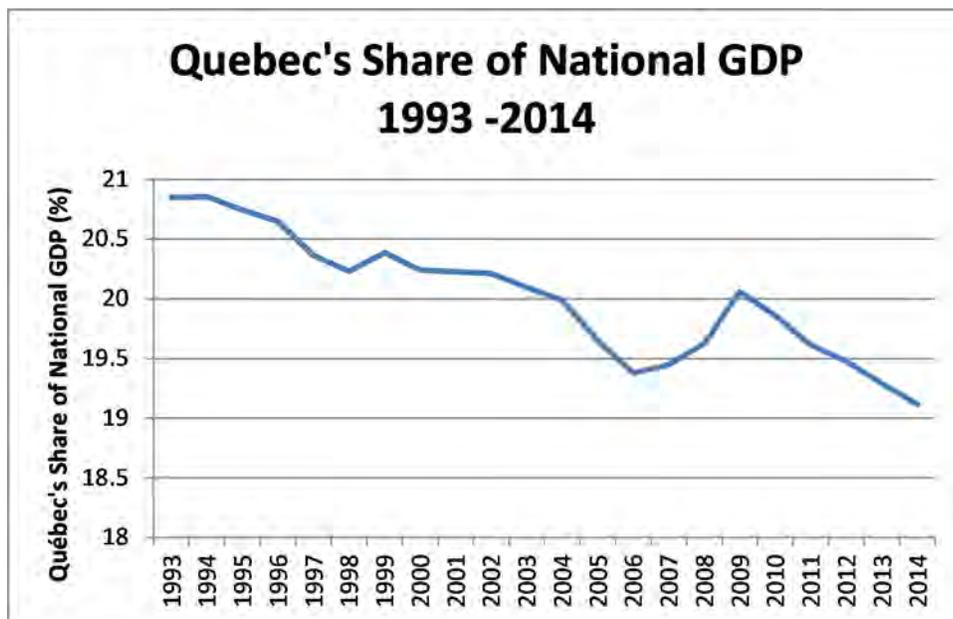
Source: Government of Canada (Statistics Canada) at http://www.statcan.gc.ca/eng/start, last accessed on 21st February 2017

Electoral success and party strategies: The *Parti Québécois* argues that Québec could increase its budget by 70 percent by gaining independence, as the region annually transfers $52.9 billion to the federal system and supposedly gets back less in return (2). The collective vote share of the two biggest separatist parties on the territorial level *Parti Québécois* and *Québéc Solidaire* in the National Assembly of Québec has developed similarly. Parti Québécois held 77 seats, corresponding to 61.6 percent of the seats, after the 1994 Election, but the percentage declined to 28.8 percent in 2007. In 2008, when *Québéc Solidaire* won its first seat in the Assembly, the two parties surged and won a combined 41.6 percent of the seats (3)

- Sources:
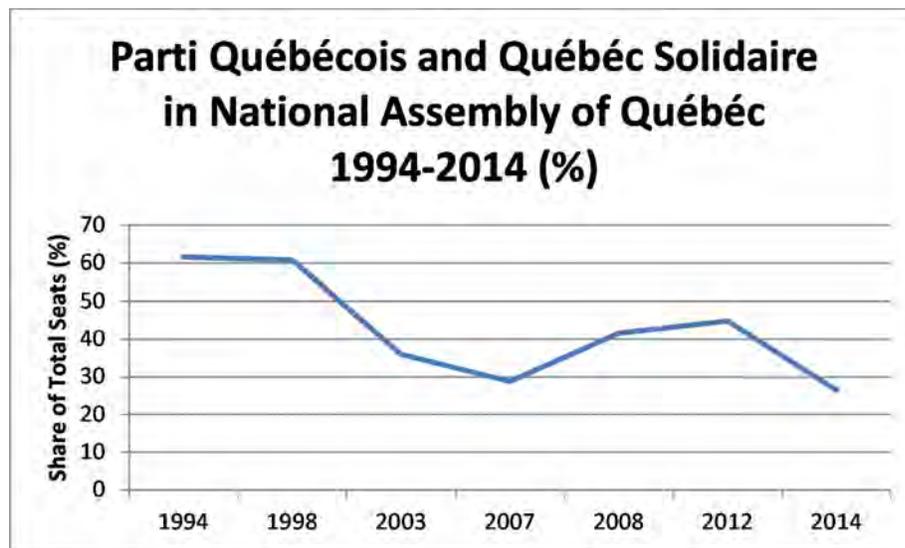
  (1) Government of Canada at http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=3840038&&pattern=&stByVal=1&p1=1&p2=35&tabMode=dataTable&csid=, last accessed on 21st February 2017

  (2) See http://mon.pq.org/documents/monpq_56e6f29687b17.pdf, last accessed: on 21st February 2017

  (3) See Le directeur général des élections du Québéc http://www.electionsquebec.qc.ca/francais/provincial/resultats-electoraux/elections_generales_statistiques.php, last accessed on 21st February 2017

- Quotes:

  "Quebec is rich. It has the currently best administration to confirm this, but the federal government benefits every year from tens of billion sent by Quebec. To get back those $ 52.9 billion would increase

Quebec's budget by almost 70 percent, thanks to our economic development."
(Economic Arguments, Parti Québécois (p. 2) at `http://mon.pq.org/documents/monpq_56e6f`
`29687b17.pdf`, last accessed: on 21st February 2017)

New Caledonia

- Seeking independence from France

- Political parties: *Kanak and Socialist National Liberation Front* (*Caledonian Union*, *Party of Kanak Liberation*, separatist), *Kanak Socialist Liberation* (separatist)

Logo of the Kanak and Socialist National Liberation Front (Front de Libération Nationale Kanak et Socialiste)

- Resources: As a French colony since 1853, New Caledonia still strongly relies on financial assistance from mainland France (1). This is hoped to be gradually alleviated through further expansions of the New Caledonian nickel industry, as the island is believed to hold roughly a quarter of the world's nickel resources and currently ranks 5th among the top nickel-producing countries (2). The Koniambo Project, a nickel mine in which Xstrata (merged with Glencore in 2013) invested $6 billion, is the largest recent expansion of the Caledonian nickel industry (4, 5).

Electoral success/party strategies: Independence activists hope that achieving economic independence in the near future will lay the foundation for complete political independence. The Koniambo Project has further instilled hopes for independence in independence leaders, which emphasize the opportunity for a largely Kanak organization (Société minière du Sud Pacifique) to work with a non-French company (Xstrata, now Glencore Xstrata), further reducing New Caledonia's economic dependence on mainland France. The fact that Société minière du Sud Pacifique, the involved local mining company, is owned by Kanak from the largely pro-independence Nothern Province is viewed as an additional benefit (3).

- Sources:

  (1) See The Economist from 25th May 2013 at `http://www.economist.com/news/asia/21578438-pressures-independence-are-alive-not-always-kicking-ends-empire`, last accessed on 21st February 2017

  (2) See, e.g. BBC News from June 16, 2016 at `http://www.bbc.com/news/world-asia-pacific-16740838`, last accessed on 21st February 2017

  (3) See Horowitz (2004)

  (4) See Financial Times from 7th June 2007 at `http://www.ft.com/cms/s/0/b5d6b672-1494-11dc-88cb-000b5df10621.html?ft_site=falcon&desktop=true#axzz4LXUJ59MK`, last accessed on 21st February 2017

  (5) Bloomberg from 2nd August 2011 at `http://www.bloomberg.com/news/articles/2011-08-02/xstrata-first-half-profit-rises-27-as-commodity-prices-climb`, last accessed on 21st February 2017

- Quotes:

  "In New Caledonia, pro-independence leaders perceive economic autonomy as a prerequisite for political independence. The Koniambo Project, a joint venture between a Canadian multinational and a local mining company, is seen by many Kanak as an opportunity to loosen economic ties to metropolitan France" (Horowitz, 2004, p. 318)

  "For half-century pioneers developed the idea that the Caledonians had the right to decide what to do with their mineral resources. From there on, this concern was central to the commitment to independence of the FLNKS Front: to have control. To have control over our natural resources, to have control over industrial tools, to have the control over mining and metallurgical annuity." (Statement on Nickel Mining, Caledonian Union at `http://unioncaledonienne.com/wp-content/uploads/2015/10/D%C3%A9claration-liminaire-UC-FLNKS-14-10-15.pdf`, last accessed on 21st February 2017)

  "The Pacific territory with the most realistic chance of decolonization is nickel-rich New Caledonia, a French colony since 1853." (The Economist from 25th May 2013 at `http://www.economist.com/news/asia/21578438-pressures-independence-are-alive-not-always-kicking-ends-empire`, last accessed on 21st February 2017)

Republika Srpska

- Seeking independence from Bosnia and Herzegovina

- Political parties: *Alliance of Independent Social Democrats* (secessionist), *Serbian Democratic Party* (secessionist)

Logo of the Alliance of Independent Social Democrats

- Resources: The region possesses 20 percent of Bosnia and Herzegovina's resources of brown coal and 40 percent of lignite among various other mineral resources (1). In 2012 Republika Srpska's president reached an agreement with the Russian company Gazprom to build part of the South Stream pipeline network, reinforcing the region's strategic advantage concerning the energy sector (2).

- Electoral success and party strategies: Prominent secessionist like the region's current president Milorad Dodik (*Alliance of Independent Social Democrats*) argue that "only an independent RS could reach its full economic potential", emphasizing the region's economic strength.

- Sources:
  (1) See Steblez (2005)
  (2) See LSE Blog from 16th September 2014 at `http://blogs.lse.ac.uk/lsee/2014/09/16/gazproms-gas-deal-in-republika-srpska-provides-south-stream-stop-gap/`, last accessed on 21st February 2017

- Quotes:
  "He [Milorad Dodik, president of Republika Srbska since 2010] called for another "extraordinary" RS Assembly to meet and organize a referendum in March 2010. "Sarajevo's constant accusations of separatism against the RS could indeed lead to secession," Dodik indicated. Presenting a paper called "Your Srpska, Your Vote," he declared that sovereignty was the goal and that only an independent RS could reach its full economic potential" (Toal, 2013, p. 192).

Santa Cruz

- Seeking independence from Bolivia

- Political parties: *Pro Santa Cruz Committee* (separatist)

Logo of the Pro Santa Cruz Committee (Comite Pro Santa Cruz)

- Resources: Santa Cruz is considered one of South America's most important energy hubs, and is expected to gain even more relevance in the future (1). The region is believed to possess the second largest natural gas deposit in South America (2), and gas exports increased five-fold from 2000 to 2005 to $620m. In addition, Santa Cruz has the highest regional GDP in Bolivia and its capital city is widely recognized as Bolivia's economic capital (3).

  Electoral success and party strategies: In 2008 over 85 percent voted in favor of autonomy in an unofficial referendum which was later declared unconstitutional. Nonetheless, the referendum bolstered up Santa Cruz's leaders pushing for more autonomy to gain control over land, oil and taxes, which they feel are currently unfairly distributed by Bolivia's system of regional redistribution (3, 4).

- Sources:

  (1) See The Economist 21st April 2005 at http://www.economist.com/node/3896009, last accessed on 21st February 2017

  (2) See Forbes Custom from 28th September 2015 at http://www.forbescustom.com/SectionPD Fs/092815-Bolivia-EcDev.pdf, last accessed on 21st February 2017

  (3) See The Economist from 8th May 2008 at http://www.economist.com/node/11332954, last accessed on 21st February 2017

  (4) See the Financial Times from 8th May 2008 at https://www.ft.com/content/0cbdb74a-19f f-11dd-ba02-0000779fd2ac, last accessed on 21st February 2017

- Quotes:

  "The capital of Bolivia's easternmost province, Santa Cruz, is prosperous and seething with frustration.

It is a centre of commercial farming, and the local headquarters for multinationals pumping natural gas out of the country. There is nothing cruzeños want more than to export gas and soya beans. But for much of the past two years, radical groups from Bolivia's western highlands have done their best to prevent that. [...] To inoculate itself against such disruption, Santa Cruz wants to gain autonomy from the central government in La Paz."

(The Economist 21st April 2005 at `http://www.economist.com/node/3896009`, last accessed on 21st February 2017)

"Santa Cruz is the department with the most prosperous and dynamic economy in Bolivia. Official statistics confirm that it has established itself as the region which contributes the most to the national GDP and as the department which contributes a large part of the national tax collection, produced by the most productive, diversified and modern economy of the country."

(Development Model for Santa Cruz 2014, Santa Cruz Committee (p. 4) `http://www.comitepros antacruz.org.bo/imagen/documentos/2.pdf`, last accessed on 21st February 2017)

Istria

- Seeking independence from Croatia

- Political parties: *Istrian Democratic Assembly* (separatist), *Istrian Democratic Forum* (separatist)

Logo of the Istrian Democratic Assembly (Istarski demokratski sabor)

- Resources: Istria is considered the most important tourist destination in Croatia, realizing 27 percent of all arrivals and 35 percent of all nights spent in the country. In addition, the region features a highly developed processing and shipping industry (1).

- Electoral success and party strategies: Between 1992 and 2015, the *Istrian Democratic Assembly* continuously held seats in the Hrvatski Sabor, the Croatian Parliament (2).

- Sources:

  (1) See Government of Istria, Istrian Economy at `https://www.istra-istria.hr/index.php?id=603`, last accessed on 21st February 2017

  (2) See Interparliamentary Union at `http://www.ipu.org/parline-e/reports/2077_arc.htm`, last accessed on 21st February 2017

- Quotes:

  "Like most subnational regional movements, Istrian regionalism was not motivated primarily by ethnic or national belonging. Such movements, like the economic regionalism in Germany in the 1980s, are driven more by economic concerns and the drive for subsidiarity than by cultural or ethnic criteria." (Ashbrook & Ashbrook, 2008, p. 151)

Upper Silesia

- Seeking independence from Poland

- Political parties: *Silesian Autonomy Movement* (separatist)

Logo of the Silesian Autonomy Movement (Ruch Autonomii Śląska)

- Resources: The region possesses extensive lignite and brown coal deposits, with the state-owned Kompania Weglowa (KW) being the largest coal-mining company in Europe (1) and 100,000 people employed in mines. In addition, the region features a flourishing car manufacturing industry, large chemical works and leading scientific research institutions, together make Upper Silesia the second richest of Poland's 16 voivodships (2).

- Electoral success and party strategies: In 2010 the *Silesian Autonomy Movement* election slogan was "Silesian Money for Silesian People", very reminiscent of the SNP's "It's Scotland's Oil!" campaign. The election campaign was centered on Poland's system of regional redistribution, which separatist leaders argue takes too much from Upper Silesia's tax money to distribute elsewhere. At the election

for the district parliament in 2010 the Silesian Autonomy Movement received 8.5 percent of the votes
(3).

- Sources:

  (1) See The Economist from 28th June 2014 at http://www.economist.com/news/special-repor
  t/21604686-traditional-industries-are-declining-outsourcing-offshoring-and-sub
  contracting-are, last accessed on 21st February 2017

  (2) See The Guardian from 8th April 2011 at https://www.theguardian.com/world/2011/apr/
  08/upper-silesia-flags-up-independence, last accessed on 21st February 2017

  (3) See Bundeszentrale für politische Bildung http://www.bpb.de/internationales/europa/po
  len/202995/tabellen-und-grafiken-zum-text-wahlergebnisse-in-der-woiwodschaft-s
  chlesien, last accessed on 21st February 2017

- Quotes:

  "But whereas Scotland has drilled down into the North Sea to make the money it resents being made to
  channel via Westminster, Upper Silesia's riches come from under solid ground. It still employs 100,000
  people in coalmines, and thousands more in the many steelworks. Plus, it boasts a booming car
  manufacturing industry – Opel has a plant in Gliwice and Fiats are made in Tychy and Bielsko-Biala
  – and big chemical works at Kedzierzyn Kozle and Zdzieszowice, and has a great track record for
  scientific research, particularly in clean coal technology, soil detoxification and renewable energy.
  "We are officially the second richest of 16 voivodships in Poland, after Warsaw and Masovia, and
  provide 14 percent of the GDP," said Gorzelik [leader of the RAS], "and we feel we don't get enough
  back from the national government." The RAS's election slogan last year was "Silesian Money for
  Silesian People", arguing that Upper Silesia should receive more money back from Warsaw, and be
  given the autonomy to spend it as it wishes."

  "The money, which will develop the people of our region, will remain at our disposal. The in-
  habitants of the land will decide on the distribution of these funds. The Silesian mining law will be
  discussed by local experts from the mining industry, not the MPs from Szczecin."
  (FAQ Section, Silesian Autonomy Movement at http://autonomia.pl/faq/, last accessed on
  21st February 2017)

Northern Italy

- Seeking Independence from Italy

- Political parties: *Lega Nord per l'Indipendenza della Padania* (formerly secessionist, separatist since 2006)

Logo of the Lega Nord per l'Indipendenza della Padania (North League)

- Resources: Northern and Southern Italy are regularly referenced as a particularly salient example of regional economic divide, owing partially to its longevity. Northern Italy was the first part of Italy to industrialize in the 19th century, and remains the most developed and productive area of Italy to the present day. For instance, unemployment in 2014 was 21.7 percent in Southern Italy, compared with only 13.6 percent in the whole of Italy, indicating not only a much weaker economic performance, but also a lack of human capital in comparison to Northern Italy (1).

- Electoral success and party strategies: Unlike most other regionalist parties, the Lega Nord could not rely on a historic nation-state as an argument for independence, but instead proclaimed it's own hypothetical state called "Padania". In the Lega Nord's Padanian Declaration of Independence from 1996, the economic strength of the region is put forward as a key argument for independence, while the Italian central state is accused of economically exploiting "Padania". The results of the *Lega Nord* in the Chamber of deputies after the introduction of the new electoral system in 2005 fluctuated. They held 26 of the 617 seats after the 2006 Election and even increased its share to 60 seats in 2008. It has decreased significantly in 2013, when *Lega Nord* lost a total of 42 seats (2).

- Sources:
  (1) See The Economist from 16th May 2015 at http://www.economist.com/news/finance-and-economics/21651261-north-limps-ahead-south-swoons-tale-two-economies, last accessed on 21st February 2017
  (2) See Election Resources at http://www.electionresources.org/it/, last accessed 21st February 2017

- Quotes:

  "In contrast, the history of the Italian State has become the history of colonial oppression, of economic exploitation, and of moral violence; The Italian State has, over time, systematically occupied Padania's economic and social system through its parasitic bureaucratic apparatus."
  (Padanian Declaration of Independence 1996 at `https://web.archive.org/web/20001207094000/http://www.leganord.org/frames/english.htm`, last accessed on 21st February 2017)

  "The key difference between the LN's political project and the majority of other regionalist political parties is the fact that it is not based in an area that has historic claims to nationhood. Instead, the LN has attempted to invent an ethnicity for the North of Italy in order to justify its political claims for the protection of the economic interests of the region." (Giordano, 2000, p. 446)

B   Oil Discoveries

Name	Year Discovered	Start of Production	Reserves
Alba	1984	Jan. 1994	400 MMstb.
Alwyn North	1971	Nov. 1987	309 MMstb.
Andrew	1974	Jun. 1996	150 MMstb.
Arbroath	1969	Apr. 1990	97.9 MMstb.
Balmoral	1975	Nov. 1986	100 MMstb.
Beatrice	1979	Sep. 1981	495 MMstb.
Bentley	1977	Jul. 1905	880.9 MMstb.
Beryl	1972	Jun. 1976	2100 MMstb.
Brae-North and South	1975	Jun. 1905	70 MMstb.
Brent	1971	Nov. 1976	3500 MMstb.
Bressay	1978	Jul. 1905	200 MMstb.
Buchan	1974	May 1981	120 MMstb.
Buzzard	2001	Jan. 2007	1500 MMstb.
Captain	1977	Mar. 1997	700 MMstb.
Clair	1977	Feb. 2005	5000 MMstb.
Claymore	1974	Nov. 1977	662 MMstb.
Cormorant North	1972	Feb. 1982	90 MMstb.
Crawford	1975	Apr. 1989	130 MMstb.
Donan	1987	Jan. 2007	60.3 MMstb.
Douglas (Wales)	1990	Jan. 1996	225 MMstb.
Dunbar (Alwyn S. S. A.)	1972	Dec. 1994	850 MMstb.
Dunlin	1973	Aug. 1978	363 MMstb.
Eider	1976	Nov. 1988	85 MMstb.
Elgin-Franklin Fields	1985	Jun. 1905	365 MMstb.
ETAP	1995	Nov. 1998	490 MMstb.
Foinaven	1990	Nov. 1997	600 MMstb.
Forties	1970	Sep. 1975	5000 MMstb.
Fulmar	1975	Feb. 1982	73 MMstb.
Gannet (A,C,D,E,F,G)	1973	Nov. 1993	214 MMstb.
Golden Eagle	2001	Nov. 2014	140 MMstb.

Name	Year Discovered	Start of Production	Reserves
Gryphon	1987	Oct. 1993	207 MMstb.
Harding	1987	Apr. 1996	322 MMstb.
Heather	1973	Oct. 1978	464 MMstb.
Hutton	1973	Aug. 1984	265 MMstb.
Ivanhoe	1975	Jul. 1989	100 MMstb.
Janice	1990	Feb. 1999	70 MMstb.
Kittiwake	1981	Sep. 1990	70 MMstb.
Kraken	1985	Jul. 1905	137 MMstb.
Leadon	1989	Jun. 1905	120 MMstb.
Macculloch	1990	Aug. 1997	58 MMstb.
Magnus	1974	Aug. 1983	1540 MMstb.
Mariner Oilfield	1981	Jul. 1905	250 MMstb.
Maureen	1973	Sep. 1983	210 MMstb.
Miller	1983	Jun. 1992	345 MMstb.
Montrose	1971	Jun. 1976	93.6 MMstb.
Murchison (UK)	1975	Sep. 1980	400 MMstb.
Nelson	1988	Feb. 1994	790 MMstb.
Ninian	1974	Dec. 1978	2920 MMstb.
Northwest Hutton	1975	Jun. 1905	265 MMstb.
Osprey	1974	Jun. 1905	158 MMstb.
Pierce	1975	Feb. 1999	100 MMstb.
Piper	1973	Dec. 1976	618 MMstb.
Ross	1981	Apr. 1999	100 MMstb.
Saltire	1988	May 1993	224 MMstb.
Schiehallion	1993	Jun. 1905	450-600 MMstb.
Scott	1983	Sep. 1993	440 MMstb.
South Cormorant	1972	Dec. 1979	90 MMstb.
Tartan	1974	Jan. 1981	116 MMstb.
T-Block	1976	Nov. 1993	100 MMstb.
Tern	1975	Jun. 1989	175 MMstb.
Thistle	1972	Feb. 1978	824 MMstb.

A main data source was https://www.gov.uk/guidance/oil-and-gas-uk-field-dataZuk
-oil-and-gas-reserves-and-resources, last accessed on 21st February 2017.

Each individual discovery, its discovery date, and size were verified using various sources. These were: Casey *et al.* (1993); Coward *et al.* (1991); Eneyok *et al.* (2003); EnQuest (2013, n.d.); E.ON (2013); Favero *et al.* (1994); Fee & O'Dea (2005); Glennie & Armstrong (1991); Guscott *et al.* (2003); Jayasekera *et al.* (1999); Kavanagh (2013); Kay (2003); Kunka *et al.* (2003); Nexen/CNOOC (2013); Pye & Brown (2002); Ritchie (2003); Talisman Energy (2006a,b, 2007); The Maersk Group (2014); Tonkin & Fraser (1991); United Kingdom Government (2013); Van Vessem & Gan (1991); Walker (1994).

C   Calculation of Constituency Results

To compute the election results for the individual constituencies based on the 2001 boundaries, we applied the following procedure. First, we superimposed historical electoral maps with a graphical software to detect whether constituency boundaries have changed. For each period, we calculated how the 2001-constituencies consist of the historical constituencies used in previous GEs. As there exists no better estimate for the population distribution within a constituency, we assume a uniform distribution. To describe the overlapping area of the historical constituencies and the 2001-constituencies, we use fifths gradations. Election results of constituencies included in the panel are then extrapolated based on the following formula. First, assume the historical constituencies 1, 2,.., n from the GE in t overlap with the 2001-constituency j. The extrapolation for this constituency is given by: $Y_{j,t} = \dfrac{\sum_{i=1}^{n} x_{i,t} \times Y_{i,t}}{\sum_{i=1}^{n} x_{i,t}}$, $x_{i,t} \in \{0, \frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, 1\}$, with $Y_{i,t}$ being the election result of an original constituency in year t, $Y_{j,t}$ being the projected result of a 2001-constituency in t, and $x_{i,t}$ representing the shares of the n original constituencies i overlapping with the 2001-constituency j. By this pattern, the results from historical constituencies are included in a weighted form in the extrapolated result based on the boundaries of 2001-constituencies. If only one historical constituency accounts for a 2001-constituency, the result is adopted without further computation. For transparency reasons, we provide the entire weightings for all constituencies in all time periods on the following pages.

The map shows the Scottish 2001-constituences to which the older election results are projected. It provides an example of the GIS maps, which we used to build the dataset analysed. Source: http://www.bcomm-scotland.in dependent.gov.uk/maps/datafiles/.

Sources: Boundary Commission for Scotland (`http://www.bcomm-scotland.independent.gov.uk/maps/datafiles/`), David Boothroyd (`http://www.election.demon.co.uk/`), UK Data Service (`https://census.edina.ac.uk/easy_download.html`); all last accessed on 19th August 2015.

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Wales	Aberavon	Aberavon	Aberavon	Aberavon	Aberavon	Aberavon
Scotland	Aberdeen Central	Aberdeen North + 2/5 Aberdeen South	Aberdeen North	Aberdeen North	Aberdeen North	Aberdeen North
Scotland	Aberdeen North	Central Aberdeenshire	West Aberdeenshire	West Aberdeenshire	West Aberdeenshire	Aberdeen North
Scotland	Aberdeen South	Aberdeen South	Aberdeen South	Aberdeen South	Aberdeen South	Aberdeen South
Scotland	Aberdeenshire West and Kincardine	Kincardine and West Aberdeenshire	3/5 West Aberdeenshire + 3/5 North Angus and Mearns	3/5 West Aberdeenshire + 3/5 North Angus and Mearns	3/5 West Aberdeenshire + 3/5 North Angus and Mearns	Kincardeene and Deeside + 2/5 Gordon
Scotland	Airdrie and Shotts	North Lanarkshire	North Lanarkshire	North Lanarkshire	North Lanarkshire	Monklandes East + 3/5 Motherwell North
Wales	Alyn and Deeside	Flint	East Flint	East Flint	East Flint	Alyn and Deeside
Scotland	Angus	2/5 Forfar +2/5 Montrose District of Burghs	2/5 South Angus + 1/5 North Angus and Mearns	2/5 South Angus + 1/5 North Angus and Mearns	2/5 South Angus + 1/5 North Angus and Mearns	Angus East
Scotland	Anniesland (Glasgow)	2/5 Hillhead + 2/5 Pattrick	3/5 Hillhead + 4/5 Scotstoun	3/5 Hillhead + 4/5 Scotstoun	3/5 Hillhead + Garscadden	1/5 Hillhead + Garscadden
Scotland	Argyll and Bute	Argyll	Argyll	Argyll	Argyll	Argyll and Bute
Scotland	Ayr	2/5 Ayr District of Burghs + 1/5 Kilmarnock	4/5 Ayr + 1/5 Central Ayrshire	4/5 Ayr + 1/5 Central Ayrshire	Ayr	Ayr
Scotland	Baillieston (Glasgow)	Bothwell	3/5 Camlachie + 1/5 Bothwell	3/5 Provan +1/5 Bothwell	3/5 Provan + 1/5 Ruhterglen	3/5 Provan + 3/5 Shettleston
Scotland	Banff and Buchan	3/5 East Aberdeenshire + 2/5 Banff	3/5 East Aberdeenshire + 2/5 Banff	3/5 East Aberdeenshire + 2/5 Banff	3/5 East Aberdeenshire + 2/5 Banff	Banff and Buchan
Wales	Blaenau Gwent	Ebbw Vale +2/5 Abertillerie	Ebbw Vale +2/5 Abertillerie	Ebbw Vale +2/5 Abertillerie	Ebbw Vale +2/5 Abertillerie	Blaenau Gwent
Wales	Brecon and Radnor	Brecon and Rednor	Brecon and Rednor	Brecon and Rednor	Brecon and Rednor	Brecon and Rednor
Wales	Bridgend	1/5 Aberavon + 2/5 Ogmore	1/5 Aberavon + 2/5 Ogmore	1/5 Aberavon + 2/5 Ogmore	1/5 Aberavon + 2/5 Ogmore	Bridgend
Wales	Caernarvon	Caernarvonshire + 2/5 Caernarvon District	Caernarvon	Caernarvon	Caernarvon	Caernarvon
Wales	Caerphilly	Caerphilly	Caerphilly	Caerphilly	Caerphilly	Caerphilly
Scotland	Caithness, Sutherland and Easter Ross	Caithness and Sutherland	Caithness and Sutherland	Caithness and Sutherland	Caithness and Sutherland	Caithness and Sutherland
Wales	Cardiff Central	Cardiff Central	Cardiff North	Cardiff North	Cardiff North	Cardiff Central

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Wales	Cardiff North	Cardiff North + 1/5 Llandaff and Barry	Cardiff North + 1/5 Barry	Cardiff North + 1/5 Barry	Cardiff North West	Cardiff North
Wales	Cardiff South and Penarth	Cardiff South + Cardiff East	Cardiff South East	Cardiff South East	Cardiff South East	Cardiff South and Penarth
Wales	Cardiff West	Llandaff and Barry	Cardiff West	Cardiff West	Cardiff West	Cardiff West
Wales	Carmarthen East and Dinefwr	Carmarthen	Carmarthen	Carmarthen	Carmarthen	Carmarthen
Wales	Carmarthen West and Pembrokeshire South	1/5 Camarthen + 2/5 Pembroke	1/5 Camarthen + 2/5 Pembroke	1/5 Camarthen + 2/5 Pembroke	1/5 Camarthen + 2/5 Pembroke	1/5 Camarthen + 2/5 Pembroke
Scotland	Carrick, Cumnock and Doon Valley	South Ayrshire	South Ayrshire	South Ayrshire	South Ayrshire	Carrick, Cunnock and Doon Valley
Scotland	Cathcart (Glasgow)	1/5 Rutherglen + Cathcart	Cathcart	Cathcart	Cathcart + 1/5 Pollok	Cathcart
Wales	Ceredigion Gogledd Penfro	Cardigan	Cardigan	Cardigan	Cardigan	Ceredigion and Pembroke North
Wales	Clwyd South	3/5 Wrexham + 2/5 Denbigh	3/5 Wrexham + 2/5 Denbigh	3/5 Wrexham + 2/5 Denbigh	3/5 Wrexham + 2/5 Denbigh	3/5 Wrexham + 2/5 Clwyd South West
Wales	Clwyd West	Denbigh	Denbigh	Denbigh	Denbigh	2/5 Clwyd South West + 2/5 Clwyd North West
Scotland	Clydebank and Milngavie	Dunbartonshire + 2/5 Dumbarton District of Burghs	1/5 East Dunbartonshire + 3/5 Central Dunbartonshire	1/5 East Dunbartonshire + 3/5 Central Dunbartonshire	Central Dunbartonshire	Clydebank and Milngavie
Scotland	Clydesdale	Lanark	Lanark	Lanark	Lanark	Clydesdale
Scotland	Coatbridge and Chryston	1/5 North Lanarkshire + 3/5 Coath-bridge+ 1/5 Bothwell	1/5 North Lanarkshire + 3/5 Coatbridge and Airdrie	1/5 North Lanarkshire + 3/5 Coatbridge and Airdrie	1/5 North Lanarkshire + 3/5 Coatbridge and Airdrie	Monklands West
Wales	Conway	Caernarvonshire + 3/5 Caernarvon District	Conway	Conway	Conway	Conway
Scotland	Cumbernauld and Kilsyth	East Dunbartonshire	Dunbartonshire	Dunbartonshire	East Dunbartonshire	Cumbernauld und Kilsyth
Scotland	Cunninghame North	Bute and North Ayrshire	Bute and North Ayrshire	Bute and North Ayrshire	Bute and North Ayrshire	Cunninghame North
Scotland	Cunninghame South	1/5 Ayr District of Burghs + 1/5 Bute and North Ayrshire	Central Ayrshire	Central Ayrshire	Central Ayrshire	Cunninghame South
Wales	Cynon Valley	Aberdare + 1/5 Merthyr	Aberdare	Aberdare	Aberdare	Cynon Valley
Wales	Delyn	Flint	4/5 Flint West + 2/5 Flint East	4/5 Flint West + 2/5 Flint East	4/5 Flint West + 2/5 Flint East	Delyn

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Scotland	Dumbarton	4/5 Dunbartonshire + Dumbarton District of Burghs	West Dunbartonshire	West Dunbartonshire	West Dunbartonshire	Dumbarton
Scotland	Dumfries	Dumfriesshire	Dumfries	Dumfries	Dumfries	Dumfries
Scotland	Dundee East	Dundee	Dundee East	Dundee East	Dundee East	Dundee East
Scotland	Dundee West	Dundee	Dundee West	Dundee West	Dundee West	Dundee West
Scotland	Dunfermline East	West Fife	West Fife	West Fife	3/5 Central Fife + 2/5 Dunfermline	Dunfermline East + 1/5 Dunfermline West
Scotland	Dunfermline West	2/5 West Fife + Dunfermline District of Burghs	2/5 West Fife + Dunfermline Burghs	2/5 West Fife + Dunfermline Burghs	Dunfermline	Dunfermline West
Scotland	East Kilbride	Lanark	Lanark	Lanark	East Kilbride	East Kilbride
Scotland	East Lothian	Berwick and Haddingon	Berwick and East Lothian	Berwick and East Lothian	Berwick and East Lothian	East Lothian
Scotland	Eastwood	East Renfrewshire	East Renfrewshire	East Renfrewshire	East Renfrewshire	Eastwood
Scotland	Edinburgh Central	Edinburgh West + Edinburgh Central	Edinburgh Central	Edinburgh Central	Edinburgh Central + 1/5 Edinburgh North + 1/5 Edinburgh West	Edinburgh Central + 1/5 Edinburgh West
Scotland	Edinburgh East and Musselburgh	Edinburgh East	Edinburgh East	Edinburgh East	Edinburgh East	Edinburgh East
Scotland	Edinburgh North and Leith	Leith + Edinburgh North + 1/5 Edinburgh West	Edinburgh Leith + Edinburgh North	Edinburgh Leith + 3/5 Edinburgh North	Edinburgh Leith + 3/5 Edinburgh North	Edinburgh Leith
Scotland	Edinburgh South	Edinburgh South	Edinburgh South	Edinburgh South	Edinburgh South	Edinburgh South
Scotland	Edinburgh West	1/5 North Midlothian + 1/5 Linlithgowshire	Edinburgh West + 1/5 West Lothian	Edinburgh West +1/5 West Lothian	Edinburgh West +1/5 West Lothian	Edinburgh West + 1/5 Livingston + 1/5 Linlithgow
Scotland	Falkirk East	2/5 Clackmannan and East Stirling +1/5 Linlithgowshire	3/5 Stirling and Falkirk Grangemouth + 1/5 West Lothian + 3/5 Clackmannan and East Stirling	3/5 Stirling and Falkirk Grangemouth + 1/5 West Lothian + 3/5 Clackmannan and East Stirling	3/5 Stirling and Falkirk Grangemouth + 1/5 West Lothian + 3/5 Clackmannan and East Stirling	Falkirk East + 1/5 Clackmannan
Scotland	Falkirk West	1/5 Clackmannan and West Stirlingshire + 1/5 Stirling Districts of Burghs	Stirling and Falkirk Grangemouth	Stirling and Falkirk Grangemouth	Stirling and Falkirk Grangemouth	Falkirk West
Scotland	Fife Central	3/5 West Fife	West Fife	West Fife	Central Fife	Central Fife

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Scotland	Fife North East	Fife East	Fife East	Fife East	Fife East	Fife North East
Scotland	Galloway and Upper Nithsdale	Galloway + 2/5 Dumfries	Galloway + 2/5 Dumfries	Galloway + 2/5 Dumfries	Galloway + 2/5 Dumfries	Galloway and Unpper Nithsdale
Scotland	Gordon	4/5 Central Aberdeenshire + 1/5 Banff + 1/5 East Aberdeenshire	1/5 West Aberdeenshire + 1/5 Banff + 3/5 East Aberdeenshire	1/5 West Aberdeenshire + 1/5 Banff + 2/5 East Aberdeenshire	1/5 West Aberdeenshire + 1/5 Banff + 2/5 East Aberdeenshire	1/5 Banff und Buchan + 3/5 Gordon +1/5 Moray
Scotland	Govan (Glasgow)	4/5 Pollok + Govan + Tradeston	1/5 Pollok + 2/5 Govan + Tradeston	Govan + 2/5 Pollak	Govan + 1/5 Pollak	2/5 Govan + 1/5 Pollok + 1/5 Central
Wales	Gower	Gower	Gower	Gower	Gower	Gower
Scotland	Greenock and Inverclyde	Greenock + 1/5 West Renfrewshire	Greenock + 1/5 West Renfrewshire	Greenock + 1/5 West Renfrewshire	3/5 Greenock + 1/5 West Renfrewshire	1/5 Renfrew West and Inverclyde + 3/5 Greenock and Port Glasgow
Scotland	Hamilton North and Bellshill	4/5 Bothwell + 1/5 Hamilton	4/5 Bothwell + 1/5 Hamilton	4/5 Bothwell + 1/5 Hamilton	3/5 Motherwell North + 2/5 Hamilton	2/5 Motherwell North + 1/5 Hamilton
Scotland	Hamilton South	3/5 Hamilton + 1/5 Rutherglen	Hamilton	Hamilton	1/5 East Kilbride + 3/5 Hamilton	Hamilton
Scotland	Inverness East, Nairn and Lochaber	3/5 Inverness + 1/5 Argyll + 2/5 Moray and Nairn	3/5 Inverness + 1/5 Argyll + 2/5 Moray and Nairn	3/5 Inverness + 1/5 Argyll + 2/5 Moray and Nairn	3/5 Inverness + 1/5 Argyll + 2/5 Moray and Nairn	Inverness, Nairn und Lochaber
Wales	Islwyn	Bedwellty	Bedwellty + 2/5 Abertillery	Bedwellty + 2/5 Abertillery	Bedwellty + 2/5 Abertillery	Islwyn
Scotland	Kelvin (Glasgow)	2/5 Patrick +4/5 Central +Kelvingrove + 2/5 Hillhead	2/5 Hillhead + 2/5 Scoutstoun + Kelvin + 4/5 Central	Kelvingrove + 2/5 Central+ 2/5 Woodside+ 2/5 Hillhead	2/5 Hillhead + 3/5 Kelvingrove + 2/5 Central	4/5 Hillhead +1/5 Central
Scotland	Kilmarnock and Loudoun	3/5 Kilmarnock + 1/5 Bute and North Ayrshire	Kilmarnock + 1/5 Central Ayrshire	Kilmarnock + 1/5 Central Ayrshire	Kilmarnock	Kilmarnock and Loudon
Scotland	Kirkcaldy	1/5 West Fife + 2/5 Kirkcaldy District of Burghs	1/5 West Fife + 3/5 Kirkcaldy Burghs	1/5 West Fife + 3/5 Kirkcaldy Burghs	Kirkcaldy	Kirkcaldy
Scotland	Linlithgow	Linlithgowshire	West Lothian	West Lothian	West Lothian	Linlithgow
Scotland	Livingston	2/5 North Midlothian + 1/5 Linlithgowshire	West Lothian	1/5 Midlothian + 1/5 Westlothian	1/5 Midlothian + 1/5 Westlothian	Livingston
Wales	Llanelly	Llanelly	Llanelly	Llanelly	Llanelly	Llanelly
Scotland	Maryhill (Glasgow)	2/5 Glasgow St. Rollox + Maryhill	3/5 Woodside+ Maryhill	1/5 Woodside+ Maryhill	1/5 Kelvingrove+ Maryhill	1/5 Springburn+ Maryhill

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Wales	Meirionnydd Nant Conwy	4/5 Merionethshire (Merioneth) + 1/5 Caernarvonshire + 2/5 Caernarvon District	4/5 Merionethshire (Merioneth) + 3/5 Conway	4/5 Merionethshire (Merioneth) + 3/5 Conway	4/5 Merionethshire (Merioneth) + 3/5 Conway	Meirionnydd Nant Conwy
Wales	Merthyr Tydfil and Rhymney	Merthyr +1/5 Caerphilly	Merthyr +1/5 Caerphilly	Merthyr +1/5 Caerphilly	Merthyr +1/5 Caerphilly	Merthyr Tydfil and Rhymney
Scotland	Midlothian	Peebles and South Midlothian	Midlothian and Peebles	Midlothian	Midlothian	Midlothian
Wales	Monmouth	Monmouth	Monmouth	Monmouth	Monmouth	Monmouth
Wales	Montgomeryshire	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery
Scotland	Moray	3/5 Moray and Nairn +3/5 Banff	3/5 Moray and Nairn +3/5 Banff	3/5 Moray and Nairn +3/5 Banff	3/5 Moray and Nairn +3/5 Banff	Moray
Scotland	Motherwell and Wishaw	Motherwell	Motherwell	Motherwell	Motherwell and Wishaw	Motherwell South
Wales	Neath	Neath	4/5 Neath + 1/5 Gower	4/5 Neath + 1/5 Gower	4/5 Neath + 1/5 Gower	Neath
Wales	Newport East	2/5 Newport + 1/5 Monmouth	2/5 Newport + 3/5 Monmouth	2/5 Newport + 3/5 Monmouth	2/5 Newport + 3/5 Monmouth	Newport East
Wales	Newport West	2/5 Newport	2/5 Newport	2/5 Newport	2/5 Newport	Newport West
Scotland	Ochil	1/5 Kinross and Westperthshire + 4/5 Clackmann and East Stirlingshire	1/5 Kinross and Westperthshire + 4/5 Clackmann and East Stirlingshire	1/5 Kinross and Westperthshire + 4/5 Clackmann and East Stirlingshire	1/5 Kinross and Westperthshire + 4/5 Clackmann and East Stirlingshire	4/5 Clackmannan + 1/5 Perth and Kinross
Wales	Ogmore	3/5 Ogmore + 1/5 Pontypridd + 1/5 Aberavon	3/5 Ogmore + 1/5 Pontypridd + 1/5 Aberavon	3/5 Ogmore + 1/5 Pontypridd + 1/5 Aberavon	3/5 Ogmore + 1/5 Pontypridd + 1/5 Aberavon	Ogmore
Scotland	Orkney and Shetland	Orkney and Zetland	Orkney and Zetland	Orkney and Zetland	Orkney and Zetland	Orkney and Shetland
Scotland	Paisley North	3/5 Paisley + 1/5 East Renfrewshire	Paisley	Paisley	Paisley	3/5 Paisley North
Scotland	Paisley South	1/5 East Renfrewshire + 1/5 Paisley	Paisley	Paisley	Paisley	Paisley South
Scotland	Pentlands (Edinburgh)	North Midlothian	Pentlands	Pentlands	Pentlands	Pentlands
Scotland	Perth	1/5 Kinross and West... + 3/5 Perth and East Perthshire	1/5 Kinross and Westperthshire + 3/5 Perth and East Perthshire	1/5 Kinross and Westperthshire + 3/5 Perth and East Perthshire	1/5 Kinross and Westperthshire + 3/5 Perth and East Perthshire	Perth and Kinross

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Scotland	Pollok (Glasgow)	1/5 Pollok + 1/5 East Renfrewshire	2/5 Pollok + 2/5 Govan	2/5 Pollok + Craigton	2/5 Pollok + Craigton	Pollok + 2/5 Govan
Wales	Pontypridd	Pontypridd	Pontypridd	Pontypridd	Pontypridd	Pontypridd
Wales	Preseli Pembrokeshire	Pembroke	Pembroke	Pembroke	Pembroke	1/5 Ceredigion and Pembroke North + 3/5 Pembroke
Scotland	Renfrewshire West	West Renfrewshire	West Renfrewshire	West Renfrewshire	Renfrew West and Inverclyde	
Wales	Rhondda	Rhondda East + Rhondda West	Rhondda East + Rhondda West	Rhondda East + Rhondda West	Rhondda	Rhondda
Scotland	Ross, Skye and Inverness West	2/5 Inverness + 3/5 Ross und Cromarty	2/5 Inverness + 3/5 Ross und Cromarty	2/5 Inverness + 3/5 Ross und Cromarty	2/5 Inverness + 3/5 Ross und Cromarty	Ross, Skye and Inverness
Scotland	Roxburgh and Berwickshire	2/5 Berwick and Haddington + 2/5 Roxburgh and Selkirk	2/5 Berwick and East Lothian + 2/5 Roxburgh and Selkirk	2/5 Berwick and East Lothian + 2/5 Roxburgh, Selkirk and Peebles	2/5 Berwick and East Lothian + 2/5 Roxburgh, Selkirk and Peebles	Roxburgh and Berwickshire
Scotland	Rutherglen (Glasgow)	Rutherglen	Rutherglen	Rutherglen	Rutherglen	Rutherglen
Scotland	Shettleston (Glasgow)	Gorbals + Bridgeton + Shettleston	Gorbals + Bridgeton + Shettleston	4/5 Gorbals + Bridgeton + Shettleston	3/5 Queen's Park + 3/5 Central +Shettleston	3/5 Central + 2/5 Shetteston
Scotland	Springburn (Glasgow)	Springburn	1/5 Camlachie	Springburn + 2/5 Provan	Springburn +1/5 Provan	4/5 Springburn + 1/5 Provan
Scotland	Stirling	4/5 West Stirlingshire + 2/5 Kinross and West Perthshire	4/5 West Stirlingshire + 2/5 Kinross and West Perthshire	4/5 West Stirlingshire + 2/5 Kinross and West Perthshire	4/5 West Stirlingshire + 2/5 Kinross and West Perthshire	Stirling
Scotland	Strathkelvin and Bearsden	1/5 West Stirlingshire + 1/5 Dunbartonshire	1/5 West Stirlingshire + 1/5 Dunbartonshire	1/5 West Stirlingshire + 1/5 Dunbartonshire	1/5 West Stirlingshire + 1/5 Dunbartonshire	Strathkelvin and Bearsden + 2/5 Monklands West
Wales	Swansea East	Swansea East	Swansea East	Swansea East	Swansea East	Swansea East
Wales	Swansea West	Swansea West	Swansea West	Swansea West	Swansea West	Swansea West
Scotland	Tayside North	3/5 Kinross and West Perthshire + 4/5 Perth +3/5 Forfar	2/5 Kinross and West Perthshire + 3/5 Perth an East P.+ 3/5 South Angus + 1/5 Noth Angus and Mearns	2/5 Kinross and West Perthshire + 3/5 Perth an East P.+ 3/5 South Angus + 1/5 Noth Angus and Mearns	2/5 Kinross and West Perthshire + 3/5 Perth an East P.+ 3/5 South Angus + 1/5 Noth Angus and Mearns	North Tayside + 2/5 Angus East

	Base: 1997-2004	1945-1949	1950-1954	1955-1973	1974-1982	1983-1996
Wales	Torfaen	Pontypool + 1/5 Monmouth	Pontypool	Pontypool	Pontypool	Torfaen
Scotland	Tweeddale, Ettrick and Lauderdale	3/5 Peebles and South Midlothian +2/5 Roxburgh and Selkirk	3/5 Peebles and South Midlothian +2/5 Roxburgh and Selkirk	3/5 Roxburgh, Selkirk and Peebles + 1/5 Midlothian + 1/5 Berwick and East Lothian	3/5 Roxburgh, Selkirk and Peebles + 1/5 Midlothian	Tewwdale, Ettrick and Lauderdale
Wales	Vale of Clwyd	1/5 Denbigh + 2/5 Flint	1/5 Denbigh + 2/5 Flint West	1/5 Denbigh + 2/5 Flint West	3/5 Denbigh + 2/5 Flint West	3/5 Clwyd North West + 1/5 Clwyd South West
Wales	Vale of Glamorgan	3/5 Llandaff and Barry + 3/5 Pontypridd	3/5 Barry + 3/5 Pontypridd	3/5 Barry + 3/5 Pontypridd	3/5 Barry + 3/5 Pontypridd	Vale of Glamorgan
Scotland	Western Isles	Western Isles	Western Isles	Western Isles	Western Isles	Western Isles
Wales	Wrexham	Wrexham	Wrexham	Wrexham	Wrexham	Wrexham
Wales	Ynys Mon	Anglesey	Anglesey	Anglesey	Ynys Mon	Ynys Mon

D Variables Description

Nationalist vote share	Share of votes received by *SNP/Plaid Cymru* in UK Parliament elections in a single constituency (in percent).
Discoveries (giant)	Number of giant oil discoveries in year t and $t-1$. An oil field classified as 'giant' contains ultimate recoverable reserves of 500 million barrels or more before the extraction starts.
Discoveries (all)	Number of oil discoveries in year t and $t-1$. All oil fields with 50 million barrels or more are captured.
Amount of new reserves	Reserves of discovered oil fields in year t and $t-1$ in 1000 million barrels of oil (MMstb.).
Scotland	Binary variable indicating Scottish constituencies (1 if the constituency is Scottish, 0 otherwise).
Oil price[a]	Real price of Brent crude oil (year average). The unit is constant 2001 US$.
GDP per capita	Relative regional per capita gross domestic product for Scotland and Wales (in percent of UK average).
Unemployment rate	Regional rate of registered unemployed (Claimant count) for Scotland and Wales (in percent).
Near border (50)[b]	Binary indicator for constituencies that are less than 50 km of the English border (1 if the constituency is within this distance, 0 otherwise).
Near border (75)[b]	Binary indicator for constituencies that are less than 75 km of the English border (1 if the constituency is within this distance, 0 otherwise).
Near border (100)[b]	Binary indicator for constituencies that are less than 100 km of the English border (1 if the constituency is within this distance, 0 otherwise).
Coastal access[b]	Binary indicator for constituencies with coastal access (1 if the constituency has sea access, 0 otherwise).
Distance to Aberdeen[b]	Distance from a constituency to Aberdeen (in km).

Avg. soil suitability[c]   Average soil suitability for production of potatoes, barley, and wheat.
                                            (medium input intensity and irrigation).

*Ruggedness index*[d]   Index of variance of elevation in each constituency.

[a] To calculate the real oil price, we used US inflation data from the Bureau of Labor Statistics (see the data at `http://www.usinfl`
`ationcalculator.com/`, last accessed on 19th August 2015). The Brent price prior to 1957 is approximately projected using data
for the sort WTI.

[b] Variables are calculated using ArcGIS. Data are taken from `http://www.gadm.org`, Boundary Commission for Scotland
(`http://www.bcomm-scotland.independent.gov.uk/maps/datafiles/`), David Boothroyd (`http://www.election.dem`
`on.co.uk/`), UK Data Service (`https://census.edina.ac.uk/easy_download.html`); all last accessed on 19th August 2015.

[c] Data are taken from the Global Elevation Data Set (`http://diegopuga.org/data/rugged/`).

[d] Data are taken from `http://www.fao.org/nr/gaez/en/`.

E   Estimated Scottish Shares
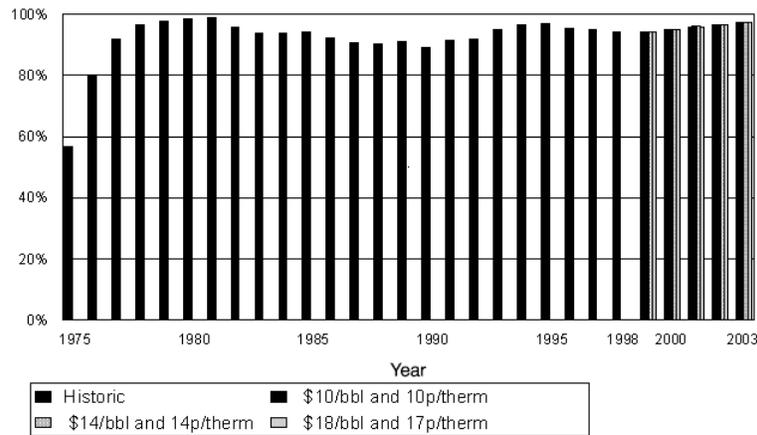
Scottish Shares of Total UK Oil Production
Source: (Kemp & Stephen, 2000)

The estimations by (Kemp & Stephen, 2000) are based on the assumption of the equidistance line as the maritime border; that is, "a dividing line on which all points are the same distance from the Scottish and rest of the UK coastline" (Brocklehurst, 2013). Another possible border would be the 55'50' latitude, established for juristical reasons in 1968 (Brocklehurst, 2013; Lee, 1976). Alexander G. Kemp remarks that "from the economic point of view, it does not make much difference because there are just a handful of fields, and not very important ones now, between the median line and the line north of Berwick" (Brocklehurst, 2013). In addition to that: "[t]hese considerations aside, there is no doubt that most of the oil lies in the northern North Sea. However, two-thirds of known reserves are 100 miles east of the Shetland Islands and can morally be claimed by their inhabitants" (Lee, 1976, 310).

F   Regressions

Table 1: **Regression Results – Alternative Clustering (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.261 [0.304]	2.862 [0.290]	1.923 [0.332]	1.926 [0.335]
Scotland	-	2.263 [1.129]	−3.500 [0.508]	-	-
Discoveries (giant)	4.494 [0.253]	-	-	-	-
p-value: Scotland × Disc. (giant)	-	0.000	0.000	0.000	0.000
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.58	0.50	0.52	0.74	0.83
Number of observations	1216	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper, but standard errors are clustered on the constituency level using the *ivreg2* command in Stata. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t = 0$ and $t = -1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 2: **Regression Results – Alternative Clustering (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.261 [0.823]	2.862 [0.781]	1.923 [0.870]	1.926 [0.868]
Scotland	-	2.263 [1.429]	−3.500 [1.434]	-	-
Discoveries (giant)	4.494 [1.124]	-	-	-	-
p-value: Scotland × Disc. (giant)	-	0.000	0.000	0.027	0.027
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.58	0.50	0.52	0.74	0.83
Number of observations	1216	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper, but standard errors are clustered on the biannual level using the *ivreg2* command in Stata. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t = 0$ and $t = -1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 3: **Regression Results – Alternative Clustering (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.261 [0.605]	2.862 [0.574]	1.923 [0.640]	1.926 [0.638]
Scotland	-	2.263 [1.051]	−3.500 [1.055]	-	-
Discoveries (giant)	4.494 [1.124]	-	-	-	-
p-value: Scotland × Disc. (giant)	-	0.000	0.000	0.003	0.003
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.58	0.50	0.52	0.74	0.83
Number of observations	1216	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper but standard errors are clustered on the country × time level using the *ivreg2* command in Stata. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t=0$ and $t=-1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 4: **Regression Results – Alternative Clustering (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.261 [0.605]	2.862 [0.574]	1.923 [0.140]	1.926 [0.132]
Scotland	-	2.263 [1.051]	−3.500 [1.055]	-	-
Discoveries (giant)	4.494 [1.422]	-	-	-	-
p-value: Scotland × Disc. (giant)	-	0.000	0.000	0.000	0.000
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.58	0.50	0.52	0.74	0.83
Number of observations	1216	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper but standard errors are clustered on the country × time-category level using the *ivreg2* command in Stata with 5 successive time-categories. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t=0$ and $t=-1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 5: **Regression Results – Alternative Clustering (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.174	2.705	1.864	1.865
		[1.189]	[0.862]	[0.826]	[0.817]
Scotland	-	2.317	−3.461	11.479	−3.173
		[1.436]	[1.794]	[4.565]	[2.805]
Discoveries (giant)	4.495	−1.450	2.157	10.83	−15.673
	[1.096]	[3.149]	[3.721]	[4.001]	[9.341]
p-value: Scotland × Disc. (giant)	-	0.008	0.002	0.025	0.022
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Number of observations	1152	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper but the estimation uses panel-corrected standard errors with panel-specific auto-correlation. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t=0$ and $t=-1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 6: **Regression Results – Alternative Clustering (Table 3) - Bootstrap**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	1.923	1.926	1.923	1.926
	[0.640]	[0.638]	[0.140]	[0.132]
Bootstrap p-value (2-point): Scotland × Disc. (giant)	0.100	0.086	0.068	0.066
Biannual fixed effects	yes	yes	yes	yes
Constituency-fixed effects	yes	yes	yes	yes
Linear time trend Scotland	yes	no	yes	no
Constituency-specific time trends	no	yes	no	yes
Adj. R-squared	0.74	0.83	0.74	0.83
Number of observations	1883	1883	1883	1883

The table displays regression coefficients with standard errors in brackets. Estimations correspond to the two last columns in Table 3 in the paper. Standard errors are clustered on the country × time level (in the left two columns) and the country × time-category level (in the right two columns) using the *ivreg2* command in Stata. Bootstrap p-value refers to p-values estimated with two wild-cluster bootstrap procedures (using a 2-point distribution) with 10,000 repetitions. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t=0$ and $t=-1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 7: **Regression Results – Without By-Elections (Table 3)**

Dependent variable	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share	Nationalist vote share
Scotland × Discoveries (giant)	-	3.211 [0.805]	2.849 [0.748]	2.053 [0.893]	2.053 [0.911]
Scotland	-	2.406 [1.794]	−3.158 [1.424]	-	-
Discoveries (giant)	4.520 [0.246]	-	-	-	-
p-value: Scotland × Disc. (giant)	-	0.000	0.000	0.022	0.024
Biannual fixed effects	no	yes	yes	yes	yes
Constituency-fixed effects	yes	no	no	yes	yes
Linear time trend Scotland	no	no	yes	yes	no
Constituency-specific time trends	no	no	no	no	yes
Adj. R-squared	0.60	0.49	0.51	0.75	0.84
Number of observations	1152	1792	1792	1792	1792

The table displays regression coefficients with standard errors in brackets. It corresponds to Table 3 in the paper but standard errors are clustered on the country × time-category level using the *ivreg2* command in Stata with 5 successive time-categories. *Discoveries (giant)* denotes the number of giant oil fields discovered in $t = 0$ and $t = -1$. The unit of analysis is the constituency-half-year and the sample covers the 1945-2001 period.

Table 8: **Regression Results – Oil Price**

Dependent variable: Nationalist vote share	Discoveries (all)	Discoveries (giant)	Amount of new reserves	Amount of new reserves (giant)
Scotland × Oil price	−0.051 [0.038]	0.049 [0.025]	0.034 [0.031]	0.063 [0.031]
X × Scotland	−2.860 [0.861]	−6.373 [2.905]	−1.057 [0.348]	−0.792 [0.252]
X × Scotland × Oil price	0.078 [0.021]	0.174 [0.064]	0.045 [0.013]	0.047 [0.014]

The table displays coefficients with standard errors in brackets. All estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). All other main effects are captured by the fixed effects. Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. $t = \{-x, 0\}$ denotes the number of discoveries and the amount of discovered oil reserves between t and the x years prior to t. The sample covers the 1945-2001 period and the number of observations is 1883 at the constituency-half-year level.

Table 9: **Regression Results – Triple Differences Design with Oil Price**

Dependent Variable: Nationalist vote share	t={-1,0}	t={-2,-1,0}	t={-3,...,0}	t={-4,...,0}
$\sum$ Amount of new reserves$_t$ × Scotland × Oil price	0.090	0.072	0.097	0.088
	[0.026]	[0.034]	[0.032]	[0.038]
Amount of new reserves per year$_t$ × Scotland × Oil price	0.045	0.024	0.024	0.018
	[0.013]	[0.011]	[0.008]	[0.008]

The table displays coefficients of 8 individual regressions with standard errors in brackets. All estimations include constituency-fixed effects, biannual time-fixed effects, a linear time trend for Scotland as well as the control variables *GDP per capita* and *Unemployment rate* (as in Table 3, column 4). All other main effects are included, but not displayed here. Standard errors are twoway-clustered on the constituency level and biannual level using the *ivreg2* command in Stata. $t = \{-x, 0\}$ denotes the sum/average amount of new discovered oil reserves in t and the x years prior to *t*. The sample covers the 1945-2001 period and the number of observations is 1883 at the constituency-half-year level.

G It's Scotland's Oil!

Poster from the SNP's "It's Scotland's Oil" campaign in the 1970s

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