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**Political Monetary Cycles or how central bank
action impacts national politics**

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¹This chapter is a joint work with MENUET Maxime and VILLIEU Patrick. A previous version of this chapter is available as a HAL working paper, see : <https://hal.archives-ouvertes.fr/hal-03479411/>.

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Introduction Générale

Introduction Générale

*“I will stop
I will stop at nothing
Say the right things
When electioneering
I trust I can rely on your vote
When I go forwards, you go backwards
And somewhere we will meet”*

Radiohead, paroles de la chanson
“*Electioneering*” issue de l’album
OK Computer - XL Recordings
(1997)

Le terme « *electioneering* », que l’on peut traduire par propagande électorale correspond à l’ensemble des moyens mis en oeuvre par un candidat ou un parti dans le but de gagner une élection. Au cours de l’histoire, les exemples d’élections impactées par des interventions extérieures sont légion. Dans un premier temps, on peut citer les élections papales, particulièrement celles ayant eu lieu à la fin du XIII^{ème} siècle durant lesquelles la maison d’Anjou usa de son influence pour infléchir les résultats Watts (2009, pp. 42-59). Dans un second temps, les élections impériales sous le Saint-Empire Romain Germanique représentent un exemple pertinent et particulièrement l’élection du 28 juin 1519. Cette dernière fut gagnée par Charles V grâce à : « la corruption, la propagande et la menace de recourir à la force »³ Rady (1988, p. 16). Ces problématiques de manipulation des résultats électoraux sont prises au sérieux assez tôt dans l’histoire. Par exemple, comme expliqué par Yakobson (1995), la République Romaine va, dès 139 AEC adopter la *lex Gabinia tabellaria* qui impose le vote à bulletin secret dans le but de limiter l’impact des populations les plus aisées sur le résultat du scrutin. Néanmoins, bien que ces exemples soient pertinents afin d’illustrer les interventions extérieures pouvant impacter un vote, ils correspondent à des élections dont le corps électoral est réduit. En effet, les élections papales ne peuvent pas comporter plus de 120

³Dans le texte : « *bribery, propaganda and the threat of force* ».

électeurs depuis le *Ingravescentem aetatem* du 21 novembre 1970. Dans le cas des élections impériales du Saint-Empire Romain Germanique, le nombre d'électeurs fluctue entre 4 et 12. De fait, bien que des manipulations électorales aient pu être observées au cours de ces événements, il semble impossible de généraliser l'analyse faite de ces situations anciennes aux élections plus récentes.

En conséquence, il est primordial de détecter la période à partir de laquelle les phénomènes électoraux sont comparables à nos modes de scrutin modernes. Afin de détecter cette période, il est pertinent de chercher la première occurrence écrite du terme "*electioneering*". D'après l'*Oxford English Dictionary*, le terme apparaît à l'écrit pour la première fois dans une lettre rédigée le 22 novembre 1760 par Edmund Pyle⁴ alors aumônier ordinaire du roi George II⁵. C'est à cette période que l'étude moderne de la propagande électorale et, *in fine* des cycles politiques va réellement débiter. En effet, on observe clairement sur la Figure 1 (page 3) que la fin du XVIII^{ème} siècle est marquée par l'apparition des premières autocraties électorales ; *i.e.* des premières élections nationales. Ces élections misent en place aux États-unis (1788/1789, 1792, 1796, 1800), en France (1791, 1792, 1795, 1797, 1798, 1799) ou encore en Grande-Bretagne (1780, 1784, 1790 et 1796 pour ne citer que les dernières) se présentent sous des formes assez proches de celles que l'on connaît aujourd'hui. En effet, ces épisodes électoraux font intervenir un grand nombre d'électeurs qui vont alors devoir choisir entre plusieurs candidats ou partis en concurrence. L'apparition de ces modes de scrutin motivent, plus que jamais auparavant, l'étude de la propagande électorale et de son impact potentiel sur la composition du gouvernement. La généralisation du processus électoral à partir de 1789 (cf. Figure 1) ne fera que renforcer la nécessité de comprendre les tenants et aboutissants du vote ce dernier prenant une place de plus en plus centrale dans la vie politique nationale. De plus, on peut également observer sur la Figure 1 que les élections sont de plus en plus démocratiques, particulièrement à la suite des trois vagues de démocratisation identifiées par Huntington (1991)⁶. Cette accélération du développement des régimes électoraux depuis 1789 n'a fait qu'augmenter la nécessité d'avoir un cadre d'analyse permettant de comprendre les manipulations électorales et d'en connaître les origines. Malgré un certain nombre de travaux importants (Marx et Engels, 1848; Mill, 1848; Bishop, 1893) et des exemples de plus en plus documentés de fraudes ou de manipulations électorales (Ziblatt, 2009; Ebhardt, 2013) au cours du XIX^{ème} siècle, il faudra attendre le siècle suivant pour voir apparaître les travaux fondateurs de l'analyse moderne des manipulations électorales. En l'occurrence, le XX^{ème} siècle verra se développer l'analyse sociologique du vote (Siegfried, 1917; Lazarsfeld et al., 1944; Downs, 1957; Campbell et al., 1960) de laquelle découle le cycle politico-économique, concept au cœur de cette thèse (Nordhaus, 1975; Hibbs, 1977). Néanmoins, avant de discuter de la pertinence de ce concept, et

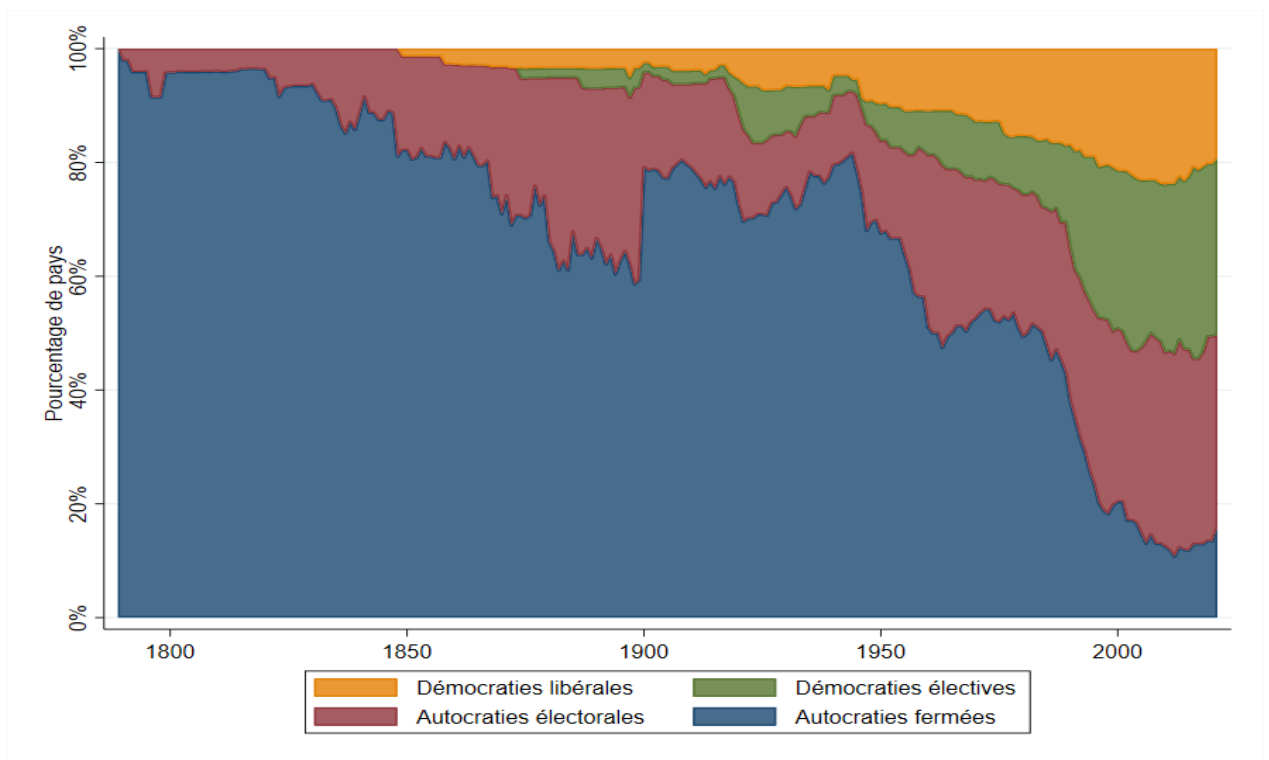
⁴Cette lettre est disponible au sein de l'ouvrage de Hartshorne et Pyle (1905, pp. 328-334).

⁵Voir "*electioneering, n.*" *OED Online*. *Oxford University Press*, consulté le 23 Septembre 2022.

⁶Plus précisément, les vagues de démocratisation sont considérées comme allant des années 1820 à 1926 pour la première (29 nouvelles démocraties), de 1945 à 1962 pour la deuxième (36 nouvelles démocraties) et de 1974 aux années 1990 pour la troisième (au moins 30 nouvelles démocraties).

plus particulièrement du concept de cycle politico-monnaire au sein du Chapitre Introductif, il est nécessaire de présenter la littérature à l'origine du concept de cycle politico-économique. En conséquence, la première section de cette introduction traite du développement de la science électorale à l'origine de la théorie de l'*economic voting* qui analyse les liens entre comportements de vote et situation économique. Cette théorie sera présentée dans une seconde section de cette Introduction Générale.

FIGURE 1 : Nombre de démocraties et d'autocraties dans le monde (1789-2021)



Source : Figure reproduite en utilisant les données mises à disposition par le site *Our World in Data* ici :

https://ourworldindata.org/grapher/share-democracies-autocracies-row?country=-OWID_WRL (consulté le 27 septembre 2022)

Les différents types de régimes politiques présentés ici correspondent à la classification proposée par Lührmann et al. (2018). Plus précisément, les auteurs définissent ces 4 types de régimes politiques comme suit : (i) une autocratie fermée correspond à un régime où le tenant du pouvoir exécutif n'a pas à faire face à des élections ou à une compétition électorale ; (ii) une autocratie électorale correspond à un régime où des élections multipartites existent mais ne peuvent pas être considérées comme libres et équitables de part l'existence d'irrégularités ou d'éléments allant contre la définition de la démocratie de Dahl (1971, 1998) ; (iii) une démocratie élective, en plus de mettre en place des élections libres et justes, doit au moins être considérée de façon crédible comme une « *polyarchy* » (Dahl, 1971) et (iv) une démocratie libérale correspond à une démocratie élective au sein de laquelle il existe des contrôles judiciaires et législatifs encadrant l'action du pouvoir exécutif ainsi qu'une protection des libertés individuelles et de l'État de droit. Pour plus d'informations, voir Lührmann et al. (2018) et particulièrement le Tableau 1 (p. 63).

Naissance de la science électorale ou comment fonctionne le processus de vote

La compréhension du comportement de vote des individus est une question centrale lorsqu'il est question de l'analyse des phénomènes électoraux. En se basant sur un travail extrêmement minutieux de récolte de données, Siegfried (1917) est le premier à développer une analyse du comportement de vote des individus basée sur des critères sociaux et géographiques. Au travers de son étude de l'Ouest de la France, l'auteur est à l'origine de la science électorale ayant pour but de comprendre le comportement de vote. Par exemple, dans le cas de la Vendée, Siegfried (1917) démontre que les régions caractérisées par un sol granitique ont tendance à voter à droite là où les régions dont le sol est composé de calcaire votent plus facilement à gauche. Cette disparité trouve son explication dans le fait qu'un sol composé de granit est bien plus dur et accidenté que son équivalent composé de calcaire⁷. En conséquence, un sol granitique favorise une densité de population faible et un milieu social typique de la ruralité ce qui, d'après l'auteur, favorise le vote pour les partis de droite. À l'inverse, un sol calcaire permet de construire beaucoup plus facilement, ce qui favorise une densité de population plus élevée et un milieu social citadin allant de paire avec un vote de gauche. Malgré quelques critiques (Aron, 1955), ce travail est à l'origine du développement de la sociologie du vote qui cherche à développer une analyse fine des comportements électoraux et de leurs déterminants. Cette première tentative d'explication du vote basée sur la géographie et la géologie mise en avant par Siegfried (1917) sert alors de base au développement de théories concurrentes ou complémentaires.

Dans un premier temps, on peut citer l'étude de l'impact des médias sur le vote qui est à l'origine des premières théories déterministes du vote. Deux points de vue opposés se développent alors sur la question. D'une part, certains auteurs dont Lasswell (1927) développent que les médias ont un impact significatif sur les résultats électoraux en infusant certaines idées au sein de la société. D'autre part, Lazarsfeld et al. (1944) et plus généralement les *Colombia studies*, considèrent que l'impact des médias sur le comportement électoral est assez superficiel, le vote individuel s'expliquant principalement par les variables dites « lourdes » comme la classe sociale (Alford, 1963) ou la religion (Michelat et Simon, 1977). Ces auteurs considèrent que les médias ne jouent qu'un rôle minime sur le vote car les individus ont tendance à ne lire que des médias en adéquation avec leur vision politique. Katz et Lazarsfeld (1955) affinent cette vision via leur théorie de la communication à double étage qui estime que le traitement médiatique d'une information parvient aux individus via une personne de leur entourage appelée *leader* d'opinion. En conséquence, les médias influencent indirectement les électeurs mais indirectement à travers l'effet qu'ils peuvent avoir sur ces *leaders* d'opinion.

⁷On considère selon l'échelle de Mohs (1820) que le granit a une dureté de 5 à 6 sur 10 là où le calcaire se situe aux alentours de 3 sur 10.

Dans un second temps, en opposition au déterminisme social des *Colombia studies* (Lazarsfeld et al., 1944; Katz et Lazarsfeld, 1955), trois approches alternatives de l'étude du comportement de vote se sont développées. La première approche nommée théorie du *public choice* se base sur les travaux des économistes, notamment sur la rationalité des agents afin d'étudier les questions politiques. Cette vision du processus électoral est basée sur la théorie de l'électeur médian (Arrow, 1951; Black, 1958) et les travaux de Downs (1957) sur les motivations des hommes et des femmes politiques. Cette approche du *public choice* est indirectement mobilisée dans cette thèse, principalement au sein du Chapitre Introductif et du Chapitre 2. Au sein de la revue de la littérature développée en Chapitre Introductif, la vision downsienne de la politique (Downs, 1957) est centrale dans le développement du concept de cycle politico-économique. De plus, la théorie du vote probabiliste développée par Lindbeck et Weibull (1987) ou Persson et Tabellini (2000) sur laquelle se base la modélisation de l'élection au sein du Chapitre 2 correspond à une ré-interprétation moderne des théories développées par l'école des choix publics.

Une seconde approche remet en question ce déterminisme électoral au travers du travail de Nie et al. (1976) notamment. Les auteurs soulignent que l'électeur est plus sophistiqué et volatile que supposé dans les *Colombia studies*. Dans cette situation, l'électeur vote en fonction d'enjeux propres à l'élection plutôt qu'en fonction de variables « lourdes ». Enfin, une dernière approche développée à la suite des travaux de Lazarsfeld et al. (1944), Katz et Lazarsfeld (1955) se base sur le concept d'identification partisane et est à l'origine de l'hypothèse d'*economic voting* (Campbell et al., 1960). Cette théorie du vote économique que l'on nomme parfois le *Michigan model* permet aisément de lier situation économique et résultats électoraux. En effet, sans ce lien entre économie et élections, la vision de l'économie utilisée de façon opportuniste par les gouvernements (Nordhaus, 1975) devient impossible à justifier.

Toutefois, il est important de mentionner que les travaux portant sur le processus électoral ne se concentrent pas que sur les éléments évoqués au sein de cette section. Par exemple, il est tout aussi pertinent d'étudier les déterminants de l'abstention que ceux du vote (Gaxie, 1978). On peut également considérer que des électeurs de plus en plus sophistiqués vont avoir des comportements de vote de plus en plus complexes. Enfin, les comportements de vote stratégique (Myatt, 2007) ou de vote de sanction (Alvarez et al., 2018) représentent autant d'exemples d'analyses modernes du processus électoral.

L'*economic voting* ou l'intérêt d'utiliser l'économie pour gagner les élections

Certains penseurs du XIX^{ème} siècle comme Marx et Engels (1848) ou Mill (1848) présentent les prémices de l'importance de l'économie dans les comportements politiques des individus. Comme évoqué précédemment, il est aujourd'hui assez communément admis que la situation économique fait partie des

principaux déterminants des résultats électoraux. Cette vision provient des travaux sur l'« *economic voting* » (ou vote économique) largement inspirés par le livre précurseur de Campbell et al. (1960) : « *The American Voter* ». Au sein de l'ouvrage, et particulièrement du Chapitre 14 nommé « *Economic Antecedents of Political Behavior* » (pp. 381-401), les auteurs développent que les électeurs ont tendance à voter différemment en fonction de la situation économique dans laquelle ils se trouvent. Par exemple, un individu ayant connu une période de chômage par le passée va avoir tendance à favoriser les gouvernements prônant une politique de redistribution importante. Cet effet est exactement le même chez les individus qui anticipent une possible période de chômage dans le futur. De plus, les auteurs soulignent que l'appartenance à un parti politique va directement impacter la façon dont l'individu réagit à un épisode de récession économique. Pour reprendre l'exemple des États-Unis cité par Campbell et al. (1960), un électeur qui s'identifie comme fortement républicain va avoir tendance à avouer moins facilement qu'une récession économique impacte négativement sa situation personnelle. À l'inverse, un électeur soutenant le parti démocrate aura tendance à se sentir lésé plus rapidement par une période de récession économique. Les auteurs mettent alors en avant une relation de causalité inverse entre la situation économique et le comportement de vote des individus. Dans un premier temps, une situation économique favorable va permettre d'avantager le parti au pouvoir mais, dans un second temps, l'appartenance idéologique de l'électeur va influencer la façon dont il évalue la situation économique. Bien que le travail de Campbell et al. (1960) permet de donner des fondements théoriques à ce raisonnement de vote économique, certains travaux antérieurs ont déjà apporté des preuves du lien entre économie et politique. Par exemple, Akerman (1947) dans son étude portant sur les États-Unis, met en avant que la majorité des passations entre les républicains et les démocrates (et inversement) ont eu lieu au cours d'une période de récession. Cette vision défend alors l'existence d'un cycle politico-économique d'une durée proche de celle du cycle des affaires mais synchronisé sur les élections présidentielles états-uniennes. En plus de constituer l'une des premières preuves empiriques de l'existence du cycle politique, cette étude précurseur apporte également des preuves de la pertinence de la théorie du vote économique.

Cette théorie du vote économique va par la suite être raffinée par la théorie du nouvel électeur développé par Key (1966). Cette dernière se base sur la théorie du *public choice* et particulièrement sur les travaux de Downs (1957) selon lesquels les individus votent de manière rétrospective. En d'autres termes, l'auteur considère que les électeurs votent uniquement pour l'alternative qui leur paraît meilleure en se basant sur les actions passées des politiciens et non sur les promesses d'actions futures. Par exemple, s'ils pensent que l'élection d'un des candidats n'aidera pas le pays à se sortir d'une crise économique, ils vont voter pour l'autre candidat. Pour paraphraser l'auteur, les électeurs votent en fonction de leurs opinions sur des questions politiques et économiques générales. Autrement dit, les électeurs n'adoptent pas un raisonnement sociologique ou psychologique sophistiqué. Selon Key (1966), les politiciens réagissent

de la même façon que ces derniers. Ils exploitent les dilemmes clivant l'électorat afin de défendre leurs intérêts politiques personnels. C'est principalement au travers de ce résultat que l'on retrouve la vision développée par Downs (1957) selon laquelle les hommes et les femmes politiques n'agissent qu'avec la volonté de conserver leur poste le plus longtemps possible. C'est sur cette représentation que vont se baser des auteurs comme Kramer (1971) ou Tufte (1978) pour développer les fondements théoriques et mettre en avant les preuves empiriques nécessaires au développement du concept de cycle politico-économique opportuniste de Nordhaus (1975).

Néanmoins, la littérature sur le vote économique continue à se développer de manière régulière, particulièrement de par la nécessité de comprendre les nouveaux enjeux électoraux (Fiorina, 1978). Plus largement, l'étude de ces liens entre comportements électoraux et situation macroéconomique (personnelle ou globale) a été alimentée de manière significative par les travaux utilisant des fonctions de popularité⁸ (Frey et Schneider, 1978; Golden et Porteba, 1980). En substance, Lewis-Beck et Stegmaier (2013) offrent une description de l'apport principal de ces travaux sur les fonctions de popularité en soulignant qu'elles sont composées d'une partie politique (« *p-part* ») et d'une partie économique (« *e-part* »). En conséquence, la popularité d'un parti politique – *i.e.* le score que ce parti est sensé obtenir à la prochaine élection – dépend directement de paramètres économiques comme l'inflation ou le chômage. On se retrouve alors avec une vision renouvelée de l'argument du vote économique développé par Campbell et al. (1960), Key (1966) ou encore Kramer (1971) dans le sens où l'économie est un déterminant significatif des résultats électoraux.

Le cycle politico-économique et le cycle politico-monétaire

À la suite des travaux de Schumpeter (1939), des cycles économiques à la durée et à l'origine variées sont mis en avant. L'ensemble de ces cycles suit un développement en 5 phases qui s'enchaînent de la façon suivante : prospérité ; récession ; crise ; dépression ; reprise et ainsi de suite. Dit autrement, c'est la confrontation de ces différents cycles qui explique la trajectoire de croissance des différents pays. Dans ce contexte, l'exploitation opportuniste du cycle économique dans un but politique (et donc sa transformation en cycle politico-économique) peut se faire de deux façon distinctes. Dans un premier temps, particulièrement au sein des régimes parlementaires, le gouvernement peut tenter de synchroniser la date de la prochaine élection avec une phase vaste du cycle économique. Ce concept de « *political surfing* » (Inoguchi, 1981) permet alors au gouvernement en place de profiter d'une période d'expansion du cycle économique et ce, qu'il en soit directement à l'origine ou non. On peut citer comme exemples le Japon Cargill et Hutchinson (1991) ou l'Inde (Chowdhury, 1993) comme étant des régimes caractérisés

⁸Il est intéressant de noter que, comme développé au sein du Chapitre Introductif que c'est au travers de l'estimation de fonctions de popularité que la littérature sur les cycles politico-monétaires c'est développée.

par du « *political surfing* ». Dans un second temps, particulièrement dans les régimes présidentiels, le gouvernement peut profiter de la politique budgétaire et monétaire afin de stimuler l'économie à court terme. Ce faisant, le gouvernement va alors pouvoir profiter d'une situation économique favorable juste avant les élections (Nordhaus, 1975).

Néanmoins, c'est Kalecki (1943) bien avant Nordhaus (1975) qui va le premier définir le concept de cycle politico-économique. Chez Kalecki (1943) le cycle politico-économique admet une vision très différente de celle développée par Nordhaus (1975). En effet, pour Kalecki (1943), le cycle politico-économique provient de la confrontation entre les intérêts des travailleurs et ceux des entreprises. D'un côté, les travailleurs font pression sur le gouvernement afin qu'il lutte contre le chômage. De l'autre, les entreprises font pression contre cette politique car elles craignent que l'intervention étatique puisse avoir des effets négatifs sur la stabilité macroéconomique. Dans les faits, cet arbitrage entre le chômage et la stabilité macroéconomique s'apparente à une courbe de Phillips (1958). C'est d'ailleurs cette relation entre les variations du chômage et de l'inflation qui représente le dernier concept fondamental mobilisé par Nordhaus (1975) lorsqu'il définit le cycle politico-économique opportuniste⁹. En effet, l'auteur considère que c'est l'exploitation de cette relation inflation/chômage par les pouvoirs publics qui est à l'origine du cycle. Plus précisément, Nordhaus (1975) théorise que les gouvernements exploitent la courbe de Phillips (1958) dans le but de diminuer le chômage avant une élection. Ce faisant, le parti au pouvoir espère accroître sa popularité et ainsi augmenter ses chances dans la future élection. Néanmoins, cet effet bénéfique sur le chômage et la popularité du gouvernement n'est pas sans répercussion. D'un point de vue économique, cette baisse du chômage s'accompagne d'une hausse de l'inflation (Phillips, 1958). Cette augmentation des prix va alors nécessiter, une fois l'élection passée, une politique économique restrictive afin d'être endiguée. D'un point de vue politique, les travaux de Peltzman (1992) ont mis en avant qu'un électorat suffisamment sophistiqué est capable de comprendre ce type de manipulation et ainsi de punir le parti qui en est l'instigateur. Autrement dit, une politique économique volontairement laxiste avant une élection peut avoir l'effet opposé à celui espéré en diminuant la popularité du gouvernement. En résumé, un cycle politico-économique opportuniste implique une baisse du chômage et une hausse de la popularité du gouvernement avant les élections pouvant entraîner une hausse de l'inflation après les élections. Suite au scrutin, le gouvernement fraîchement élu va devoir lutter contre cette hausse de l'inflation en menant une politique économique restrictive augmentant le chômage au détriment de sa popularité¹⁰. Une autre vision du cycle politico-économique dite partisane s'est également développée à

⁹Plus précisément, le travail de Nordhaus (1975) cite directement les travaux de Schumpeter (1939), Kalecki (1943), Downs (1957), Phillips (1958) et Kramer (1971). Sur les 18 références supplémentaires, 6 ont attiré à la récolte des données et 2 à des travaux précédents de l'auteur. Au sein des travaux restants, on ne retrouve que des études empiriques, des travaux non académiques ou traitant uniquement de politique et des ré-interprétations des travaux de Phillips (1958) sur la relation inflation/chômage (Phelps, 1967; Leeper, 1974).

¹⁰On peut par exemple observer ce comportement cyclique de la popularité du gouvernement au sein de la Figure 2.4 (page 99).

la suite des travaux de Hibbs (1977). Cette vision d'un cycle post-électoral et son impact sur l'étude des cycles politico-monnaires sont présentés en détail au sein du Chapitre Introductif de cette thèse et plus particulièrement au sein de la Section 1.3.

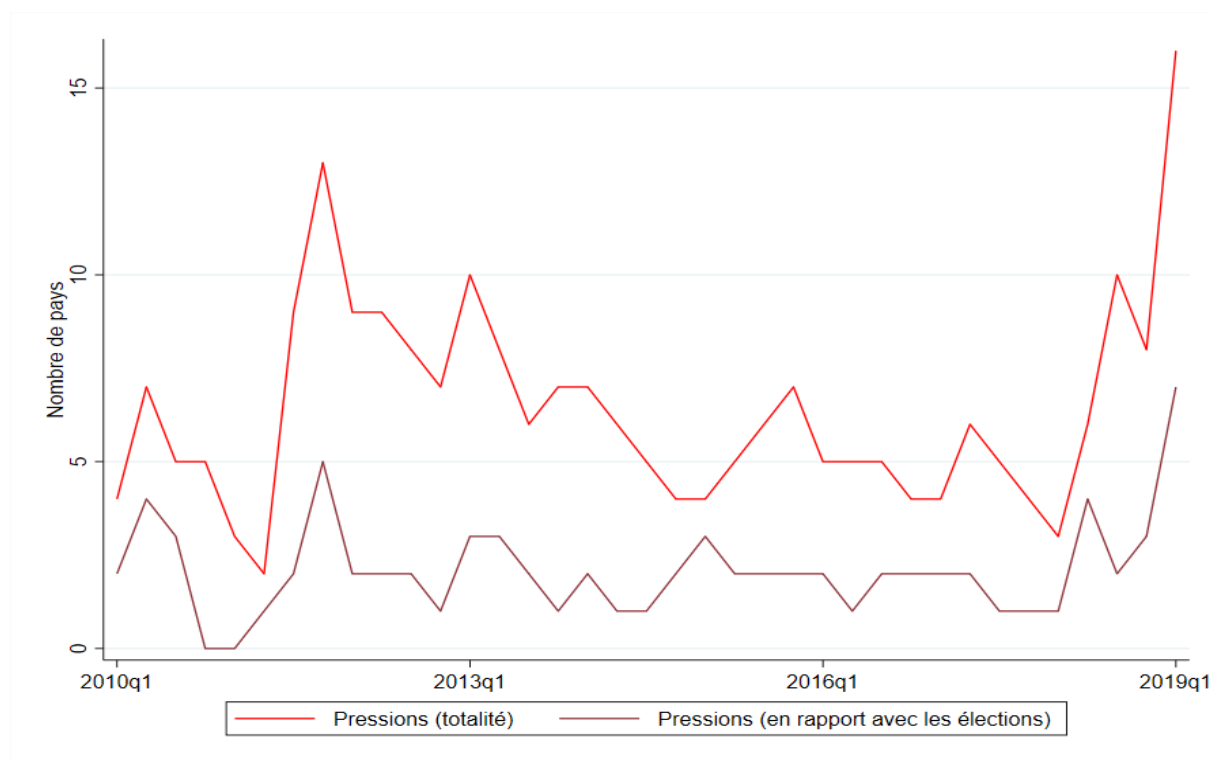
Au sein du cadre théorique développé par Nordhaus (1975), on peut supposer que la manipulation des électeurs peut à la fois passer par la politique budgétaire et l'action du gouvernement mais aussi par la politique monétaire et l'action de la banque centrale. En effet, au sein de son travail, Nordhaus (1975) ne fait absolument pas la distinction entre un cycle d'origine budgétaire et un cycle d'origine monétaire. Dans le premier cas, on parle alors de cycle politico-budgétaire et l'on considère que le gouvernement cherche à utiliser les outils de politique économique à son propre avantage. Dans le second cas, c'est la banque centrale qui est à l'origine de la manipulation pré-électorale et on parle de cycle politico-monnaire. Néanmoins, depuis la fin des années 1980, ce cycle politico-monnaire paraît beaucoup moins direct que son homologue budgétaire. En effet, depuis les travaux sur le biais inflationniste (Kydland et Prescott, 1977; Barro et Gordon, 1983), un consensus émerge autour de l'idée que l'indépendance des banques centrales permet de les isoler des problématiques politiques et partisans. Par ailleurs, on observe aisément cette généralisation de l'indépendance des banques centrales au sein de la Figure 3 (page 11). Cette dernière représente le nombre de banques centrales dans le monde ayant une indépendance *de jure* de plus de 0.5 (sur 1) d'après l'indice d'indépendance (*CBIE*) calculé par Romelli (2022). De part leur indépendance, les banques centrales sont alors dans l'incapacité de dévier de leurs objectifs de long terme. Ainsi, elles ne peuvent plus faire varier leur politique à l'approche d'un scrutin. Pour cette raison, les travaux portant sur le cycle politico-monnaire sont quelque peu tombés en désuétude jusque dans les années 2000-2010.

Cependant, de nombreux travaux récents insistent sur la politisation grandissante des banques centrales depuis la crise de 2007/2008 (Alesina et Stella, 2010; Fernández-Albertos, 2015; Lockwood, 2016; Binder et Spindel, 2017; de Haan et al., 2018). Cette politisation implique que les banques centrales ont une place de plus en plus centrale dans la vie politique nationale laissant craindre une résurgence des cycles politico-monnaires. De plus, loin de reculer, cette importance de la banque centrale dans le débat public est renforcée par la crise des dettes souveraines en Europe (Afonso et al., 2018) ou encore par la pandémie de COVID-19 (Feldkircher et al., 2021; Wei et Han, 2021). En plus d'augmenter drastiquement le poids électoral de l'autorité monétaire, cette politisation va également modifier la nature des interactions entre politique fiscale et monétaire (Azad et al., 2021) ainsi que la fréquence de ces interactions (Balls et al., 2018). Il apparaît donc pertinent aujourd'hui de mobiliser le concept de cycle politico-monnaire; le contexte économique récent étant très propice à leur réapparition.

L'actualité du cycle politico-monnaire

La crise de 2007/2008 et la pandémie de COVID-19 ont donc eu un impact considérable sur le fonctionnement des banques centrales (Balls et al., 2018; de Haan et al., 2018). Plus précisément, ces deux événements ont affecté la mise en place de la politique monétaire en réduisant grandement les marges de manœuvre de la banque centrale de plusieurs manières. Premièrement, un nombre croissant de pays fait face à une situation de *zero lower bound* (Hofmann et al., 2021) obligeant la mise en place de politiques monétaires non conventionnelles (Bernanke, 2020). Ces mêmes pays ont également connu au cours des dernières années le passage d'une situation de *monetary dominance* à une situation de *fiscal dominance* (de Haan et Eijffinger, 2019). De plus, les craintes concernant un potentiel retour de la monétisation des déficits publics par les banques centrales sont réapparues, particulièrement suite à l'augmentation des dépenses publiques induite par l'épidémie de COVID-19 (Lawson et Feldberg, 2020). Les banques centrales se retrouvent alors à subir énormément de pressions politiques mais aussi électorales (Figure 2) et ce, malgré un niveau d'indépendance *de jure* toujours plus élevé (Figure 3). Le travail de Binder (2021a) représenté au sein de la Figure 2 démontre qu'en l'espace de 9 ans (2010-2019), le nombre de pays au sein desquels les banques centrales font face à des pressions a été multiplié par 3.

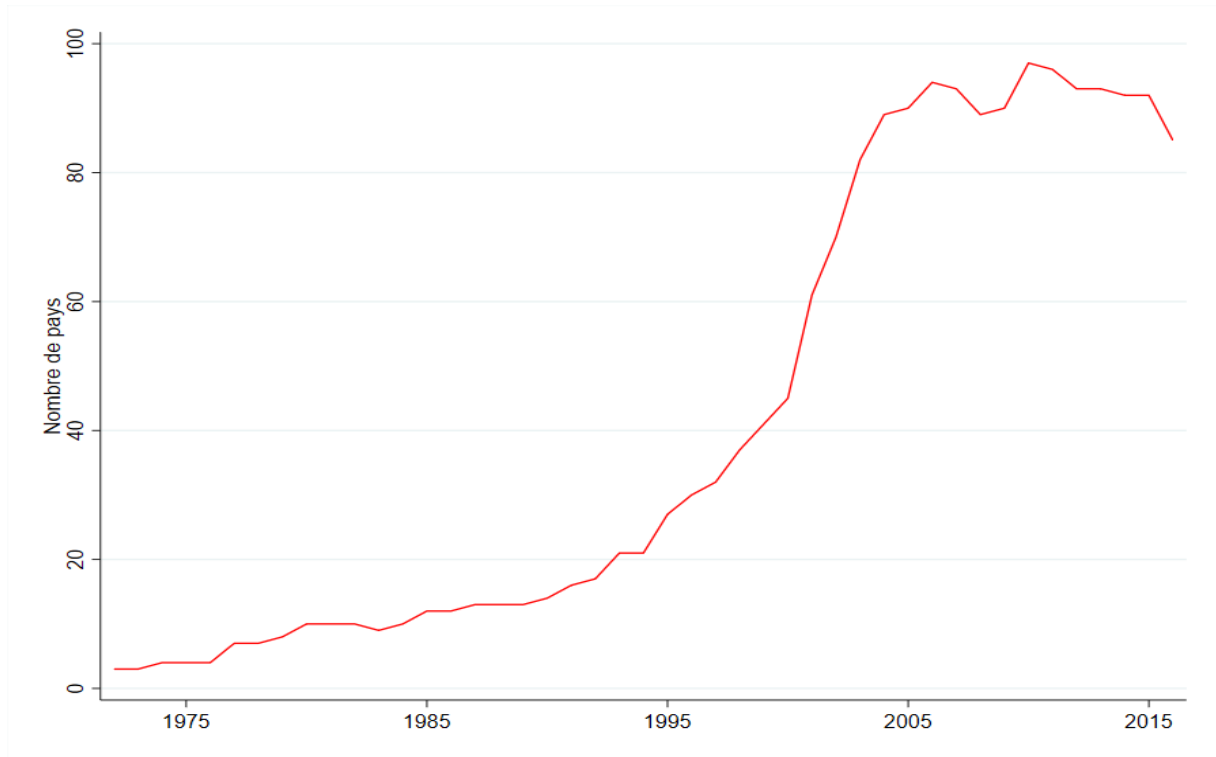
FIGURE 2 : Nombre de pays la banque centrale a subie au moins une pression politique (2010Q1-2019Q1)



Source : Mesures développées par Binder (2021a)

La mise en place de la politique monétaire est également impactée par l'apparition de nombreux partis

FIGURE 3 : Nombre de pays ayant un niveau d'indépendance de plus de 0.5 (1972-2016)



Source : Indice *CBIE* d'indépendance de la banque centrale développé par Romelli (2022)

politiques qualifiés de populistes (Mudde, 2012). Ces partis, de droite comme de gauche, sont caractérisés par une rhétorique anti-élitiste voir anti-intellectualiste qui fait peser sur les banques centrales la responsabilité des crises économiques (Rodrik, 2018). De plus, au delà de ces pressions politiques directes, les banques centrales peuvent également internaliser ces considérations électorales. En effet, la banque centrale a un impact sur la progression des idées populistes de part le rôle central de l'institution au sein de la rhétorique populiste. De ce fait, elle peut modifier sa politique monétaire en conséquence. Ce mécanisme est notamment mis en avant par Bodea et al. (2019) qui démontrent qu'une banque centrale indépendante réduit les chances de survie d'un gouvernement autocratique. Par exemple, entre 2019 et 2022, 4 banquiers centraux différents ont été nommés à la tête de la banque centrale turque. À chaque licenciement, Erdoğan et son gouvernement ne manquaient pas d'insister sur la responsabilité des banquiers centraux précédents sur la situation économique négative que connaît le pays dernièrement (Demiralp et Demiralp, 2019). De nombreux autres pays font face à des menaces répétées sur l'indépendance de leur banque centrale (voir Figure 2).

Au sein des Chapitres 1, 2 et 3 de cette thèse, de nombreux exemples de pays où l'indépendance des banques centrales est menacée ont été évoqués : la Turquie d'Erdoğan, le Royaume-Uni post-Brexit, les États-Unis sous la présidence Trump, l'Inde de Narendra Modi depuis 2018, l'Ukraine à l'été 2020, la Grèce de 2015 ou encore l'Italie de 2018. Nonobstant, ces dernières années, de nombreux autres exemples

peuvent être cités. Dans le sillage de l'exemple italien du Mouvement Cinq Étoiles, on peut citer le parti *Podemos* en Espagne et plus largement les nombreux partis considérés comme techno-populistes (Bickerton et Invernizzi, 2021; Binder, 2021*b*). Ces derniers se situent aux frontières entre une approche populiste et une approche technocratique de la politique. En conséquence, certains comme *Podemos* ou le Mouvement Cinq Étoiles ont un rapport proche du populisme avec la Banque Centrale Européenne (Bickerton et Invernizzi, 2021). Plus récemment, le *Central Banking Newsdesk* disponible sur le site *Central Banking*¹¹ souligne que la banque centrale du Belize a connu 3 gouverneurs différents en 2021, celle du Soudan du Sud 7 gouverneurs différents entre 2017 et début 2022 et le gouverneur de la banque d'Algérie a été licencié en mai 2022¹². De plus, depuis le début de l'année 2022, les banques centrales du Royaume-Uni, du Canada ou encore de la Colombie ont subies des pressions politiques répétées et importantes¹³.

Contributions de la Thèse

Le contexte politique récent est marqué par la politisation grandissante des banques centrales justifiant la nécessité de recourir à de nouvelles études des cycles politico-monétaires. Cette thèse se compose de 4 chapitres distincts étudiant le cycle au travers de diverses méthodologies. Le Chapitre Introductif permet, au travers d'une revue de la littérature, de remettre en perspective la question des cycles politico-monétaires. Par la suite, le Chapitre 1 propose un travail préliminaire sur l'existence du cycle. En mobilisant une base de données composée de 110 pays, ce chapitre apporte des preuves de l'existence d'un cycle politico-monnaire. Les Chapitres 2 et 3 appréhendent ce cycle de façon plus précise. D'une part, le Chapitre 2 développe un modèle théorique traitant des liens entre politique monétaire et popularité des partis politiques. Ce chapitre défend l'idée que le cycle n'est pas lié à une volonté du banquier central de favoriser un parti par rapport aux autres. Plus précisément, c'est en souhaitant mettre en place une politique monétaire anti-inflationniste, qu'elle va détruire l'avantage comparatif du parti politique le plus conservateur. Donc, au travers des variations du taux d'intérêt, la banque centrale impacte le résultat des futures élections. Enfin, après avoir mobilisé la littérature existante, le Chapitre 3 définit le

¹¹Voir <https://www.centralbanking.com/author/central-banking-newsdesk>.

¹²Dans l'ordre : (i) « *Kareem Michael to be new Belize governor* » publié le 3 décembre 2021 <https://www.centralbanking.com/central-banks/governance/people/7904636/kareem-michael-to-be-new-belize-governor> ; (ii) « *South Sudan president fires sixth governor* » publié le 8 août 2022 <https://www.centralbanking.com/central-banks/governance/people/7951871/south-sudan-president-fires-sixth-governor> et (iii) « *Algerian president replaces central bank governor* » <https://www.centralbanking.com/central-banks/governance/people/7948281/algerian-president-replaces-central-bank-governor> publié le 24 mai 2022.

¹³Dans l'ordre : (i) « *Bank of Canada critic becomes leader of the opposition* » <https://www.centralbanking.com/central-banks/governance/people/7953062/bank-of-canada-critic-becomes-leader-of-the-opposition> publié le 24 mai 2022 ; (ii) « *Colombian president criticises central bank's rate increases* » <https://www.centralbanking.com/central-banks/governance/accountability/7953327/colombian-president-criticises-central-banks-rate-increases> publié le 12 septembre 2022 et (iii) « *BoE's Bailey hits back at monetary policy critics* » <https://www.centralbanking.com/central-banks/monetary-policy/7948276/boes-bailey-hits-back-at-monetary-policy-critics> publié le 6 octobre 2022.

concept de *press related opportunistic political monetary cycle*. Ce concept se situe à la frontière entre l'économie, la science politique et l'analyse textuelle. Ce dernier chapitre se concentre alors sur les effets exogènes à la mise en place de la politique monétaire qui pourraient amplifier ou atténuer l'effet du cycle politico-monétaire.

Chapitre Introductif : Les Cycles Politico-monétaires : Perspectives Historiques et Développements Récents

Le Chapitre Introductif de cette thèse présente une analyse historique des principaux travaux traitant de la question des cycles politico-monétaires. Au travers d'une approche chronologique, cette revue de la littérature défend la pertinence du concept de cycle politico-monétaire sur la période s'étendant de leur mise en avant dans les années 1970 à la situation économique et politique contemporaine. Malgré une perte de vitesse à la fin des années 1980 et jusqu'au milieu des années 2000, la crise financière globale de 2007/2008 a remis le concept de cycle politico-monétaire sur le devant de la scène. En effet, la dominance budgétaire ainsi que la situation de *zero lower bound* héritées de cette crise ont remis les manipulations politiques de la banque centrale au coeur des préoccupations des chercheurs et des gouvernants. L'étude du phénomène est donc aujourd'hui encore pertinente et ce malgré la démocratisation de l'indépendance des banques centrales.

Ce Chapitre Introductif met également en avant la forte dichotomie existante entre l'approche opportuniste et l'approche partisane du cycle politico-monétaire. Malgré leur évolution en vase-clos, ces deux approches sont certes opposées mais elles ne sont pas pour autant incompatibles. Plus précisément, l'approche opportuniste a principalement alimenté les travaux en économie au contraire de l'approche partisane plus prisée par les politologues. Néanmoins, la mobilisation de méthodologies communes ainsi que les travaux récents sur les processus politiques entourant les banques centrales ont permis à ces deux conceptions du cycle politico-monétaire d'interagir ces dernières années.

En conséquence, il apparaît comme pertinent de prendre du recul sur cette littérature qui se développe sur près de 50 ans aux frontières des sciences économiques et politiques afin de motiver les trois chapitres suivants. Le Chapitre 1 présente une étude empirique de la validité du cycle politico-monétaire sur 110 pays. Ce nombre important de pays couplé à la période récente sur laquelle l'étude se base (1985-2016) permettent d'apporter des preuves concrètes de la pertinence du phénomène. Par la suite, le Chapitre 2 étudie les canaux de transmission permettant l'existence du phénomène. Plus précisément, malgré le niveau d'indépendance élevé des banques centrales, le chapitre précédent nous a démontré que les cycles politico-monétaires semblent être une réalité, au moins pour certains pays. Au travers du développement d'un modèle théorique, le Chapitre 2 démontre qu'une banque centrale conservatrice défavorise le

candidat le plus conservateur en luttant efficacement contre l'inflation. Autrement dit, un cycle politico-monnaire peut exister même si la banque centrale n'oriente pas sa politique monétaire dans ce sens. Enfin, le Chapitre 3 définit un nouveau type de cycle politico-monnaire jusqu'ici inédit, le *press related opportunistic political monetary cycle*. Ce dernier est défini comme un cycle politique opportuniste et indirect issu de la façon dont les médias traitent de la politique monétaire. En plus de poser les bases de ce concept, le Chapitre 3 combine l'approche engagée au sein des deux chapitres précédents et apporte une nuance partisane à un concept défini comme opportuniste.

Chapitre 1 : *Political Monetary Cycles : An Empirical Study*

Le Chapitre 1 se concentre sur l'étude de l'impact des événements politiques sur la mise en place de la politique monétaire. Plus précisément, il cherche à démontrer que les élections ont un impact significatif sur l'orientation de la politique monétaire. Ce cycle politico-monnaire admet alors la définition suivante : un cycle politique opportuniste induit, consciemment ou non, par le comportement de la banque centrale a pour effet d'augmenter la probabilité que le gouvernement reste au pouvoir. Afin de traiter de la présence ou non du cycle, une base de données unique constituée d'informations sur les dates des élections et sur les régimes politiques de 110 pays a été développée sur une période de 32 ans (1985-2016). En plus de permettre de considérer plus de situations différentes que les études précédentes, la base de données porte sur une période d'étude récente assurant une certaine actualité à l'étude. Ce travail de constitution d'une base de données est utilisé afin d'étudier l'impact potentiel des périodes pré-électorales sur l'orientation de la politique monétaire. Étant donné le nombre important de pays étudiés, l'orientation de la politique monétaire est mesurée tout au long du chapitre par le taux de croissance de la masse monétaire et plus particulièrement par l'agrégat M1. Ce dernier est utilisé pour sa disponibilité et sa proximité avec la base monétaire qui représente parfaitement les fluctuations de la politique monétaire.

En utilisant un estimateur basé sur la méthode des moments généralisés (Arellano et Bond, 1991), le Chapitre 1 souligne qu'en moyenne, les élections influencent l'orientation de la politique monétaire. En effet la croissance de la masse monétaire semble significativement plus élevée dans les douze mois précédant une élection nationale. L'effet obtenu représente, en moyenne, une croissance de M1 plus élevée de 1.2% à 3.7% durant l'année précédant une élection nationale. De surcroît, ce résultat est robuste à l'utilisation de 3 mesures alternatives de l'orientation de la politique monétaire (M0, M2 et le *policy rate*), la période pré-électorale considérée, l'utilisation d'un estimateur standard en panel à effets fixes, ou encore à la prise en compte des variations pré-électorales de la croissance du ratio crédit sur PIB, des régimes de change fixes ou encore de l'indépendance des banques centrales.

Enfin, le Chapitre 1 propose d'analyser en détail un certain nombre de paramètres censés impacter l'apparition mais aussi l'amplitude des cycles politico-monnaires. Il semble alors possible de diminuer

l'importance des cycles en mettant en place des élections libres et disputées, en ayant une banque centrale âgée, en rendant le *timing* des élections exogène, en empêchant les individus au pouvoir de se re-présenter mais aussi en adoptant un régime parlementaire. À l'inverse, un gouvernement de gauche, un régime présidentiel ou un niveau de développement élevé semblent augmenter les chances d'observer un cycle politico-monnaire. Certaines caractéristiques comme l'adoption d'une politique de ciblage d'inflation et l'appartenance à une union monétaire ne semblent pas avoir d'impact significatif sur le cycle politico-monnaire.

Chapitre 2 : *Do Conservative Central Bankers Weaken the Chances of Conservative Politicians ?*

Le Chapitre 2 étudie plus en détail les canaux de transmission expliquant l'existence des cycles politico-monnaies. Plus précisément, ce chapitre explore l'effet indirect d'une politique monétaire efficace dans la lutte contre l'inflation sur la popularité des partis politiques. Le modèle théorique développé dans ce chapitre démontre qu'une banque centrale conservatrice (*i.e.* suffisamment aversée à l'inflation), en luttant efficacement contre l'inflation, diminue la popularité du parti politique le plus conservateur (*i.e.* qui partage l'aversion à l'inflation du banquier central). Ce résultat est dû au fait qu'en limitant le niveau d'inflation, la banque centrale détruit l'avantage comparatif du parti politique le plus conservateur. En d'autres termes, si l'inflation est déjà limitée par l'action de la banque centrale, le parti conservateur n'est plus en mesure d'utiliser sa capacité à lutter contre l'inflation comme un argument auprès des électeurs. En conséquence, le parti le plus conservateur se retrouve dans une situation où sa popularité diminue si la banque centrale est efficace avant une élection nationale.

Ce résultat provient du développement d'un modèle théorique basé sur la théorie des jeux et plus particulièrement sur un jeu de *policy-mix*. Cette approche, croisée avec une représentation du processus électoral via un modèle de vote probabiliste est appliquée à un régime politique bipartite composé d'un parti politique économiquement conservateur et d'un parti plus libéral.

L'approche théorique mise en place au sein de ce chapitre est accompagnée par une validation empirique mobilisant des données britanniques mensuelles sur la période allant de janvier 1987 à décembre 2015. La validation du modèle prend alors la forme de l'estimation de fonctions de popularité des deux partis politiques principaux du Royaume-Uni. Le *Conservative Party* étant considéré comme le parti conservateur du modèle et le *Labour Party* comme la parti plus libéral. En plus de réactualiser l'estimation de fonctions de popularité des partis britanniques, la spécification économétrique utilisée dans ce chapitre inclut les variations du taux d'intérêt choisies par la Banque d'Angleterre dans les mois précédents une élection nationale. Le résultat principal issue des estimations est alors le suivant : une augmentation

d'un point de pourcentage du taux d'intérêt dans les 10 mois précédant une élection nationale diminue en moyenne de 2.4 points de pourcentage la popularité du *Conservative Party* par rapport à sa tendance. Ce résultat reste inchangé quelque soit le parti au pouvoir, la durée pré-électorale, les variables alternatives au sein du modèle économétrique et l'existence supposée d'un processus de mémoire longue au sein de nos séries statistiques de popularité. De plus, on retrouve un résultat similaire sur la période alternative allant de janvier 1987 à août 2021 quel que soit le niveau d'indépendance *de jure* de la Banque d'Angleterre.

Chapitre 3 : *Press Related Opportunistic Political Monetary Cycles or Does the Media Coverage of the European Monetary Policy Impacts German Political Parties' Popularity ?*

Le Chapitre 3 définit le concept de *press related opportunistic political monetary cycle* qui correspond à un cycle politique opportuniste (*i.e.* pré-électoral) lié à la couverture médiatique de la politique monétaire menée par la banque centrale. Plus précisément, on suppose que le traitement de la politique monétaire a un impact direct sur la popularité des partis politiques. Dans le cas de l'Allemagne, les partis politiques principaux étudiés dans ce chapitre ont une opinion sur la politique monétaire de la Banque Centrale Européenne. En conséquence, si la politique monétaire de l'Union Européenne devient un sujet important dans les médias allemands, il est plus que probable que les partis politiques voient leur cote de popularité impactée par le traitement médiatique du sujet. Afin d'étudier cette question, une base de données composée de plus de 26 000 articles de presse issues de 6 journaux allemands¹⁴ sur une période allant de janvier 2005 à décembre 2021 est utilisée. Par la suite, le nombre d'occurrences de certains termes liés à la politique monétaire¹⁵ est récupéré en fréquence mensuelle et intégré au sein de l'estimation de fonctions de popularité des 6 partis allemands les plus populaires¹⁶. Étant donné que le phénomène étudié est opportuniste, les mesures textométriques utilisées sont introduites en interaction avec des variables muettes prenant la valeur 1 pour un certain nombre de mois précédant un scrutin.

L'approche empirique mobilisée est efficace puisque le Chapitre 3 souligne l'existence de preuves d'un *press related opportunistic political monetary cycle* au sein de la popularité des partis politiques allemands que ce soit avant les élections fédérales mais aussi avant les élections au parlement européen. Plus précisément, ces cycles semblent profiter au *SPD* et au *FDP* avant les élections fédérales et désavantager le *CDU/CSU*, *Die Grünen* et l'*AfD*. De plus, on observe des effets plus importants avant les élections au parlement européen favorisant cette fois le *CDU/CSU* et le *FDP* au détriment de l'ensemble des autres

¹⁴Les journaux considérés au sein de la base sont les suivants : *Bild*, *Der Spiegel*, *Die Welt*, *Frankfurter Rundschau*, *Handelsblatt* et *Süddeutsche Zeitung*.

¹⁵Les termes retenus pour l'étude sont les termes liés à l'inflation, à la Banque Centrale Européenne ou encore les mentions des membres du conseil d'administration de l'autorité monétaire européenne.

¹⁶Les partis suivants sont intégrés à l'étude : le *CDU/CSU* (Union Chrétienne-démocrate/Union Chrétienne-sociale en Bavière), le *SPD* (Parti Social-démocrate), le *FDP* (Parti Libéral-démocrate), *Die Grünen* (Alliance 90/Les Verts), *Die Linke* (La Gauche) et l'*AfD* (Alternative pour l'Allemagne)

partis.

Par la suite, l'existence du concept de *press related opportunistic political monetary cycle* est étudiée sur deux bases de données alternatives : (i) une base de données séparant l'Allemagne entre les anciens *Länders* d'Allemagne de l'Ouest (ou République Fédérale d'Allemagne) d'un côté et les anciens *Länders* d'Allemagne de l'Est (ou République Démocratique Allemande) de l'autre et (ii) une base de donnée composée de la popularité des partis allemands au sein des 16 *Länders* qui composent le pays. Le même modèle est alors appliqué à ces nouvelles bases de données et souligne assez nettement que les effets nationaux observés auparavant sont le reflet de réalités locales bien différentes. Toutefois, il semble assez clair que des preuves de l'existence de *press related opportunistic political monetary cycles* existent également à l'échelle locale. Enfin, la robustesse de nos résultats est également démontrée par l'introduction de périodes pré-électorales alternatives (de 1 à 6 mois avant les élections) mais aussi par la mise en place d'une analyse de sentiment portant sur les articles de presse considérés dans l'étude. Les deux approches confirment l'existence et la pertinence du concept de *press related opportunistic political monetary cycle* dans le cas de l'Allemagne motivant de plus amples recherches sur le concept.

Chapitre Introductif

Chapitre Introductif

Les Cycles Politico-monétaires :

Perspectives Historiques et

Développements Récents

La situation économique héritée de la crise financière de 2007-2008 a eu un impact important sur la mise en place de la politique monétaire. Les interactions entre les banquiers centraux et les gouvernements sont devenues plus nombreuses mais aussi plus conflictuelles. Les exemples récents d'antagonismes forts entre un chef d'État et un banquier central ne manquent pas : Donald Trump et Jerome Powell aux États-Unis, Recep Tayyip Erdoğan et Erkan Kilimci en Turquie ou encore Narendra Modi et Urjit Patel en Inde¹⁷. De plus, la réponse sans précédent des banques centrales à la pandémie de COVID-19 laisse craindre une accélération de ce phénomène de rapprochement entre les autorités budgétaires et monétaires¹⁸. Cette situation nouvelle laisse craindre une résurgence des problématiques électorales au sein de la politique monétaire et l'on observe depuis quelques années un retour de l'étude des cycles politico-monétaires qui avaient disparu du débat public et scientifique.

Les cycles politico-monétaires représentent des modifications de la politique monétaire motivées par des considérations électorales. La littérature sur le sujet est historiquement scindée en deux approches qui diffèrent quant à l'origine du cycle. La première approche dite opportuniste représente des manipulations pré-électorales qui ont pour but d'augmenter la probabilité de réélection du gouvernement en place. La seconde approche dite partisane représente des manipulations post électorales permettant au parti au

¹⁷Voir Benoit, Guillaume, « L'indépendance Contestée des Banques Centrales », publié le 17 décembre 2018 - Les Échos. <https://www.lesechos.fr/idees-debats/editos-analyses/lindpendance-contestee-des-banques-centrales-239417>

¹⁸Voir les déclarations de Agustín Carstens, directeur général de la *Bank for International Settlements* rapporté dans l'article de Elliott, Larry, « *Central Banks' Could Face Political Pressure to Allow High Inflation* », publié le 30 juin 2020 - *The Guardian*. <https://www.theguardian.com/business/2020/jun/29/central-banks-could-face-political-pressure-to-allow-high-inflation>

pouvoir de mettre en place une politique économique conforme à son idéologie. Après un intérêt certain dans les années 1970-1980, le concept de cycle politico-monnaire va peu à peu perdre en popularité à la suite de la généralisation de l'indépendance des banques centrales. En effet, par définition, une banque centrale indépendante est dans l'incapacité de favoriser un gouvernement ou un parti politique spécifique, son statut lui liant les mains (Kydland et Prescott, 1977). Néanmoins, la littérature récente démontre qu'indépendance de la banque centrale et cycle politico-monnaire ne sont pas (plus?) incompatibles. Aux États-Unis par exemple, la Federal Reserve (Fed) est considérée comme l'une des banques centrales les plus indépendantes du monde et pourtant, cela n'empêche pas Abrams et Iossifov (2006) ou Dentler (2019) de mettre en avant des variations électorales de sa politique monétaire. Clark et Arel-Bundock (2013) vont même souligner que depuis 1951, date à laquelle la Fed devient indépendante d'un point de vue opérationnel, elle favorise systématiquement le parti républicain au détriment du parti démocrate (p. 24).

Ces résultats empiriques récents alimentent les débats entourant l'indépendance des banques centrales et conduisent la littérature à s'intéresser de nouveau au concept de cycle politico-monnaire. En effet, la prévalence du phénomène aux États-Unis mais aussi dans plusieurs autres pays de l'OCDE (Klose, 2012) laisse présager de la pertinence du concept malgré le niveau d'indépendance de l'autorité monétaire. Ce regain d'intérêt est visible sur la Figure 4 (voir page 41 au sein de la section Annexes) qui présente le nombre d'articles publiés mentionnant dans leur titre et/ou dans leur abstract l'expression : « *Political Monetary Cycles* ». En effet, leur nombre a augmenté, particulièrement depuis la crise de 2007-2008 passant de moins de 5 articles en 2000 à plus de 20 par an depuis 2018. Cette dynamique est également montrée par la Figure 5 (voir également page 41 dans les Annexes) lorsque l'on considère le nombre de citations de ces articles qui passe d'environ 50 en 2000 à près de 300 en 2020.

Néanmoins, ce retour en grâce de l'étude des cycles électoraux au sein de la politique monétaire nécessite une certaine prise de recul. La littérature sur les cycles politico-monnaire est marquée par une forte absence de consensus. Au-delà de la distinction entre approche opportuniste et partisane, il existe également un débat entre les défenseurs du concept et ceux qui doutent sérieusement de sa pertinence. Il apparaît donc fondamental de présenter ces travaux avec un regard nouveau et ce pour au moins trois raisons. Premièrement, afin d'aider les recherches récentes à se positionner dans cette littérature dense et régulièrement enrichie. Deuxièmement car l'étude du phénomène nécessite la mobilisation de travaux en économie mais aussi en science politique. Cela rend la littérature plus complexe à appréhender sans prise de recul préalable. Enfin, car il n'existe pas de revue de la littérature traitant spécifiquement du sujet des cycles politico-monnaire, que ce soit en français ou en anglais. Seul Dubois (2016) évoque cette question mais de façon très succincte (voir la section 4.3, pp. 246-248). Ce chapitre, en offrant une nouvelle perspective sur les cycles politico-monnaire, paraît donc nécessaire afin de mobiliser des outils

et des raisonnements pertinents, tant pour analyser les événements politiques passés que les politiques monétaires futures.

Compte tenu du contexte, ce chapitre ambitionne de présenter les principaux questionnements autour de l'analyse des cycles politico-monétaires afin de défendre la pertinence du concept et de son étude. Pour cela, la suite du chapitre est organisée en quatre sections distinctes. Ces sections proviennent directement des évolutions de la littérature présentées succinctement au sein de la Figure 6 (voir page 42 dans la section Annexes). En effet, il apparaît assez clairement sur la Figure 6 que les approches opportuniste (branche gauche) et partisane ont évolué en vase clos jusqu'à dans les années 2000. En conséquence, après une première section présentant les difficultés liées à l'étude des cycles politico-monétaires, nous allons présenter séparément l'étude des cycles opportunistes (seconde section) et l'étude des cycles partisans (troisième section). Enfin, une dernière section permettra de conclure et de présenter des axes potentiels pour de futurs travaux.

Difficultés d'identification du cycle politico-monétaire

La première occurrence du terme cycle politico-économique provient du travail de Kalecki (1943) (p. 330). La définition qu'il en donne est toutefois assez éloignée de celle que l'on considère aujourd'hui. En effet, selon l'auteur, le cycle d'origine politique est lié à l'état du rapport de force entre les travailleurs et les entreprises. Les premiers vont faire pression sur le gouvernement afin de diminuer le chômage via une augmentation de l'investissement public. À l'inverse, les entreprises vont s'opposer à cette intervention publique lui préférant une politique plus orthodoxe. À la suite de cet article fondateur, Akerman (1947) met en avant une corrélation importante entre la situation économique et la survie du gouvernement en place aux États-Unis. Plus précisément, sur la période 1865-1945, les changements de parti politique au pouvoir coïncident avec des périodes de récession économique. Ces travaux précurseurs vont conduire les économistes à s'intéresser à l'impact de la situation politique, et plus précisément au processus électoral sur la situation macroéconomique globale.

Ce sont les recherches menées par Downs (1957) qui permettront à la littérature d'aboutir à une nouvelle définition des cycles politico-économiques, plus proche de celle que l'on admet aujourd'hui. L'auteur y développe une hypothèse que l'on peut résumer ainsi : les hommes et les femmes politiques au pouvoir n'agissent que dans le but de conserver leur place. En d'autres termes, les gouvernements vont avoir tendance à maximiser leurs chances de réélection et ce, même si cet objectif rentre en contradiction avec la maximisation du bien-être collectif ou la stabilité économique. Ce raisonnement va servir de point de départ à la définition du cycle opportuniste. C'est l'article fondateur de Nordhaus (1975) qui définira précisément ce cycle opportuniste comme une modification de la politique économique avant

un scrutin dans le but d'améliorer les conditions macroéconomiques à court terme afin de briguer un mandat supplémentaire. Le gouvernement crée alors un cycle économique en voulant défendre ses intérêts puisque la politique économique post-électorale va devoir contrecarrer les distorsions entraînées par la manipulation pré-électorale¹⁹.

Néanmoins, cette vision du cycle n'est pas la seule. En effet, une seconde approche dite partisane va émerger à la suite des travaux de Hibbs (1977). Dans son cadre théorique, les partis politiques essayent principalement de maximiser leur utilité espérée en satisfaisant leur électorat. Ce comportement va entraîner l'existence de différences systématiques dans la politique économique mise en place par les gouvernements d'obédiences différentes. Dans les faits, les partis de droite²⁰ vont avoir tendance à privilégier la lutte contre l'inflation afin de satisfaire leur électorat. Au contraire, les partis de gauche²¹ vont faire de la lutte contre le chômage leur objectif prioritaire. C'est alors l'alternance entre les partis de droite et de gauche qui va entraîner l'existence des cycles politico-économiques en adoptant des politiques économiques aux orientations opposées.

Cette dichotomie entre les approches opportuniste et partisane est importante et persiste tout au long du développement de la littérature. Comme le montre clairement la Figure 6 (42), ces deux conceptions évoluent en parallèle l'une de l'autre et ne s'amalgament que rarement. Cela reste vrai lorsque ces deux approches du cycle ont été enrichies de l'hypothèse d'anticipations rationnelles. D'une part, l'approche opportuniste rationnelle (Rogoff et Sibert, 1988; Persson et Tabellini, 1990) justifie l'apparition du cycle par une asymétrie d'information portant sur le niveau de compétence des candidats. Les électeurs ne pouvant connaître le niveau de compétence réel des candidats, le gouvernement profite de cette situation pour signaler aux électeurs qu'il est plus compétent que ses concurrents avant l'élection. D'autre part, l'approche partisane rationnelle du cycle (Chappell et Keech, 1986 ; Alesina, 1987, 1988b) se base sur le fait que le résultat de la future élection est incertain. Les agents rationnels vont donc baser leurs anticipations d'inflation sur une moyenne des préférences des candidats de droite et de gauche. Le vainqueur sera alors en mesure de profiter de la différence entre les anticipations des agents et le taux d'inflation effectif afin de mettre en place le cycle. Dit autrement, les individus vont baser leurs anticipations sur des préférences moyennes et donc minimiser les différences idéologiques entre les partis. Dans cette situation, le gouvernement sera en capacité de surprendre des agents rationnels et ainsi, un cycle politico-monnaire partisan persiste. Les gouvernements pourront utiliser ce mécanisme afin de mettre en place un cycle ayant pour but de satisfaire leur électorat et/ou de limiter les possibilités de ses futurs opposants.

Au sein de cette revue de la littérature, les travaux seront présentés en suivant cette distinction entre

¹⁹Pour plus de détails sur le processus historique aboutissant à la définition des cycles opportunistes, le lecteur peut consulter Dubois (2016) et particulièrement les pages 1 à 4.

²⁰Hibbs (1977) prend l'exemple du parti républicain aux États-Unis et du parti conservateur au Royaume-Uni

²¹L'auteur prend cette fois l'exemple du parti démocrate états-unien ou du parti travailliste au Royaume-Uni

approche opportuniste et partisane. Le cycle politico-monnaire sera alors défini comme les variations de la politique monétaire ayant pour but d'augmenter la probabilité du gouvernement de remporter une élection et/ou de défendre son idéologie une fois élu. En conséquence, des cycles pourront apparaître à la fois avant et après les élections.

Comme évoqué en introduction, la littérature sur les cycles politico-monnaires est marquée par une absence prégnante de consensus. Il n'y a pas d'accord entre les différents auteurs sur la pertinence voir même sur l'existence du concept. Une grande partie de l'explication de ce résultat (ou plutôt de cette absence de résultat) est à trouver au sein des nombreuses spécificités impactant l'interaction entre les phénomènes politiques et le comportement de l'autorité monétaire. Premièrement, depuis les travaux sur le biais inflationniste (Kydland et Prescott, 1977; Barro et Gordon, 1983; Rogoff, 1985), la politique monétaire n'est plus du ressort direct des gouvernements. L'étude du cycle politico-monnaire fait donc intervenir un acteur supplémentaire dans l'analyse : la banque centrale. Cette dernière est théoriquement incapable de peser au sein du jeu politique, son statut l'empêchant de dévier de son ou ses objectif(s) de long terme. Néanmoins, cette vision de la banque centrale comme une institution technocratique et politiquement neutre est à nuancer. Dans un premier temps, de nombreux travaux remettent en cause cette indépendance en soulignant la différence importante entre indépendance *de jure* et *de facto* (Cargill, 2016). La première correspond à la définition juridique de l'indépendance. Elle représente des éléments simples à quantifier comme la possibilité ou non pour la banque centrale de prêter de l'argent au gouvernement ou encore le processus de nomination du banquier central²². Pour ce qui est de l'indépendance *de facto*, elle représente l'indépendance expérimentée par la banque centrale dans les faits. Elle dépend directement du comportement de l'institution monétaire et du gouvernement en place ce qui la rend beaucoup plus complexe à étudier et à quantifier. Malheureusement, lorsque l'on souhaite étudier les liens entre les phénomènes politiques et la politique monétaire c'est l'indépendance *de facto* qui semble la plus pertinente à mobiliser. Or, comme exprimé par Cargill (2016), il n'existe pas aujourd'hui de mesure de cette indépendance pour un grand nombre de pays. Même si quelques travaux ont essayé d'approxi-mer l'indépendance *de facto*, les résultats obtenus sont peu satisfaisants. En résumé, l'étude des cycles politico-monnaires doit donc introduire un acteur supplémentaire à l'analyse sans même pouvoir mesurer précisément son degré de proximité avec les pouvoirs publics.

De plus, la façon même de fonctionner des banques centrales est issue d'un processus lent d'évolution qui va de pair avec les évolutions institutionnelles des pays. Le consensus ayant abouti à une dichotomie stricte entre politique budgétaire et monétaire est récent et on observe déjà un certain retour en arrière (de Haan et al., 2018). En effet, on observe un glissement d'une banque centrale indépendante d'un point

²²Pour plus de détails, voir les travaux de Cukierman et al. (1992) qui définissent les critères qu'ils utilisent pour mesurer l'indépendance *de jure* et la façon dont ils sont quantifiables au sein de la Table 1 (pp. 358-359)

de vue opérationnel et politique vers une banque centrale plus proche du gouvernement, particulièrement en temps de crise. Cette vision d'une indépendance des banques centrales qui varie en fonction du contexte macroéconomique et politique est d'ailleurs théoriquement mise en avant dès les travaux de Drazen (2005) ou d'Alesina et Stella (2010). Il est donc possible de passer d'une situation de dominance budgétaire à une situation de dominance monétaire en fonction du contexte. Les cycles politico-monétaires ne sont donc probablement pas de la même intensité en fonction du nombre mais aussi de la nature des interactions entre la banque centrale et le gouvernement.

On peut également observer que l'indépendance des banques centrales est fortement diminuée par les pressions qu'elle subit. Ces pressions, provenant de nombreux acteurs du monde politique influencent significativement l'orientation de la politique monétaire (Ehrmann et Fratzscher, 2011). De plus, le nombre de pression pesant sur la banque centrale a significativement augmenté après la crise financière globale de 2007-2008. Cela s'explique par l'augmentation significative des critiques de la banque centrale émanant des personnalités politiques mais aussi par le nombre plus important de partis politiques populistes qui ont tendance à critiquer les banques centrales avec virulence (Masciandaro et Passarelli, 2020). Ces pressions grandissantes représentent une contrainte externe qu'il faut prendre en compte car elle peuvent potentiellement forcer la main de la banque centrale et conduire à la mise en place d'un cycle politico-monétaire.

Les caractéristiques du banquier central vont également impacter le comportement de la banque centrale. En appliquant au banquier central les outils d'analyse classique de la bureaucratie, Adolph (2013) met en avant que le comportement du banquier central est motivé par la volonté d'apparaître comme le plus compétent possible. Ces motivations égoïstes vont également impacter la mise en place de la politique monétaire et ainsi complexifier encore un peu plus l'appréhension du phénomène. Sans développer outre mesure ces comportements²³, on peut considérer que des motivations carriéristes ou une volonté de passer pour un technocrate efficace vont pouvoir motiver le banquier central à succomber ou non aux pressions politiques qu'il subit. L'analyse des caractéristiques sociologiques des banquiers centraux a également mis en avant que leur parcours universitaires et professionnels passés (Mishra et Reshef 2019) ainsi que le fait d'avoir connu ou non des épisodes inflationnistes dans leur jeunesse (Malmendier et al., 2021) avaient des conséquences non négligeables sur l'orientation de leur politique monétaire. L'étude de l'interaction de ces différentes contraintes va devoir être mobilisée afin de pouvoir conclure si la banque centrale est dans la capacité de mettre en place ou non un cycle politico-monétaire.

Il est également important de préciser que les instruments principaux de la politique monétaire sont peu connus et peu observés par le grand public. Contrairement au taux de chômage ou à la fiscalité, la

²³Pour plus de détails, le lecteur peut se référer au Tableau 1.1 présenté par Adolph (2013) dès la page 11 de son livre et plus généralement au chapitres 1 et 2 de l'ouvrage (pp. 1-69)

croissance de la masse monétaire ou la valeur des taux d'intérêts sont peu évoquées au sein des débats publics. Même si la couverture médiatique de la politique monétaire est plus importante aujourd'hui (Berger et al., 2011), un accès plus simple à ces informations ne permet pas au grand public de saisir l'ensemble des phénomènes monétaires. Par exemple, dans le cas des États-Unis, la majorité des ménages n'a pas conscience du rôle exact de la Fed et a tendance à considérer que c'est le président qui est responsable de l'économie dans son ensemble (Carvalho et Nechio, 2014). On peut alors supposer que la manipulation des instruments de la politique monétaire à des fins électorales sera plus difficile à détecter pour les observateurs.

Une spécificité supplémentaire des cycles politico-monétaires est liée au fait que le lien statistique entre les instruments de la politique monétaire et le résultat de l'élection est moins évident que peut l'être celui entre le vote et les instruments de la politique budgétaire. Par exemple, dans le contexte des cycles politico-monétaires, il paraît difficile de justifier un effet direct et automatique de la nomination d'un nouveau membre de la direction de la banque centrale sur la probabilité de réélection du gouvernement. De plus, Golden et Porteba (1980) ajoutent que les délais de transmission de la politique publique – et particulièrement de la politique monétaire – ne sont pas connus avec précision. Il est donc complexe pour les gouvernements ou les banques centrales de manipuler efficacement la politique économique avant les élections. Cet état de fait implique également qu'il est compliqué pour les économistes de calibrer parfaitement leurs modèles pour détecter ces cycles.

Enfin, même si ce point concerne autant les cycles politico-monétaires que leurs homologues budgétaires, il est important de souligner que des contraintes techniques viennent ajouter un niveau de complexité à l'analyse. Dans un premier temps, Paldam (1979) souligne la difficulté de mettre en avant un phénomène cyclique lorsque les gouvernements étudiés ne sont pas suffisamment stables. Malgré tout, la plus grande contrainte technique pesant sur l'étude des cycles politiques a été résumé par Franzese (2002*b*). Ce dernier souligne que, dans un grand nombre d'études précédentes, la spécification des mesures électorales est mauvaise. Par exemple, il paraît peu probable que la période préélectorale soit la même aux États-Unis et au Mexique étant donné que la mandature présidentielle n'est pas la même dans les deux pays (4 ans contre 6 ans). Plus généralement, Franzese (2002*b*) définit 4 biais potentiels dans les travaux traitant des cycles politico-économiques : (i) le manque d'attention accordée à la date exact des scrutins au sein de l'année, (ii) l'utilisation abusive de données saisonnalisées, (iii) un intérêt accru pour des pays où le cycle semble difficile à mettre en avant et (iv) un intérêt trop important pour les phénomènes préélectoraux au détriment de leurs homologues post-électoraux.

Étant donné les spécificités des cycles politico-monétaires et la relative difficulté de leur étude, on comprend mieux l'absence de consensus autour de leur existence. En effet, des difficultés de mesure et de calibration des modèles s'ajoutent à la compréhension limitée que l'on peut avoir des phénomènes

politiques endogènes et/ou exogènes pouvant impacter les choix politiques d’une banque centrale. Néanmoins, il semble assez probable que l’image du banquier central comme un spécialiste indépendant et uniquement désireux de mener une politique monétaire efficace soit quelque peu à nuancer.

Le cycle politico-monétaire opportuniste : la banque centrale au service du gouvernement ?

Politiciens opportunistes et manipulations de la politique monétaire

Comme souligné dans l’introduction, la première approche historique du cycle politico-économique fut l’approche opportuniste. Cette dernière considère que le cycle est issu de la volonté du gouvernement de conserver le pouvoir. Pour ce faire, il utilise la politique économique afin de mettre en place une situation qui lui est favorable avant l’élection. Ainsi, il espère augmenter ses chances de gagner en apparaissant comme compétent dans le domaine économique. Cette vision se formalise à partir du milieu des années 1970 au travers des travaux théoriques de Nordhaus (1975). Il est important d’insister sur ce travail fondateur car il repose sur l’utilisation directe de la politique monétaire par les pouvoirs publics. En effet, le modèle repose sur l’exploitation d’une courbe de Phillips (1958) à court terme comme suit : le gouvernement en place est incité à diminuer le chômage avant les élections en menant une politique économique expansionniste afin de contenter les électeurs. Après le scrutin, on observe alors une augmentation de l’inflation induite par cette politique expansionniste que le gouvernement va endiguer en menant une politique restrictive ; augmentant cette fois-ci le chômage. C’est alors la répétition de ce phénomène, suffrage après suffrage qui crée le cycle politique opportuniste. La politique monétaire occupe ici une place fondamentale car la façon la plus efficace d’atteindre cet objectif pour le gouvernement est de surprendre les agents avec une expansion monétaire inattendue.

Nordhaus (1975) propose dans son article quelques exemples du phénomène mais ces derniers ne suffisent pas à convaincre de la validité de son hypothèse. De nombreux économistes cherchent alors à étudier ces variations électorales supposées au sein de la politique économique. Pour ce qui est de la politique monétaire, on peut citer le travail précurseur de Tufte (1978) qui met en avant, qu’aux États-Unis, sur la période 1948-1976, la moitié des élections présidentielles sont caractérisées par une politique monétaire expansionniste dans les deux ans précédant le scrutin. Néanmoins, à l’époque il est complexe de mobiliser des travaux utilisant des méthodologies et des données diverses. Afin de pallier à ce problème, la littérature va plébisciter une méthodologie : l’estimation de fonctions de réaction de la politique monétaire. Comme résumé par Frey et Schneider (1978), cette approche est légitime car elle renseigne sur la façon dont les gouvernements peuvent influencer l’économie avec l’objectif *in fine* d’augmenter leurs chances de

remporter le futur suffrage. En pratique, ces travaux estiment les variations d'un instrument de la politique monétaire (masse monétaire et/ou taux d'intérêt) ou de la politique monétaire dans son ensemble (offre de monnaie). L'étude du cycle politico-monnaire se fait alors via l'introduction au sein de la fonction de réaction d'une mesure électorale. Cette variable électorale est souvent une variable muette prenant la valeur 1 au cours de la période électorale étudiée et 0 le reste du temps. La significativité de cette variable est alors traduite comme une validation de l'existence d'une variation de la politique monétaire induite par le processus électoral. Malgré cette méthodologie commune, les résultats restent extrêmement contrastés. Toutefois, plusieurs études soulignent l'existence d'un cycle politico-monnaire opportuniste.

Premièrement, certains travaux démontrent l'existence des cycles politico-monnaire opportunistes (Nordhaus, 1975). Dans le contexte des États-Unis, Grier (1987, 1989) et Haynes et Stone (1994) identifient clairement un cycle politico-monnaire de 4 ans synchronisé sur les années d'élection. On peut également citer Williams (1990) qui met en avant l'existence d'un cycle politico-monnaire dans les variations des taux d'intérêt de court terme et de la base monétaire. Néanmoins, les preuves directes de l'existence du phénomène restent peu nombreuses et rapidement, la littérature détecte un cycle électoral plus indirect. Ces études soulignent que ce sont les variations de l'offre de monnaie et non les variations des instruments de la politique monétaire qui sont marquées par un cycle politique. Le cycle n'est donc pas directement dû à des manipulations politiques conscientes de la part de la banque centrale mais plutôt au fait que la politique monétaire s'adapte aux modifications électorales de la politique budgétaire. Wallace et Warner (1984) et Allen (1986) trouvent des preuves de ce phénomène au sein du comportement de la *Fed*. Beck (1991) qualifie ce comportement de « faiblesse électorale » (p. 25) et considère qu'il s'explique par un niveau d'indépendance de la banque centrale trop faible à l'époque. On retrouve ici l'idée sous-jacente que la Fed n'est pas encore assez indépendante pour se prémunir efficacement contre la coercition gouvernementale.

Dans un second temps, une partie des travaux sur le sujet souligne que ces cycles politico-monnaire existent mais uniquement dans certains contextes précis. En effet, de nombreux paramètres modifient l'apparition et l'amplitude des cycles politico-monnaire sur l'économie. On peut citer l'existence potentielle de l'effet inverse – *i.e.* une banque centrale qui essaye d'aider le parti politique opposé à celui au pouvoir – (Kettl, 1986), le régime de change (Clark et Hallerberg, 2000) ou encore le niveau de popularité du gouvernement en place au moment des élections (Carlsen, 1997) comme autant de paramètres impactant la nature du cycle. Hakes (1990) quant à lui montre que la politique monétaire est différente pour chaque nouveau gouvernement et/ou banquier central. Les manipulations opportunistes de la politique monétaire semblent donc conditionnées à l'appartenance partisane du gouvernement et à sa proximité idéologique avec le banquier central (Clark et Arel-Bundock, 2013). L'exemple le plus parlant de ce phénomène est mis en avant par Abrams et Butkiewicz (2012) qui démontrent que l'élection de Richard

Nixon en 1972 se caractérise par une politique monétaire très accommodante de la part du banquier central de l'époque Arthur Burns. Ces travaux sur l'environnement politique et économique entourant le cycle politico-monnaire permettent également de mettre en avant un autre résultat fondamental : la différence entre les régimes parlementaires et présidentiels. En effet, au sein des régimes parlementaires, le gouvernement peut choisir de modifier la date de l'élection. Dans ce contexte, le pouvoir en place peut synchroniser la date du scrutin avec une période faste du cycle économique afin d'améliorer sa probabilité de réélection (Ito et Park, 1988). Ce concept de « *political surfing* » explique que seul les pays ayant un agenda électoral exogène ont recours aux cycles politiques (Kayser, 2005). En parallèle, dans les deux types de régime, le gouvernement est incité à mettre en place une politique monétaire difficilement lisible. Cette ambiguïté sur l'orientation réelle de la politique monétaire lui permet d'avoir plus facilement recours à un cycle politique si la situation l'exige (Cukierman et Meltzer, 1986).

Néanmoins, les preuves de l'existence du phénomène sont à nuancer. En effet, l'estimation de fonction de réaction est soumise à de nombreux biais (Nannestad et Paldam, 1994; Lewis-Beck et Steigmaier, 2013). Une absence de résultat peut alors s'expliquer par le fait que la fonction de réaction utilisée est mal spécifiée. De plus, le signe attendu de la relation n'est peut-être pas le bon. La banque centrale pourrait avoir tendance à se retenir de prendre des décisions en période pré-électorale pour garantir son indépendance auprès du grand public (Hakes, 1988). Il est également plausible que le gouvernement essaye de mettre en place un cycle politico-monnaire mais sans succès. Par exemple, dans certains cas, la manipulation peut s'avérer trop coûteuse ou avoir lieu trop tôt/tardivement (Golden et Porteba, 1980). Enfin, l'argument central expliquant cette absence de consensus tient au fait que les phénomènes étudiés sont encore partiellement compris à cette époque.

Plus généralement, malgré les nombreux résultats validant l'hypothèse de cycle politico-monnaire, deux éléments vont rapidement entamer la légitimité du concept à partir des années 1980. En effet, l'apparition de l'hypothèse de rationalité ainsi que le développement de l'indépendance des banques centrales va entraîner une modification en profondeur de la littérature.

Rationalité et indépendance : mort du cycle opportuniste ?

L'introduction de l'hypothèse de rationalité au sein de l'analyse va profondément bouleverser l'étude des cycles politico-monnaies. En effet, si l'on introduit des électeurs capables de comprendre parfaitement la politique monétaire et d'anticiper ces variations, le gouvernement n'a plus à s'embarrasser à essayer d'influencer la politique économique. Toutes modifications de cette dernière à des fins électorales seront alors comprises et n'auront plus d'effet sur la probabilité de réélection du gouvernement. Au contraire, si les électeurs sont suffisamment sophistiqués, ils devraient même avoir tendance à punir le gouvernement qui essaye de les manipuler au détriment de la stabilité macroéconomique (Peltzman, 1992). Ce sont les

travaux de Rogoff et Sibert (1988), Persson et Tabellini (1990) et Rogoff (1990) qui sont à l'origine de l'analyse du cycle politique opportuniste rationnel. Ces auteurs considèrent que, même en étant rationnels, les électeurs ne peuvent pas connaître avec certitude le niveau de compétence des candidats à l'élection. Le gouvernement en place va alors pouvoir profiter de cette asymétrie d'information – car lui connaît son niveau de compétence réel – afin de signaler aux électeurs qu'il est plus compétent que ses opposants. D'après Rogoff et Sibert (1988) et Rogoff (1990), ce signal va prendre la forme d'une augmentation des dépenses publiques les plus visibles avant l'élection. Pour Persson et Tabellini (1990), le signal va plutôt passer par la mise en place d'une situation économique favorable avant le scrutin (principalement en luttant contre le chômage). Lohmann (1998*b*) en monopolisant un argumentaire proche de celui de Persson et Tabellini (1990) va justifier l'existence d'opportunisme politique au sein de la politique monétaire. Dans un contexte d'asymétrie d'information portant sur le niveau de compétence des candidats, le gouvernement est incité à mentir sur son niveau réel de compétence. Cet effet est observable pour n'importe quel niveau de compétence ex ante du gouvernement. Si ce dernier est très compétent, il voudra que les électeurs soient au courant (équilibre séparateur) et à l'inverse, si le gouvernement est peu compétent, il souhaitera duper les électeurs en se faisant passer pour plus compétent qu'il n'est réellement (équilibre « *pooling* »). On se retrouve alors dans une situation paradoxale où les deux types de gouvernement vont essayer de manipuler les électeurs avant les élections. Si cette manipulation passe par la politique monétaire, on a alors la possibilité d'observer un cycle politico-monétaire et ce même si les individus sont rationnels.

Néanmoins comme évoqué précédemment, l'utilisation de la politique monétaire dans l'optique de mettre en place un cycle politique est rendue plus complexe par le développement de l'indépendance des banques centrales. L'étude du biais inflationniste (Kydland et Prescott, 1977; Barro et Gordon, 1983; Rogoff, 1985) entraîne, dès le milieu des années 1980 une généralisation de la séparation stricte entre les autorités monétaire et budgétaire. À cette augmentation de l'indépendance, on peut ajouter le développement puis la généralisation de la règle de Taylor (1993) qui va conduire à une homogénéisation de la façon dont la politique monétaire est mise en place. Ces développements diminuent la marge de manœuvre politique du gouvernement et rendent plus complexe la manipulation de l'économie et des électeurs via la politique monétaire. Toutefois, malgré ces évolutions et l'introduction des anticipations rationnelles, les cycles politico-monétaires persistent et sont encore observés dans les études empiriques. De nombreux auteurs vont alors chercher à mettre en avant des cadres théoriques justifiant la persistance de ces cycles.

Tout d'abord, Lohmann (1992) met en avant qu'une banque centrale indépendante peut faire varier l'inflation à la hausse ou à la baisse et ce, même en présence d'anticipations rationnelles. Elle explique que cela est dû au fait que les chocs exogènes frappant la politique monétaire varient en intensité. Face

à des chocs importants²⁴, il peut être rationnel pour la banque centrale de dévier de ses objectifs de long terme afin de permettre une sortie de crise plus rapide. Dans un second temps, certains travaux nuancent l'intangibilité de l'indépendance des banques centrales. Carlsen (1997) justifie la présence de cycles politico-monnaïres en démontrant qu'il existe une corrélation négative entre apparition du cycle et popularité du gouvernement. L'auteur démontre que les cycles ne sont observés que si la probabilité de réélection du gouvernement passe sous un certain seuil. Dans le cas des États-Unis, l'auteur définit ce seuil de la façon suivante : lorsque le gouvernement en place a moins de 80 à 85% de chance de gagner la prochaine élection. Si on se situe en dessous de ce seuil, le gouvernement fait pression sur la Fed afin qu'elle mette en place un cycle politico-monnaïre. De plus, Vaubel (1997) met en avant que le recours aux cycles politico-monnaïres opportunistes est fortement corrélé à la composition partisane du conseil d'administration de la banque centrale. En effet, en prenant l'exemple de la *Bundesbank*, l'auteur met en avant que la politique monétaire est expansionniste (restrictive) avant une élection lorsqu'une majorité du conseil d'administration de la banque centrale partage (ne partage pas) les préférences idéologiques du gouvernement. L'impact de l'indépendance sur la disparition du cycle politico-monnaïre est également nuancé par les travaux de Drazen (2005) qui concluent que l'indépendance de la banque centrale n'est pas figée dans le temps. En effet, cette dernière semble varier au fur et à mesure du cycle électoral. Plus précisément, plus l'élection approche et plus le gouvernement augmente les pressions qu'il fait peser sur la banque centrale. Par conséquent, plus l'élection approche et moins la banque centrale est indépendante. Autrement dit, plus l'élection approche et plus l'écart entre indépendance *de jure* et *de facto* se creuse.

Il est tout de même important de préciser que lorsque l'autorité monétaire est suffisamment contrainte, on ne retrouve plus cet opportunisme électoral. En réduisant la marge de manœuvre de l'autorité monétaire, ces contraintes vont permettre de lutter contre l'intrusion de problématiques électorales au sein de la politique monétaire. Cependant, ces contraintes ont des effets extrêmement disparates d'un pays à l'autre. En effet, il semble logique de considérer qu'une banque centrale peu crédible va avoir du mal à impacter le comportement des électeurs. Cette valeur électoral de la politique monétaire dépend de plusieurs paramètres. Lockwood (2016) estime que l'horizon temporel du gouvernement, les institutions politiques en place ou encore la facilité avec laquelle le gouvernement peut mettre en place des cycles politico-budgétaires sont autant de paramètres impactant cette valeur électoral (p. 7). Ce sont d'ailleurs ces différences de valeur électoral qui motivent les travaux les plus récents sur le sujet.

²⁴L'auteure cite directement comme exemple les chocs sur le prix du pétrole, les déclarations de guerre, ou les krachs boursiers (p. 281)

Développements théoriques et empiriques récents

Au sortir des années 1990, la littérature sur les cycles politico-monétaires opportunistes se situe dans un cadre d'analyse extrêmement proche de celui décrit par Nordhaus (1975). La seule exception notable concerne le fait que le contexte politique et économique entourant la politique monétaire est pris en compte de façon plus systématique. De plus, malgré l'introduction des hypothèses de rationalité et la généralisation de l'indépendance des banques centrales, des preuves de l'existence du phénomène subsistent. Cet état de fait va permettre le développement de nouveaux travaux et la mise en avant de nouveaux résultats permettant une meilleure compréhension du phénomène. Le résultat le plus fondamental est celui qui établit une différence nette entre les pays développés et les pays en développement du point de vue des cycles politico-monétaires. En effet, jusqu'à la crise financière de 2008, l'analyse du cycle opportuniste au sein des pays développés n'a pas ou peu évolué. Au contraire, le concept retrouve une actualité et une pertinence dans l'analyse de la politique monétaire des pays en développement. La situation économique et politique de ces pays est assez proche du cadre d'analyse de Nordhaus (1975). Les études du cycle politico-monétaire opportuniste sont alors nombreuses dans les pays en développement et convergent dans le sens de la validité de l'hypothèse. On peut citer Remmer (1993) qui étudie les pays d'Amérique Latine ou encore Block et al. (2003) pour les pays d'Afrique subsaharienne. Plus récemment, Alpanda et Honig (2009) démontrent que cette différence entre pays développés et en développement en soulignant que seuls ces derniers connaissent des cycles politico-monétaires. Selon ces auteurs, cette différence marquée se justifie par des banques centrales significativement moins indépendantes au sein des pays en développement.

D'un point de vue théorique, l'évolution majeure issue de l'analyse des pays en développement provient du travail d'Aidt et al. (2020). Ils démontrent que la croissance de la masse monétaire est plus élevée à l'approche des élections nationales et donc qu'il existe, en moyenne un cycle politico-monétaire opportuniste. Néanmoins, les auteurs expliquent ce résultat par un raisonnement assez éloigné de celui de Nordhaus (1975). Selon eux, le cycle politico-monétaire opportuniste provient d'un comportement d'achat systématique de voix de la part du gouvernement en place. En effet, dans les pays où le phénomène est observable, ils montrent que la croissance de la masse monétaire supplémentaire avant les élections s'accompagne d'une augmentation significative de la consommation de nourriture chez les électeurs. Le cycle politico-monétaire n'est donc pas utilisé pour mettre en place une situation économique favorable au gouvernement mais directement pour acheter des voix auprès des électeurs indécis voir opposés.

En parallèle de l'étude des pays en développement, les pays développés continuent d'être étudiés. On peut notamment citer l'étude d'Abrams et Iossifov (2006) qui démontre l'existence d'un cycle politico-monétaire opportuniste aux États-Unis. Toutefois, il faudra attendre la crise de 2008 pour observer un

retour de l'intérêt autour du concept. En effet, la crise a eu un impact déterminant sur le comportement des banques centrales en modifiant les instruments de la politique monétaire et en diminuant leur indépendance *de facto* (de Haan et al., 2018). Dans cet environnement nouveau, le nombre de travaux sur les cycles politico-monétaires va connaître une augmentation significative. Ces nouvelles études vont alors apporter des preuves tangibles de l'existence des cycles politico-monétaires de plusieurs façons. Premièrement, en mobilisant de nouvelles méthodologies plus adaptées à l'étude de phénomènes cycliques et non linéaires (Funashima, 2016). Deuxièmement, en utilisant des données plus précises qu'auparavant (Klose, 2012) et en étudiant un plus grand nombre de pays sur une période plus récente (Oriola, 2022). Enfin, en développant des concepts théoriques nouveaux pouvant expliquer la persistance des variations électorales de la politique monétaire. Par exemple, Dentler (2019) développe et teste le concept de « *reverse political cycle* ». Il démontre qu'il existe aux États-Unis un cycle politico-monétaire mis en place par le banquier central lorsque celui ne partage pas les préférences idéologiques du gouvernement. Dans cette situation, la politique monétaire de la Fed a pour but d'handicaper le gouvernement en place en augmentant les taux d'intérêts avant les élections. Il est plus que probable que cet effet aille à l'encontre du cycle politico-monétaire opportuniste traditionnel et donc qu'il faille le prendre en compte au sein des travaux sur le sujet. Un autre exemple de développement faisant le lien entre les approches opportunistes et partisans est le travail de Menuet et al. (2021). Ces derniers démontrent qu'en souhaitant lutter contre l'inflation, la banque centrale peut se retrouver à favoriser le parti politique le plus conservateur. En effet, une banque centrale efficace (*i.e.* conservatrice) permet de garantir un taux d'inflation faible. Cependant, si l'inflation est contrôlée, un parti politique conservateur ne peut plus utiliser la lutte contre l'inflation comme un argument électoral. Autrement dit, en luttant contre l'inflation, la banque centrale va mécaniquement réduire les chances du parti politique le plus conservateur en l'empêchant de mobiliser la lutte contre l'inflation comme un argument de campagne. Dans le contexte du Royaume-Uni, les auteurs démontrent même que ce phénomène peut conduire à une augmentation de la probabilité de gagner les élections du Labour quand le parti conservateur est au pouvoir.

Ces deux derniers travaux soulignent l'importance des interactions potentielles entre les approches opportunistes et partisans qui a été délaissée par la littérature sur les cycles politico-économiques. Les travaux récents semblent mettre de côté cette dichotomie comme on peut le voir au sein de la Figure 3 où les liens entre ces deux approches semblent de plus en plus importants au fil du temps. Ces connaissances plus précises sur les caractéristiques des cycles politico-monétaires peuvent expliquer que les travaux plus anciens rencontrent des difficultés à mettre en avant l'existence de cycles politico-monétaires.

Le cycle politico-monnaire partisan : connivences idéologiques entre les gouvernements et les banquiers centraux ?

Différences idéologiques systématiques dans la politique économique

L'approche partisane du cycle politique théorise l'existence de cycles politico-économique post-électoraux. Cette approche a été mise en avant par les travaux de Hibbs (1977) qui développe l'argument suivant : les partis politiques ont des préférences différentes en ce qui concerne la classification des objectifs économiques. En moyenne, les partis de gauche considèrent comme prioritaire la lutte contre le chômage là où les partis de droite et du centre vont plutôt privilégier la stabilité des prix²⁵. Cette hiérarchisation des enjeux économiques modifie l'orientation globale de la politique économique dès lors que l'idéologie du parti au pouvoir change. En conséquence, l'alternance entre des gouvernements de droite et de gauche entraîne l'apparition de cycles politico-économiques partisans. Cette vision du cycle politico-économique mobilise un argumentaire proche de celui de Wittman (1973). Ce dernier considère que les partis politiques sont mus par deux objectifs. Premièrement, maximiser leur chance de gagner l'élection comme définit par l'approche opportuniste. Deuxièmement, et cela représente leur objectif prioritaire dans la logique partisane, ils cherchent à maximiser leur utilité espérée. Ce second objectif passe principalement par la satisfaction de leur électorat qui partage les mêmes préférences idéologiques que celles du parti. Dans ce contexte, des biais partisans vont pouvoir être observés au sein de la politique économique dans son ensemble.

Dans le cas des cycles politico-monnaires partisans, leur existence est moins évidente à démontrer que celle de leurs homologues budgétaires. En effet, le développement de l'indépendance des banques centrales induit par les travaux sur le biais inflationniste (Kydland et Prescott, 1977; Barro et Gordon, 1983; Rogoff, 1985) est censé empêcher toute apparition d'un cycle politico-monnaire partisan. Une banque centrale indépendante n'est pas censée pouvoir dévier de ses objectifs de long terme de façon suffisamment importante pour mettre en place une politique avantageuse pour l'un des partis politiques au détriment des autres. Toutefois, en dépit de l'indépendance des banques centrales, bon nombre de travaux identifient un biais idéologique plus ou moins fort au sein de la politique monétaire. Le travail de Cowart (1978) démontre l'existence d'une politique monétaire partisane dans plusieurs pays d'Europe. Selon lui, les taux d'intérêts sont plus importants en Allemagne lorsque le parti social-démocrate (SPD) est au pouvoir, aux Pays-Bas lorsque le parti de gauche (PvdA) fait partie de la coalition gouvernementale ou encore en Grande-Bretagne sous le *Labour*. Dans le cas des États-Unis, Grier et Neiman (1987) soulignent de la *Fed* ne monétiser que les déficits supplémentaires causés par les gouvernements démocrates. De plus, Williams

²⁵Voir Hibbs (1977) pour un classement plus complet de ses préférences (p. 1471)

(1990) met en avant que la politique de la banque centrale est significativement plus accommodante lorsque les parties de gauche sont au pouvoir. De plus il est pertinent de souligner que le biais idéologique peut apparaître à des échelles diverses au sein de la politique monétaire. Caporale et Grier (2000, 2005) étudient cette question en développant que les variations du taux d'intérêt réel mis en place par la Fed sont très corrélées avec les changements de majorité au Congrès, du parti à la Maison Blanche ou encore du banquier central. Les cycles politico-monétaires semblent donc être observés dans certains pays et ce indépendamment du niveau d'indépendance de la banque centrale. On peut trouver deux explications principales à ce phénomène.

D'une part, Sieg (1997) démontre que la banque centrale elle-même est caractérisée par des préférences partisans. Elle est donc incitée à mettre en place un cycle politico-monétaire afin que son parti préféré reste au pouvoir le plus longtemps possible. Un exemple de ce phénomène est mis en avant par Clark et Arel-Bundock (2013). Ces derniers démontrent que la Fed avantage le parti Républicain via sa politique monétaire de façon significative. Les auteurs expliquent ce résultat par le fait que les républicains accordent plus d'importance à l'indépendance de la Fed que les démocrates. En conséquence, afin de conserver son indépendance, la banque centrale états-unienne favorise le parti Républicain au travers de sa politique monétaire. Plus généralement, une banque centrale aura tendance à favoriser le parti politique qui lui permettra de satisfaire son mandat de la façon la plus simple possible. D'autre part, la mise en place de la politique monétaire impacte de nombreux acteurs politiques. La banque centrale est donc susceptible de faire face à des pressions provenant de plusieurs acteurs divers ayant chacun leur propre biais idéologiques. En conséquence, la littérature sur le sujet démontre que l'orientation de la politique monétaire est fortement corrélée à l'idéologie du banquier central (Alesina et Sachs, 1988) ; du parti majoritaire au parlement (Grier, 1991) ou encore des membres du conseil d'administration de la banque centrale (Havrilesky et Gildea, 1992).

Néanmoins, il est important de mentionner que certains auteurs nuancent quelque peu cette vision. Quinn et Shapiro (1991) résument ces critiques en quatre principaux arguments (p. 656) : (i) l'absence de lien statistique entre l'idéologie des gouvernements et l'orientation des politiques macroéconomiques ; (ii) La tendance naturelle des parties politiques à défendre les positions politiques de l'électeur médian pour gagner les élections ; (iii) l'hypothèse d'un arbitrage entre l'inflation et le chômage et (iv) l'hypothèse que les politiques macroéconomiques sont assez spécifiques pour bénéficier à une catégorie précise de la population. De plus, Quinn et Shapiro (1991) font une distinction entre l'approche partisane de Hibbs (1977) qu'ils qualifient de *class partisanship* et ce qu'ils définissent comme l'*ideological partisanship* qui définit les différences entre les partis par des visions différentes du futur souhaitable pour la société²⁶.

²⁶ Voir Quinn et Shapiro (1991) pour plus de détails (pp. 657-664) car nous ne développerons pas avec précision la différence entre ces deux motivations des cycles partisans

Néanmoins, comme définit par Franzese (2002*b*), ces arguments n'invalident pas pour autant les résultats principaux de la théorie partisane (p. 396).

Tout comme leurs homologues opportunistes, les cycles politico-monétaires partisans vont rapidement se retrouver confrontés à l'introduction de l'hypothèse de rationalité. Cela nécessitera une refonte importante des mécanismes théoriques justifiant l'existence du phénomène. De plus, il paraît complexe de justifier une existence automatique du phénomène à chaque changement de parti au pouvoir, ce qui va motiver la littérature sur le sujet à mettre en place de nouvelles méthodes d'estimation et de nouveaux cadres d'analyse permettant une meilleure compréhension du phénomène.

Le cycle politico-monnaire partisan rationnel : viscosité des contrats de travail et surprises électorales

L'introduction de l'hypothèse de rationalité au sein de l'analyse partisane du cycle a été initiée par les travaux de Chappell et Keech (1986) et d'Alesina (1987). Ces derniers se basent sur l'idée que, même si les agents forment leurs anticipations de manière rationnelle, une politique monétaire active peut impacter la croissance de la production à court terme car les contrats de travail sont visqueux. Dans ce contexte, si l'on considère le résultat de la future élection comme incertain, les contrats de travail négociés avant le scrutin se feront sur la base d'un niveau d'inflation anticipée. Cette anticipation sera alors une moyenne entre le niveau d'inflation attendu suite à la victoire du parti de droite et le niveau d'inflation attendu suite à la victoire du parti de gauche. Autrement dit, le niveau d'inflation anticipé sera plus élevé que celui qui sera mis en place par le gouvernement de droite et plus faible que celui résultant d'une politique de gauche. En conséquence, si le parti de droite gagne l'élection, il pourra mettre en place un taux d'inflation plus faible que celui anticipé par son électorat. Ainsi, le parti de droite pourra satisfaire ses électeurs qui accordent une importance élevée à la lutte contre l'inflation. À l'inverse, si le parti de gauche vient à gagner l'élection, il aura la possibilité de mettre en place un taux d'inflation plus élevé que celui anticipé par ses électeurs. De cette façon, il pourra diminuer le chômage et satisfaire son électorat qui considère que la lutte pour l'emploi est prioritaire sur la lutte contre l'inflation. Les cycles politico-monnaire partisans rationnels sont donc des phénomènes post-électorales qui existent même dans un cadre d'anticipations rationnelles.

Ce raisonnement permet alors de développer une explication nouvelle de l'existence d'un cycle politico-monnaire mais aussi de tester la validité de l'hypothèse simplement d'un point de vue statistique. En effet, il suffit de repérer un changement dans l'orientation de la politique monétaire à la suite d'un scrutin pour valider, au moins en partie, la théorie partisane rationnelle. De plus, la modélisation d'un tel phénomène n'est pas compliquée. En effet, l'introduction d'une courbe de Phillips (1958) augmentée des anticipations

permet de se situer dans un cadre théorique proche de celui de l'approche partisane de Hibbs (1977).

À la suite du développement de ce cadre d'analyse, de la même façon que leurs homologues opportunistes, l'existence des cycles politico-monétaires partisans rationnels sera validée par de nombreux travaux empiriques. On peut citer Ellis et Thoma (1996) qui mettent en avant qu'un parti conservateur au pouvoir (*i.e.* averse à l'inflation) est caractérisé par une période de récession économique avec une politique monétaire restrictive, une inflation en dessous de sa valeur moyenne et un taux de chômage situé lui au-dessus de sa valeur moyenne. Au contraire, un gouvernement travailliste (*i.e.* averse au chômage) connaît un début de mandature caractérisé par une inflation supérieure à sa valeur moyenne et un taux de chômage plus faible. Les auteurs démontrent également que plus le mandat avance et plus les deux partis vont connaître des situations similaires d'un point de vue économique. Ces travaux valident donc complètement la théorie partisane rationnelle et démontre sa pertinence dans l'analyse des différences partisans pour ce qui est de la politique monétaire et budgétaire. D'autres travaux vont également valider l'existence de ce biais idéologique au sein de la politique monétaire et ce même dans un cadre d'analyse rationnel (Alesina et al., 1997; Berleermann et Markwardt, 2007).

Tout au long du développement de cette littérature, de nouvelles justifications théoriques de l'existence du phénomène se sont ajoutées à ces premières motivations et preuves. On peut citer le travail de Sakamoto (2008) qui considère que les objectifs d'une banque centrale très indépendante rentrent en opposition directe avec la politique économique désirée par un gouvernement de gauche. En effet, l'autorité monétaire cherche à garder l'inflation à un niveau raisonnable là où le parti de gauche cherche à diminuer le chômage au détriment de la stabilité de l'inflation. L'autorité monétaire a donc intérêt à mettre en place une politique plus restrictive quand un parti de gauche est au pouvoir afin de s'assurer du respect de son objectif d'inflation (p. 228). Il semble donc que la banque centrale est tendance à essayer, avant les élections d'impacter positivement l'activité économique lorsqu'un parti économiquement conservateur est au pouvoir et inversement (Clark et Arel-Bundock, 2013). Néanmoins, cette politique monétaire en faveurs du parti le plus conservateur peut se retourner contre la banque centrale en favorisant l'arrivée d'un parti moins conservateur au pouvoir (Menuet et al., 2021).

Toutefois, il semble que les cycles politico-monétaires partisans rationnels ne semblent pas pouvoir prospérer éternellement. En effet, Bearce (2007) met en avant l'existence d'un effet d'apprentissage des partis politiques. Au fur et à mesure de leur existence, les partis ont tendance à accorder de plus en plus d'attention à l'objectif prioritaire du parti adverse. Formellement, les partis de gauche vont accorder plus d'attention au contrôle de l'inflation et les partis de droite vont plus souvent éviter de mettre en place des politiques économiques récessives (p. 95). Dans ce contexte, les biais idéologiques au sein de la politique économique ont vocation à être de moins en moins importants à mesure que les partis de droite et de gauche convergent vers une politique économique commune. Cette convergence entre les partis de droite

et de gauche est renforcée par les travaux d’Alexiadou (2012) qui démontre qu’une assurance chômage importante tend à gommer les différences partisans. Si les compensations sont élevées pour les individus au chômage, un gouvernement de gauche va pouvoir se permettre de réagir plus intensément à une hausse de l’inflation sans pour autant risquer de perdre une part importante de son électorat aux prochaines élections.

Développements théoriques et empiriques récents : conseil d’administration et union monétaire

Le processus politique entourant la mise en place de la politique monétaire est assez complexe car cette dernière subit sans cesse des pressions extérieures. Néanmoins, ces pressions ne représentent pas les seules contraintes politiques impactant l’autorité monétaire. En effet, la plupart des banques centrales fonctionnent via un processus de prise de décision collectif au travers d’un comité décisionnel. Par exemple, aux États-Unis les décisions de politique monétaire sont prises par le *Federal Open Market Committee (FOMC)* composé de 12 membres. Au Royaume-Uni ou encore au Japon, c’est un comité composé de 9 membres qui décide de l’orientation de la politique monétaire. L’orientation de la politique monétaire est donc influencée par les interactions entre les différents individus composant le comité décisionnel. Par exemple, au sein du *FOMC* les préférences du membre médian du conseil d’administration expliquent de façon plus pertinente que celles du banquier central lui-même, les orientations de la politique de la *Fed* (Chappell et al., 2004). Il semble donc primordial de prendre en compte le comportement des différents membres du comité décisionnel des banques centrales afin de comprendre pleinement le phénomène des cycles politico-monnaies. En effet, il est possible que ce soit l’interaction entre les différents membres qui soit à l’origine ou non d’un cycle politique.

L’analyse du comportement des membres du conseil d’administration remonte au travail de Yohe (1966) qui étudie le vote des membres du *FOMC* et son impact sur l’orientation globale de la politique monétaire. D’après l’auteur, le comportement de vote au sein du comité est loin d’être « monolithique » (p. 404) et des frictions existent entre les différents membres. Ces travaux préliminaires vont rapidement être mobilisés par les économistes afin d’essayer de mieux comprendre le cadre dans lequel la politique monétaire est mise en place. Il est nécessaire de comprendre l’impact du conseil d’administration et de sa composition sur le cycle politico-monnaie. Dans cette optique, les travaux de Puckett (1984) démontrent qu’au travers de la nomination de nouveaux membres au sein du *FOMC*, le gouvernement en place peut avoir un impact partisan sur les décisions de politique monétaire. Il est alors simple pour un gouvernement de défendre « en interne » la politique monétaire qu’il souhaite sans même avoir pressuriser publiquement la banque centrale. Ce travail est complété par Havrilesky et Gildea (1992) et Chappell et al. (1993) qui

soulignent qu'un nouveau membre nommé au *FOMC* par le parti Républicain a plus de chance de voter en faveur d'une politique monétaire restrictive. En parallèle, en plus de nommer des membres au sein du comité décisionnel de la banque centrale, les gouvernements vont également avoir tendance à congédier les membres qui vont dans le sens inverse de leur avantage comparatif. En d'autres termes, un gouvernement de droite (de gauche) aura tendance à remercier plus facilement un membre qui participera à augmenter l'inflation (le chômage). Plus généralement, Vuletin et Zhu (2011) définissent que les gouvernements vont licencier un banquier central désobéissant – *i.e.* qui prône des politiques contraires aux intérêts ou aux volontés du gouvernement – pour en mettre un plus docile à la place. Adolph (2013) a encore plus loin dans l'analyse en repérant que la nomination de nouveau membre au sein du *FOMC* semble suivre un motif cyclique qu'il ira jusqu'à considérer comme des cycles partisans.

Ces effets partisans au sein du comité décisionnel de la banque centrale sont extrêmement dépendants de la fidélité partisane des membres nommés au conseil d'administration (McGregor, 1996). Néanmoins, il est assez évident, comme démontré par Göhlmann et Vaubel (2007), qu'un membre est *de facto* plus loyal envers l'administration qui l'a nommé. De plus, les travaux récents persistent à mettre en avant des différences systématiques entre les politiques monétaires menés par des banquiers centraux nommés par les gouvernements de droite et ceux nommés par les gouvernements de gauche (van Ommeren et Piccillo, 2021).

Par la suite, même si cette problématique concerne un nombre de pays plus réduit, l'appartenance à une union monétaire va également complexifier l'étude du cycle politico-monétaire. En effet, plusieurs pays gouvernés par des partis politiques aux préférences disparates ne vont pas avoir les mêmes attentes vis à vis de la banque centrale. On retrouve cette idée dans l'analyse de la formation de la zone euro de Dornbusch et al. (1998) dont la conclusion semble valable pour toutes les unions monétaires. En substance, les économies des différents pays d'une union monétaire vont toutes réagir différemment à des modifications du taux d'intérêt. Au sein des pays de la zone euro, on peut observer que les membres du directoire sont caractérisés par un biais régional, tant dans leurs décisions (Heinemann et Huefner, 2004) que dans leur discours (Bennani et Neuenkirch, 2017). Leurs préférences dépendent grandement du contexte économique de la région de laquelle ils sont originaires. Dans cette situation, des disparités de traitement peuvent rapidement arriver entre les membres de l'union. Par exemple von Hagen et Brückner (2002) démontrent que la banque centrale européenne accorde un poids plus important au développement économique de l'Allemagne et de la France qu'à celui des autres pays membres. Fabbrini (2016) ajoute que cette relative domination de l'Allemagne – et plus généralement des pays créditeurs – sur la politique monétaire commune s'est accentué depuis la crise de 2008. Dans le cas des unions monétaires d'Afrique subsaharienne, bien que la situation économique soit différente, Cadot (2000) met en avant de potentiels pays « dominants » à savoir la Côte d'Ivoire dans le cas de l'Union Économique et Monétaire Ouest

Africaine (UEMOA) et le Cameroun pour la Communauté Economique des États d'Afrique Centrale (CEMAC). On peut alors imaginer que, si les intérêts de certains pays de l'union sont plus importants que ceux des autres, il est possible pour le pays dominant de manipuler l'orientation globale de la politique monétaire commune selon son bon vouloir.

Conclusion : Le futur de la recherche sur les cycles politico-monétaires

Les cycles politico-monétaires représentent des phénomènes politiques trop souvent négligés au détriment de leurs homologues budgétaires. En effet, la généralisation de l'indépendance des banques centrales a rapidement conforté la littérature dans l'idée que les cycles politico-monétaires ne pouvaient apparaître que dans certaines économies caractérisées par une banque centrale trop proche du pouvoir en place. Néanmoins, les travaux récents motivés par le contexte économique et politique hérité de la crise de 2008 et de l'épidémie de COVID-19 a permis de redynamiser cette question de recherche. En effet, les travaux sur le sujet sont de plus en plus importants et de plus en plus cités et permettent de comprendre avec plus de précision le phénomène qui était jusque là partiellement envisagé. On observe des preuves de l'existence des cycles politico-monétaires dans les pays en développement (Alpanda et Honig, 2009) mais aussi dans les pays développés caractérisés par des banques centrales très indépendantes (Abrams et Iossifov, 2006; Oriola, 2022)

Toutefois, cette littérature a accumulé un certain « retard » en comparaison de celle traitant des cycles politico-budgétaires. Par exemple, Dubois (2016) insiste sur l'importance de la prise en compte des institutions dans l'étude des cycles politico-économiques. Ce dernier propose un certain nombre d'idées permettant d'approfondir l'analyse des cycles politiques comme l'étude des pays au sein desquels les élections présidentielles et parlementaires ont lieu la même année ou encore la prise en compte des caractéristiques spécifiques des hommes et des femmes politiques telles que leur âge ou leur ancienneté dans le monde de la politique. Il serait également pertinent de mobiliser de nouvelles méthodologies comme l'analyse textuelle dans le cadre de l'analyse du comportement des membres du conseil d'administration des banques centrales. En effet, le développement des politiques de *forward guidance* et plus généralement le développement des politiques monétaires non conventionnelles au sein de nombreux pays implique de fait que la communication autour de la politique monétaire impacte l'économie dans son ensemble.

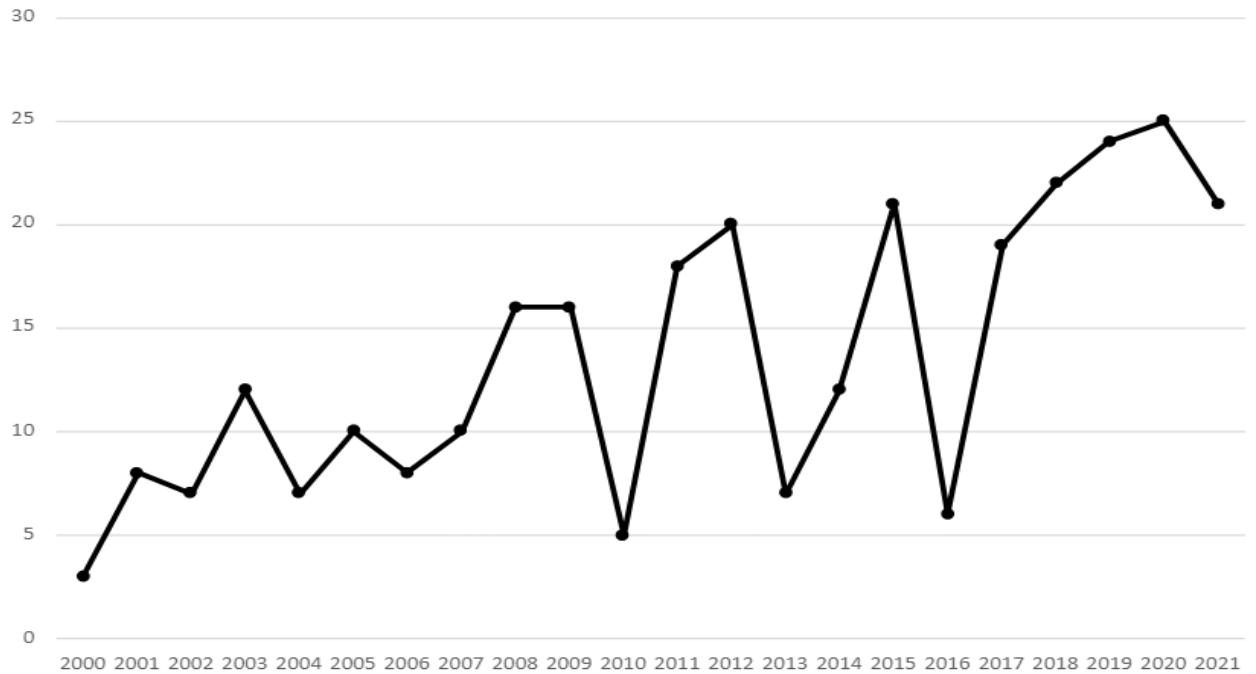
Par la suite, un développement déterminant dans l'évolution de la littérature serait d'arrêter de considérer les approches opportunistes et partisans comme dichotomiques, les deux approches sont complémentaires et il est impossible de comprendre la mise en place de cycle politico-économique opportunistes sans étudier le contexte idéologique entourant la mise en place des politiques monétaire et budgétaire.

On observe assez clairement au sein de la Figure 3 que des travaux récents vont dans le sens d'une plus grande interaction entre les deux approches tant d'un point de vue empirique (Adolph, 2013; Dentler, 2019) que d'un point de vue théorique (Clark et Arel-Bundock, 2013; Menuet et al., 2021).

Enfin, comme la littérature a su le faire en s'intéressant à l'étude du phénomène au sein des unions monétaires, les travaux sur les cycles politico-monnaies devraient s'intéresser à la contagion de la politique monétaire d'un pays vers un autre. Par exemple, les variations des taux d'intérêts induites par la mise en place d'un cycle politico-monnaire laissent présager un potentiel impact du cycle d'un pays vers un autre. L'exemple le plus frappant étant des États-Unis vers les pays d'Amérique Latine (Cavacas et Meurer, 2021).

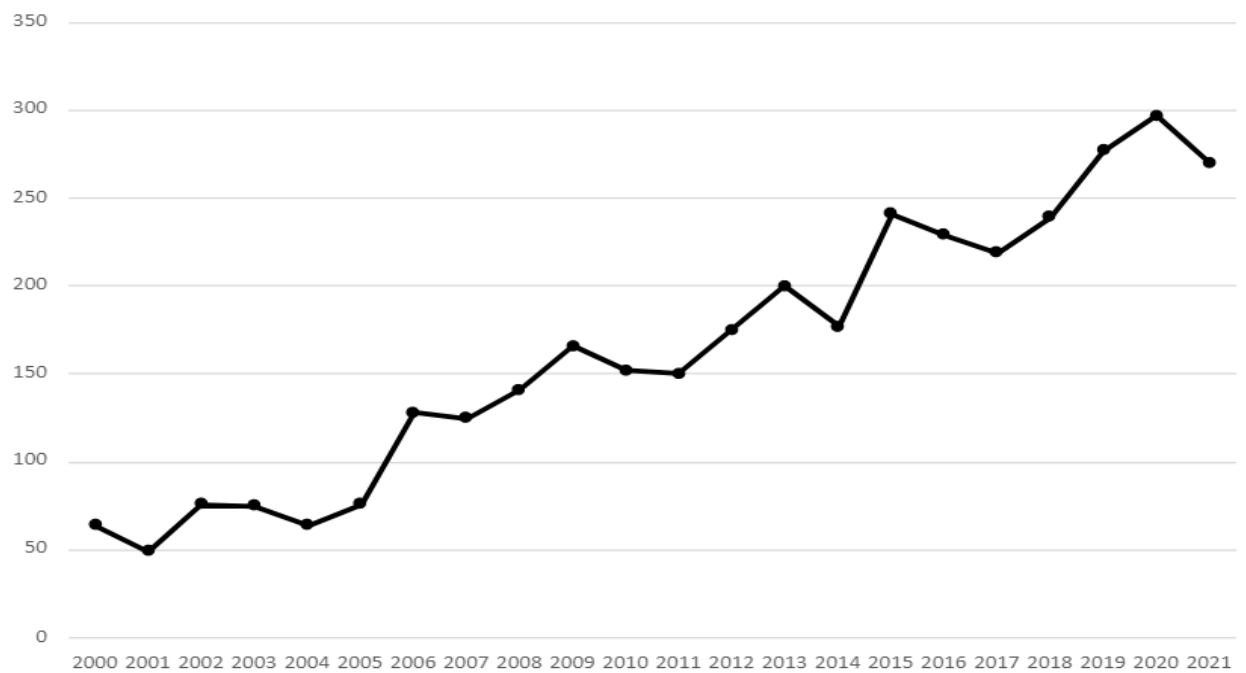
Annexes

FIGURE 4 : Nombre de publications dont le titre ou l'*abstract* contient l'expression « *Political Monetary Cycles* »



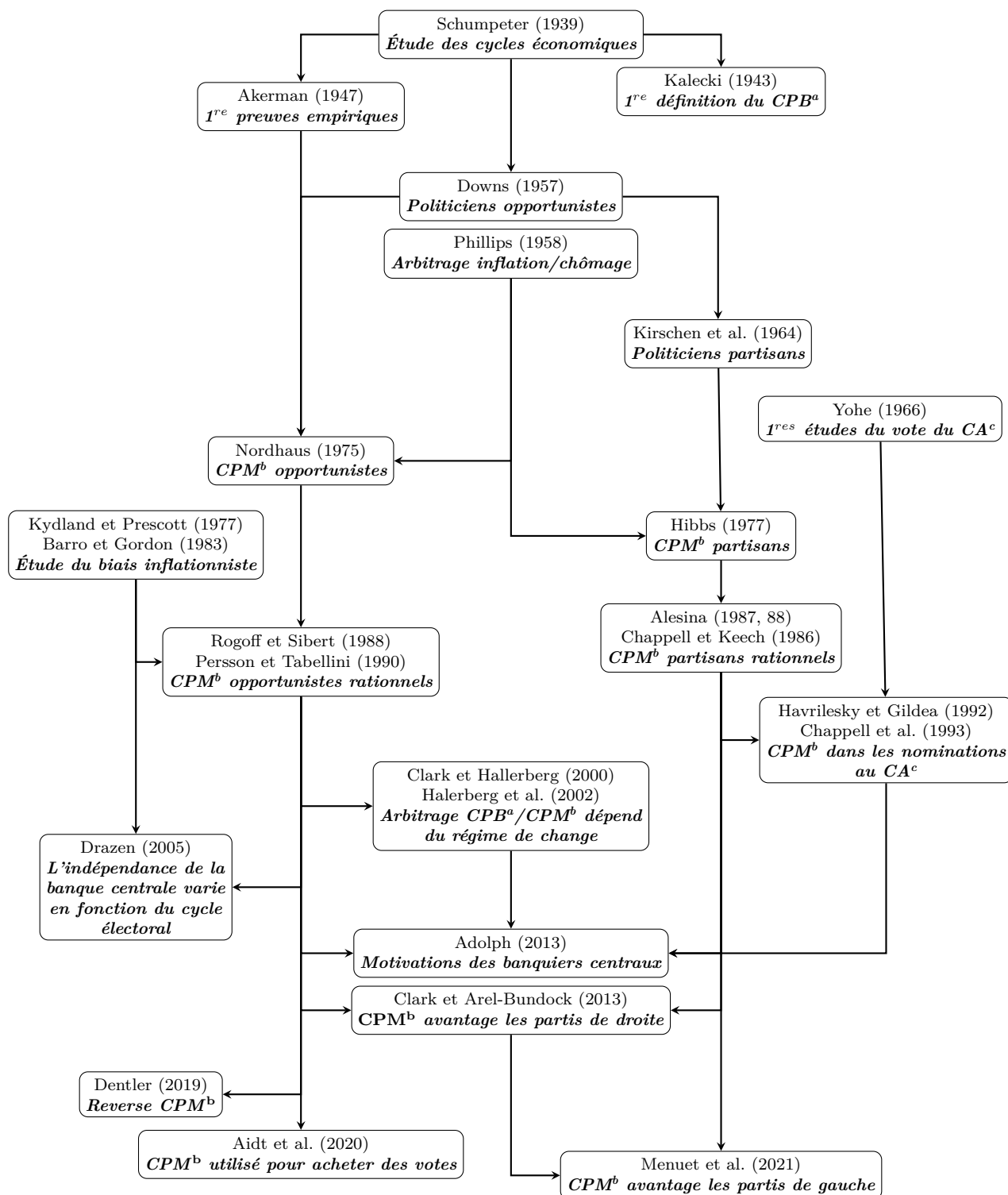
Source : <https://app.dimensions.ai/discover/publication> (consulté le 17 janvier 2022)

FIGURE 5 : Nombre de citations des articles dont le titre ou l'*abstract* contient l'expression « *Political Monetary Cycles* »



Source : <https://app.dimensions.ai/discover/publication> (consulté le 17 janvier 2022)

FIGURE 6 : Évolutions Historiques Principales de la Littérature sur les Cycles Politico-Monétaires



^a CPB = Cycle Policito-Budgétaire ; ^b CPM = Cycle Politico-Monétaire ; ^c CA = Conseil d'Administration de la Banque Centrale

Source : auteur.

Chapitre 1

Chapter 1

Political Monetary Cycles: An Empirical Study

1.1 Introduction

Repeated political pressures on the Federal Reserve (Fed) monetary policy under Trump’s presidency as well as the nomination of Şahap Kavcıoğlu as the new director of the Central Bank of the Republic of Turkey in March 2021 have raised questions about the actual level of political independence of these central banks. Indeed, Mr. Powell has been urged many times to implement a monetary policy that accommodates the American president¹. The same request applies to Mr. Kavcıoğlu who is the third different central banker in Turkey since July 2019, which raised concerns about the independence of the institution². Increased instances of intrusion by incumbent governments into decisions related to monetary policies can be observed in many countries despite their level of development, quality of institutions or even the *ex ante* level of central bank independence (CBI). Highly symbolic examples are Argentina in 2010 (Vuletin and Zhu, 2011), post-Brexit England and India in late 2018 (Jones and Matthijs, 2019) or the former Ukrainian central banker, Yakiv Smoliy who resigned in July 2020 due to “*systematic political pressure*”³. In general, Binder’s (2021a) dataset on the political pressures faced by central banks reveals that from 2010 to 2018, 39% of the 118 central banks examined faced political pressures.

¹For instance, the Wall Street Journal reported a declaration made by Donald Trump on Twitter on the September 16, 2019: “Will Fed ever get into the game? Dollar strongest EVER! Really bad for exports. No Inflation...Highest Interest Rates [...] The United States, because of the Federal Reserve, is paying a MUCH higher Interest Rate than other competing countries.”. See Ballhaus, Rebecca, “Trump Again Pressures the Federal Reserve in Wake of Saudi Attacks”, September 16, 2019 - Wall Street Journal. <https://www.wsj.com/articles/trump-again-pressures-the-federal-reserve-in-wake-of-saudi-attacks-11568638112>

²See Butler, Daren; Devranoglu, Nevzat and Coskun, Oran “Erdogan’s Central Bank Overhaul Clears Way for More Rate Cuts”, October 14, 2021 - Reuters <https://www.reuters.com/world/middle-east/turkeys-erdogan-o-verhauls-cenbank-mpc-appoints-two-new-members-2021-10-13/>

³See Zinets, Natalia and Williams, Matthias, “Ukraine central bank chief abruptly resigns, citing political pressure”, July 1, 2020 - Reuters. <https://www.reuters.com/article/us-ukraine-cenbank-idUKKBN2427D5>

These observations underlined prominent interactions between political phenomena and monetary institutions despite the high level of *de jure* independence (Alesina and Stella, 2010; Fernández-Albertos, 2015; Lockwood, 2016; Binder and Spindel, 2017). The literature has provided several explanations. First, the 2007-2008 financial crisis curtailed the political independence of central banks (Balls et al., 2018) and forced fiscal authorities to implement additional aggressive economic policies (Hofmann et al., 2021). Specifically, the crisis induced zero lower bound environments in a significant number of countries. In this context, fiscal policy needs to become more aggressive to compensate for the less influential monetary policy. This effect is even greater when economic activity is weak and inflation is low (Corsetti et al., 2019). Therefore, a different policy mix emerged after the crisis, which raised concerns for more interference of fiscal authorities in monetary policy. Second, the recent emergence of populism⁴ (Agur, 2018; Goodhart and Lastra, 2018; Rodrik, 2018; Masciandaro and Passarelli, 2020) placed central banks at the forefront of electoral debates like never before. In particular, the political independence of central banks is less valued as it has been in the past and interactions between monetary and fiscal authorities are significantly increasing (Bodea, 2013). This close link between central banks and incumbent governments re-introduced the concept of political monetary cycles (PMCs) as economies shifted from monetary to fiscal dominance (de Haan and Eijffinger, 2019).

Following these recent observations and the literature, this study challenges the vision of a politically neutral central banker. Specifically, it investigates variations in monetary policy throughout the electoral cycle. Re-examining this concept of PMCs is of high importance. Indeed, as demonstrated by the recent context and literature, new interactions between incumbents and central banks largely influence policy mix. Therefore, it is highly possible that the relationship between monetary and fiscal policies inherited from the 2007-2008 global financial crisis can lead to increasing political cycles in macroeconomic policies. The main result of this study is that given a certain number of institutional features, the orientation of monetary policy in recent years is strongly correlated to electoral periods. An econometric specification inspired by Alpanda and Honig (2009) and estimated using a difference-generalized method of moments (GMM) model (Arellano and Bond, 1991) proves the existence of an opportunistic PMC (*i.e.*, an expansionary monetary policy prior to a national election) for 110 countries. Specifically, the growth of monetary mass (measured by M1) is on average 1.45% higher than that of the year preceding a national election. In addition to this main result, this study addresses a certain number of methodological concerns frequently cited in the literature on PMC. First, the literature has raised the question of a potential misspecification of electoral measures (Haynes and Stone, 1989, 1990, 1994). To avoid this potential bias, this study uses the electoral index developed by Franzese (2000) which

⁴See Inglehart and Norris (2016) for a comprehensive definition of the concept of populism (pp. 6-8).

enables a high degree of precision in the measure of electoral periods by considering the exact date when an election was held. Second, Franzese (2002*b*) underlines that a restrained number of countries bias a significant number of studies on political economic cycles⁵. The current study addresses this concern by conducting an extensive data collection, which enables the construction of an unique dataset that comprises 110 countries during the period of 1985-2016⁶. Moreover, this large database enables the current study to proceed to an extensive investigation on the political and institutional characteristics that may influence PMCs. In a nutshell, PMCs can be observed when: the election timing is exogenous; the incumbent is running for his/her own re-election; the country is a presidential regime or the incumbent goes not originate from an identified left-wing party. Moreover, more competitive elections or older central banks can dampen electoral fluctuations within monetary policy. Finally, the study found that PMCs are larger after the global financial crisis and are observable in developed and developing countries.

The remainder of this chapter is structured as follows. Section 2 discusses the related literature, Section 3 presents the data, summary statistics and econometric specification. Section 4 displays the main results, with robustness and heterogeneity in Section 5. Finally, Section 6 concludes.

1.2 Literature review

The literature on PMC emerged with the global literature on political cycles during the 1940s (Kalecki, 1943; Akerman, 1947) and was characterized by two distinct approaches to the origin of the cycle. On the one hand, the opportunistic approach developed by Nordhaus (1975) defined pre-electoral political cycles as a result of the will of incumbents to be re-elected. Toward this end, they implement lax economic policies before a national scrutiny to increase their probability of being re-elected. On the other hand, the partisan approach which is based on the work of Hibbs (1977) highlighted that post-electoral cycles can be induced by the ideology posited by freshly elected politicians. Consequently, the more divided the political game, the more pronounced the cycle. As emphasized by Drazen (2001), these initial models are clearly oriented toward monetary policy manipulations because they assume the existence of a Phillips curve. Indeed, a decrease in unemployment which is required to increase the satisfaction of the electorate, requires an increase in inflation and *vice versa*. As previously discussed, the investigation will focus on pre-electoral cycles that affects monetary policy (*i.e.* the analysis of opportunistic PMCs). On this precise topic, Franzese (2002*a*) proposes that empirical investigation does not confirm theoretical results. Traditional empirical results on opportunistic PMCs are numerous but fail to reach a clear consensus. In the United States, Beck (1984), Allen (1986) or Renshaw and Trahan

⁵For instance, the author argues that a focus on developed countries would severally bias the evaluation of the phenomenon.

⁶See Section 3.1.2 and Table A1.10 in the Appendix Section for more details.

(1990) were unable to detect these PMCs using instruments of monetary policy. On the contrary, Grier (1987, 1989), Hakes (1988), Williams (1990) and Abrams and Iossifov (2006) found that an election cycle exerted a significant impact on the monetary policy of the Fed. Moreover, PMCs are observable in German *Bundesbank* (Sieg, 1997; Vaubel, 1997; Lohmann, 1998a) but with certain subtleties (Berger et al., 2001). In general, Clark and Hallerberg (2000) and Hallerberg et al. (2002) emphasized the importance of the exchange rate regime in the choice of instrument used by the incumbent uses to manipulate voters. In other words, the incumbent and the central banker will implement a PMC or a political budget cycle according to the exchange rate regime. Particularly, electioneering in monetary policy should only be observable in countries where the exchange rate is flexible, and CBI is low. A simple explanation of this result can be found in Mundell's (1960) concept of impossible trinity⁷. The literature on panel data confirmed the mixed findings and insisted on differences between developed and developing countries. On the one hand, Block (2002), Dreher and Vaubel (2009), and Alpanda and Honig (2009) proposed that PMCs are more likely prevalent in developing countries. On the other hand, Leertouwer and Maier (2001) demonstrated that neither political nor electoral cycles are imputable to the behavior of central banks across 14 OECD countries. Nevertheless, this debate is ongoing as Ferris (2008) or Klose (2012) underlines that monetary policy is significantly more expansionary prior to a general election in developed countries. Concomitantly, the partisan approach of PMCs leads to consistent results. Indeed, Beck (1982), Hibbing (1987), Sheffrin (1989), Alesina and Roubini (1992, 1993, 1997), Franzese (1999) or more recently Dentler (2019) argues that PMCs are dependent of the partisanship of an incumbent miscellaneous samples. In general, central banks are more accommodating of right-wing politicians. Analysis of the behaviour of members of executive committees, which exhibit strong partisanship patterns, confirms this result (Potts and Luckett, 1978; Woolley, 1984; Gamber and Hakes, 1997).

In addition to the literature on PMCs, this study is aligned with recent works that challenge the beneficial effects of CBI on monetary policy. Indeed, awareness of the significant impact that CBI should exert on PMCs is crucial. First, the higher the CBI, the lesser the PMCs are likely to occur (Gärtner, 1999; Alpanda and Honig, 2009; 2010). This effect is strongly conditional on the level of democracy (Bodea and Hicks, 2015) and on who is the dominant player in the relationship between the incumbent and the central banker (de Haan et al., 2018). Second, CBI (and monetary policy in general) is highly dependent on the incumbent⁸. For instance, Clark and Arel-Bundock (2013) and Bodea and Higashijima (2017) illustrate that the Fed is more accommodating of Republican politicians. Nevertheless, in the example of the United-States, Gandrud and Grafstööm (2015)

⁷Indeed, if a country is characterized by a fixed exchange rate regime and free capital mobility, Mundell's policy trilemma posits that observing monetary autonomy is impossible. Thus, implementing a PMC is impossible in this situation.

⁸See Potrafke (2017) for a complete list of empirical studies on this topic on fiscal and monetary policies.

find that inflation forecasts of central bank bureaucrats are strongly correlated the ideology of the incumbent. Even in the context of a monetary union, Moschella and Diodati (2020) illustrate that the decisions of national central bankers are influenced by the partisanship of the national government they represent. Third, the characteristics of the central banker as well as and central bank bureaucrats can shape monetary policy-making. Indeed, Adolph (2013), Bennani (2015) and Mishra and Reshef (2019) propose that previous positions occupied by central bankers represent a key determinant of the monetary reform process.

1.3 Data and summary statistics

1.3.1 Data

The database is composed of 110 countries over 32 periods (1985–2016). The choice of countries in the sample is based on several constraints. First, according to availability of data, only countries for which observations on *M1*, *CBIE*, *Ygap*, *Inflation*, *Credit* and *Fix* were available on at least 10 continuous periods were retained. Second, countries with less than two elections over the sample were excluded. Third, the database was restrained to include data from 1985 to 2016 to limit the potential biases of an extremely imbalanced sample⁹. Table A1.11 available in the Appendix section provides a list of data sources.

Orientation of monetary policy

As the sample is composed of a large number of developing countries, the main variable of interest is the annual growth rate of monetary mass, which is measured as *M1*. Specifically, an increase (decrease) in monetary mass is considered an illustration of an expansive (restrictive) monetary policy. The policy is then approximated using the growth of *M1* for the following reasons: (i) the limited availability of data on monetary base and policy rate; (ii) low levels of financial development of developing countries which lead to the close gap between *M0* and *M1* and (iii) the will to implement a study comparable with the majority of existing literature that employ *M1* to examine PMCs (Alpanda and Honig, 2009). Even if the growth rate of *M0* and/or the policy rate are certainly similar to the real orientation of monetary policy than *M1* is, their use would limit the number of countries in the sample¹⁰. The *International Financial Statistics* database which was

⁹Indeed, observations of these variables were only previously available for certain developed countries (approximately 20).

¹⁰Information on the monetary base and the policy rate is available for a large number of countries (85 and 93, respectively according to data provided by the IMF). Nevertheless, merging with other data sources used in this chapter sharply reduces the number of countries within the sample. On the one hand, only 65 countries present information on *M0* and the main variables (*CBIE*, *Ygap*, *Inflation*, *Credit* and *Fix*). Out of these 65 countries, only 55 are characterized by more than 10 observations. On the other hand, 52 countries are characterized by available data on *Policy Rate*, and the main explanatory variables. Nevertheless, to verify robustness, Section 5.1 presents estimations of the main model using *M0*, *M2* and *Policy Rate* as interest variables, which confirms the hypothesis on opportunistic PMCs (Table 1.6).

developed by the International Monetary Fund (IMF), provided the observations on $M0$, $M1$ and $M2$. Information on the main interest rate targeted by the central bank ($Policy_Rate$) was derived from Monetary and Financial Statistics which is also provided by the IMF.

In addition, emphasizing that a period of high rates of money growth can weaken the popularity of the incumbent is important. Indeed, a high inflation will lead voters to punish the incumbent who is considered responsible (Ashworth, 2012). A significant increase in monetary mass could then encourage the incumbent to institute early elections before the economic situation is out of control to avoid punishment (Smith, 2004). In turn, this scenario can potentially influence the timing of elections by leading incumbents to schedule elections early prior to the realization of the public about the adverse economic effects of high growth rates. Thus, extremely important high growth rates of $M1$ could introduce bias in estimations due to potential reverse causality. To address this issue, the study excluded that exceed 75% in absolute values¹¹.

Electoral periods

Measuring electoral periods is one of the major challenges in the empirical literature on political cycles. As previously stated, a misspecified variable could severely bias estimations (Haynes and Stone, 1989, 1990, 1994). Moreover, as the study is examining electoral cycles within monetary policy, the correct quantification of pre- and post-electoral periods is crucial. Indeed, monetary policy across countries is characterized by varying transmission lags. Therefore, desinging the correct electoral measure in considering these particularities is of importance. The pre- and post-electoral periods will adopt a 12-months duration because the dataset is composed of a majority of developing countries. Indeed, according. indeed, according to Havranek and Rusnak (2013), transmission lags are significantly lower in developing countries. In addition, the smaller electoral period is motivated by the fact that electioneering increases with closeness to elections. The nearer the election date, the broader political cycles (Tufte, 1978). Thus, a smaller pre-electoral period would be more relevant in detecting broad electoral effects in a significant number of countries.

To ensure the accuracy of the election measure, the study computed three variables. First, the variable *Election* is a simple dummy taking that takes a value of 1 on the year that an election is implemented; otherwise, it takes a value of 0. Second, the exact date of each scrutiny is important as it impacts the turnout or the capacity to implement certain types of policy (Anzia, 2011). Given that, the study is examining the pre-electoral manipulation of monetary policy. Toward this end, the study develops two measures, namely *ElectionDpre* and *ElectionIpre*.

¹¹This 75% threshold corresponds to the exclusion of the last percentile of $M1$. This threshold is also applied to negative values of $M1$ because there is only one observation of the variable that exceeds -75 (-81,04 for Belarus in 2001). This observation represents a real outlier because the lowest value of $M1$ is -46,25, when Belarus is introduced into the sample since 2002. The same limitation is applied to *Inflation* following the same reasoning. To ensure that the excluded observations are not driving the results, the main model is estimated with alternative limitations on $M1$ (100% and 50%), as presented in Table A1.14 in the Appendix.

On the one hand, *ElectionDpre* is a dummy that takes a value of 1 in year t if an election occurs in the second half of the same year t (*i.e.* from July to December). Contrarily, if the election takes place in the first half of year t (*i.e.* from January to June), then the dummy takes a value of 1 in $t - 1$. For instance, if a country faces two elections, namely one in March 2002 and one in November 2014, then *ElectionDpre* will take a value of 1 in 2001 and 2014. This computation aims to reduce potential measurement errors due to the consideration of pre- and post-electoral events when focusing on pre-electoral phenomena¹². Indeed, *ElectionDpre* considers that the majority of the pre-electoral cycle of an election that occurs from January to June will be observable in the prior year. The study creates *ElectionDpost* to explore potential post-electoral effects. It takes a value of 1 in year t if an election occurs in the first half of the same year t . Similarly, if an election occurs in the second half of year t , then the variable takes a value of 1 in $t + 1$.

On the other hand, as *Election* and *ElectionDpre* are simple dummies, they cannot be considered as the most relevant measures of pre-electoral periods. A more precise method of considering pre- and post-electoral phenomenon is computing an index developed by Franzese (2000). The author computed an index that enables the consideration of the exact date of an election on yearly datasets. In this study, this index corresponds to *ElectionIpre* and is designed to measure 12 months of pre-electoral periods. Specifically, if an election is occurring in year t , during month M at the exact day d , then the index will take the following value:

$$ElectionIpre_{i,t} = \frac{(M - 1) + d/D}{12}$$

$$ElectionIpre_{i,t-1} = \frac{12 - (M - 1) - d/D}{12}$$

where D denotes the number of days contained in M .

Obviously, when the period observed is neither an election year nor a pre-election year, then *ElectionIpre* is equal to 0. As an example, an election that will occur on January 23, 2004 will be coded as 0.938 in 2003 and 0.062 in 2004 respectively. Following the same methodology, the study computed a second index called *ElectionIpost* as a measure of post-electoral periods. Again, this index is designed to cover 12 months of post-electoral periods. If an election will take place in year

¹²For instance, Alesina and Roubini (1992, 1997) found evidence that inflation increases immediately after an election. Consequently, a poorly specified measure could consider these pre- and post-electoral effects at the same time.

t , then *ElectionIpost* will take the following values¹³:

$$ElectionIpost_{i,t} = \frac{12 - (M - 1) - d/D}{12}$$

$$ElectionIpre_{i,t+1} = \frac{(M - 1) + d/D}{12}$$

where M stands for the exact month of an election, d denotes the exact day of an election and D represents the number of days contained in M .

Finally, the study computed *ElectionIpre*_[2years] and *ElectionIpost*_[2years] to ensure that the results are not driven by the 12 month duration of the pre- and post-electoral periods. They are designed as 24 month periods and are closer to the electoral variable used by Alpana and Honig (2009). Specifically, if an election occurs in year t , then *ElectionIpre*_[2years] will be equal to $\frac{1}{12}[(M - 1) + \frac{d}{D}]$ in year t , 1 in year $t - 1$, and $\frac{1}{12}[12 - (M - 1) - \frac{d}{D}]$ in year $t - 2$ ¹⁴.

Despite their precision, the construction of these indexes raises three issues. First, certain countries face elections in two or more consecutive years. In this case, *ElectionIpre* is computed as the sum of its values computed for each election, which is similar to Franzese (2000). Consequently, observing index values greater than 1 is possible. Nevertheless, as described by Franzese (2000), these situations are uncommon, as such, limiting electoral indexes to values below 1 does not represent a major bias in estimations (p. 63 and especially footnote 42)¹⁵. Thus, *ElectionIpre* is considered equal to 1 when its value exceeds 1. Second, two or more elections may occur within the same year. To address this issue, the study considered only the last election that occurred within the period. Third, several countries experienced national elections in the year after (before) their last (first) occurrence within the dataset. In this case, the study computed a value for *ElectionIpre* (*ElectionIpost*) in the last (first) year observed in the panel even if the election is held “out of sample”¹⁶. Thus, the computation of these electoral indexes requires an extensive data collection due to these different issues. Indeed, to the best of my knowledge, no database contains information on the exact election dates of every country in the world. These dates were obtained using different data sources, such as the *Database of Political Institutions* (DPI) developed by Beck et al. (2001) for the World Bank; the *Election Guide* provided by the International Foundation

¹³Similarly, if the observation is neither an electoral period nor a post-electoral period, then the variable is equal to 0.

¹⁴On the contrary, the post-electoral index will be $\frac{1}{12}[12 - (M - 1) + \frac{d}{D}]$ in t ; 1 in $t + 1$; and $\frac{1}{12}[(M - 1) - \frac{d}{D}]$ in $t + 2$

¹⁵Specifically, only three out of the 1016 positive values of *ElectionIpre* exceed 1 (Kuwait in 2008, Latvia in 2010 and Netherlands in 2002). The example of Kuwait, is due to the fact that elections were held in 2008 (May 17) and 2009 (May 16). The pre-electoral index is then composed of the pre-electoral component of the 2008 election computed in 2008 (0.3805) and the same pre-electoral component of the 2009 election attached to 2008 (0.6222). Thus, $ElectionIpre_{Kuwait,2008} \simeq 0.3805 + 0.6222 \simeq 1.0028$.

¹⁶For instance, the following countries are characterized by these types of “out of sample” pre-electoral periods in the database: Albania, Angola, Bahamas, Central African Republic, Chad, Chile, Czech Republic, Germany, Iran, Italy, Jamaica, Japan, Kenya, Kyrgyzstan, Latvia, Liberia, Luxembourg, Malta, Nepal, Netherlands, New Zealand, Russia, South Korea and the United Kingdom.

for Electoral Systems¹⁷; the *Voter Turnout Since 1945* dataset provided by the Institute for Democracy and Electoral Assistance¹⁸; the *National Elections Across Democracy and Autocracy* established by Hyde and Marinov (2012) and the *Free and Fair Elections* dataset computed by Bishop and Hoeffler (2016). These data sources are the most commonly used but they cannot be considered exhaustive. Consequently, they were completed by the tremendous work of data collection made by Nohlen et al. (1999, 2001a, 2001b, 2005a, 2005b, 2010).

Finally, one may infer whether or not data on non-democratic countries should be included in the study. Elections cannot be considered disputed in these countries and the traditional method for addressing this problem is to exclude these countries. However, the current study retained them, because previous scholars proved that political manipulations also occur in non-democratic regimes (Soh, 1988; Gonzalez, 2002; Pepinsky, 2007; Guo, 2009). This effect is mainly due to the will of political leaders to eliminate discontent among the public using electoral cycles as a means of legitimizing their authority.

Credit

The introduction of the credit to GDP ratio (*Credit*) is motivated by its two potential impacts on the growth of monetary mass. First, as cited by Alpanda and Honig (2009), the ease with which governments can borrow money is strongly correlated with the degree of political pressure faced by central banks. Indeed, if the government cannot easily obtain external funding, then it will be forced to pressure the central bank to finance extra public spending through discretionary monetary policy. Thus, the degree of financial development which is measured using the credit to GDP ratio, can be considered a good proxy for the degree of pressure faced by central banks to monetize debt. Moreover, the nearer the election, the greater the pressure faced by central banks to monetize public deficits. Therefore, as the sample is composed of developing (*i.e.* , environment with low financial development) and developed (*i.e.* , high degrees of financial development) countries, controlling for this aspect is important to alleviate potential estimation bias. Second, a high value of *Credit* in conjunction with a low reserve to deposit ratio may lead to an increase in *M1* even under a stable monetary policy. In this situation, a significant and positive link is observed between *Credit* and *M1*, even if monetary policy remains unchanged. Therefore, introducing this variable within the model is important to control for the potential endogeneity of monetary mass induced by the variation in the credit to GDP ratio. Moreover, throughout the chapter, the negative and significant coefficient of *Credit* indicates that the first negative effect more than compensates for this second positive effect.

Data on domestic credit to the private sector (measured in percentage of GDP) are available

¹⁷ Available here: <https://www.electionguide.org/>

¹⁸ Available here: <https://www.idea.int/data-tools/data/voter-turnout>

through the *World Development Indicators* (WDI) provided by the World Bank.

Central bank independence

As presented in Section 2, CBI is a key control variable in econometric specification that harshly impacts PMCs in theory. Indeed, the more independent the central bank, the less likely the PMCs are observable (Alpanda and Honig, 2009). This effect is the main explanation for the consensus that explains that PMCs are more likely prevalent in developing countries. Therefore, introducing it to the model is crucial. CBI and its measurement is an important field of study that has led to the development of several indicators. The vast majority of these CBI measures concern *de jure* independence (Alesina et al., 1989; Grier, 1991), whereas a few papers measure *de facto* independence. The current study employs the new measure of *de jure* independence computed by Romelli (2022) (*CBIE* index). The author has extended the CBI index proposed by Cukierman et al. (1992) by considering more institutional characteristics of CBI¹⁹.

Fixed exchange rate regime

As discussed in Section 2, a country with a fixed exchange rate regime is less likely to observe PMCs (Clark and Hallerberg, 2000; Hallerberg et al., 2002). Indeed, political trilemma of Mundell (1960) concludes that free capital flows and fixed exchange rate regime are incompatible with monetary autonomy. Thus, identifying fixed exchange rate regimes is important because they should be less concerned by PMCs. Moreover, in developing countries, a fixed exchange rate regime is more efficient than high CBI to reduce inflation (Strong, 2021). Consequently, in these countries, the impact of the exchange rate regime on the existence of PMC deemed important and needs to be measured within estimations.

To examine the exchange rate regime, the variable *Fix* is introduced in the model. It represents a dummy that takes a value of 1 if the country is characterized by a fixed exchange rate regime, otherwise it takes a value of 0. Information is obtained through the dataset developed by Levy-Yeyati and Sturernegger (2016) on *de facto* exchange rate regimes²⁰.

Output gap and inflation

Output gap and inflation rate are mainly introduced to control for cyclical variations of the economic context. One can argue that an important number of countries within the sample do not follow the Taylor rule (Carporale et al., 2018), however, monetary policy is highly dependent on the overall macroeconomic context in developed and developing countries. In addition, introduc-

¹⁹For instance, *CBIE* is augmented with a measure of the financial independence of the central bank or a degree of the accounting of the central bank to the public. A complete review of the computation of the variable and selection of information added to this new index is available in Table 1 of Romelli (2022), see page 8.

²⁰For missing values, the variable has been completed using the work of Ilzetzi et al. (2017).

ing the output gap within the model remains essential to control for potential endogenous election timing²¹ and the significant number of countries that adopted inflation targeting.

The variable $Ygap$ is obtained through a Hamilton (2018) filter used to separate the cyclical and the trend components of real GDP. As such, the study used the difference between its trend and its raw values to compute for output gap. Data on real GDP and inflation are provided by the WDI.

1.3.2 Summary statistics

1.1 presents the summary statistics for every variable used in the different specifications. As previously discussed, the sample is composed of 110 countries over the period of 1985-2016 and represents 2099 observations. The summary statistics covers the number of observations available within the database. As previously developed (see Section 3.1.2), avoiding an economic situation that is directly responsible for election timing is important. Therefore, the sample is purged from the extreme values of $M1$ and $Inflation$. Specifically, the 24 observations representing outliers according to these three variables were excluded from the sample. This step leads to $M1$ and $Inflation$ values between -75% and 75%. One can infer that this threshold may be more constraining; however, more limited values could have forced the further exclusion of a few countries out of the sample. Nevertheless, to assure the reader of the validity of the results, Table A1.14 in the Appendix presents estimations of the main model with different thresholds of $M1$ (100% and 50% in absolute terms), and the results remain unchanged.

In the sample, a total of 478 elections are occurring. As the study have reviewed the pre- and post-electoral periods, elections occurring in 1984 and 2017 are indirectly introduced in various electoral measures. As such, the database contains 481 and 492 pre- and post-electoral periods respectively within the database. As a reminder, only countries with at least two pre- or post-electoral periods were retained in the sample. Moreover, another expected outcome is the relatively high values of *de jure* CBI indexes with an average that exceeds 0.6 (out of 1). This relative homogeneity in terms of CBI explain the unexpected non-significance of $CBIE$ within the main specifications.

1.2 presents the summary statistics of the six main variables split in different sub-samples. First, in the upper part of the table, the sample is split between pre-electoral (when $ElectionIpre > 0$) and non pre-electoral ($ElectionIpre = 0$) periods. In the last column of the table, the difference in means between both sub-samples is computed across variables and its significance is measured using several t-tests²². On average, no significant difference in $M1$ is observed between pre- and

²¹As underlined by Alpanda and Honig (2009), in parliamentary regimes, a good economic situation (*i.e.*, a high output gap) increases the probability of an early election. See Inoguchi (1981) and the concept of “political surfing” for more information. This issue is investigated further in Section 5.3.

²²Using Welch’s (1947) methodology enables a comparison of the means of samples with unequal variances.

Table 1.1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
M1	13.385	12.224	-28.958	74.605	2099
M0	14.027	11.788	-21.937	69.915	1734
M2	11.219	14.604	-48.593	212.670	1029
Policy_Rate	-0.388	3.931	-48	34.5	800
Election	0.228	0.419	0	1	2099
ElectionDpre	0.229	0.42	0	1	2099
ElectionDpost	0.234	0.424	0	1	2099
ElectionIpre	0.226	0.315	0	1	2099
ElectionIpost	0.228	0.316	0	1	2099
ElectionIpre_[2years]	0.415	0.428	0	1	2099
ElectionIpost_[2years]	0.42	0.426	0	1	2099
ElectionIpre_[Endogenous]	0.065	0.203	0	1	2099
ElectionIpre_[Exogenous]	0.133	0.263	0	1	2099
ElectionIpre_[Running]	0.14	0.268	0	1	2099
ElectionIpre_[Not Running]	0.088	0.228	0	1	2099
CBIE	0.608	0.177	0.147	0.929	2099
Ygap	0.029	0.206	-1.525	1.552	2099
Inflation	5.906	7.187	-10.067	73.528	2099
Credit	55.838	44.356	0.491	221.288	2099
Fix	0.347	0.476	0	1	2099
Fiscal Deficit	-1.927	4.887	-32.124	43.304	1855
CreationYearCB	1939.624	59.499	1668	2001	2099
CEI	0.646	0.286	0	0.983	1539

non-pre-electoral periods. In terms of *CBIE*, *Ygap* and *Fix*, the study observed no significant differences between pre-electoral and non-pre-electoral periods either. On the contrary, *Inflation* is significantly lower during pre-electoral periods. This scenario could be interpreted as an indirect proof of a political cycle in monetary policy. Indeed, this result can be interpreted as an evidence of high inflation following a national election (Alesina and Roubini 1992, 1997). However, as post-electoral measures are never seemingly significant, this study will not further interpret this result. Another point that needs to be addressed in 1.2 is the significantly more important credit to GDP ratio before a national scrutiny. As established in Section 3.1.4, this result may impact the growth of *M1* even under a stable monetary policy. As demonstrated in Figure A, this upper amount of credit, which leads to an increase in the money multiplier ($M1/M0$) is observable on average on the overall sample. Thus, the introduction of *Credit* is essential to the model because it enables the control of this potential effect (Section 3.1.4).

Third, on the lower part of 1.2, the sample is split between developed and developing countries. As the sample is characterized by a large number of countries, it contains an important number of developing countries. Specifically, developed countries are classified using the 2020 World Bank classification²³. Following this ranking, the study considered 36 countries in the sample devel-

²³High-income economies are considered developed countries. The complete classifications of countries used by the World Bank are available here: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

Table 1.2: Summary statistics with sub-samples

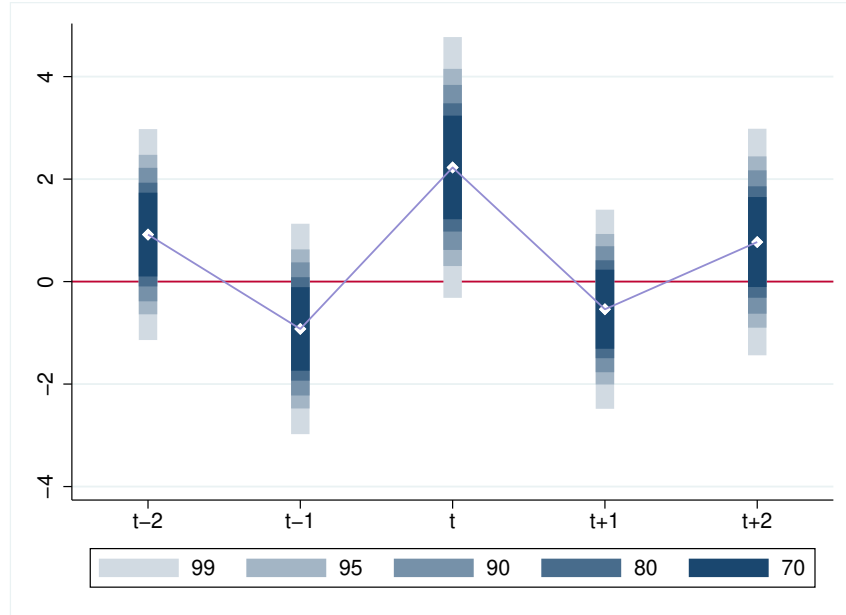
Variable	PreElection = 1 [†]					PreElection = 0 [†]				
	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.	N
M1	13.277	11.788	-16.522	74.605	938	13.472	12.571	-28.958	71.429	1161
CBIE	0.605	0.182	0.147	0.929	938	0.610	0.173	0.147	0.929	1161
Ygap	0.026	0.199	-0.977	1.552	938	0.031	0.211	-1.525	1.452	1161
Inflation	5.547	6.487	-3.704	58.451	938	6.195	7.697	-10.068	73.528	1161
Credit	59.168	45.476	1.201	221.288	938	53.148	43.263	0.491	218.088	1161
Fix	0.332	0.471	0	1	938	0.360	0.480	0	1	1161

Variable	Developed Countries					Developing Countries				
	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.	N
M1	9.863	9.282	-20.864	55.896	773	15.438	13.228	-28.958	74.605	1326
CBIE	0.621	0.212	0.147	0.929	773	0.599	0.152	0.303	0.863	1326
Ygap	0.012	0.19	-1.013	0.864	773	0.038	0.214	-1.525	1.552	1326
Inflation	3.317	4.137	-4.478	44.736	773	7.415	8.101	-10.067	73.528	1326
Credit	86.47	45.882	6.59	221.288	773	37.981	31.971	0.491	160.125	1326
Fix	0.331	0.471	0	1	773	0.357	0.479	0	1	1326

Significance tests on the mean differences were performed following Welch (1947)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ [†] *PreElection* is a dummy equals to 1 when *ElectionIpre* is positive and 0 otherwise

Figure 1.1: Pre- and post-treatment estimation of the average treatment effect of a pre-electoral period on $M1$ growth (% of growth)



Outcome variable: $M1$; Treatment variable: $PreElection$; X variables: $M1(t-1)$, $CBIE$, $Ygap$, $Inflation$, $Credit$ & Fix ; Parallel trend test: passed ($F(2, 109) = 1.71$; $Prob > F = 0.1857$); Nbr. observations: 1516; Nbr. countries: 110

oped²⁴. For the sake of simplicity, all countries that are not defined as developed are considered developing ones. As previously explained, the study provides the significance of the mean differences between developed and developing. Each variable is significantly different in terms of means between developed and developing countries except for Fix . Particularly, $CBIE$ and $Credit$ are significantly lower in developing countries due to the lower institutional quality on the one hand and lower financial development on the other hand.

As the mean differences presented in 1.2 present no evidence of a significantly different monetary mass during pre-electoral periods, Figure presents a computation of an estimation of the average pre- and post-treatment effects. The study employs a generalization of the difference in difference estimator as developed by Cerulli and Ventura (2019). The methodology enables a graphic representation of the pre- and post- average treatment effects using a binary treatment variable. in this case, the treatment variable used will be $PreElection$ because $ElectionIpre$ is non binary. $PreElection$ is a dummy variable that takes a value of 1 when $ElectionIpre$ differs from 0. Figure , clearly presents that the growth rate of $M1$ is significantly higher during the pre-electoral years (year t in Figure corresponds to periods in which $PreElection = 1$). As this measure considers pre- and post-electoral timing, its significance does not justify the existence of an opportunistic manipulation of monetary mass before the election. Nevertheless, Figure underlines the existence

²⁴See Table A1.10 in the Appendix for a complete list of these developed countries.

of a significantly different growth of monetary mass near a national electoral episode when country fixed-effects are added to the analysis. Despite the low number of observation, the same methodology is applied to examine variations in $M2$ (Figure A in the Appendix), $M0$ (Figure A in the Appendix), and the money multiplier $M1/M0$ (Figure A in the Appendix). These estimations provide puzzling results. Indeed, near an election, $M2$ and the money multiplier behave similar to $M1$. On the contrary, $M0$ does not appear significantly higher before a national ballot. Aidt et al. (2020) observed these combined effects on $M1$, $M0$ and the money multiplier in a study on low-income and developing countries. The authors explain this result by a vote buying behavior of the incumbent through shadow economy immediately prior to an election. Nevertheless, $Credit$ and $M1$ are characterized by a significant and negative relationship in the majority of the models. Therefore, although puzzling, this effect does not introduce a positive bias within estimations. Moreover, when controlling for the endogeneity of $M1(t-1)$, $Ygap$ and $Inflation$ through the use of a GMM model, $M0$ appears significantly higher before a national election the same way as $M1$, $M2$ and $Policy_Rate$ (see Table 1.6).

Finally, Table 1.3 presents the correlation coefficients between the six main variables, as well as their significance levels.

Table 1.3: Correlogram

	M1	CBIE	Ygap	Inflation	Credit	Fix
M1	1					
CBIE	0.0088	1				
Ygap	0.1375*	0.0130	1			
Inflation	0.3619*	-0.0707*	-0.0381*	1		
Credit	-0.3047*	-0.0851*	-0.1257*	-0.3413*	1	
Fix	-0.0445*	-0.1091*	0.0520*	-0.1509*	-0.0769*	1

* denotes a significance at 5%

1.3.3 Econometric specification

To investigate the presence and the magnitude of potential PMCs, the main econometric specification is directly inspired by the work of Alpanda and Honig (2009)²⁵. Thus, the main specification of this chapter is as follows:

$$M1_{i,t} = \beta_1 M1_{i,t-1} + \beta_2 Election_{i,t} + \beta_3 X_{i,t} + \varepsilon_{i,t} \quad (1.1)$$

²⁵As stated in Section 3.1, several differences are observed between the work of Alpanda and Honig (2009) and the current study. First, the current estimations are performed using a difference-GMM estimator contrary to the system-GMM one. Second, this study uses different variables compared with than the cited study. In a nutshell, $CBIE$ is the Cukierman et al. (1992) measure that is similar to that of Alpanda and Honig (2009) but augmented with institutional characteristics (Romelli, 2022). Moreover, $Ygap$ is obtained by applying a different filter to the GDP series (Hamilton, 2018) and $ElectionIpre$ is designed to measure 12 months pre-electoral periods, whereas Alpanda and Honig (2009) consider 24 months. Finally, the sample used in the current study is characterized by a large number of countries (110 against 63) and a more recent period (1985-2016 versus 1972-2001).

where $M1_{i,t}$ denotes the annual growth rate of monetary aggregate M1 in country i for year t ($M2_{i,t}$, $M0_{i,t}$ and $Policy_Rate_{i,t}$ are also used as robustness); $Election_{i,t}$ represents one of the pre-electoral or post-electoral measure(s); $X_{i,t}$ stands for a vector of explanatory variables; and ε is an error term. In the main specification, $X_{i,t}$ is composed of $CBIE_{i,t}$ (an extended measure of *de jure* CBI), $Inflation_{i,t}$ (annual inflation rate measured as Consumer Price Index), $Ygap_{i,t}$ (output gap), $Credit_{i,t}$ (amount of domestic credit available to the private sector as a percentage of GDP), and $Fix_{i,t}$ (a dummy variable that takes a value of 1 if a country is characterized by a fixed exchange rate regime).

As previously mentioned, the study uses a dynamic model throughout the chapter. This choice is motivated by four main arguments: (i) the high correlation between $M1$ and its past values as previously detailed, (ii) the existence of endogenous variables (mainly $Inflation$ and $Ygap$), (iii) the presence of time invariant country characteristics in the error term (country fixed-effects), and (iv) a dataset subject to the Nickell (1981) bias (*i.e.*, a dataset with a small T [32 periods] and a large N [110 countries]). The main estimator used by the study is the difference-GMM (Arellano and Bond, 1991). The choice of this model instead of system-GMM is supported by the fact that the coefficient attached to the past explained variable ($M1(t-1)$) in a difference-GMM estimation (0.132, Table 1.5) exceed its estimated value with a classic fixed-effects model (0.064, Table A1.13) and below its estimated value with a pooled ordinary least squares (OLS) estimator (0.210)²⁶.

As the main results are obtained using GMM estimators, it is important remaining clear and precise on the implementation of estimations to avoid biases. For instance, GMM results are highly dependent on the number of instruments used; therefore, the study follows Roodman (2009), and gives a high level of attention to their number. The information is provided for each regression. Moreover, three variables ($M1(t-1)$, $Inflation$ and $Ygap$) are suspected to be endogenous, whereas other variables are presumed exogenous²⁷. Moreover, the number of lags is constantly less important than the number of countries that compose each estimation. This issue is a critical one because instrument proliferation could severely bias estimation. To reassure the reader on this issue, Hansen and Sargan statistics (Anderson and Sørensen, 1996; Bowsher, 2002) are also presented for each estimation. Finally, instrument sets in every regression are collapsed to reduce the risk of the use of an excessive number of instruments. Finally, to ensure the computation of non-biased standard errors, the study applies Windmeijer's (2005) finite-sample correction to every regression. This correction implies that all models are estimated in a two-step procedure because it is more efficient than one-step estimates according to Roodman (2009, p. 97).

²⁶The estimation of the main model with the pooled OLS estimator is available upon request.

²⁷On this point, the specification does not differ from that of Alpanda and Honig (2009).

1.4 Main results

Table 1.4 implements a method comparable to the one used by Mink and de Haan (2006). The authors estimated their model by introducing all electoral variables from the most general to the most specific. In the same manner, the current study first introduces *Election* followed by *ElectionDpre* and *ElectionIpre* to assess the hypothesis of a pre-electoral impact on monetary policy. Potential post-electoral impact is also examined by introducing the variables *ElectionDpost* and *ElectionIpost*. Nevertheless, these two variables seemingly never appear significant, this study will no longer investigate this issue. Then, as Mink and de Haan (2006) found a pre-electoral effect on fiscal policy, the estimations underline higher levels of growth of monetary mass in a pre-electoral period. *Election* and *ElectionDpe* appear significant in regressions (2) and (3). However, *ElectionDpre* is non significant in model (5), which may be due to the relative fuzziness of the measurement of pre-electoral periods using simple dummies. Moreover, the introduction of the pre-electoral index (*ElectionIpre*) appears strongly significant and positively related to the growth of monetary mass, which is expected. Reasoning with *ElectionIpre*, the growth of M1 is higher by 1.1% to 1.2% on average in the 12 months prior to a national scrutiny²⁸. The estimation of the same model using a standard fixed-effects estimator in Table A1.13 in the Appendix produces an average pre-electoral increase in *M1* at 0.9%. Estimations of the main model using different threshold on the variable *M1* in Table A1.14 also confirm this effect (see the Appendix). The less restrictive the threshold, the more important the pre-electoral rise in the growth rate of monetary mass. As explained in Section 3.1.2, when a post-electoral dummy or index is introduced (*ElectionDpost* or *ElectionIpost*), the study observed no significant effect. The absence of post-electoral results may be due to the computation of the electoral index. Indeed, it is designed as a 12 month period, however, a possibility exists that the pre-electoral effect occurs within a longer or shorter time period given that its existence is confirmed. This issue is further investigated in Table 1.8, where 2 pre- and post-electoral indexes for two years are introduced into the model.

Second, highlighting certain results regarding the significance of the different explanatory variables is notable. In Table 1.4, *Inflation*, *Credit* and *Fix* appear significant and with the expected signs as developed in Section 3. In addition in Table A1.13, *Ygap* is also significant and characterized by a positive sign. The most puzzling result concerns the measure of *de jure* CBI (*CBIE*). *CBIE* is characterized by a positive coefficient in Table 1.4 and a negative one in Table A1.13. Despite the lack of significance of these coefficients in Tables 4 and A4, mixed findings can be observed in Table 1.6 for instance. This unclear relationship between the orientation of monetary policy and CBI can be explained using several arguments. The first pertains to the high levels of

²⁸This result is obtained by multiplying the coefficients of *ElectionIpre* in Table 1.4 by its average value (0.741) when the dummy variable *ElectionDpre* takes a value of 1.

Table 1.4: Main results with difference-GMM estimator

M1 (% of growth)		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
M1(t-1)		0.132** (0.056)	0.131** (0.056)	0.131** (0.055)	0.135** (0.056)	0.133** (0.056)	0.131** (0.055)	0.136** (0.056)	0.135** (0.055)
CBIE		0.793 (2.006)	0.913 (2.051)	0.921 (2.048)	0.783 (1.964)	0.888 (2.011)	1.038 (2.102)	0.832 (1.969)	1.029 (2.056)
Ygap		-0.412 (3.012)	-0.226 (2.967)	-0.341 (2.964)	-0.495 (3.108)	-0.430 (3.069)	-0.235 (2.946)	-0.520 (3.084)	-0.356 (3.023)
Inflation		0.703*** (0.132)	0.714*** (0.131)	0.702*** (0.129)	0.699*** (0.132)	0.701*** (0.129)	0.706*** (0.128)	0.701*** (0.132)	0.704*** (0.129)
Credit		-0.054** (0.024)	-0.053** (0.024)	-0.055** (0.024)	-0.055** (0.026)	-0.055** (0.025)	-0.054** (0.023)	-0.055** (0.025)	-0.055** (0.024)
Fix		2.221* (1.206)	2.203* (1.202)	2.121* (1.185)	2.268* (1.221)	2.167* (1.209)	2.152* (1.171)	2.254* (1.212)	2.187* (1.183)
Election			1.053** (0.525)						
ElectionDpre				0.929* (0.499)		0.667 (0.518)			
ElectionDpost					-0.969 (0.641)	-0.771 (0.659)			
ElectionIpre						1.616** (0.659)			1.466** (0.668)
ElectionIpost								-1.336 (0.862)	-1.165 (0.854)
Nbr. observations	1870	1870	1870	1870	1870	1870	1870	1870	1870
Nbr. instruments	62	63	63	63	64	63	63	64	64
AR(1) test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.518	0.520	0.560	0.537	0.557	0.553	0.534	0.534	0.545
Sargan C-test	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Hansen J-test	0.314	0.347	0.363	0.286	0.321	0.377	0.293	0.293	0.347

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Unless otherwise noted, all of our regressions are computed using dynamic a difference-GMM estimator

Robust standard errors are provided in parenthesis. Statistics shown are p-values

M1 and Inflation are limited to values below 75% in absolute terms.

difference between *de jure* and *de facto* CBI measures. Indeed, this chapter uses a *de jure* measure of CBI although *de facto* CBI is more likely to impact the implementation of monetary policy. Second, the increased interaction between central bankers and incumbent governments (Section 2) introduced a new policy mix in developed and developing countries. Third, the positive sign of *CBIE* when using a GMM model may be explained by the correction of potential endogeneity in the CBI measure²⁹. Fourth, and the explanation that will be further investigated, the statistical relationship between the orientation of monetary policy and CBI is non linear (see Table 1.5). Toward this end, the study follows Alpanda and Honig (2009), and introduces various interaction terms among *CBIE*, *Credit*, *Fix* and the pre-electoral index. As underlined by the cited authors, the effect of elections on the growth of *M1* may be highly dependent on CBI, financial development and/or the exchange rate regime. Table 1.6 presents these estimations. When introduced, the interaction terms *Credit X Elec* and *Fix X Elec* are non-significant and the pre-electoral period continues to be seemingly significant (columns 13 and 14). In other words, even if financial development and the fixed exchange rate regime may impact PMCs, their introduction does not modify the results on average. When introduced, the interactive term *CBIE X Elec* is non-significant, however, the significance of PMCs disappears. This result is expected because the more independent the central bank, the more difficult the implementation of PMCs. Nevertheless, this situation is mainly explained by a non linear relationship between CBI and the effectiveness of monetary policy (Baumann et al., 2021). Indeed, an unlikely scenario is that the statistical link between the two variables is linear³⁰. Thus, from columns 10 to 13, *CBIE* is split into four quartiles: *CBIE_[Q1]* (representing the 25% less independent central banks), *CBIE_[Q4]* (the 25% more independent ones) and so forth (columns 10 to 13). These estimations demonstrate a significant electoral cycle, which is greater in countries with highest levels of CBI (column 13). Moreover, CBI is seemingly efficient in promoting a less important growth of monetary mass in 50% of countries with the highest CBI. Specifically, only countries in the third quartile of the CBI distribution (column 12) do not experience any significant PMCs. Moreover, the interaction term *CBIE_[Q4] X Elec.* is significant and counterbalances the significance of PMC. In summary, CBI seemingly promotes the implementation of an efficient monetary policy only in the third and fourth quartiles of the CBI distribution. Prior to this value, the central bank implements, willingly or not a PMC.

Finally, in columns 16 and 17, the study introduces a measure of fiscal deficit is introduced into the model. Measure the potential impact of fiscal policy on PMCs is of high importance because a significant number of authors (Allen, 1986; Beck, 1987; Drazen, 2005) report that political cycles in monetary policy are due to debt monetization and/or the use of monetary policy to counter the adverse effects of increasing public expenditure. However, the introduction of the orientation of

²⁹For instance, this endogeneity may be due to potential measurement errors.

³⁰In general, see Section 3.3 of Cukierman (2008) on the non-linearities of the reaction functions of central banks.

fiscal policy in the model does not impact the significance of the pre-electoral measure even though an increase in public deficit leads to a higher growth of the monetary mass.

According to this baseline specification, PMCs are observable on average, on the overall sample. This result validates the main hypothesis of the chapter of an opportunistic pre-electoral PMC and is seemingly robust to different estimators. In other words, central banks allow (consciously or not) a more accommodating monetary policy prior to national scrutiny. As mentioned in the Introduction, a possible explanation is the will of a central banker to back up a conservative incumbent because they share preferences for a conservative monetary policy (Clark and Arel-Bundock, 2013; Menuet et al., 2021). However, data on central banker ideology on a sufficient scale is unavailable. Thus, the only partisan effect investigated in the study is the impact of incumbent partisanship (Section 5.1). The absence of significant PMC reported by Alpanda and Honig (2009) can be derived from their pre-electoral measure itself. Indeed, as stated by Haynes and Stone (1990; 1994) or Franzese (2002b), the absence of pre-electoral variations of economic policy can be explained by the lack of precision in electoral measures. Moreover, the difference can be explained using a more recent time period (1985-2016) in which PMCs are more likely to be observed. Finally, the detection of potential PMCs in this chapter may be explained by the increasing number of developed countries that are more likely to experience PMCs.

1.5 Heterogeneity and robustness

1.5.1 Alternative measures of monetary policy orientation

To ensure the robustness of the hypothesis on opportunistic PMCs, the study estimates the main model using alternative measures of monetary policy orientation. As developed in Section 3.1.1, $M1$ is selected as the main explained variable to maximize the number of country in the dataset. Indeed, even if monetary base or policy rate are available for a large number of countries, the number of countries in the sample is relatively low (65 and 52 countries respectively) when merged with other data sources used in the main regression. However, to ensure the validity on pre-electoral opportunistic PMC, Table 1.6 presents the regressions with three alternative interest variables. Specifically, regressions (6), (7) and (8) where *ElectionIpre* and *ElectionIpost* are used as electoral measures, are reported with $M2$, $M0$ and *Policy_Rate* as the interest variables, respectively. As found in $M1$, these nine estimations confirm the existence of a PMC as hypothesized throughout the chapter.

The significant pre-electoral increase in $M0$ (2.783 in regression (8) ^{$M0$}) is higher than that measured for $M1$ (1.466 in regression (8); Table 1.4) and $M2$ (1.120 in regression (8) ^{$M2$}). The use of the *Policy_Rate* in the third part of the table also confirms this result in which *ElectionIpre*

Table 1.5: Main results with interaction terms

M1 (% of growth)		(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
M1(t-1)		0.132** (0.055)	0.129** (0.055)	0.129** (0.055)	0.131** (0.055)	0.134** (0.056)	0.131** (0.055)	0.128** (0.055)	0.158*** (0.058)	0.157*** (0.057)
ElectionIpre		2.759 (2.116)	1.494* (0.852)	1.575*** (0.784)	0.940 (0.737)	2.287*** (0.747)	2.070* (1.200)	1.738* (0.880)	1.503* (0.823)	1.468* (0.840)
CBIE		1.467 (2.277)					1.013 (2.136)	1.019 (2.136)	0.202 (2.597)	0.136 (2.598)
CBIE X Elec.		-1.900 (3.386)								
CBIE_[Q1]			-1.058 (2.934)							
CBIE_[Q1] X Elec.			0.871 (3.761)							
CBIE_[Q2]				0.120 (2.228)						
CBIE_[Q2] X Elec.				0.188 (3.931)						
CBIE_[Q3]					-0.225 (1.476)					
CBIE_[Q3] X Elec.					3.756 (2.496)					
CBIE_[Q4]						1.039 (0.942)				
CBIE_[Q4] X Elec.						-3.401** (1.607)				
Ygap		-0.293 (2.968)	-0.250 (2.928)	-0.186 (2.972)	-0.337 (2.922)	-0.407 (3.002)	-0.114 (2.942)	-0.270 (2.957)	-2.545 (3.275)	-2.608 (3.335)
Inflation		0.704*** (0.128)	0.703*** (0.125)	0.697*** (0.125)	0.701*** (0.127)	0.690*** (0.128)	0.706*** (0.128)	0.705*** (0.128)	0.514*** (0.179)	0.511*** (0.179)
Credit		-0.054** (0.023)	-0.054** (0.022)	-0.053** (0.022)	-0.053** (0.022)	-0.053** (0.022)	-0.052** (0.024)	-0.055** (0.024)	-0.091** (0.043)	-0.091** (0.043)
Credit X Elec.							-0.007 (0.014)			
Fix		2.153* (1.173)	2.150* (1.167)	2.205* (1.172)	2.227* (1.182)	2.190* (1.163)	2.137* (1.161)	2.178* (1.212)	3.528*** (1.252)	3.502*** (1.268)
Fix X Elec.								-0.353 (1.524)		
Fiscal Deficit									0.230** (0.104)	0.230** (0.109)
Fiscal Deficit X Elec.									-0.006 (0.164)	-0.006 (0.164)
Nbr. observations		1870	1870	1870	1870	1870	1870	1870	1594	1594
Nbr. instruments		64	64	64	64	64	64	64	49	50
AR(1) test		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test		0.548	0.560	0.562	0.555	0.534	0.559	0.583	0.215	0.216
Sargan C-test		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.004	0.004
Hansen J-test		0.378	0.377	0.373	0.381	0.381	0.368	0.360	0.333	0.329

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
 Unless otherwise noted, all of our regressions are computed using dynamic a difference-GMM estimator
 Robust standard errors are provided in parenthesis. Statistics shown are p-values
M1 and *Inflation* are limited to values below 75% in absolute terms.

significantly and negatively impacts the policy rate implemented by the central bank. Thus, regardless of the variable used to the orientation of monetary policy, the central bank seemingly implements a loose monetary policy in the 12 months prior to a national scrutiny.

Moreover, two issues need to be discussed when examining the results in Table 1.6. First, *CBIE* significantly impacts the growth rate of *M0* with a positive sign. This result is surprising because the more independent the central bank, the less important the growth of the monetary base because independence helps prevent inflation bias (Kydland and Prescott, 1977; Barro and Gordon, 1983). As previously discussed, this result may be due to the fuzzy relationship between CBI and the effectiveness of monetary policy (Baumann et al., 2021). An additional explanation can be found in the lowest number of countries included in these specific regressions. Second, in regressions using policy rate as the interest variable, *ElectionIpost* appears significant and positive in model (7)^{PR}. This result could be interpreted as a systematic decrease in interest rate after a national election, whose objective may be to counterbalance the pre-electoral rise. However, as this significance is not observable in model (8)^{PR}, this effect should be interpreted with caution.

1.5.2 Heterogeneity

Second, the model is estimated on different sub-samples to an in-depth study on the ins and outs of the presence of PMCs. As stated in the Introduction, recent papers (Bodea, 2013; Balls et al., 2018; Hofmann et al., 2021) prove that the relationship between central banks and incumbents has been increasing since the 2008-2009 financial crisis. This situation may lead to an increase in political pressure faced by central bankers (Binder, 2021a), which renders easy the influence of incumbents on monetary policy. In Table 1.7, a PMC is observable on average prior to the crisis (column 18). Nevertheless, the coefficient of *ElectionIpre* is non-significant after the crisis (column 19). This absence of PMC after the crisis may be mainly driven by the low number of observations in the estimation presented in column 19. However, the increasing links between fiscal and monetary authorities are observable with the significance of *Fiscal Deficit* only during the 2010-2016 period.

Moreover, a widely agreed hypothesis is that PMCs are more likely prevalent in developing countries (Dreher and Vaubel, 2009). Nevertheless, columns 20 and 21 illustrate that the pre-electoral increase in monetary mass is mainly driven by developed countries. Evidently, as the number of observations in this regression is low, this result should be interpreted with caution; however, PMCs are seemingly a political phenomenon that is relevant to countries with high levels of institutional quality or economic development. In addition to technical issues (see Section 3.3), the first half of Table 1.7 represents the main differences between the results of the current study and those of Alpanda and Honig (2009). Indeed, as stated by de Haan and Eijffinger (2019) and de Haan et al. (2018), the shift from a situation of monetary dominance to fiscal dominance in

Table 1.6: Main Results with $M2$, $M0$ and Policy Rates

M2 (% of growth)		(6) ^{M2}	(7) ^{M2}	(8) ^{M2}	(6) ^{M0}	(7) ^{M0}	(8) ^{M0}	(6) ^{PR}	(7) ^{PR}	(8) ^{PR}
M2(t-1)		0.351*** (0.058)	0.355*** (0.058)	0.352*** (0.058)						
M0(t-1)					0.052 (0.051)	0.047 (0.049)	0.051 (0.050)			
Policy_Rate(t-1)								-0.041 (0.067)	-0.037 (0.066)	-0.040 (0.066)
CBIE		-6.369* (3.349)	-6.248* (3.405)	-6.332* (3.399)	10.822* (6.123)	11.767* (5.940)	11.038* (6.197)	-0.829 (2.462)	-1.173 (2.441)	-0.980 (2.444)
Ygap		6.057** (2.468)	6.065** (2.463)	6.074** (2.470)	1.978 (3.658)	1.264 (3.616)	2.317 (3.716)	5.022** (2.214)	5.202** (2.227)	5.141** (2.239)
Inflation		0.367*** (0.118)	0.369*** (0.119)	0.369*** (0.118)	1.029*** (0.194)	1.021*** (0.181)	1.039*** (0.196)	-0.156 (0.098)	-0.160 (0.097)	-0.155 (0.097)
Credit		-0.045 (0.030)	-0.046 (0.031)	-0.044 (0.030)	-0.016 (0.024)	-0.019 (0.023)	-0.016 (0.024)	0.008 (0.006)	0.008 (0.006)	0.008 (0.006)
Fix		1.145 (0.932)	1.145 (0.942)	1.146 (0.935)	2.668 (1.914)	3.116* (1.780)	2.781 (2.003)	0.320 (0.006)	0.313 (0.006)	0.316 (0.006)
ElectionIpre		1.129* (0.647)		1.120* (0.623)	2.630* (1.534)		2.783* (1.596)	-0.424** (0.205)	-0.357* (0.212)	-0.357* (0.212)
ElectionIpost			-0.254 (0.702)	-0.107 (0.687)		1.290 (0.949)	1.261 (0.976)	0.488* (0.257)	0.429 (0.263)	0.429 (0.263)
Nbr. observations		1539	1539	1539	928	928	928	693	693	693
Nbr. instruments		40	40	41	27	27	28	16	16	17
AR(1) test		0.000	0.000	0.000	0.003	0.003	0.003	0.035	0.034	0.035
AR(2) test		0.359	0.350	0.360	0.675	0.688	0.688	0.854	0.840	0.838
Sargan C-test		0.000	0.000	0.000	0.037	0.031	0.035	0.012	0.013	0.013
Hansen J-test		0.212	0.197	0.209	0.841	0.890	0.827	0.700	0.746	0.732

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Regressions are computed using a dynamic difference-GMM estimator

Robust standard errors are provided in parenthesis

 $M2$ and $Inflation$ are limited to values below 75% in absolute terms. $M0$ and $Interest_Rate$ are not limited.

recent years represents the main explanation for PMCs. In other words, since the financial crisis, PMCs are a reality in developed countries. This phenomenon, together with the increase in forward guidance (McKay et al., 2016), the new political leadership of central banks (Tortola and Pansardi, 2019), and the important number of developing countries examined in the current study mainly explain the results.

Another interesting outcome in Table 1.7 is the relative absence of PMCs when the sample is split between parliamentary and presidential regimes (columns 22 and 23). Indeed, even if PMCs were supposed to be more important in a presidential regime, (Persson and Tabellini, 2003), no differences are observed between these two political regimes. Finally, the final columns in the table emphasize that monetary policy is less likely to favor left-wing incumbents. In other words, PMCs are not absent when the incumbent is from a left-wing party (column 25). Clark and Arel-Bundock (2013) develop a simple explanation. Indeed, central bankers are technocrats who prefer conservative monetary policy. Thus, a conservative central banker may favour a conservative incumbent by implementing a PMC (column 24). However, when the incumbent does not share these conservative preferences, the central banker will not implement a PMC.

1.5.3 Timing of elections

Third, further investigating the characteristics of elections on the presence and the amplitude of PMCs is of high importance. Indeed, similar to every electoral phenomenon, PMCs are highly dependent on the number of months considered pre-electoral, the timing of the election, the probability of the incumbent to win or the degree of freedom and fairness of the vote. Table 1.8 tackles these issues. In columns 25 to 27, a two-year pre-electoral period is considered. The measure, which is similar to the one used by Alpanda and Honig (2009) provides results similar to those of the one-year index. However, the effect is less broad and significant. Indeed, the coefficient attached to *ElectionIpre* is approximately 1.5 (columns 6 and 8 in Table 1.4), whereas it is only approximately 0.94 when the measure *ElectionIpre_[2years]* is used. A simple explanation for this downward effect is that, the closer the election date, the more accommodating the monetary policy. In other words, taking a longer period renders the average manipulation on the overall period smaller because this manipulation occurs closer to the election date.

The study then examines the impact of election timing. Following Brender and Drazen (2005), election timing is considered endogenous or exogenous. Specifically, endogenously timed elections occur in a different year than the one that was constitutionally defined. For instance, if an incumbent term is supposed to last five years, then an election that occurs before or after the end of this five-year period is considered endogenous. Moreover, an election that occurs at a date

Table 1.7: Heterogeneity

M1 growth (% of GDP)		(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
		Pre-crisis periods (1985-2006)	Post-crisis periods (2010-2016)	Developed Countries	Developing countries	Presidential regimes	Parliamentary regimes	Right-wing & center incumbents	Left-wing incumbents
M1 (t-1)		0.222*** (0.083)	0.010 (0.077)	0.278*** (0.076)	0.076 (0.070)	0.155** (0.063)	0.137* (0.077)	0.160** (0.062)	0.087 (0.078)
ElectionIpre		2.233* (1.219)	-0.638 (1.026)	1.519* (0.827)	0.749 (0.958)	1.122 (1.003)	0.922 (0.846)	1.846** (0.784)	1.440 (1.276)
CBIE		2.077 (2.963)	-153.009 (106.981)	1.571 (1.716)	-0.084 (3.640)	1.126 (3.826)	2.879 (2.152)	2.985 (2.552)	-2.388 (3.067)
Ygap		3.428 (4.633)	-5.874 (6.124)	-2.337 (2.825)	3.226 (4.456)	1.254 (3.809)	0.385 (3.851)	-2.832 (3.121)	13.199** (6.359)
Inflation		0.714*** (0.178)	-0.566 (0.467)	0.223 (0.204)	0.708*** (0.154)	0.495*** (0.153)	0.721*** (0.251)	0.569*** (0.157)	0.712*** (0.166)
Credit		-0.038 (0.026)	-0.215** (0.091)	-0.049* (0.028)	-0.123*** (0.031)	-0.138*** (0.049)	-0.029 (0.024)	-0.086*** (0.024)	-0.007 (0.029)
Fix		1.589 (1.180)	3.238 (2.572)	0.364 (1.188)	3.043* (1.588)	1.743 (1.450)	2.447* (1.451)	1.550 (1.271)	2.218 (1.817)
Fiscal Deficit		0.111 (0.135)	0.334** (0.145)						
Nbr. observations	819	558		707	1163	874	996	1347	523
Nbr. instruments	25	35		37	45	30	29	55	39
AR(1) test	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.316	0.731		0.170	0.828	0.035	0.387	0.442	0.856
Sargan C-test	0.009	0.000		0.011	0.000	0.000	0.028	0.005	0.001
Hansen J-test	0.233	0.228		0.570	0.245	0.224	0.191	0.358	0.434

As every estimation is performed on a different sample, the number of instrument is chosen using both Sargan and Hansen statistics.

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Unless otherwise noted, all of our regressions are computed using a dynamic difference-GMM estimator.

Robust standard errors are provided in parenthesis. Statistics shown are p-values.

M1 and Inflation are limited to values below 75% in absolute terms.

Table 1.8: Electoral characteristics

M1 (% of growth)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35) [†]
M1(t-1)	0.135** (0.055)	0.130** (0.056)	0.132** (0.057)	0.133** (0.056)	0.128** (0.056)	0.128** (0.056)	0.132** (0.055)	0.132** (0.056)	0.131** (0.055)	0.188*** (0.061)
CBIE	1.015 (2.098)	0.866 (2.032)	0.945 (2.059)	0.910 (2.029)	0.918 (2.055)	1.024 (2.077)	1.049 (2.037)	0.788 (2.013)	1.050 (2.045)	-0.296 (2.695)
Ygap	-0.031 (2.875)	-0.465 (3.032)	-0.429 (3.016)	-0.385 (2.960)	-0.237 (3.010)	-0.178 (2.960)	-0.269 (2.897)	-0.364 (3.023)	-0.212 (2.907)	-1.163 (3.485)
Inflation	0.676*** (0.128)	0.708*** (0.131)	0.683*** (0.130)	0.700*** (0.130)	0.690*** (0.129)	0.685*** (0.128)	0.710*** (0.129)	0.705*** (0.133)	0.712*** (0.129)	0.659*** (0.144)
Credit	-0.056** (0.027)	-0.054** (0.024)	-0.054** (0.024)	-0.055** (0.024)	-0.051** (0.023)	-0.051** (0.023)	-0.052** (0.023)	-0.054** (0.024)	-0.052** (0.023)	-0.047 (0.029)
Fix	2.365** (1.143)	2.233* (1.189)	2.193* (1.189)	2.198* (1.209)	2.093* (1.187)	2.075* (1.191)	2.240* (1.144)	2.235* (1.208)	2.240* (1.146)	2.560* (1.422)
ElectionIpre_2years]	0.905* (0.526)		0.976* (0.559)							
ElectionIpost_2years]		0.038 (0.658)	0.385 (0.691)							
ElectionIpre_Endogenous]				0.628 (0.827)		0.802 (0.803)				
ElectionIpre_Exogenous]					1.228** (0.560)	1.297** (0.552)				
ElectionIpre_Running]							2.536*** (0.856)			
ElectionIpre_Not Running]								0.039 (1.126)		
ElectionIpre									5.041** (1.921)	
CEI X Elec.										-5.111**
Nbr. observations	1870	1870	1870	1870	1870	1870	1870	1870	1870	1361
Nbr. instruments	63	63	64	63	63	64	63	63	64	47
AR(1) test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.461	0.539	0.492	0.501	0.534	0.518	0.532	0.523	0.542	0.115
Sargan C-test	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
Hansen J-test	0.344	0.299	0.306	0.298	0.352	0.334	0.387	0.315	0.389	0.417

[†] As regression (34) is estimated on a different sample, the number of instrument is chosen using both Sargan and Hansen statistics.

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Unless otherwise noted, all of our regressions are computed using a dynamic difference-GMM estimator

Robust standard errors are provided in parenthesis. Statistics shown are p-values

M1 and *Inflation* are limited to values below 75% in absolute terms.

that differs than the one defined by the constitution is considered endogenously timed³¹. To classify election dates, the study constructed the variables *ElectionIpre_[Endogenous]* and *ElectionIpre_[Exogenous]* using variable *yrcurnt* of the DPI database³². When introducing exogenous electoral periods (*ElectionIpre_[Exogenous]*), PMCs are observable. On the contrary, PMCs are not observable when introducing endogenous electoral periods (*ElectionIpre_[Endogenous]*). This result is expected because the incumbent and the central banker lack a reason to manipulate voters through fiscal or monetary policy when they have been setting political agendas to their advantage (Inoguchi, 1981).

In addition, an important issue is the impact of the re-election process of the incumbent on PMCs. Indeed, an incumbent with the knowledge that his/her probability for re-election is null lacks the incentive to stimulate fiscal and/or monetary policy prior to national scrutiny. In general, if a politician knows that the chances of winning are null, then he/she will not run in the next election. Therefore, if the incumbent is not running, no PMC should be observable (Bohn and Veiga, 2021). To examine this phenomenon, the study established two variables, namely, *ElectionIpre_[Running]* and *ElectionIpre_[Not Running]*. On the one hand, *ElectionIpre_[Running]* is equal to *ElectionIpre* only when the incumbent is running in the subsequent election³³. On the other hand, the variable *ElectionIpre_[Not Running]* is equal to *ElectionIpre* when the incumbent is not running in the subsequent election. The idea is to prove that an election in which the incumbent is not running could not be characterized by a PMC and *vice versa*. When these measures are introduced into the model, PMCs appear only when the incumbent is running. Thus, evidently, when the incumbent will not participate in the subsequent election, PMCs are not implemented.

Moreover, this study argues that the results are driven by countries where governments can easily manipulate electoral results. Indeed, the database is composed of democratic and non-democratic countries. To tackle this issue, an interaction term between pre-electoral periods and electoral competitiveness is introduced in column 34 (*CEI X Elec.*). The competitive election index (*CEI*) is derived from the *Varieties of Democracy* (V-Dem) database. This variable is an index that ranges from 0 to 1. Low scores stand for a non-democratic electoral events and conversely, high scores stand for free and fair electoral processes. As expected, the more free and fair the elections, the less broad the electioneering in monetary policy. Nevertheless, on average the study can still observe PMCs below a certain level of electoral competitiveness.

³¹Every election is then classified as endogenous or exogenous and cannot be considered under both of these categories.

³²*yrcurnt* measures the number of years prior to the next constitutionally planned national election. When information was unavailable, the study referred to constitutions of countries. Within the dataset, 155 elections out of the 478 are considered endogenously timed.

³³In the case of a presidential regime, defining which election the incumbent president is running or not is easy. On the contrary, certain difficulties can be encountered for parliamentary regimes. For the sake of simplicity, a political party is considered running if it is part of the previous ruling majority.

1.5.4 Institutional framework of monetary policy

Finally, the study further explores the institutional framework of monetary policy (Table 1.9). In column 35, the age of the central bank is introduced into the model. Given that a central bank is an institution, a possibility exists that a potential learning effect in the conduct of their monetary policy accompanies seniority. As hypothesized, the younger the central banks, the greater the impact of pre-electoral periods on *M1* variation. On the contrary, older monetary authorities are impacted by smoother PMCs. One explanation can be a direct link between the seniority of the monetary institution and its efficiency as an organization. Therefore, an established central bank can efficiently fight against political pressure (Mantzavinos et al., 2004). Another explanation is the concentration of certain specific institutional characteristics in countries characterized by relatively new central banks.

Institutional arrangements such as inflation targeting (*IT*), or the adherence to a monetary union can add constraints to monetary authorities and reflect in the behaviour of central banks. First, the study considered the introduction of a dummy *IT* that takes a value of 1 if a country is implementing IT (column 36). Countries that target inflation do not avoid the significant and positive impact of pre-electoral periods on M1 growth. Contrary to the conventional view, IT is seemingly inefficient in the fight against PMCs. The study finds a similar result when considering monetary union membership within estimations. Indeed, the introduction of the interaction term *MonetaryUnion X Elec* into column 37 does not lead to the disappearance of PMCs.

Furthermore, in columns 38 to 41, every monetary union in the database is introduced alone to seek for potential differences. The dataset is composed of countries from the Eastern Caribbean Central Bank (ECCB), the Economic and Monetary Community of Central African States (CEMAC), the West African Economic and Monetary Union (WAEMU) and the European System of Central Banks (ESCB)³⁴. Nonetheless, the study observes no significant impact exerted by any monetary union introduced into the model.

1.6 Conclusion

This study contributes to the present debate on whether elections exert an influence on monetary policy. The results provide tangible and robust evidence that, on average, a pre-electoral increase in the growth of monetary mass can be observed for developed and developing countries. Moreover, this result remains robust regardless of the econometric model, or variable used to measure variations in monetary mass. Several aspects of political and institutional frameworks directly

³⁴For European countries, they are only included in the dataset before their entry in the euro zone. Subsequently, the dummy *ESCB* takes the value 1 only when a country is actively engaged in a converging process aiming at joining the euro zone.

Table 1.9: Central bank and monetary policy characteristics

M1 (% of growth)	(36)	(37)	(38)†	(39)†	(40)†	(41)†	(42)†
M1(t-1)	0.132** (0.054)	0.132** (0.055)	0.130** (0.055)	0.132** (0.055)	0.132** (0.055)	0.131** (0.055)	0.131** (0.055)
ElectionIpre	2.611** (1.006)	1.660** (0.736)	1.599** (0.745)	1.485** (0.717)	1.500** (0.676)	1.821*** (0.665)	1.680** (0.667)
CBIE	1.606 (2.072)	1.256 (2.036)	1.036 (2.129)	1.006 (2.073)	1.027 (2.101)	1.421 (1.990)	1.015 (2.107)
Ygap	-0.172 (2.861)	-0.019 (2.934)	-0.213 (2.960)	-0.169 (2.935)	-0.272 (2.883)	-0.301 (2.954)	-0.253 (2.953)
Inflation	0.660*** (0.138)	0.729*** (0.157)	0.704*** (0.128)	0.706*** (0.128)	0.705*** (0.129)	0.703*** (0.128)	0.707*** (0.128)
Credit	-0.045* (0.024)	-0.054** (0.023)	-0.054** (0.024)	-0.053** (0.023)	-0.054** (0.023)	-0.055** (0.024)	-0.054** (0.024)
Fix	2.108* (1.164)	2.160* (1.172)	2.139* (1.168)	2.157* (1.167)	2.158* (1.176)	2.143* (1.164)	2.143* (1.169)
CreationCB	-0.043 (0.051)						
CreationCB X Elec.	-0.016* (0.009)						
IT		0.679 (1.511)					
IT X Elec.		-0.242 (1.658)					
MonetaryUnion X Elec.			0.014 (1.725)				
ECCB X Elec.				1.536 (2.240)			
CEMAC X Elec.					3.719 (2.630)		
WAEMU X Elec.						-3.689 (2.789)	
ESCB X Elec.							-1.492 (2.533)
Nbr. observations	1870	1870	1870	1870	1870	1870	1870
Nbr. instruments	65	65	64	64	64	64	64
AR(1) test	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.510	0.563	0.555	0.532	0.533	0.572	0.555
Sargan <i>C</i> -test	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Hansen <i>J</i> -test	0.421	0.415	0.368	0.385	0.372	0.382	0.378

† In these models, dummies measuring the membership in a monetary union *MonetaryUnion*, *ECCB*, *CEMAC*, *WAEMU* and *ESCB* were dropped due to collinearity

Unless otherwise noted, all of our regressions are computed using dynamic difference-GMM estimator

Robust standard errors are provided in parenthesis. Statistics shown are p-values

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

M1 and *Inflation* are limited to values below 75% in absolute terms.

ECCB: Eastern Caribbean Central Bank

CEMAC: Economic and Monetary Community of Central African States

WAEMU: West African Economic and Monetary Union

ESCB: European System of Central Banks

impact the amplitude of PMCs. For instance, endogenously timed elections or an incumbent that does not run in the next election reduce their amplitude. Therefore, certain aspects of the central banking process such as the seniority of central banks, can play a role in reducing political cycles within monetary policy. This study demonstrates that the more competitive the elections, the less severe the electioneering. Finally, PMCs are mainly observable in developed countries which is in contrast to that commonly assumed. Thus, examining seriously potential links between fiscal and monetary authorities is of high importance because they have been increasing since the global financial crisis. Monetary policy cannot be credibly considered implemented by independent experts that are mainly focused on inflation. This rationale underlies the reasoning that explains the main differences between the results of the current study those of Alpanda and Honig (2009). Indeed, the database used by the present study is composed of a large number of countries (110) and a recent study period (1985-2016). Therefore, testing the different policy mixes inherited from the 2008-2009 crisis is possible. The shock of the Great Recession, the rise of political populism and the recent re-assessment of CBI have clearly restructured the manner in which monetary policy is conducted. Central bankers have increasingly become political actors that need to play their role in national and international politics (Fernández-Albertos, 2015).

In this new context, PMCs can have exert an important impact on the theoretical modeling of the behaviour of central banks. As demonstrated, elections are impacting monetary policy, and their integration within macroeconomic studies is a concern that should be given attention. Nevertheless, acknowledging that the main result of this study underlines the existence of a correlation between pre-electoral periods and high growth rates of M1 is of high importance. However, it does not imply causality and could not be interpreted as causality. In summary, this study highlights that, on average, the growth rate of monetary mass is higher in the 12 months that precede a national election. However, further investigation with higher degree of precision are required to validate the existence (or non-existence) of this phenomenon in countries depending on certain specific characteristics. In addition, further investigating the transmission channels through which political events may impact modern central banking is another interesting avenue for research. Another path may be the analysis of the potential mutually reinforcing effects of fiscal and monetary policies in terms of electorally induced manipulation. To fully understand PMCs, data collection on the ideology, preferences and previous positions of central bankers is essential to examine potential partisan explanations that could reinforce opportunistic results. This present chapter is designed as an ice-breaker on this topic and a justification for new investigations on the interaction between politics and monetary policy because the policy-mix itself has significantly changed in recent years. As stated by Adolph (2013), an important difference is notable between the theoretical behavior of central bankers and their real behavior. Therefore, a reassessment of the concept of PMCs may

be the first step in fulfilling this research gap.

Within this chapter, the objective was to study the highest number of countries as possible to ensure the pertinence of the concept of political monetary cycle. This approach forces me to use the growth rate of the monetary mass ($M1$) to study the orientation of national monetary policies. However, in a significant number of countries, the orientation of monetary policy is not measured using this growth rate of the monetary mass. For instance, since the spread of Taylor (1993) rules, a significant number of countries use the policy rate as their main policy instrument³⁵. Consequently, it is of high importance to conduct an investigation on political monetary cycles using instruments closer to the real orientation of monetary policy. To do so, Chapter 3 of this thesis uses the policy rate implemented by the central bank to study the orientation of monetary policy. More precisely, this information is studied in the case of the United-Kingdom for which precise data on both politics and monetary policy are available.

³⁵On the problem of the choice of monetary policy instrument, the reader may refer to Poole (1970).

1.7 Appendix

Table 1.10: List of countries

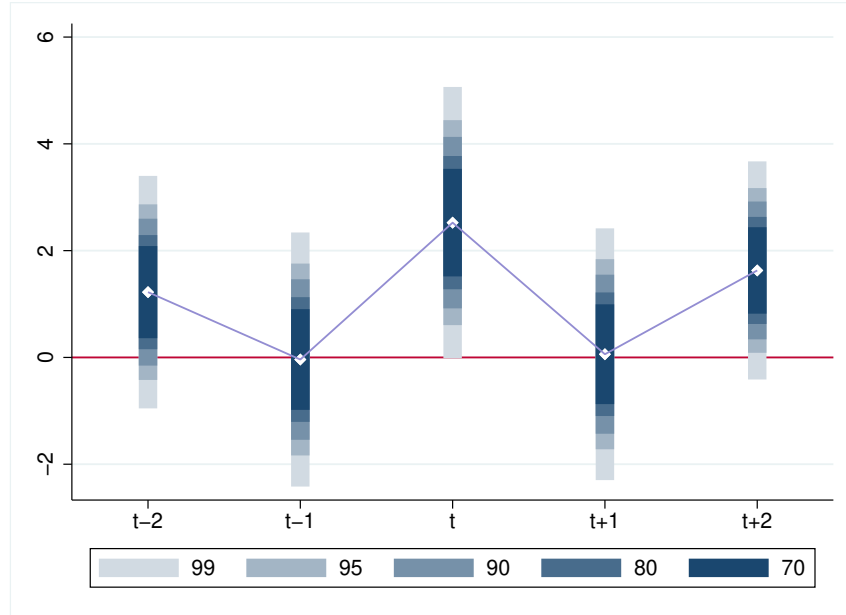
Countries		
Albania	Gabon	Niger
Algeria	Gambia	Nigeria
Angola	Germany	Oman
Antigua & Barbuda	Ghana	Pakistan
Argentina	Greece	Paraguay
Australia	Grenada	Peru
Austria	Guatemala	Philippines
Bahamas	Haiti	Poland
Bahrain	Hungary	Portugal
Belarus	India	Russia
Belgium	Indonesia	Rwanda
Benin	Iran	Senegal
Bolivia	Iraq	Seychelles
Botswana	Ireland	Singapore
Brazil	Italy	Slovenia
Bulgaria	Ivory Coast	South Africa
Burkina Faso	Jamaica	South Korea
Burundi	Japan	Spain
Cambodia	Kenya	Sri Lanka
Cameroon	Kuwait	St. Kitts and Nevis
Canada	Kyrgyzstan	St. Lucia
Central Afr. Rep.	Latvia	St. Vincent & the Gren.
Chad	Liberia	Sweden
Chile	Lithuania	Switzerland
China	Luxembourg	Tanzania
Colombia	Macedonia	Togo
Comoros	Malawi	Tunisia
Costa Rica	Malaysia	Turkey
Czech Republic	Mali	Uganda
Dem. Rep. of the Congo	Malta	Ukraine
Denmark	Mauritius	United Kingdom
Dominica	Mexico	United States of Am.
Dominican Republic	Moldova	Uruguay
Egypt	Morocco	Zambia
Estonia	Namibia	
Ethiopia	Nepal	
Finland	Netherlands	
France	New Zeland	

Countries in bold letters are considered as developed countries following the World Bank

Table 1.11: Data sources

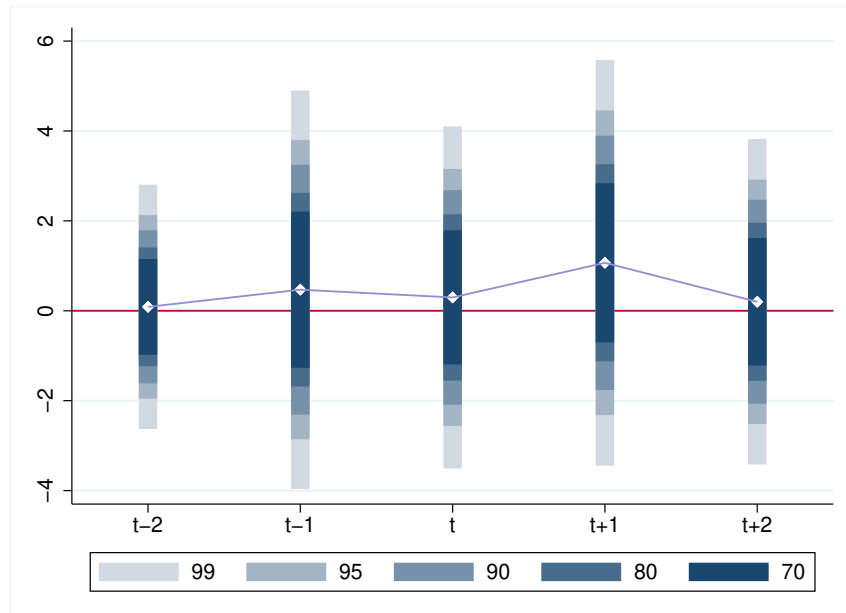
Variable	Sources
M0, M1 & M2	<i>International Financial Statistics</i> (IFS) database - International Monetary Fund
Policy Rate	Monetary and Financial Statistics (MFS) database - International Monetary Fund
CBIE	Data computed by Romelli (2022)
Ygap, Inflation & Credit	<i>World Development Indicators</i> (WDI) database - World Bank
Fix	Data computed by Levy-Yeyati and Sturernegger (2016) Completed using the work of Ilzetzki et al. (2017)
Election measures	<i>Database of Political Institutions</i> (DPI) - Beck et al. (2001) 2017 version <i>Election Guide</i> - International Foundation for Electoral Systems (IFES) <i>Voter Turnout Since 1945</i> database - Institute for Democracy and Electoral Assistance (IDEA) Data computed by Nohlen et al. (1999, 2001a,b, 2005a,b, 2010) National Elections Across Democracy and Autocracy (NELDA) - Hyde and Marinov (2012) 2015 version Free and Fair Elections - Bishop and Hoeffler (2016) 2016 version
Fiscal Deficit	Government Finance Statistics (GFS) - International Monetary Fund
CEI	Variable <i>v2xel_frefair</i> - <i>Varieties of Democracy</i> (V-Dem) database Version 9 (2019)
CreationCB, IT & Monetary union membership	Data computed using the central bank hub - Bank for International Settlements (BIS)
Developed/Developing Countries	World Bank classification available here: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups 2020 version
Political regime	Variable <i>system</i> - <i>Database of Political Institutions</i> (DPI) - Beck et al. (2001) 2017 version
Government ideology & yrcurnt	Variable <i>execrlc</i> - <i>Database of Political Institutions</i> (DPI) Beck et al. (2001) 2017 version

Figure 1.2: Pre- and post-treatment estimation of the average treatment effect of a pre-electoral period on $M2$ growth (% of growth)



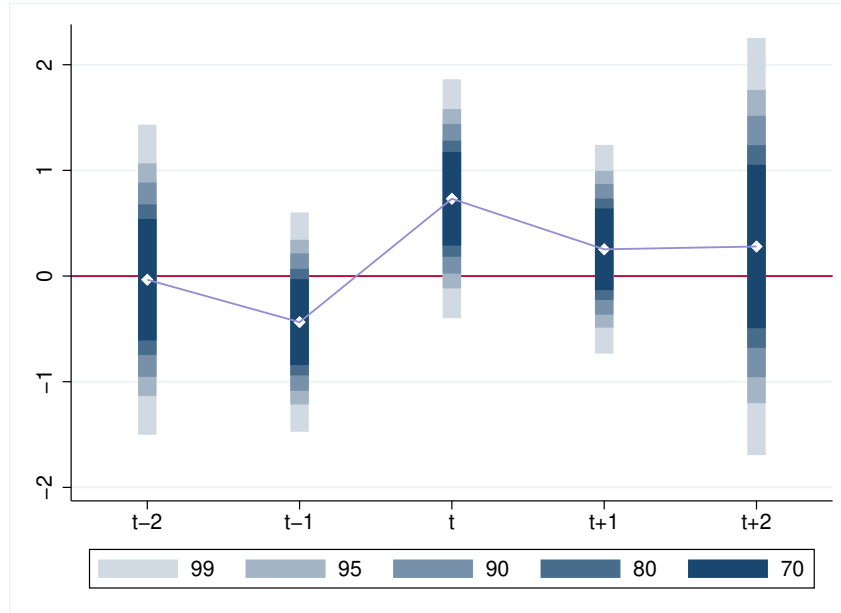
Outcome variable: $M2$; Treatment variable: *Election*; X variables: $M2(t-1)$, $CBIE$, $Ygap$, $Inflation$, $Credit \& Fix$; Parallel trend test: *passed* ($F(2, 94) = 1.10$; $Prob > F = 0.3381$); Nbr. observations: 1237; Nbr. countries: 95

Figure 1.3: Pre- and post-treatment estimation of the average treatment effect of a pre-electoral period on $M0$ growth (% of growth)



Outcome variable: $M0$; Treatment variable: *Election*; X variables: $M0(t-1)$, $CBIE$, $Ygap$, $Inflation$, $Credit \& Fix$; Parallel trend test: *passed* ($F(2, 761) = 0.04$; $Prob > F = 0.9606$); Nbr. observations: 749; Nbr. countries: 55

Figure 1.4: Pre- and post-treatment estimation of the average treatment effect of a pre-electoral period on the money multiplier ($M1/M0$) growth (% of growth)



Outcome variable: $M1/M0$; Treatment variable: *PreElection*; X variables: $M1/M0(t-1)$, *CBIE*, *Ygap*, *Inflation*, *Credit & Fix*; Parallel trend test: *passed* ($F(2, 53) = 0.68$; $Prob > F = 0.5131$);
Nbr. observations: 737; Nbr. countries: 54

Table 1.12: Dummies used in Table 1.9

Dummies	Countries
Inflation Targeting (IT)	Albania, Australia, Brazil, Canada, Chile, Colombia, Czech Republic, Dominican Republic, Ghana, Guatemala, Hungary, India, Indonesia, Japan, Mexico, Moldova, New Zealand, Paraguay, Peru, Philippines, Poland, Russia, South Africa, South Korea, Sweden, Turkey, Uganda, United Kingdom, Uruguay
Economic and Monetary Community of Central African States (CEMAC)	Cameroon, Central Afr. Rep., Chad, Gabon
Eastern Caribbean Central Bank (ECCB)	Antigua & Barbuda, Dominica, Grenada, St. Kitts & Nevis, St. Lucia, St. Vincent & the Gren.
European System of Central Banks (ESCB)	Bulgaria, Czech Republic, Denmark, Hungary, Poland, Sweden
West African Economic and Monetary Union (WAEMU)	Benin, Burkina Faso, Ivory Coast, Mali, Niger, Senegal, Togo

Table 1.13: Main results with a standard fixed effects estimator

M1 growth (% of growth)								
	(1) ^{FE}	(2) ^{FE}	(3) ^{FE}	(4) ^{FE}	(5) ^{FE}	(6) ^{FE}	(7) ^{FE}	(8) ^{FE}
M1(t-1)	0.064 (0.039)	0.063 (0.039)	0.064 (0.039)	0.064* (0.039)	0.064* (0.039)	0.064 (0.039)	0.065* (0.038)	0.065* (0.039)
CBIE	-1.222 (2.281)	-1.225 (2.288)	-1.234 (2.283)	-1.218 (2.274)	-1.227 (2.276)	-1.212 (2.290)	-1.228 (2.267)	-1.218 (2.274)
Ygap	5.615*** (1.546)	5.640*** (1.547)	5.635*** (1.548)	5.572*** (1.544)	5.592*** (1.546)	5.638*** (1.550)	5.570*** (1.544)	5.595*** (1.548)
Inflation	0.224*** (0.075)	0.228*** (0.075)	0.226*** (0.075)	0.223*** (0.075)	0.224*** (0.076)	0.227*** (0.075)	0.223*** (0.075)	0.225*** (0.076)
Credit	-0.092*** (0.024)	-0.091*** (0.024)	-0.091*** (0.024)	-0.092*** (0.024)	-0.091*** (0.024)	-0.091*** (0.024)	-0.091*** (0.024)	-0.091*** (0.024)
Fix	2.161** (1.048)	2.180** (1.049)	2.155** (1.046)	2.165** (1.046)	2.161** (1.045)	2.158** (1.044)	2.149** (1.045)	2.148** (1.040)
Election		0.676 (0.498)						
ElectionDpre			0.586 (0.470)		0.395 (0.468)			
ElectionDpost				-0.774 (0.552)	-0.661 (0.557)			
ElectionIpre						1.175* (0.618)		1.060* (0.614)
ElectionIpost							-1.164 (0.740)	-1.049 (0.737)
Constant	16.181*** (1.941)	15.986*** (1.939)	16.025*** (1.953)	16.362*** (1.943)	16.229*** (1.962)	15.859*** (1.949)	16.451*** (1.941)	16.134*** (1.952)
Nbr. observations	1980	1980	1980	1980	1980	1980	1980	1980
R2 overall	0.147	0.148	0.148	0.148	0.148	0.149	0.148	0.149

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Regressions are computed using a classic fixed effects estimator

Robust standard errors are provided in parenthesis

M1 and Inflation are limited to values below 75% in absolute terms.

Table 1.14: Main results on $M1$ with different thresholds

M1 (% of growth)	M1 < 100%			M1 < 50%		
	(6) ^{100%}	(7) ^{100%}	(8) ^{100%}	(6) ^{50%}	(7) ^{50%}	(8) ^{50%}
M1(t-1)	0.144*** (0.047)	0.143*** (0.049)	0.144*** (0.048)	0.130*** (0.049)	0.130** (0.050)	0.131*** (0.049)
CBIE	0.458 (2.126)	0.204 (2.014)	0.398 (2.085)	1.430 (2.227)	1.475 (2.187)	1.430 (2.203)
Ygap	-1.141 (2.938)	-1.238 (3.091)	-1.084 (2.935)	-0.419 (2.405)	-0.571 (2.421)	-0.479 (2.429)
Inflation	0.712*** (0.126)	0.715*** (0.130)	0.716*** (0.128)	0.610*** (0.139)	0.615*** (0.141)	0.614*** (0.139)
Credit	-0.064*** (0.024)	-0.063** (0.026)	-0.063** (0.026)	-0.051** (0.025)	-0.052** (0.025)	-0.051** (0.025)
Fix	1.929* (1.126)	2.001* (1.140)	1.992* (1.120)	1.687 (1.087)	1.730 (1.106)	1.704 (1.086)
ElectionIpre	1.282** (0.611)		1.140* (0.609)	1.155* (0.631)		1.076* (0.641)
ElectionIpost		-1.206 (0.861)	-1.046 (0.855)		-0.895 (0.788)	-0.726 (0.792)
Nbr. observations	1883	1883	1883	1816	1816	1816
Nbr. instruments	69	69	70	55	55	56
AR(1) test	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test	0.685	0.701	0.693	0.562	0.575	0.575
Sargan C -test	0.002	0.002	0.002	0.000	0.000	0.001
Hansen J -test	0.465	0.393	0.431	0.395	0.379	0.396

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Regressions are computed using a dynamic difference-GMM estimator

Robust standard errors are provided in parenthesis

Inflation is limited to values below 75% in absolute terms.

Chapitre 2

Chapter 2

Do Conservative Central Bankers Weaken the Chances of Conservative Politicians?¹

2.1 Introduction

Political business cycle (PBC) theories have long documented that politicians are incentivized to manipulate macroeconomic variables to their benefit. The opportunistic approach of PBC depicts strategic politicians who seek to be reelected and are facing short-sighted (or rational) voters. The incumbent is then tempted to stimulate economic activity before the election to fool electors (Nordhaus, 1975) or to pose as competent (Rogoff and Sibert, 1988). The partisan approach of PBC highlights the possibility that governments may seek to satisfy voters through ideologically driven policy.²

Against this background, efficient institutions can limit the discretion of politicians and attempt to mitigate the harmful impacts of their strategic behavior (Alesina et al., 1989; Shi and Svensson, 2006). This argument has been particularly developed in the area of monetary policy. Appropriate monetary arrangements, such as ensuring the independence of the central bank (Kydland and Prescott, 1977; Barro and Gordon, 1983), nominating a conservative central banker (Rogoff, 1985; Lohmann, 1992), optimizing contracts and inflation targeting (Walsh, 1995; Svensson, 1997), or fixing exchange rate regimes (Shambaugh, 2004), can weaken the incentives for the possibility of incumbents opportunistically controlling monetary variables before elections. By delegating some

¹This chapter is a joint work with MENUET Maxime and VILLIEU Patrick. A previous version of this chapter is available as a HAL working paper, see : <https://hal.archives-ouvertes.fr/hal-03479411/>.

²This approach can be defended whether voters are considered myopic (Hibbs, 1977) or rational (Alesina, 1988a).

power to an independent, unelected institution, a weak government can take advantage, in the form of credibility gains, from having its hands tied (Giavazzi and Pagano, 1988). In the same way, society can benefit from tying the hands of future governments to avoid potentially harmful discretionary policies (Goodman, 1991).

However, independent monetary institutions are unlikely to eliminate all undesirable pre-election fluctuations because they may generate their own inefficiencies. Although no consensus has emerged in the literature about the existence of political monetary cycles (see Alpanda and Honig, 2009; Oriola, 2022), recent works using a partisan approach show that central banks' rate policy is not insulated from ideological preferences. For example, Abrams and Iossifov (2006) found evidence of an abnormally expansionary monetary policy when the incumbent US president and Federal Reserve (Fed) chair are affiliated with the same party, while Dentler (2019) showed that the Fed hikes rates before elections when the chair is from a different party.

The main message conveyed by these papers is that, although independent, central bankers are not politically indifferent, as argued by Clark and Arel-Bundock (2013). Following these authors, if central bankers are more conservative than the median voter (as suggested by Rogoff, 1985), their preferences for policy objectives can be translated into government preferences. Specifically, if the Fed chair is an inflation hawk, they would prefer to see a Republican president elected, provided that Republicans are further to the right on the Phillips curve than are Democrats. Analyzing data on over half a century of monetary policy in the US, Clark and Arel-Bundock (2013) asserted that the Fed acts in ways that promote the (re)election of Republican presidential candidates because interest rates decline as elections approach when Republicans control the White House but rise when Democrats do.

In this chapter, we challenge the claim that a conservative central bank strengthens the chances of a conservative (*i.e.*, inflation-averse) president or government. In contrast, if the election is based on the comparative advantages of the different candidates (*i.e.*, their skills or ideological preferences for solving a particular problem), an inflation-averse central banker can deter the chances of a conservative candidate because once inflation is removed, its comparative advantage in the fight against inflation disappears. This may explain why the interest rate declines before elections when the incumbent is a Republican but rises when it is a Democrat. The reason is not that the central bank has ideological preferences but simply that it does not want to deviate from its inflation target.

Our argument applies to different institutional designs: it holds whether or not the central bank is independent, because any pre-election increase in the interest rate will disadvantage the conservative candidate in the vote, and can be adapted to different democratic governance systems (parliamentary, presidential,...). We develop this argument by adopting an integrated strategy that

combines theoretical modeling and empirical evaluation.

Theoretically, our model is based on a simple aggregate demand-aggregate supply framework. Inflation and activity depend on fiscal and monetary policies, and agents make rational expectations. In this stylized economy, we consider a strategic game between two politicians (R and D) who seek to be elected, citizen voters, and a central bank who has own preferences over inflation and activity. The two politicians are distinguished by their location on the Phillips curve; the type- R politician is relatively more inflation-averse than the type- D politician. Before the election, the two candidates announce the fiscal policy program they will implement, if elected.³ At the same time, the central bank computes the policy rate it will implement after the election.

The election is modeled through a probabilistic voting model, following Lindbeck and Weibull (1987) and Persson and Tabellini (2000). Voters are characterized by their personal preferences for economic activity and inflation. In such a setup, it is well known that the election probability of the two candidates depends on their respective ideological preferences, namely, their relative preferences for economic activity and inflation. However, due to the presence of another player—the central bank—the election probability also depends on the policy rate. More precisely, our model shows that any increase in the interest rate leads to a decrease in the election probability of a type- R candidate. Intuitively, by increasing the nominal interest rate, the central bank decreases inflation after the election irrespective of the elected politician. This policy benefits the more inflationist type- D candidate relatively more than the less inflationist type- R candidate, as the comparative advantage of the conservative candidate in the election is reduced by the more stringent monetary policy. Consequently, the more conservative the central bank is, the higher the chances of the inflationist politician.

Empirically, we test this prediction using popularity functions for UK governments and political parties based on monthly data from 1987 to 2015. This choice is motivated by several arguments. First, despite its parliamentary multi-party system, the UK is characterized by strong bi-partisanship, where only two parties have held power. These two main political forces are significantly different in terms of inflation and unemployment preferences.⁴ Second, both parties have ruled the country for similar amounts of time and won an equivalent number of elections. Third, the sample period (1987M1-2015M12) is selected for two reasons. On the one hand, we want to exclude the post-2016 period characterized by the emergence of the UK Independence Party (UKIP) and the Brexit episode. On the other hand, the sample period begins in the late 1980s for two reasons. First, the mid-1980s were marked by financial innovations that may have affected monetary policy. Our empirical investigations do not point to any structural change in the policy

³For the sake of simplicity, we ignore time inconsistency issues and suppose that these announcements are binding.

⁴Although there is a significant third party (the Liberal), we claim that the theoretical model complies with the recent British political history if we equate the Labour Party with the type- D candidate and the Conservative Party with the type- R one.

rate over the sample period, although the Bank of England achieved operational independence in 1997. Second, this period excludes several snap elections (1966, February and October 1974, 1979 and 2017) that would bias our results.

Our main finding is that an increase in the interest rate negatively impacts the popularity of the incumbent in the pre-election period when it is a Tory.⁵ In contrast, no significant effect is found when the incumbent is from the Labour. Thus, monetary policy impacts the pre-election popularity of the Conservative Party only.

This chapter is related to a large strand of literature showing that an incumbent politician or government can implement policy measures at odds with its preferences (or those of its supporters) to maintain a comparative advantage in elections. Milesi-Ferretti (1995) highlights that an inflation-averse government may refrain from designating a conservative central banker to preserve its comparative advantage against less inflation-averse politicians.⁶ Recent papers (Fergusson et al., 2016; Menuet and Villieu, 2021) underline the necessity to keep the enemy alive as a way to ensure future electoral success by taking the wind out of the sails of the incumbent's challengers. In these papers, devoting too much effort to solving a task (such as reducing inflation) decreases the chances of an incumbent being reappointed.

The contribution of the present chapter is to show that a noncooperative policy mix can lead to a similar situation. Effectively, in our model, the task (*i.e.*, reducing inflation) can be addressed by two players: either the government—through the use of fiscal policy—or the central bank—by the choice of its policy rate. Consequently, the paradoxical effect of a tighter monetary policy arises from the noncooperative policy-mix game that leads to elimination of the comparative advantage of the more conservative candidate. The central bank unintentionally favors the inflationary candidate through its policy choice because conservative candidates will appear less attractive in the electors' eyes since the central bank is already doing its job. Thus, the message of this chapter is that an overly conservative central bank will erode the comparative advantage of the Conservative Party and weaken its chances of winning future elections.⁷

The rest of the chapter is organized as follows. Section 2 presents the theoretical setup, and Section 3 outlines the solution of the model. Section 4 details the empirical investigation and discusses the data. Section 5 highlights the main empirical results, and Section 6 presents robustness

⁵Specifically, the more restrictive monetary policy is 10 months prior to a general election, the less popular the right-wing party will be. This result is robust to the econometric model and the measure of monetary policy orientation.

⁶The same argument is developed by Persson and Svensson (1989), Aghion and Bolton (1990), Hodler (2011), or Menuet and Villieu (2021) in an analysis of public debt.

⁷In another context, this idea is supported by recent Greek political history. As developed by Stavrakakis and Katsambekis (2014), the austerity required by the *Troika* (the EU, ECB, IMF) since 2008 played an active role in the electoral victory of the left-wing party *Syriza* in 2015 and the defeat of the most conservative parties. More generally, Huebscher et al. (2021) show that austerity measures reduce incumbents' chances of future electoral success. Another example is the victory of the Five Star Movement and Lega in 2018 in Italy (D'Alimonte, 2019) or several Latin American countries studied by Sachs (1990) or Dornbusch and Edwards (1991) while developing their concept of populist cycles.

tests. Finally, Section 7 concludes.

2.2 The theoretical model

We consider a game-theoretic approach based on a static model where the equilibrium of a typical closed economy is described by the following pair of equations:

$$y = Ag - Br, \quad (2.1)$$

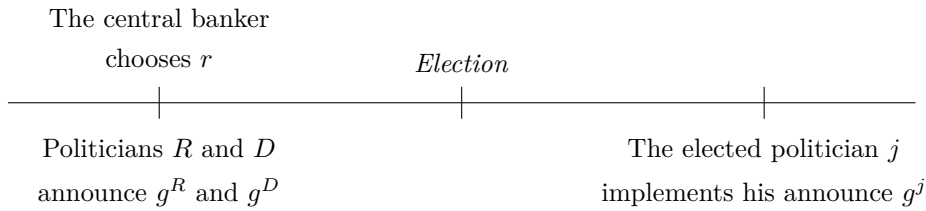
$$\pi = Cg - Kr, \quad (2.2)$$

where A , B , C and K are positive parameters. Both the equilibrium output gap (y) and the inflation rate (π) depend positively on public spending (g) the policy instrument of the government and negatively on the nominal interest rate (r) the policy instrument of the central bank.

The reduced-form (2.1)-(2.2) can be the result of a standard aggregate supply-aggregate demand framework (*i.e.*, a flexible-price IS-LM model), for example. In this setup, the aggregate demand depends positively on public spending (g) and negatively on the real interest rate (*i.e.*, the nominal interest rate r less inflation π), and the aggregate supply positively depends on inflation (a Phillips curve), with all variables expressed as log-deviations from a long-run steady state.

Although we consider a static single-period model, we introduce a timing for the election. At the beginning of the period, two politicians, indexed by $j = R, D$, compete for being elected. Each politician j announces his electoral platform, namely, the amount of public spending (g^j) he will implement if elected. At the end of the period, the election takes place, and elected politician implements his announced policy platform.⁸

Figure 2.1: The electoral sequence



The timing of events (see Figure 2.1) is as follows:

1. At the beginning of the period, the two candidates, simultaneously and noncooperatively, announce their electoral platforms (g^R , g^D), and the central bank fixes the nominal interest rate r knowing these platforms but without knowing the result of the election.

⁸According to Persson and Tabellini (2000), to avoid time-inconsistency issues that are not the purpose of the present chapter, candidate announcements are assumed to be binding.

2. The election is held, in which voters choose between the two candidates.
3. The elected candidate implements his announced policy platform, and the game ends.

2.2.1 Citizens

In the economy, there are N districts indexed by i , each populated by a continuum of voters with measure normalized to unity. Voters are characterized by their personal preferences towards the output gap and inflation. Hence, in each district i , the representative citizen has the following linear-quadratic loss function:

$$L_i^j = \frac{1}{2}(\pi^j)^2 - \lambda_i y^j, \quad (2.3)$$

where y^j and π^j are the output gap and the inflation rate, respectively, implemented if politician j is elected (namely, if policy g^j is implemented), and $\lambda_i \geq 0$ represents preferences of citizen i (thereafter we identify district i to citizen i) for output relative to inflation. We denote by $\bar{\lambda} = \sum_{i=1}^N \lambda_i / N$ the society's average preference for output.

This loss function closely follows the seminal setup of Barro and Gordon (1983). The first term is the cost of inflation, where the use of a quadratic form implies that these costs rise at an increasing rate with the rate of inflation. In addition, positive and negative deviations from zero in the inflation rate are regarded as generating costs since deflationary and inflationary situations are costly. The optimal rate of inflation is set to zero without loss of generality. The second term is the benefit of output, which is assumed to be linear for convenience.

2.2.2 Politicians

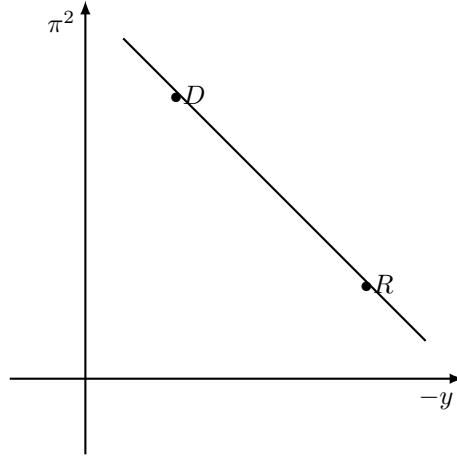
Politicians are interested in inflation and the output gap and attempt to minimize a loss function analogous to Eq. (2.3). In addition, they have a preference for public spending; hence, we define the loss function of type- j politicians as

$$L^j = \frac{1}{2}[(\pi^j)^2 + \mu(g^j)^2] - \lambda^j y^j, \quad (2.4)$$

where $\mu > 0$ describes their preferences for public spending.

The term $(g^j)^2$ in the politician's loss function is subject to two interpretations. First, it can reflect a penalty incurred in case of deviations from a predetermined social objective (here, this target is zero). Second, it can mean that the elected politician incurs a private cost of changing public expenditure. Indeed, policy changes imply some economic and political costs, such as the administrative costs of reallocating resources for policy reform.

Figure 2.2: Candidates' preferences



The parameter λ^j is a measure of the preferences of politician j towards the output gap. Without loss of generality, we assume $\lambda^R < \lambda^D$, and define these parameters in terms of their deviation from the society's average preference, namely, $\lambda^R = \bar{\lambda} - \varepsilon/2$ and $\lambda^D = \bar{\lambda} + \varepsilon/2$. The parameter $\varepsilon > 0$ measures the degree of polarization.

Thus, politicians D and R distinguish themselves only by their difference in the inflation-output trade-off. Graphically, we represent in Figure 2.2 that both candidates preferred ideological positions at similar points along the Phillips curve. Politician R (resp. D) is thus assimilated to a party that is more (less) concerned with stabilizing inflation than output.

2.2.3 The central bank

The central bank minimizes a loss function similar to Eq. (2.3) with two qualifications. First, the central bank may (or may not) have a relative preference for output distinct from the citizens' average preference. Second, at the beginning of the period, the central bank does not know the result of the election; hence, it has to compute the expected value of inflation and the output gap to determine its optimal policy.

Let us define the expected output gap and inflation rate at the beginning of the period by $E(\pi) = p^R \pi^R + p^D \pi^D$ and $E(y) = p^R y^R + p^D y^D$, respectively, where p^j is the probability that politician j is elected. Hence, the central bank minimizes

$$L^B = \frac{1}{2}(E(\pi))^2 - \tilde{\lambda}E(y), \quad (2.5)$$

where $\tilde{\lambda}$ is the central bank's relative preference for the output gap.

2.3 Non cooperative political equilibrium

We first consider the Nash equilibrium between the central bank and the politicians. This equilibrium prevails when the central bank takes, as given in the politicians' announcements g^R and g^D . The three actors then determine their policies independently and simultaneously at the beginning of the period. Then, we analyze the configuration where the central bank plays as the leader of the game in subsection 3.5. First, let us describe the electoral side of the model.

2.3.1 Political competition

Voters have preferences for ideologies and the politicians' characteristics. Thus, citizen i receives additional expected utility $(\theta_i + \xi)$ if politician R takes power. To avoid generating a deterministic election outcome, this term includes two random components: θ_i , which is idiosyncratic, and ξ , which is common to all voters. Following the probabilistic voting models of Lindbeck and Weibull (1987) and Persson and Tabellini (2000), θ_i are independent random variables that are constant over time and uniformly distributed on $[-1/2, 1/2]$, and ξ reflects the (relative) general popularity of politician R , which is uniformly distributed on $[-1/2h, 1/2h]$ with density $h > 0$.

Then, from Eq. (2.3), if politician j is elected, citizen i 's expected utility is

$$U_i^j = \begin{cases} -L_i^R + \theta_i + \xi & = \lambda_i y^R - \frac{1}{2}(\pi^R)^2 + \theta_i + \xi & \text{if } j = R, \\ -L_i^D & = \lambda_i y^D - \frac{1}{2}(\pi^D)^2 & \text{if } j = D. \end{cases} \quad (2.6)$$

As is common in probabilistic voting models, citizen i supports candidate R if $U_i^R > U_i^D$, namely, if $\theta_i > \bar{\theta}_i$, where

$$\bar{\theta}_i := -\xi - \frac{1}{2} \left[(\pi^D)^2 - (\pi^R)^2 \right] - \lambda_i (y^R - y^D). \quad (2.7)$$

All citizens with $\theta_i > \bar{\theta}_i$ prefer candidate R . Given our assumptions about the distribution of ideological preferences, candidate R 's vote share in district i , denoted by δ_i^R , is the probability that citizen i votes for candidate R is

$$\delta_i^R = \mathbb{P} \{ \theta_i > \bar{\theta}_i \} = \int_{\bar{\theta}_i}^{1/2} dz = \frac{1}{2} - \bar{\theta}_i.$$

Hence, by (2.7),

$$\delta_i^R = \frac{1}{2} + \xi + \frac{1}{2} \left[(\pi^D)^2 - (\pi^R)^2 \right] + \lambda_i (y^R - y^D).$$

From both candidates' point of view, δ_i^R is a random variable since it is a transformation of the random shock ξ . The electoral outcome is thus a random event related to the realization of the popularity shock ξ . Let us consider a majoritarian rule in which the candidate having obtained

less than 50% of all votes wins the election. Under this rule, the election probability of candidate R is

$$p^R = \mathbb{P} \left\{ \sum_{i=1}^N \delta_i^R \geq \frac{N}{2} \right\} = \mathbb{P} \left\{ \xi \geq -\frac{1}{2} \left[(\pi^D)^2 - (\pi^R)^2 \right] - \bar{\lambda}(y^R - y^D) \right\}.$$

Of course, candidate D wins with probability $p^D = 1 - p^R$. Hence, following our distributional assumption about the popularity shock

$$p^R = \frac{1}{2} + \frac{h}{2} \left[(\pi^D)^2 - (\pi^R)^2 \right] - h\bar{\lambda}(y^D - y^R). \quad (2.8)$$

2.3.2 Politicians' behavior

Each politician j chooses their electoral platform (g^j) by minimizing their loss function. From equilibrium equations (2.1)-(2.2), politician j 's loss function (2.4) becomes

$$L^j = \frac{1}{2} [(Cg^j - Kr)^2 + \mu(g^j)^2] - \lambda^j (Ag^j - Br).$$

The first-order condition is⁹

$$\frac{\partial L^j}{\partial g^j} = 0 \Leftrightarrow \lambda^j A - C(Cg^j - Kr) - \mu g^j = 0.$$

The value of public spending is then

$$g^j = \frac{\lambda^j A + KCr}{\mu + C^2}. \quad (2.9)$$

Eq. (2.9) is the fiscal reaction function to the interest rate implemented by the central bank. Any increase in the interest rate (r) leads to an increase in public spending (g^j), regardless of the characteristics of the government. This positive retroaction is common in neo-Keynesian frameworks. Moreover, as $\lambda^R < \lambda^D$, a type- D government will implement a higher amount of public spending than a type- R government due to their greater concern over the output gap.

From (2.9), the values of inflation and the output gap are, with $W = B\mu + C(BC - AK)$

$$y^j = \frac{A^2 \lambda^j - Wr}{\mu + C^2}, \quad (2.10)$$

$$\pi^j = \frac{AC\lambda^j - \mu Kr}{\mu + C^2}. \quad (2.11)$$

As $\lambda^R < \lambda^D$, the inflation rate and the output gap will both be higher, *ceteris paribus*, when

⁹The second-order condition is satisfied since $\partial^2 L^j / \partial (g^j)^2 = \mu + C^2 > 0$.

politician D is elected. This feature holds irrespective of the central bank's behavior, since the interest rate does not depend on the politician who holds power. Indeed, the central bank does not know the outcome of the election at the time it decides its policy (*i.e.*, the interest rate only depends on expected inflation).

However, the behavior of the central bank will affect the expected inflation rate, as its policy will influence the candidates' election probability. This issue is addressed in the next subsection.

2.3.3 Computation of election probability

Introducing Eqs. (2.10)-(2.11) in (2.8), we obtain

$$p^R = \frac{1}{2} - \frac{Ah\mu\varepsilon}{(\mu + C^2)^2}(CKr + \tilde{\lambda}A) =: p(r). \quad (2.12)$$

This relation is the fundamental result of this chapter. If there was no difference in preferences about inflation and output between the two candidates ($\lambda^D = \lambda^R \Leftrightarrow \varepsilon = 0$), the election probability would be simply $1/2$. However, as long as $\varepsilon > 0 \Leftrightarrow \lambda^D > \lambda^R$, any increase in the interest rate reduces the election probability of a type- R candidate, namely, $p'(r) < 0$. Indeed, by increasing the nominal interest rate before the election, the central bank decreases expected inflation irrespective of the elected politician. This policy benefits the more inflationist type- D candidate relatively more than the less inflationist type- R candidate. Thus, the comparative advantage of the type- R candidate is reduced via tighter monetary policy. A high interest rate will thereby weaken the type- R candidate as the central bank does its job by controlling the inflation rate.

The final step in the model is the derivation of the interest rate from the central bank's behavior.

2.3.4 The central bank's behavior

In the Nash equilibrium, the central bank minimizes its loss function L^B by taking p^R and p^D as given. Using Eqs. (2.1), (2.2) and (2.5), the first-order condition is¹⁰

$$-\frac{\partial L^B}{\partial r} = 0 \Leftrightarrow -E(\pi)\frac{\partial E(\pi)}{\partial r} + \tilde{\lambda}\frac{\partial E(y)}{\partial r} = 0 \Leftrightarrow KE(\pi) - \tilde{\lambda}B = 0,$$

hence,

$$E(\pi) = \frac{B}{K}\tilde{\lambda}. \quad (2.13)$$

The expected level of inflation thus positively and linearly depends on the central bank's preference for output. Intuitively, the more conservative the central bank (*i.e.*, the lower $\tilde{\lambda}$), the lower the expected inflation.

¹⁰Effectively, $\partial E(\pi)/\partial r = -p^R K - p^D K = -K(p^R + p^D) = -K$, and $\partial E(y)/\partial r = -p^R B - p^D B = -B(p^R + p^D) = -B$.

At equilibrium, as $E(\pi) = \pi^R + (1 - p(r))(\pi^D - \pi^R)$, the policy rate implemented by the central bank is, using (2.11) and (2.12)

$$r = \frac{\lambda}{X} \left\{ AC + \frac{\mu h A^3 C \varepsilon^2}{(\mu + C^2)^2} - \frac{B(\mu + C^2)\tilde{\lambda}}{K\bar{\lambda}} \right\}, \quad (2.14)$$

with

$$X := \mu K \left[1 - \frac{h A^2 C^2 \varepsilon^2}{(\mu + C^2)^2} \right]. \quad (2.15)$$

For a small degree of polarization (*i.e.*, $\varepsilon^2 < \frac{1}{h}(\frac{\mu+C^2}{AC})^2$), we have $X > 0$ and $\partial r / \partial \tilde{\lambda} < 0$, such that the interest rate is positively related to the degree of central bank conservatism. Hence, owing to (2.12), the higher the degree of central bank conservatism, the higher the electoral chances of the inflationist type- D politician.

It intuitively follows that a conservative central bank weakens the comparative advantage of conservative politicians in elections. In accordance with a need for enemies effect (see, *e.g.*, Ferguson et al., 2016; Menuet and Villieu, 2021), the advantage of appointing a conservative politician is that he/she will be more likely to tackle the inflation problem if elected. However, if the central bank reduces this problem through its interest rate policy, this advantage is eroded.

We can therefore compute the neutral interest rate r^n such that the chances of both candidates in the election are $1/2$. This rate corresponds to $r^n = -\tilde{\lambda}A/CK$ in Eq. (2.12). If society could choose the degree of conservatism of the central banker (measured by the term $\tilde{\lambda}/\bar{\lambda}$), this neutral interest rate would be implemented for $\tilde{\lambda}/\bar{\lambda} = AK/BC$. A high degree of central bank conservatism (namely, $\tilde{\lambda}/\bar{\lambda} < AK/BC$) will favor the inflationist candidate (*i.e.*, $p(r) < 1/2$), while a low degree of conservatism ($\tilde{\lambda}/\bar{\lambda} > AK/BC$) will favor the type- R candidate (*i.e.*, $p(r) > 1/2$). Hence, through the institutional design of the monetary framework, a society can voluntarily or involuntarily increase or decrease the chances of a certain type of candidate in elections.¹¹

2.3.5 A Stakelberg game with a leading central bank

In this subsection, we relax the assumption that the central bank and politicians act simultaneously by considering the central bank as the leader in the policy-mix game. In this case, the central bank takes the politicians' reaction function to the interest rate (2.9) into account when minimizing its loss function. As usual, the game is solved by backwards induction. We first establish politician j 's strategy at the end of the period, when elected; we then compute the interest rate implemented by the central bank at the beginning of the period.

Politician j 's behavior (2.9) is unchanged. However, as it is now a leader in the game, the central bank needs to internalize the impact of its action on the politicians' election probability

¹¹For instance, a type- R incumbent has an interest in designating a central banker that is not too conservative so as to preserve their chances of reelection. This illustrates of the analysis of Milesi-Ferretti (1995).

$p(r)$. Hence, the program of the central bank is now

$$\text{Min}_r \left\{ \begin{aligned} & -\tilde{\lambda} [p(r)[Ag^R(r) - Br] + (1 - p(r))[Ag^D(r) - Br]] \\ & + \frac{1}{2} [p(r)[Cg^R(r) - Kr] + (1 - p(r))[Cg^D(r) - Kr]]^2 \end{aligned} \right\}, \quad (2.16)$$

with $p(r)$ and $g^j(r)$ defined in (2.12) and (2.9), respectively, for any $j = R, D$.

Using (2.9), we have $\partial g^j / \partial r = KC / (\mu + C^2) =: g'(r)$, and the first-order condition of program (2.16) gives rise to the following expected value of inflation:

$$E(\pi) = \frac{\tilde{B}}{\tilde{K}} \tilde{\lambda}, \quad (2.17)$$

where $\tilde{B} := B + p'(r)(y^D - y^R) - Ag'(r)$, and $\tilde{K} := K + p'(r)(\pi^D - \pi^R) - Cg'(r)$.

For the second-order condition to be verified, it must be the case that $\tilde{K} > 0$, which is true for a small degree of differentiation between the politicians. In addition, $\tilde{B} > 0$ under the (unnecessary) sufficient condition $AK < BC$ that we assume hereafter. Under such conditions, it follows that $\tilde{B}/\tilde{K} > B/K$.¹² Hence, compared to Eq. (2.13), when the central bank acts as the leader in the game, the expected inflation rate will be higher than that in the Nash equilibrium. The corresponding interest rate implemented by the central bank will be lower and defined by

$$r = \frac{\bar{\lambda}}{X} \left\{ AC + \frac{\mu h A^3 C \varepsilon^2}{(\mu + C^2)^2} - \frac{\tilde{B}(\mu + C^2) \tilde{\lambda}}{\tilde{K} \bar{\lambda}} \right\}. \quad (2.18)$$

The intuition is the following. In the Stakelberg equilibrium, the central bank internalizes that its policy rate will affect election probabilities. As the central bank aims to reduce inflation, to avoid the more inflationist type- D candidate being favored in the election, it adopts a less stringent interest rate, since a higher interest rate would lower the chances of the less inflationist type- R candidate. This supports our idea that the central bank influences, even unintentionally, the outcome of the election and that a high interest rate policy decreases the chances of the Conservative Party being elected.

Thanks to a basic policy-mix game of electoral competition, our theory provides two implications: (i) central bank policies affect electoral outcomes, and (ii) a tight monetary policy in pre-electoral periods reduces the electoral chances of the Conservative Party. The rest of the chapter aims to test these implications in the context of British politics.

¹²Indeed, $\tilde{B}/\tilde{K} > B/K \Leftrightarrow CK(BC - AK) > p'(r)A\varepsilon(BC - AK) \Leftrightarrow CK > p'(r)A\varepsilon$, which is true because $p'(r) < 0$.

2.4 Empirical investigation

To test such predictions, we estimate the popularity functions of the British government and its political parties on a monthly basis using a 29-years sample (1987M1-2015M12)¹³. Popularity functions are based on both macroeconomic indicators (*e.g.*, inflation and unemployment) and political variables (*e.g.*, dummies) used to measure major political events that impact British politics. We introduce the monetary policy orientation (*i.e.*, the interest rate) to study its impact on popularity ratings.

2.4.1 Econometric specification

Following Sanders (2000), we specify our popularity function as follows¹⁴

$$\begin{aligned} dGovernment_Approval_t = & \beta_0 + \beta_1 \left(dGovernment_Approval_{t-1} \right) + \beta_2 \left(dBase_Rate_t \right) \\ & + \beta_3 \left(PreElection10_t \right) + \beta_4 \left(PreElection10XdBase_Rate_t \right) \\ & + \beta_5 \left(dInflation_t \right) + \beta_6 \left(dInflation_{t-1} \right) \\ & + \beta_7 \left(dUnemployment_t \right) + \beta_8 \left(dUnemployment_{t-1} \right) \\ & + \beta_9 X_t + \varepsilon_t, \end{aligned}$$

with $dGovernment_Approval_t$ being the detrended popularity of the incumbent in month t , $dBase_Rate_t$ the main targeted interest rate, $PreElection10_t$ a dummy variable taking the value of 1 in the 10 months prior to a general election, $PreElection10XdBase_Rate_t$ the interaction term between $dBase_Rate_t$ and $PreElection10_t$, $dInflation_t$ the inflation rate, $dUnemployment_t$ the unemployment rate, X_t a vector of dummy variables measuring different political events, and ε_t an error term. The letter d represents that the variable is introduced as its first difference.

2.4.2 Data

Our main dataset consists of monthly data for the UK from January 1987 to December 2015 (348 observations). This period is selected for the availability of the data and the motivation to exclude both the *Brexit* episode and the different snap elections (1966, February and October 1974, 1979 and 2017).¹⁵ As specified above, the same model will be estimated using a broader sample-period

¹³As robustness, we estimate the main model on a broader sample (1987M1-2021M8) validating our main findings (see table A8 in the Appendix section)

¹⁴The main difference between our specification and that of Sanders (2000) is the number of lags. We introduce only one lag of $dInflation$ and $dUnemployment$ after the computation of several Hannan-Quinn (HQIC) and Schwarz (SBIC) information criteria, thus underlining that a single lag is optimal in our setup (see Lütkepohl, 2005).

¹⁵This excludes both the before 1987 and the post-2016 period in which the emergence of the Liberals and the UK Independence Party (UKIP) can challenge our hypothesis of only two main political forces in the country.

(1987M1-2021M8) with similar results.

Popularity shares & government approval

Our popularity data come from the *Opinion Polls Database from 1943 to the present (PollBase)* developed by Pack (2011) in his subsequent versions. We only consider the popularity of the Conservative and Labour parties, as no other party won a general election during the period under review.¹⁶ According to several stationarity tests, the two-party shares are not stationary. Thus, by applying a Hamilton (2018) filter, we use the cyclical components, labeled *hamConservative* and *hamLabour*, as our popularity ratings. In addition, the variable *dGovernment_Approval* corresponds to the former when the incumbent is from the Conservative Party and to the latter when the incumbent is from the Labour Party.¹⁷ These three variables will be our main independent variables throughout this analysis.

Measure of the pre-electoral period

When studying election-related phenomena, the method used to measure electoral periods is a key issue. Following the seminal measure implemented by Alesina et al. (1997), we define a dummy taking the value of 1 for a certain number of months before a national ballot including the electoral month. To account for the monetary policy transmission lag, we assume that the pre-electoral period starts 10 months before the general election. This is consistent with Cesa-Bianchi et al. (2020) when they identify that a monetary policy shock significantly impacts the economy from 8 to 18 months depending on the variable considered.¹⁸ Then, we introduce the dummy *PreElection10*, which takes the value of 1 for the 10 months before an election, so that the interaction variable *PreElection10XdBase_Rate* characterizes the pre-electoral effect of monetary policy. We will provide estimations with different pre-electoral periods as robustness tests in Section 6.2.

Measure of monetary policy

The impact of the Bank of England on political parties' popularity is measured using its monetary policy orientation. To attempt to capture the discretionary component of its monetary policy, we

¹⁶Plack's data concern Great Britain, while our other variables are on the UK. As Northern Ireland represents a small part of the overall population of the UK, we consider Great Britain's popularity scores to be a reasonable proxy for those of the UK. To provide further support for this hypothesis, we compute the difference in general election results between the two regions from 1987 to 2015 without finding any significant differences (see Table A2.4 in the Appendix).

¹⁷As we suspect that this variable *dGovernment_Approval* will be characterized by a long memory process, we will estimate our model with a heterogeneous autoregressive model (Corsi, 2009) in subsection 6.3.

¹⁸More precisely, the authors underline that the effect on the consumer price index peaks 10 months after the shock. On the policy rate, the impact is significant on a 8 months period (see Figure 2.2, 89).

use the main interest rate targeted by the Bank of England (measured by the variable *Base_Rate*), obtained through the *Official Bank Rate History Data from 1694*.¹⁹ This dataset consists of the exact dates on which the main targeted rate has been changed from 1694 to the present.²⁰ Moreover, as the variable *Base_Rate* is not stationary, we use its first difference (*dBase_Rate*) to study pre-electoral changes in the monetary policy orientation.

Inflation & Unemployment

As in our theoretical model, we introduce inflation and unemployment as control variables. We use seasonally adjusted OECD data in first differences (*dInflation* and *dUnemployment*).

Major political & economic events.

Many political and economic events may impact government approval. We can mention, *e.g.*, the well-known *Rally-Round-the-Flag* effect consisting of an increase in incumbent popularity following international crises, such as a declaration of war (Mueller, 1970), or the various political scandals that can erode politicians' public credibility (Smyth and Taylor, 2003).

Regarding the selection of such events, there is a consensus on the positive impact of the Falklands war declaration on Thatcher's popularity (Norpoth, 1987; Clarke and Whiteley, 1990), but few other events in British political history have been sufficiently studied to achieve a consensus. Hence, following Sanders (2004), we include many political events and keep only those that are significant as dummies taking the value 1 when the event occurs in a given period and 0 otherwise (see Table A2.5 in the Appendix).

2.4.3 Summary statistics

In our sample period, Conservatives were in office approximately 36% and Labour approximately 64% of the time (see Table A2.6 in the Appendix for more details). Conservatives have won 4 general elections against 3 for the Labour.²¹ In addition, 3 of the 5 Prime Ministers during the period were conservatives and 2 were from the Labour Party. British governments are characterized by a fairly long tenure (*i.e.*, an average of 6.9 years if we take into account Thatcher's tenure).

Figure 2.3 depicts the score of the three main political parties in the 7 general elections that

¹⁹Available at <https://www.bankofengland.co.uk/monetary-policy/the-interest-rate-bank-rate>

²⁰The targeted rate has changed twice during our study period: the target was the minimum band 1 lending rate (August 1981-April 1997), the repo rate (May 1997-July 2006) and the official bank rate (until August 2006). To ensure that these changes do not affect the variation of the base rate itself, we conduct Zivot and Andrews (1992) tests to identify potential endogenous break points. We do not find an endogenous break date corresponding to a change in the targeted rate.

²¹We consider the Cameron-Clegg coalition a Conservative type of government. Hence, as Sanders (2000), we consider the left-wing party as the winner of this election throughout this chapter.

took place between 1987 and 2015 . This graph provides some insights into the UK electoral pattern.

Since 2005, Conservatives and Labour are more competitive, and the difference in vote share become fairly small. The mean of the absolute difference between the vote shares of the two main parties in the last three elections is around 5.53 percentage points. Before 2005 (4 elections), in contrast, this absolute difference is approximately 10.4 percentage points, which has led to fewer election disputes. The major explanation is the long terms of Thatcher and Blair which truly advanced their own party's popularity.

Figure 2.3: Vote shares of the three main British political parties in general elections (1987-2015)

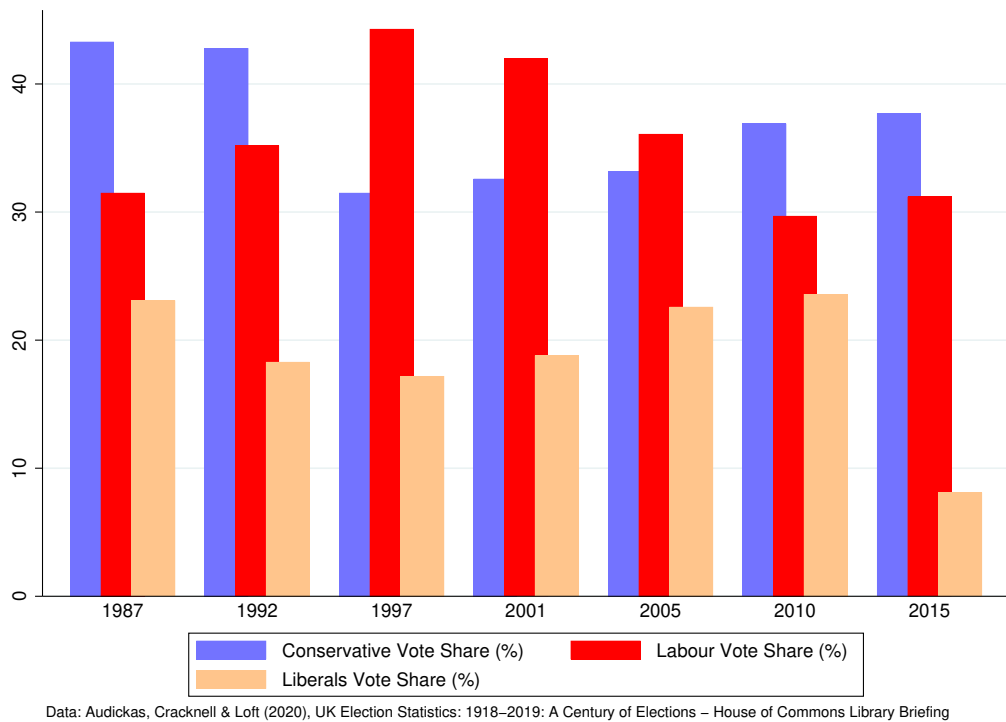
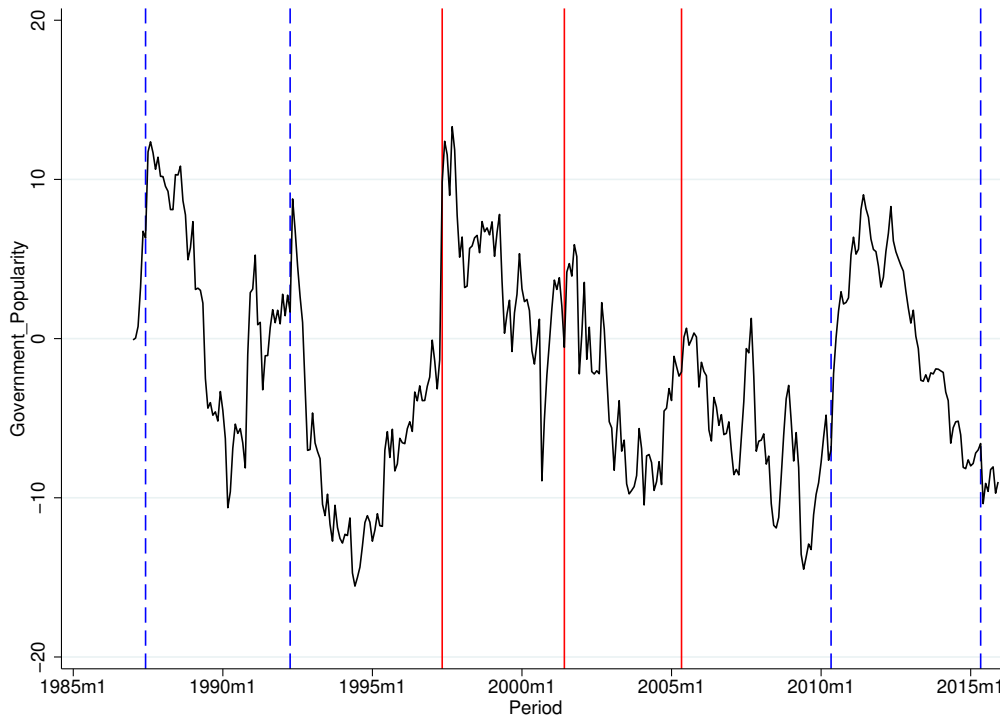


Figure 2.4 highlights electorally driven cycles in government popularity with a well-known “U-shaped” pattern. In a nutshell, incumbent’s popularity rate is mainly impacted in the beginnings and ends of tenures. To take into account this pattern in the incumbent’s approval, we compute two variables. (i) The variable *Honeymoon* takes the value 6 in the first month of the term and decreases to 0 within 7 months, as developed by Veiga and Veiga (2004). (ii) This variable is augmented by the introduction of our measure of the pre-election period *PreElection10*. Hence, beyond avoiding a potential omitted variable bias due to the presence of the interaction term *PreElection10XdBase_Rate*, the variable *PreElection10* also measures the increase in the incumbent’s popularity just before an election.

Finally, we present a table of summary statistics in which we divide our dataset into four subsamples: one for each incumbent political party, one in which the observations are not in a

Figure 2.4: Government popularity, cyclical component (1987-2015)



pre-election period, and one representing only observations over pre-election periods (see Table A2.7 in the Appendix).

2.5 Results

In this section, we report different estimations using a simple ordinary least squares (OLS) estimator.²² Our results are organized in three subsections. Subsection 5.1 presents regressions of government approval on our overall sample and on subdatasets in which the Conservative (Labour) party is in office. Subsection 5.2 presents the same model with the overall popularity of parties as the explained variable (*i.e.*, regardless of who holds the office). Finally, robustness checks are outlined in subsection 5.3.

²²The estimation of popularity functions can lead to some biases (Nannestad and Paldam, 1994; Lewis-Beck and Stegmaier, 2013), such that heteroscedasticity and autocorrelation (see, *e.g.*, Sanders, 2000). We control these potential biases by correcting standard errors thanks to the Newey and West (1987) procedure. Additionally, we implement this procedure with 3 to 4 lags in the autocorrelation structure depending on the subsample used. This number is obtained following Greene (2011), which advises selecting a number of maximum lags equal to the integer part of $T^{\frac{1}{4}}$ (p. 960). We adapt these criteria to the number of observations in each regression, leading some specifications to use 4 lags (those on the overall sample) and others to use 3 (when the sample is split by political party). Following this criterion, regressions on the period (1987M1-2021M8) are implemented with 4 lags despite the higher number of observation.

2.5.1 Government's approval

Our main results are reported in Table 2.1. As mentioned above, political scandals involving one party decrease the party's popularity (*Cash for Honors* and *PM Expenses Scandal*). The events of 9/11/2001 and the early warning signs of the global financial crisis in July 2007 also significantly impacted the popularity of the Labour Party. Finally, we confirm the existence of the "U-shaped" pattern in government popularity (see Figure 2.4) through the significance and positive signs of our variables *Honeymoon* and *PreElection10*.

Economic variables also affect the incumbent's approval rating in the expected direction. Right-wing politicians are favoured by an increase in the unemployment rate, while their left-wing peers are penalized by an increase in the unemployment rate. Hence, the popularity of incumbents is mainly influenced by the economic variable that they primarily defend in their proposed policy program (Wright, 2012). Nevertheless, regression (6) shows that Labour Party approval is also negatively affected by the variations in the main interest rate and past unemployment, thus validating Carlsen's (2000) mixed findings on the left-wing party.

Interestingly, when introduced, our main interest variable *PreElection10XdBase_Rate* is significant and negative only when the incumbent is a Tory (regression 4). Thus, an increase in the main interest rate in the 10 months prior to a national election has a significant and negative impact on government popularity when the Conservative Party is in power.²³ Specifically, a 1 percentage point increase in the interest rate in the 10 months prior to a national election decreases the popularity of a Tory government by approximately 2.4 percentage points relative to its trend. This result is consistent with the implications of our theory.

2.5.2 Parties' popularity

This subsection implements the same model using the popularity of parties regardless of whether they are incumbent. This allows studying the popularity of the opponent.

In Table 2.2, we present estimations explaining each party's popularity on three subsamples labeled as I, II and III. The first corresponds to the overall dataset, the second corresponds to a situation in which the Conservative Party is in power and the last corresponds to a Labour incumbent. Moreover, in the first section of the table (regressions 7, 8 and 9), our explained variable is the detrended popularity of the Conservative Party (*hamConservative*), while in the second section of the table (regressions 10, 11 and 12), it is the detrended popularity of the Labour Party (*hamLabour*). Once again, the variable *PreElection10XdBase_Rate* is only significant when the Conservative Party controls the government (regressions II). Moreover, even left-wing popularity

²³In contrast, increases in the main interest rate do not increase the popularity of the Labour Party, except when there is a Conservative incumbent (see regression (10) and (11) in Table 2.2).

is significantly impacted by conservative monetary policy when the incumbent is a Tory. This supports our main result that a pre-electoral restrictive monetary policy also increases Labour's popularity. More precisely, a 1 percentage point rise in the main interest rate 10 months before a national ballot will increase the Labour Party's popularity by 2.4 percentage points relative to its trend.

2.6 Robustness

As a robustness check, we estimate our model using alternative measures of our explanatory variables in the following subsection and of the pre-electoral period in subsection 6.2. Then, we control for the potential long memory process of the variable *dGovernment_Approval* in subsection 6.3. Finally, in subsection 6.4 we estimate our model on a broader time period and we introduce a direct measure of the Bank of England level of independence.

2.6.1 Alternative measures of our explanatory variables

Table 2.3 implements two robustness tests. First, to take into account the potential endogeneity of the variable *Unemployment*, we use the output gap as a proxy. The latter is computed by applying a Hamilton (2018) filter on monthly industrial production data from the OECD. Then, we build the variable *Output_Gap* as the difference between the cyclical component and the trend of industrial production. As this variable is nonstationary, we consider its first difference (*dOutput_gap*). Regressions (13) and (16) show that our results are unchanged. Second, as the main interest rate may be correlated with inflation and/or unemployment, we use a more exogenous measure. To this end, we regress the main interest rate on *dInflation* and *dUnemployment* in t and $t - 1$, and the residuals of this estimation are denoted by *RESID*. Then, we use the variable *RESID* to compute an exogenous measure of monetary policy. Once again, our main results are not modified (see regressions 14 and 17), although the magnitude of the pre-election effect is smaller.

2.6.2 Alternative measures of the pre-electoral period

We perform our estimations with alternative measures of the pre-electoral period (with length measured in terms of months). Figure 2.5 depicts coefficients and 95% confidence intervals of the interaction terms between the first difference of the main interest rate and 24 different pre-electoral measures. More precisely, each point of each subfigure represents the coefficient of the interaction term between *dBase_Rate* and a dummy taking the value of 1 in the N months preceding the election (*i.e.*, the *PreElectionNXdBase_Rate* with $N = 1, 2, \dots, 24$). The subfigures represent estimations considering the full sample and two subsamples, depending on the party in office.

Table 2.1: Main results : Government approval (1987M1-2015M12)

	Government Approval		Conservative incumbent		Labour incumbent	
	(1)	(2)	(3)	(4)	(5)	(6)
Gov._Approv.(t-1)	0.939*** (0.017)	0.939*** (0.018)	0.929*** (0.024)	0.926*** (0.024)	0.930*** (0.027)	0.940*** (0.027)
Honeymoon	0.349*** (0.116)	0.349*** (0.117)	0.550*** (0.201)	0.551*** (0.201)	0.296** (0.135)	0.295** (0.134)
PreElection10	0.780*** (0.269)	0.775** (0.308)	1.252*** (0.400)	1.020*** (0.341)	0.553 (0.425)	0.639 (0.431)
PreElection10 X dBase_Rate		-0.128 (2.073)		-2.401*** (0.877)		10.939 (8.724)
dBase_Rate	0.082 (0.440)	0.094 (0.446)	0.320 (0.447)	0.553 (0.425)	-0.858 (0.786)	-1.549** (0.641)
dInflation	0.286 (0.421)	0.285 (0.421)	1.227** (0.527)	1.203** (0.516)	-0.467 (0.583)	-0.266 (0.585)
dInflation(t-1)	0.069 (0.547)	0.064 (0.541)	-0.084 (0.698)	-0.239 (0.714)	0.455 (0.819)	0.663 (0.806)
dUnemployment	-2.756** (1.160)	-2.751** (1.190)	-1.843 (1.577)	-1.682 (1.576)	-4.062** (1.837)	-4.120** (1.750)
dUnemployment(t-1)	2.123** (1.018)	2.125** (1.010)	1.703 (1.369)	1.660 (1.364)	1.878 (1.607)	1.497 (1.586)
Thatcher Dismissal	7.441*** (0.258)	7.438*** (0.269)	7.439*** (0.389)	7.385*** (0.381)		
Bank of England Act	1.119*** (0.283)	1.117*** (0.280)			0.961** (0.417)	1.131*** (0.350)
Sept. 2001	-1.597*** (0.552)	-1.591*** (0.552)			-2.211*** (0.713)	-2.415*** (0.720)
Cash for Honors	-3.339*** (0.218)	-3.340*** (0.214)			-3.153*** (0.333)	-3.074*** (0.332)
Jul. 2007	3.663*** (0.280)	3.658*** (0.279)			3.440*** (0.403)	3.768*** (0.425)
PM Expenses Scandal	-2.251*** (0.785)	-2.254*** (0.783)			-2.205** (0.924)	-1.935** (0.923)
Constant	-0.464*** (0.136)	-0.464*** (0.136)	-0.685** (0.276)	-0.682** (0.274)	-0.417** (0.165)	-0.435*** (0.164)
Nbr. observations	348	348	124	124	224	224
R2 adjusted	0.906	0.906	0.939	0.940	0.879	0.883

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Newey and West (1987) standard errors are provided in parenthesis

Table 2.2: Main results : Political parties' popularity (1987M1-2015M12)

	hamConservative			hamLabour		
	I	II	III	I	II	III
	(7)	(8)	(9)	(10)	(11)	(12)
hamConservative(t-1)	0.942*** (0.016)	0.926*** (0.024)	0.896*** (0.028)			
hamLabour(t-1)				0.955*** (0.015)	0.904*** (0.031)	0.939*** (0.027)
Honeymoon	0.131 (0.126)	0.551*** (0.201)	-0.027 (0.147)	0.200** (0.097)	-0.125 (0.111)	0.296** (0.134)
PreElection10	0.106 (0.219)	1.020*** (0.341)	-0.217 (0.271)	0.120 (0.282)	-1.122*** (0.352)	0.562 (0.393)
PreElection10 X dBase_Rate	-2.955** (1.323)	-2.401*** (0.877)	-2.788 (6.628)	3.734** (1.479)	2.433* (1.440)	8.001 (6.393)
dBase_Rate	0.483 (0.336)	0.553 (0.425)	0.330 (0.608)	-0.678 (0.476)	-0.329 (0.607)	-1.468** (0.620)
dInflation	0.611* (0.327)	1.203** (0.516)	0.339 (0.519)	-0.354 (0.352)	-0.483 (0.408)	-0.315 (0.579)
dInflation(t-1)	-0.585 (0.465)	-0.239 (0.714)	-0.440 (0.569)	0.655 (0.525)	0.224 (0.648)	0.660 (0.805)
dUnemployment	0.082 (1.115)	-1.682 (1.576)	2.216 (1.770)	-2.859** (1.289)	-1.412 (1.793)	-3.786** (1.665)
dUnemployment(t-1)	0.167 (1.044)	1.660 (1.364)	-0.317 (1.653)	0.797 (0.968)	-0.162 (1.314)	1.529 (1.579)
Thatcher Dismissal	6.848*** (0.251)	7.385*** (0.381)		-1.286*** (0.291)	-1.949*** (0.418)	
Bank of England Act	0.181 (0.207)		-0.071 (0.287)	0.630*** (0.234)		1.131*** (0.350)
Sept. 2001	1.025* (0.560)		1.215* (0.679)	-2.093*** (0.529)		-2.383*** (0.719)
Cash for Honors	-1.062*** (0.220)		-1.109*** (0.321)	-3.244*** (0.212)		-3.075*** (0.333)
Jul. 2007	-1.397*** (0.227)		-1.571*** (0.320)	3.275*** (0.282)		3.715*** (0.412)
PM Expenses Scandal	-0.330 (0.974)		-0.391 (1.133)			-1.976** (0.929)
Constant	-0.221* (0.124)	-0.682** (0.274)	-0.107 (0.142)	-0.142 (0.128)	0.673** (0.310)	-0.431*** (0.164)
Nbr. observations	348	124	224	348	124	224
R2 adjusted	0.893	0.940	0.803	0.911	0.913	0.888

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

I: Overall sample

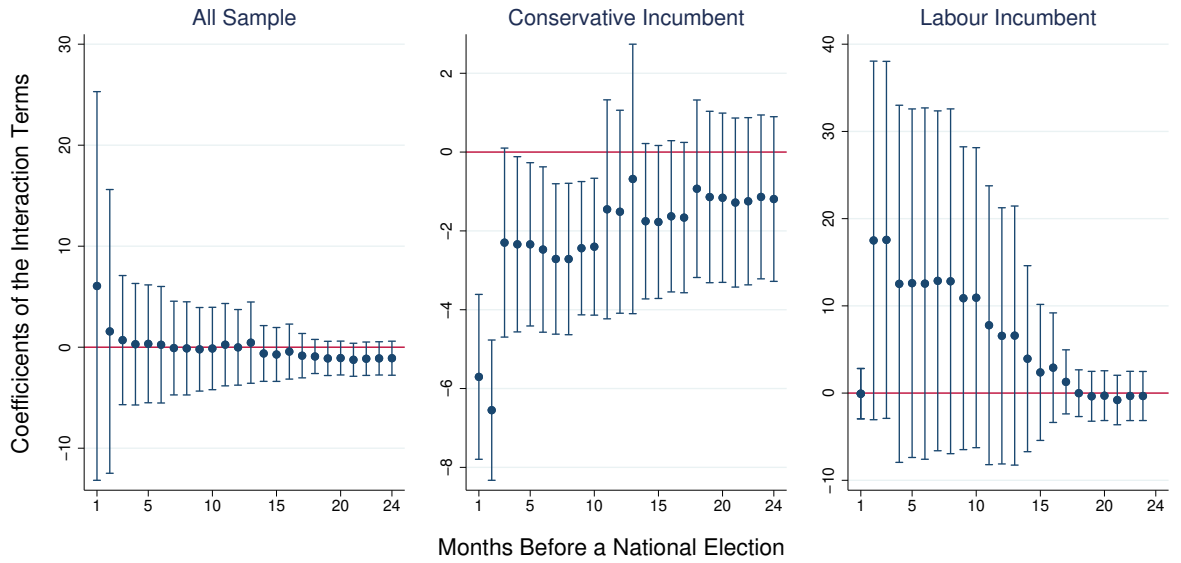
II: Conservative party is in power

III: Labour party is in power

These estimations confirm that, from 4 to 10 months before a general election, an increase in the interest rate significantly and negatively impacts the popularity of a Conservative incumbent.²⁴

In addition, we perform the estimations in Table 2.1 using these different pre-electoral measures in periods ranging from 1 to 10 months (see Table A2.8 in the Appendix). Regardless of the length of the pre-election period, the interest rate has a significant negative impact on the right-wing incumbent's popularity. Moreover, in this 1-10 month period, the closer the manipulation is to the election, the greater the effect.²⁵

Figure 2.5: Effect of an increase in the main interest rate before a national election (95% confidence intervals)



2.6.3 Long memory process within the government's popularity

Looking at Figure 2.4, we can posit that our variable *dGovernment_Approval* is characterized by a long memory process. To control for the potential impact of this long memory process, we compute a heterogeneous autoregressive model by closely following Corsi (2009). More precisely, we introduce two variables: *MAGovernment_Approval_quarter* and *MAGovernment_Approval_year*, which represent the moving averages of the past values of *dGovernment_Approval* for the last quarter and the last year, respectively. As described by Corsi (2009), these variables measure the past behavior of our popularity rating on the medium run (*MAGovernment_Approval_quarter*) and on the long run (*MAGovernment_Approval_year*). Regressions (15) and (18) in Table 2.3

²⁴We will not interpret the significance of the coefficients before this 3-month threshold due to their closeness with the scrutiny even though they move in the right direction. Moreover, when the 1992 election is not considered, all the 24 months appear significant (see Figure A2.6 in the Appendix)

²⁵To ensure that this result is robust to the sample used, we have computed the same results in Table A2.9 in the Appendix section on the period 1987M1-2021M8. Unsurprisingly, we still observe a negative impact of an increase in the main interest rate on the conservative incumbent's popularity, but only for periods ranging from 7 to 10 months prior to an election.

show that these variables do not significantly affect our results. Hence, the suspected long memory process does not drive the significance of the variable *PreElection10XdBase_Rate*.

2.6.4 Liberals' popularity, broader time period and measure of the central bank independence

Table A2.10 present estimations of our main model implemented with the popularity of the third British political force, the Liberal Party. Despite the sample period used, we underline that the popularity of this party is never impacted significantly by the orientation of the monetary policy before a national election. This result is reassuring because it reinforces one of our main hypothesis: a relative bipartism within the country.

Then, in Table A2.11 we present estimations of Table 2.1 and Table 2.2 performed using an alternative sample period (1987M1-2021M8). Our main results remain the same and we can still observe a negative and significant impact of the variable *PreElection10XdBase_Rate* only when the incumbent is from the Conservative party.

Finally, Table A2.12 introduce a new variable *CBIE* measuring the level of independence of the Bank of England. This variable is developed by Romelli (2022) and represents an index going from 0 (low central bank independence) to 10 (high central bank independence)²⁶. In addition to this variable *CBIE*, we introduce an interaction term (*PreElection10XdBase_Rate* $\times$ *CBIE*) between our classic interest variable (*PreElection10XdBase_Rate*) and this independence index. Again, these results are robust to this new specification and confirm the validity of our theoretical approach.

2.7 Conclusion

In this chapter, we developed the idea that a conservative central bank may, whether voluntarily or involuntarily, negatively affect the popularity of an inflation-averse party. Through an original policy-mix game, our theory predicts that an increase in the interest rate reduces the chances of a conservative politician being elected. We tested this prediction using data from British political history and showed that a 1 percentage point increase in the main interest rate in the 10 months prior to a national election decreases the popularity of a Tory government by approximately 2.4 percentage points relative to its trend.

On the theoretical side, our result calls into question the principle of independence and political neutrality of central banks, which has been at the heart of the institutional recommendations for monetary policy for several decades. Indeed, a key reason for delegating monetary instruments to an independent institution is that monetary policy requires a very long time horizon, whereas

²⁶We multiplied the CBIE index by 10 to guarantee that our new variable is on the same scale as *PreElectionXdBase_Rate*)

Table 2.3: Robustness: Alternative explanatory variables (1987M1-2015M12)

	Conservative incumbent			Labour incumbent		
	(13)	(14)	(15)	(16)	(17)	(18)
Gov._Approv.(t-1)	0.925*** (0.024)	0.928*** (0.024)	0.937*** (0.159)	0.944*** (0.027)	0.933*** (0.027)	0.814*** (0.103)
MAGov._Approv._quarter			0.015 (0.166)			0.075 (0.114)
MAGov._Approv._year			-0.031 (0.051)			0.087 (0.065)
Honeymoon	0.607*** (0.195)	0.548*** (0.202)	0.521** (0.231)	0.286** (0.136)	0.295** (0.135)	0.412** (0.170)
PreElection10	1.059*** (0.342)	1.031*** (0.380)	0.946** (0.398)	0.729 (0.460)	0.630 (0.436)	0.948** (0.476)
PreElection10 X dBase_Rate	-2.452** (0.949)		-2.390*** (0.882)	10.905 (9.102)		11.008 (8.929)
PreElection10 X RESID		-1.994** (0.925)			2.817 (3.001)	
dBase_Rate	0.560 (0.435)		0.584 (0.422)	-1.031** (0.519)		-1.590** (0.720)
RESID		0.564 (0.441)			-1.042 (0.774)	
dInflation	1.198** (0.535)	1.233** (0.527)	1.227** (0.493)	-0.406 (0.603)	-0.427 (0.589)	-0.214 (0.625)
dInflation(t-1)	-0.181 (0.700)	-0.212 (0.717)	-0.259 (0.726)	0.671 (0.792)	0.471 (0.809)	0.629 (0.770)
dOutput_gap	-0.094 (0.166)			0.011 (0.064)		
dOutput_gap(t-1)	-0.138 (0.110)			-0.005 (0.060)		
dUnemployment		-1.651 (1.617)	-1.728 (1.558)		-3.891** (1.907)	-3.557** (1.738)
dUnemployment(t-1)		1.749 (1.364)	1.701 (1.401)		2.007 (1.535)	1.856 (1.542)
Thatcher Dismissal	7.150*** (0.255)	7.303*** (0.394)	7.371*** (0.352)			
Bank of England Act				1.308*** (0.329)	0.984** (0.414)	0.947** (0.389)
Sept. 2001				-1.915*** (0.734)	-2.284*** (0.709)	-2.406*** (0.769)
Cash for Honors				-2.925*** (0.260)	-3.126*** (0.331)	-3.124*** (0.336)
Jul. 2007				3.521*** (0.468)	3.526*** (0.421)	4.372*** (0.493)
PM Expenses Scandal				-2.248** (0.945)	-2.177** (0.894)	-2.178** (0.882)
Constant	-0.735*** (0.253)	-0.658** (0.274)	-0.668** (0.277)	-0.390*** (0.149)	-0.419** (0.164)	-0.493*** (0.182)
Nbr. observations	124	124	124	224	224	224
R2 adjusted	0.941	0.940	0.939	0.881	0.878	0.885

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Newey and West (1987) standard errors are provided in parenthesis

politicians are short-sighted. “*So, if politicians made monetary policy on a day-to-day basis, the temptation to reach for short-term gains at the expense of the future (that is, to inflate too much) would be hard to resist. Knowing this, many governments wisely try to depoliticize monetary policy by, for example, putting it in the hands of unelected technocrats with long terms of office and insulation from the hurly-burly of politics*” (Blinder, 1998, pp. 56-57). In this chapter, even if the independent central bank does not have a partisan objective and conducts a depoliticized monetary policy (following Blinder’s words), its interest rate policy is not politically neutral and may affect the outcome of the election. Thus, monetary policy, even when implemented by unelected institutions, is not insulated from the political area.

On the empirical side, our work provides a new contribution to the study of popularity functions. While focusing on the British case, it would be interesting to replicate this study on different countries or on a panel of countries representing a variety of political systems throughout history.

One can argue that our results are only valid for the United-Kingdom. Then, to study the concept of political monetary cycle on a different country, Chapter 4 of this thesis is concentrated on a study of Germany. Moreover, to increase the comprehension of the effects of central banking on national politics, this final chapter is studying an indirect political cycle through media coverage. To do so, a new concept called press related opportunistic political monetary cycle is defined as a pre-electoral impact of media coverage of monetary policy related issues on political parties popularity.

2.8 Appendix

Table 2.4: Vote share in general elections: Difference between United Kingdom & Great Britain

Election Date	United Kingdom			Great Britain		
	Conserv.	Labour	Liberals	Conserv.	Labour	Liberals
June 11th, 1987	42.3	30.8	22.6	43.3	31.5	23.1
April 9th, 1992	41.9	34.4	17.8	42.8	35.2	18.3
May 1st, 1997	30.7	43.2	16.8	31.5	44.3	17.2
June 7th, 2001	31.6	40.7	18.30	32.6	42	18.8
May 5th, 2005	32.4	35.2	22	33.2	36.1	22.6
May 6th, 2010	36.1	29	23	36.9	29.7	23.6
May 7th, 2015	36.8	30.4	7.9	37.7	31.2	8.1
July 24th, 2017*	42.3	40	7.4	43.4	41	7.6
December 12th, 2019	43.6	32.1	11.5	44.7	32.9	11.8

Source : Cracknell and Pilling (2021) (pp. 16 & 18)

Elections after the double line are only used in the robustness estimations (1987M1-2021M8)

* This election is a snap elections

Table 2.5: Political events and the month in which they occurred

Political Events	Month in which we coded it as 1	Description
Thatcher Dismissal	November 1990	In November 1990, the Conservative Party leadership election was disputed, leading to Thatcher's dismissal as she failed to receive the unanimous support of the Tories due to different debates and scandals.
Bank of England Act	June 1998	In June 1998, the Bank of England Act is promulgated.
Sept. 2001	September 2001	Major terrorist attacks in the United States
Cash for Honors	April 2006	In April 2006, a list of British personalities suspected to have obtained titles within the peerage system against some donations to the Labour Party.
Jul. 2007	July 2007	First signs of the international financial crisis.
PM Expenses Scandal	May, June & July 2009	Politicians from both the House of Commons and the House of Lords were pointed out for their illegal expenses claims. It had a huge impact on the British political life as it has lead to several prison terms.
Brexit Vote	June 2016	Month in which the European Union membership referendum has been held and won by the Yes option.
British Prorogation Controversy	August, September & October 2019	The timing of the prorogation of British Parliament in September and October 2019 lead many opposition politicians to criticize Boris Johnson. Indeed, the opposition claimed that this prorogation period has been used to avoid parliamentary debates on the Brexit negotiations between the government and the European Union.
First Lockdown	March, April & May 2020	First national lockdown following the COVID-19 pandemic outbreak.
Partygate	November, December 2020 & January 2021	Members of Conservative party gathered during the COVID-19 pandemic event though gatherings were prohibited according to public health restrictions.

Events after the double line are only used in the robustness estimations (1987M1-2021M8)

Table 2.6: Incumbent characteristics

Prime Minister	Political Party	First Day of Mandate	Last Day of Mandate	Tenure†	Elections won
Margaret Thatcher	Conservative	May 4th 1979	November 28th 1990	11.6 years	3 (1979, 83, 87)
John Major	Conservative	November 28th 1990	May 2nd 1997	7.6 years	1* (1992)
Tony Blair	Labour	May 2nd 1997	June 27th 2007	10.2 years	3 (1997, 2001, 05)
Gordon Brown	Labour	June 27th 2007	May 11th 2010	2.9 years	0*
David Cameron	Coalition**	May 11th 2010	July 13th 2016	6.2 years	2 (2010, 15)
Theresa May	Conservative	July 13th 2016	24th July 2019	3 years	1* (2017)
Boris Johnson	Conservative	24th July 2019	/	/	1 (2019)

Governments after the double line are only used in the robustness estimations (1987M1-2021M8)

† Butler & Butler (2000) p. 72 and own computation since Tony Blair's mandate

* Candidate was elected by the member of his/her own party after his/her predecessor's resignation

** From May 11th 2010 to May 8th 2015, Cameron and the Conservative were in a coalition with Clegg and the Liberals.

We consider this government to be conservative

Table 2.7: Summary statistics (1987M1-2015M12)

Variable	Mean	Std. Dev.	Min.	Max.	N
hamConservative	-2.247	5.351	-15.549	12.365	348
hamLabour	0.277	6.494	-14.486	14.683	348
dGovernment_Approval	-1.953	6.534	-15.549	13.315	348
dBase_Rate	-0.03	0.295	-1.5	1.5	348
dInflation	-0.009	0.252	-1	1.5	348
dUnemployment	-0.023	0.105	-0.4	0.5	348
Incumbent from Conservative Party					
hamConservative	-2.431	7.392	-15.549	12.365	124
hamLabour	3.827	5.813	-8.375	14.683	124
dGovernment_Approval	-2.431	7.392	-15.549	12.365	124
dBase_Rate	-0.04	0.43	-1	1.5	124
dInflation	-0.013	0.297	-1	1.5	124
dUnemployment	-0.039	0.139	-0.4	0.4	124
Incumbent from Labour Party					
hamConservative	-2.145	3.792	-9.761	8.331	224
hamLabour	-1.688	6.007	-14.486	13.315	224
dGovernment_Approval	-1.688	6.007	-14.486	13.315	224
dBase_Rate	-0.024	0.182	-1.5	0.313	224
dInflation	-0.007	0.225	-0.8	0.6	224
dUnemployment	-0.015	0.08	-0.2	0.5	224
PreElection10 = 0					
hamConservative	-2.534	5.766	-15.549	12.365	283
hamLabour	1.093	6.489	-14.486	14.683	283
dGovernment_Approval	-1.628	6.854	-15.549	13.315	283
dBase_Rate	-0.025	0.315	-1.5	1.5	283
dInflation	-0.008	0.256	-1	1.5	283
dUnemployment	-0.021	0.102	-0.3	0.5	283
PreElection10 = 1					
hamConservative	-0.998	2.606	-4.728	6.746	65
hamLabour	-3.275	5.229	-13.72	6.471	65
dGovernment_Approval	-3.365	4.688	-13.72	6.746	65
dBase_Rate	-0.05	0.183	-1	0.25	65
dInflation	-0.015	0.237	-0.6	0.6	65
dUnemployment	-0.032	0.121	-0.4	0.2	65

Figure 2.6: Effect of an increase in the main interest rate before a national election without the 1992 election (95% confidence intervals)

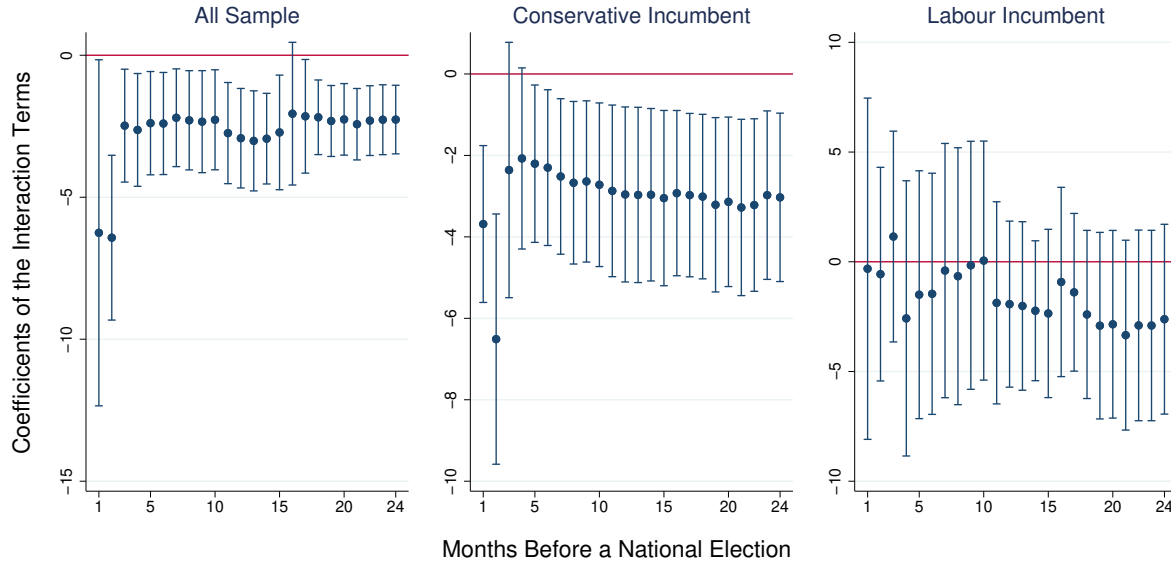


Table 2.8: Robustness: Coefficients and standard errors of several interaction variables (1987M1-2015M12)

Variable	Model Estimated		
	(2)	(4)	(6)
<i>PreElection1X</i> <i>dBase_Rate</i>	6.062 (9.781)	-5.703*** (1.056)	24.376** (9.895)
<i>PreElection2X</i> <i>dBase_Rate</i>	1.565 (7.140)	-6.549*** (0.474)	17.502* (10.427)
<i>PreElection3X</i> <i>dBase_Rate</i>	0.701 (3.250)	-2.297* (1.211)	17.566 (10.381)
<i>PreElection4X</i> <i>dBase_Rate</i>	0.294 (3.059)	-2.340** (1.122)	12.528 (10.385)
<i>PreElection5X</i> <i>dBase_Rate</i>	0.333 (2.966)	-2.341** (1.046)	12.598 (10.135)
<i>PreElection6X</i> <i>dBase_Rate</i>	0.243 (2.932)	-2.473** (1.059)	12.554 (10.216)
<i>PreElection7X</i> <i>dBase_Rate</i>	-0.085 (2.358)	-2.712*** (0.963)	12.871 (9.884)
<i>PreElection8X</i> <i>dBase_Rate</i>	-0.117 (2.344)	-2.713*** (0.970)	12.818 (10.027)
<i>PreElection9X</i> <i>dBase_Rate</i>	-0.209 (2.102)	-2.439*** (0.853)	10.876 (8.806)
<i>PreElection10X</i> <i>dBase_Rate</i>	-0.128 (2.073)	-2.401*** (0.877)	10.939 (8.725)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

Table 2.9: Robustness: Coefficients and standard errors of several interaction variables (1987M1-2021M8)

Variable	Model Estimated		
	(2)	(4)	(6)
<i>PreElection1X</i>	6.113	-5.740*	24.356**
<i>dBase_Rate</i>	(9.940)	(1.953)	(9.895)
<i>PreElection2X</i>	2.3347	-4.548*	17.502*
<i>dBase_Rate</i>	(6.770)	(1.580)	(10.427)
<i>PreElection3X</i>	1.099	-1.623	17.566*
<i>dBase_Rate</i>	(3.088)	(1.326)	(10.381)
<i>PreElection4X</i>	0.866	-1.426	12.528
<i>dBase_Rate</i>	(2.903)	(1.184)	(10.385)
<i>PreElection5X</i>	0.945	-1.329	12.598
<i>dBase_Rate</i>	(2.830)	(1.108)	(10.135)
<i>PreElection6X</i>	0.771	-1.652	12.554
<i>dBase_Rate</i>	(2.818)	(1.106)	(10.217)
<i>PreElection7X</i>	0.163	-2.329**	12.871
<i>dBase_Rate</i>	(2.278)	(1.096)	(9.884)
<i>PreElection8X</i>	-0.036	-2.625**	12.818
<i>dBase_Rate</i>	(2.302)	(1.203)	(10.027)
<i>PreElection9X</i>	-0.228	-2.562**	10.876
<i>dBase_Rate</i>	(2.061)	(1.140)	(8.806)
<i>PreElection10X</i>	-0.285	-2.581**	10.939
<i>dBase_Rate</i>	(1.965)	(1.128)	(8.724)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
Newey and West (1987) standard errors are provided in parenthesis

Table 2.10: Robustness: Liberals' popularity

	(1987M1-2015M12)			(1987M2-2021M8)		
	I	II	III	I	II	III
	(7) <i>Liberals</i>	(8) <i>Liberals</i>	(9) <i>Liberals</i>	(7) <i>Liberals</i>	(8) <i>Liberals</i>	(9) <i>Liberals</i>
hamLiberals(t-1)	0.921*** (0.021)	0.917*** (0.033)	0.918*** (0.031)	0.925*** (0.019)	0.919*** (0.031)	0.918*** (0.031)
Honeymoon	-0.283*** (0.097)	-0.467*** (0.125)	-0.226* (0.125)	-0.248*** (0.082)	-0.299*** (0.099)	-0.226* (0.125)
PreElection10	0.346 (0.226)	0.118 (0.396)	0.383 (0.291)	0.305 (0.219)	0.208 (0.361)	0.383 (0.291)
PreElection10 X dBase_Rate	-0.443 (1.445)	-0.463 (1.790)	-1.527 (2.179)	-0.249 (1.401)	-0.156 (1.788)	-1.527 (2.179)
dBase_Rate	0.140 (0.269)	0.095 (0.345)	0.297 (0.516)	-0.024 (0.266)	-0.140 (0.318)	0.297 (0.516)
dInflation	-0.082 (0.341)	-0.307 (0.532)	0.037 (0.491)	-0.190 (0.299)	-0.446 (0.416)	0.037 (0.491)
dInflation(t-1)	0.206 (0.440)	-0.201 (0.732)	0.488 (0.599)	0.212 (0.405)	-0.025 (0.613)	0.488 (0.599)
dUnemployment	2.288** (1.022)	2.599* (1.469)	1.488 (1.792)	1.027 (0.771)	0.860 (0.842)	1.488 (1.792)
dUnemployment(t-1)	0.356 (0.968)	0.617 (1.307)	-0.414 (1.303)	0.578* (0.317)	0.711** (0.359)	-0.414 (1.303)
Thatcher Dismissal	-3.542*** (0.203)	-3.717*** (0.340)		-3.249*** (0.196)	-3.181*** (0.298)	
Bank of England Act	1.312*** (0.195)		1.234*** (0.286)	1.273*** (0.170)		1.234*** (0.286)
Sept. 2001	2.009*** (0.444)		1.719*** (0.576)	1.718*** (0.378)		1.719*** (0.576)
Cash for Honors	1.248*** (0.192)		1.401*** (0.249)	1.311*** (0.155)		1.401*** (0.249)
Jul. 2007	-1.446*** (0.235)		-1.389*** (0.329)	-1.387*** (0.211)		-1.389*** (0.329)
PM Expenses Scandal	0.611*** (0.229)		0.933*** (0.336)	0.765*** (0.229)		0.933*** (0.336)
Brexit Vote				0.390*** (0.114)	0.419*** (0.156)	
British Prorogation Controversy				-0.158 (0.361)	-0.031 (0.430)	
First Lockdown				-2.087* (1.106)	-2.001 (1.239)	
Partygate				-0.468*** (0.123)	-0.461*** (0.155)	
Constant	0.105 (0.095)	0.199 (0.206)	0.069 (0.112)	0.031 (0.088)	-0.002 (0.188)	0.069 (0.112)
Nbr. observations	348	124	224	416	192	224
R2 adjusted	0.877	0.898	0.848	0.880	0.890	0.848

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

I: Overall sample

II: Conservative party is in power

III: Labour party is in power

Table 2.11: Robustness: Main results (1987M1-2021M8)

	Government Approval			hamConservative			hamLabour		
	I	II	III	I	II	III	I	II	III
	(1)'	(3)'	(5)'	(7)'	(8)'	(9)'	(10)'	(11)'	(12)'
Gov._Appro.(t-1)	0.930*** (0.017)	0.928*** (0.026)	0.940*** (0.027)						
hamConservative(t-1)				0.945*** (0.016)	0.939*** (0.022)	0.896*** (0.028)			
hamLabour(t-1)							0.950*** (0.014)	0.926*** (0.022)	0.939*** (0.027)
Honeymoon	0.289*** (0.105)	0.325* (0.167)	0.295** (0.134)	0.119 (0.108)	0.324* (0.165)	-0.027 (0.147)	0.162* (0.096)	-0.036 (0.151)	0.296** (0.134)
PreElection10	0.567* (0.343)	0.509 (0.563)	0.639 (0.431)	0.059 (0.295)	0.571 (0.549)	-0.217 (0.271)	0.013 (0.335)	-0.953** (0.473)	0.562 (0.393)
PreElection10 X dBase_Rate	-0.285 (1.965)	-2.581** (1.128)	10.939 (8.724)	-2.767** (1.333)	-2.563** (1.115)	-2.788 (6.628)	3.284** (1.440)	1.938 (1.450)	8.001 (6.393)
dBase_Rate	-0.137 (0.439)	0.254 (0.425)	-1.549** (0.641)	0.150 (0.356)	0.246 (0.424)	0.330 (0.608)	-0.262 (0.464)	-0.019 (0.577)	-1.468** (0.620)
dInflation	0.218 (0.389)	0.890* (0.493)	-0.266 (0.585)	0.587* (0.329)	0.861* (0.493)	0.339 (0.519)	-0.403 (0.322)	-0.434 (0.340)	-0.315 (0.579)
dInflation(t-1)	0.251 (0.485)	-0.011 (0.611)	0.663 (0.806)	-0.321 (0.425)	-0.079 (0.614)	-0.440 (0.569)	0.365 (0.460)	0.005 (0.557)	0.660 (0.805)
dUnemployment	-1.290 (0.870)	-0.547 (0.765)	-4.120** (1.750)	-0.061 (0.689)	-0.390 (0.738)	2.216 (1.770)	-1.277 (1.149)	-0.688 (1.011)	-3.786** (1.665)
dUnemployment(t-1)	-0.856 (1.026)	-1.371 (0.840)	1.497 (1.586)	-1.446* (0.753)	-1.477* (0.766)	-0.317 (1.653)	1.202** (0.472)	0.952* (0.508)	1.529 (1.579)
Thatcher Dismissal	7.325*** (0.210)	7.242*** (0.321)		7.068*** (0.226)	7.374*** (0.286)		-1.706*** (0.313)	-2.166*** (0.312)	
Bank of England Act	1.276*** (0.256)		1.131*** (0.350)	0.241 (0.197)		-0.071 (0.287)	0.630*** (0.207)		1.131*** (0.350)
Sept. 2001	-1.378*** (0.487)		-2.415*** (0.720)	0.889* (0.477)		1.215* (0.679)	-1.653*** (0.510)		-2.383*** (0.719)
Cash for Honors	-3.064*** (0.199)		-3.074*** (0.332)	-0.834*** (0.182)		-1.109*** (0.321)	-3.443*** (0.172)		-3.075*** (0.333)
Jul. 2007	3.596*** (0.258)		3.768*** (0.425)	-1.324*** (0.220)		-1.571*** (0.320)	3.028*** (0.250)		3.715*** (0.412)
PM Expenses Scandal	-2.132*** (0.801)		-1.935** (0.923)	-0.051 (0.944)		-0.391 (1.133)	-2.387*** (0.904)		-1.976** (0.929)
Brexit Vote	-0.538*** (0.130)	-0.573*** (0.217)		-0.754*** (0.120)	-0.503** (0.200)		-1.229*** (0.157)	-1.912*** (0.296)	
British Prorogation Controversy	2.581*** (0.668)	2.716*** (0.921)		2.986*** (0.690)	2.794*** (0.913)		-0.787** (0.341)	-0.767 (0.623)	
First Lockdown	2.240** (1.013)	1.908 (1.278)		1.424 (1.230)	1.729 (1.300)		0.895 (1.705)	0.148 (1.579)	
Partygate	0.514* (0.269)	0.564* (0.325)		0.360 (0.280)	0.624* (0.324)		-0.209 (0.185)	-0.742*** (0.268)	
Constant	-0.411*** (0.125)	-0.444** (0.215)	-0.435*** (0.164)	-0.225* (0.115)	-0.506** (0.202)	-0.107 (0.142)	-0.044 (0.114)	0.483** (0.192)	-0.431*** (0.164)
Nbr. observations	416	192	224	416	192	224	416	192	224
R2 adjusted	0.888	0.894	0.883	0.885	0.910	0.803	0.913	0.930	0.888

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
Newey and West (1987) standard errors are provided in parenthesis
I: Overall sample
II: Conservative party is in power
III: Labour party is in power

Table 2.12: Robustness: Measuring Bank of England independence (1987M1-2021M8)

	Government Approval			hamConservative			hamLabour		
	I	II	III	I	II	III	I	II	III
	(1)'	(3)'	(5)'	(7)'	(8)'	(9)'	(10)'	(11)'	(12)'
Gov._Approv.(t-1)	0.930*** (0.017)	0.919*** (0.032)	0.919*** (0.030)						
hamConservative(t-1)				0.942*** (0.017)	0.935*** (0.026)	0.878*** (0.034)			
hamLabour(t-1)							0.930*** (0.017)	0.908*** (0.026)	0.924*** (0.029)
Honeymoon	0.289*** (0.105)	0.316* (0.179)	0.269* (0.147)	0.120 (0.110)	0.320* (0.170)	0.001 (0.154)	0.152 (0.103)	-0.039 (0.165)	0.276* (0.143)
PreElection10	0.559 (0.343)	0.424 (0.557)	0.607 (0.434)	0.081 (0.302)	0.527 (0.524)	-0.243 (0.280)	-0.088 (0.341)	-0.986** (0.495)	0.544 (0.401)
PreElection10 X dBase_Rate X CBIE	-0.217 (0.900)	-1.870*** (0.684)	1.548 (1.690)	-0.949 (0.926)	-1.773*** (0.656)	0.465 (1.187)	1.470 (0.927)	1.406 (0.891)	1.171 (1.335)
dBase_Rate	-0.132 (0.434)	0.256 (0.430)	-1.323** (0.618)	0.048 (0.370)	0.249 (0.425)	0.189 (0.605)	-0.181 (0.464)	0.002 (0.591)	-1.307** (0.610)
CBIE	0.039 (0.112)	0.266 (0.301)	-0.505 (0.468)	0.150 (0.110)	0.114 (0.258)	0.514 (0.353)	-0.273** (0.129)	-0.262 (0.223)	-0.371 (0.378)
dInflation	0.204 (0.387)	0.750 (0.454)	-0.326 (0.591)	0.541* (0.323)	0.795* (0.457)	0.388 (0.522)	-0.318 (0.322)	-0.306 (0.350)	-0.356 (0.586)
dInflation(t-1)	0.240 (0.486)	-0.129 (0.616)	0.547 (0.814)	-0.315 (0.430)	-0.132 (0.619)	-0.368 (0.591)	0.379 (0.469)	0.111 (0.553)	0.577 (0.809)
dUnemployment	-1.323 (0.866)	-0.708 (0.776)	-3.877** (1.771)	-0.204 (0.685)	-0.472 (0.725)	1.933 (1.703)	-1.091 (1.111)	-0.558 (0.999)	-3.609** (1.692)
dUnemployment	-0.878 (1.028)	-1.527* (0.821)	2.007 (1.633)	-1.534** (0.732)	-1.541** (0.775)	-0.761 (1.670)	1.280*** (0.461)	1.060** (0.493)	1.910 (1.610)
Thatcher Dismissal	7.383*** (0.250)	7.371*** (0.294)		7.290*** (0.267)	7.429*** (0.284)		-2.002*** (0.350)	-2.285*** (0.347)	
Bank of England Act	1.240*** (0.265)		1.295*** (0.381)	0.116 (0.219)		-0.199 (0.311)	0.950*** (0.241)		1.248*** (0.374)
Sept. 2001	-1.409*** (0.488)		-2.028*** (0.750)	0.698 (0.482)		0.869 (0.747)	-1.270** (0.556)		-2.103*** (0.735)
Cash for Honors	-3.091*** (0.215)		-3.102*** (0.337)	-0.924*** (0.189)		-1.116*** (0.329)	-3.331*** (0.181)		-3.095*** (0.337)
Jul. 2007	3.557*** (0.273)		3.683*** (0.418)	-1.425*** (0.224)		-1.528*** (0.325)	3.152*** (0.245)		3.657*** (0.412)
PM Expenses Scandal	-2.169*** (0.807)		-2.162** (0.920)	-0.161 (0.942)		-0.320 (1.125)	-2.383*** (0.904)		-2.133** (0.930)
Brexit Vote	-0.558*** (0.145)	-0.905* (0.464)		-0.824*** (0.124)	-0.644 (0.392)		-1.250*** (0.156)	-1.765*** (0.308)	
British Prorogation Controversy	2.566*** (0.670)	2.366** (1.185)		2.873*** (0.701)	2.648** (1.128)		-0.868** (0.349)	-0.712 (0.654)	
First Lockdown	2.269** (1.008)	1.896 (1.242)		1.565 (1.172)	1.739 (1.278)		0.628 (1.633)	0.114 (1.536)	
Partygate	0.491* (0.273)	0.221 (0.488)		0.280 (0.279)	0.478 (0.426)		-0.103 (0.183)	-0.477 (0.321)	
Constant	-0.520 (0.336)	-0.989 (0.636)	1.273 (1.594)	-0.651* (0.344)	-0.740 (0.571)	-1.899 (1.250)	0.743* (0.400)	1.072* (0.589)	0.825 (1.291)
Nbr. observations	416	192	224	416	192	224	416	192	224
R2 adjusted	0.887	0.895	0.880	0.884	0.910	0.805	0.913	0.930	0.887

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
Newey and West (1987) standard errors are provided in parenthesis
I: Overall sample
II: Conservative party is in power
III: Labour party is in power

Chapitre 3

Chapter 3

Press Related Opportunistic Political Monetary Cycles or Does the Media Coverage of the European Monetary Policy Impacts German Political Parties’ Popularity?¹

3.1 Introduction

*“Clear and effective communication is
very important to us.”*

Christine Lagarde

President of the *European Central Bank*

In the ECB Knowledge & Attitudes survey conducted in May 2021 to Euro Area citizens² (Gardt et al., 2022), 87% of the respondents answered that they have heard of the European Central Bank. At the same time, 55% of them indicate they are not interested in the ECB

¹This chapter is a joint work with PICAULT Matthieu.

²Detailed results are provided here: https://www.ecb.europa.eu/ecb/access_to_documents/document/pa_document/shared/data/ecb.dr.par2022_0007_knowledge_attitudes_survey2021.en.pdf

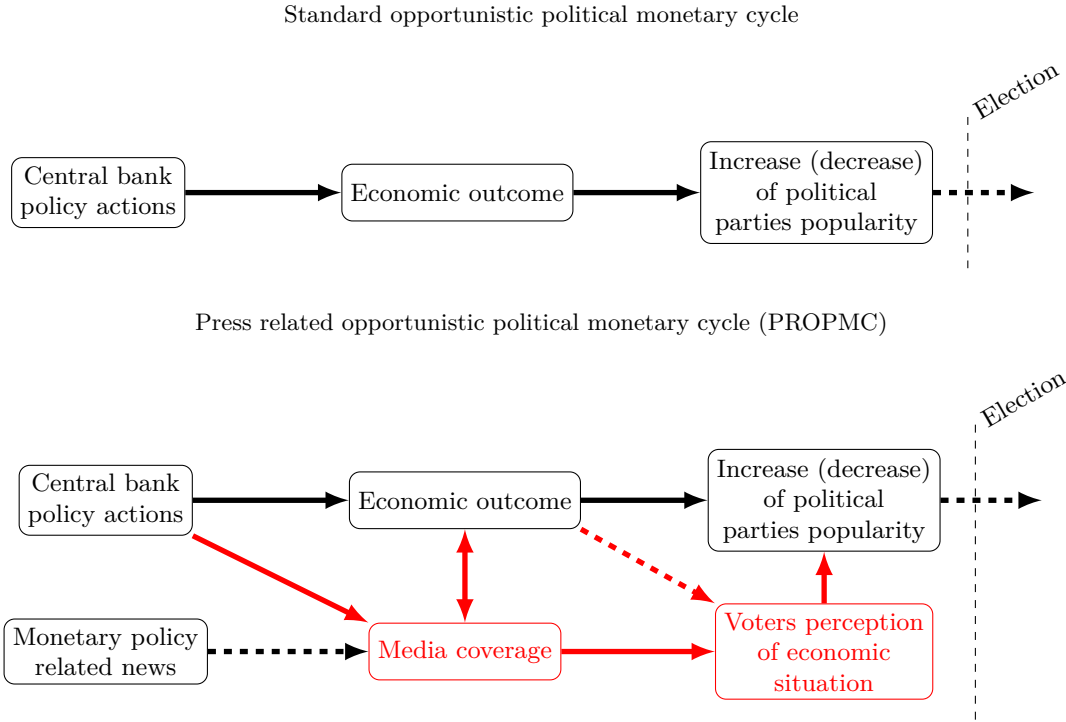
and 39% consider financing governments as one of the ECB objectives. While communication to financial markets and investors greatly increased, central bankers focus has shifted to improving their communication to the main public. Official communications are controlled and carefully written. According to the Article 4.1 of the Code of Conduct for high-level European Central Bank Officials published at the Official Journal of the European Union on 8th March 2019³: “[M]embers and alternates shall not disclose any information covered by the obligation of professional secrecy obtained in the exercise of their duties and responsibilities that has not been made public and is not accessible to the public (hereinafter ‘confidential information’) except deliberately as part of the agreed communication strategy of the ECB.” But in the Euro Area, information related to monetary policy is therefore coming to households not directly from the central bank itself, but from television, printed and online press as well as the radio. A media might, consciously or not, misinterpret central bank communication due to its high level of complexity (Ferrara and Angino, 2021) and a certain lack of readability (Munday and Brookes, 2021) and clarity (Huang and Simon, 2021). This leads to public reluctance to economics in general (Haldane et al., 2020) and may have significant impact on vote behaviour as it favors populist parties that often use central bank in their anti-elite communication (Guriev and Papaioannou, 2022). More generally, as developed by fer15, central banks are unequivocally political institutions and their politicization have increased in recent times due to: (i) the impact of the 2008 global financial crisis on central banks political independence (de Haan and Eijffinger, 2019; Balls et al., 2018; Hofmann et al., 2021); (ii) the recent rise of populism (Goodhart and Lastra, 2018; Rodrik, 2018; Masciandaro and Passarelli, 2020) and (iii) the increasing political pressures faced by central bankers (Binder, 2021a). Then, despite their highly technocratic roots, central banks impact national politics as monetary policy has distributional effects (Doepke et al., 2015; Bonifacio et al., 2021) but also because central bank communication is a significant determinant of investors behavior (Bennani, 2020) and financial market inflation expectations (Picault et al., 2022). In this context, it is of high importance to study these links between monetary policy and national politics.

To do so, we define the concept of Press Related Opportunistic Political Monetary Cycle (PROPMC) as follows: an opportunistic political cycle (Nordhaus, 1975) induced by the occurrences of monetary policy related topics on newspapers prior to an election. Then, directly or indirectly, monetary policy influence press coverage of its actions and this coverage will advantage or disadvantage German political parties. In other words, we theorized the existence of an opportunistic political monetary cycles⁴, *i.e.* a political cycles induced directly or indirectly by the implementation of monetary policy. We develop a schematic representation of this hypothesized mechanism of PROPMC in Figure 3.1. In the first part of Figure 3.1, we present the theoretical

³Available here: [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019XB0308\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019XB0308(01))

⁴See Oriola (2022) for a recent literature review on political monetary cycles.

Figure 3.1: Transmission of central bank policy actions into a political monetary cycle



This figure is adapted from Picault et al. (2022) and present the differences between the standard definition of the political monetary cycle and the hypothesized mechanism of PROPMC studied in this paper.

link between the implementation of monetary policy and the increase in incumbent's popularity supposed by the opportunistic definition of political cycle (Nordhaus, 1975). Monetary policy prior to an election produces a certain economic outcome that voters observe. This information is analyzed by voters and they modify their political preferences in terms of political parties. More precisely, a good (bad) economic performance is supposed to have a positive (negative) impact on incumbent's popularity increasing (decreasing) its chances to be reelected. The theoretical mechanism beyond PROPMC is less direct as it passes through media coverage of monetary policy (see Figure 3.1). However, even if the existence of PROPMCs is supposed to be less easy to underline, the early stages of such a cycle can be found in the work of Hayo and Neuenkirch (2014) on Germany. The authors underline that being informed on the European Central Bank (ECB) through newspapers has a negative impact on the degree of trust in the European Union (EU) monetary policy. Then, media coverage of ECB's policy actions is impacting voters' perception of the EU and, as demonstrated by (van Spanje and de Vreese, 2014), a voter exposed to a positive (negative) evaluation of the EU is less (more) likely to vote for an openly eurosceptic⁵ political party. More generally, as hypothesized in the definition of PROPMCs, media coverage of the monetary policy implemented by the ECB is (directly or indirectly) impacting national politics.

To identify these pre-electoral phenomena, we estimate several updated popularity functions

⁵See Mudde (2012) for more information on the ongoing debates among the literature on euroscepticism.

of the 6 German main political forces⁶. In our popularity functions, we introduce the occurrences of monetary policy related terms from 5 different German newspapers interacted with a dummy taking the value 1 on the month prior to an election. We interpret the significance of the interaction term as a proof of the existence of a PROPMC. Then, through this methodology, this paper is characterized by several noticeable contributions. First, this paper defines the concept of PROPMC and presents evidences of its pertinence in Germany. Second, we mobilize data on three alternative scales: national, Eastern versus Western Germany and *Länder* states. This novel approach allows us to investigate on three alternative types of election: *Bundestag*, European Parliament (EP) and *Landtags*. Then, we are able to identify PROPMC at national level before both Federal and EP elections but also at the local level in German *Länders* before *Landtag* elections. Third, we underline a certain number of heterogeneities in terms of PROPMS at every level and for every party. At the national level, before federal elections, the cycles favour *SPD* and *FDP* while penalising other parties. In the case of EP elections, the more eurosceptic is a party, the more penalized it is by the PROPMC. At the local scale, *Greens* seem to be favoured more than the other parties by PROPMC while *Länder* specific characteristics are significantly impacting these cycles. For instance, *Sachsen-Anhalt Länder* is the less impacted by PROPMC or dominant parties in *Baden-Württemberg* and *Thuringen* are negatively impacted by PROPMS. Finally, we implement a sentiment analysis that confirms the underlines PROPMS are also dependent on the tone of press articles dealing with monetary policy.

Then, this study proceeds as follows. Section 2 details the three strands of literature used in this study. Then, Section 3 discusses the data used and displays some summary statistics. Section 4 presents the econometric specifications used. Finally results are developed in Section 5 and 6 and Section 7 concludes.

3.2 Literature Review

In this paper, we investigate the impact of German media coverage of ECB policy actions on the popularity of German political parties. To do so, we define the concept of PROPMC which represents a traditional opportunistic political cycle (Nordhaus, 1975) induced, voluntarily or not by the media. We consider that occurrences of monetary policy related topics in the media may have a significant impact on parties popularity comparable to the effect of an opportunistic political monetary cycle⁷.

⁶We update the estimation of popularity functions on Germany. Indeed, to our knowledge, the last study estimating German popularity functions has been performed by Williams et al. (2017) on the period January 1993m1-2011m12. In this study, we concentrate on a more recent period (2005m1-2021m12). This leads us to elaborate on the political events impacting German parties' popularity (see Table A3.16). This investigation allows us to consider *AfD* within our study contrary to the existing literature.

⁷Again, for more information on political monetary cycle, see Oriola (2022).

Then, this study mobilises four distinct literature strands: the study of the content of media articles (Loughran and McDonald, 2016); the impact of media coverage on economic events (Hetherington, 1996); the study of political cycles Nordhaus (1975); Hibbs (1977) and the estimation of popularity functions (Goodhart and Bhansali, 1970; Mueller, 1970).

First, textual analysis is the study of written document content, from official documents to social medias. This content can then provide additional relevant information to explain an economy dynamics. Tetlock (2007) shows that information conveyed by the media can forecast stock markets. More precisely, he focuses on the sentiment, or tonality, of the Wall Street Journal articles. To define this sentiment, research focuses on the words used in the documents. Loughran and McDonald (2011) used 10K companies' filing to manually identify words associated with a positive, a negative or an uncertain tonality, therefore creating a lexicon. Focusing on words suggesting uncertainty, Baker et al. (2016) successfully relate the used of uncertain terms in press articles to macroeconomic aggregates. Focusing on the communication of central banks, Conrad and Lamla (2010) highlights the effect of central bank communication on the exchange rate while Picault and Renault (2017) focuses on the relevance of central banks communications to forecast interest rates and the short term stock market dynamics. Mobilizing this methodology allows us to study precisely the composition of press articles and their tones which represents the first step of the investigation on whether PROPMC exists or not.

Second, the composition of media coverage on central banking obtained has to be confronted to the economy. Then, our approach needs to study the impact of press articles dealing with economic performance, events or figures and its impact on voting behaviour according to Hetherington (1996). Validation of this result can be found in recent studies on the United States (Garz and Martin, 2021), members of the European Union (Jonkman et al., 2020) or the United Kingdom (Basu, 2022). However, the only monetary policy related topics investigated in these studies is inflation. The authors do not include mentions of central bank actions or communication around central banking within their studies. This is surprising as it is documented that central bank communication impacts significantly non-experts behavior (Ehrmann and Wabitsch, 2022) but also investors behavior (Bennani, 2020) or financial market inflation expectations (Picault et al., 2022). Moreover, despite its mandate, the ECB is considered by elected officials in the EP as accountable for price stability but also unemployment and other economic issues (Ferrara et al., 2021). Then, it is highly probable that media coverage of central banking related topics impact national politics around election periods. This argument is particularly significant in the case of Germany for three reasons. First, the construction process of the ECB is largely inspired by the way *Bundesbank* was operating in Germany (Campanella, 1995; Howart and Loedel, 2005). Thus, German people should be able to understand, even more than other Europeans the way the ECB is

behaving. Second, within a monetary union, executive board are characterized by a regional bias in their decision (Heinemann and Huefner, 2004) but also in their communication (Bennani and Neuenkirch, 2017). Third, Germany can credibly be considered as the “*dominant player*” of the EU (von Hagen and Brückner, 2002; Fabbrini, 2016). In this situation, nothing avoid PROPMCs to be observable even in the highly independent ECB. Then, if the ECB tries to have a political impact in one of the EU country, it has to be Germany.

Third, as PROPMCs are considered as opportunistic political phenomenon (*i.e.* happening before the scrutiny to impact parties popularity), the literature on political cycles is crucial in our approach. This literature has developed through seminal works of Nordhaus (1975) and Hibbs (1977). On the one hand, Nordhaus (1975) theorised the opportunistic approach of the cycle that defines pre-electoral political cycles due to the will of incumbents to stay in power. On the other hand, Hibbs (1977) developed the partisan approach that considers post-electoral political cycles induced by significantly different economic policies implemented by right- and left-wing incumbents. Throughout this paper, we study a political phenomenon defined as opportunistic party by party (*i.e.* differentiating by partisan characteristic of German parties) mixing these two approaches. In other words, we consider the impact of an opportunistic phenomenon on political parties characterized by different partisan characteristics. This type of “*mixed*” approach is particularly important in recent studies dealing with political monetary cycles (Clark and Arel-Bundock, 2013; Dentler, 2019; Menuet et al., 2021) and seems suitable in our study because *Bundesbank* has already experienced opportunistic political monetary cycles despite its independent level (Sieg, 1997; Vaubel, 1997; Lohmann, 1998*a,b*; Berger et al., 2001).

Fourth, as expressed above, we try to validate the existence of PROPMC in Germany through the estimation of popularity functions in which we introduce different textometric measures. The estimation of such functions is based on the seminal work of Goodhart and Bhansali (1970) and Mueller (1970) who studied variations in polls of popularity in the United Kingdom and in the United States. To do so, they regress polls data on economic variables as inflation or unemployment. As described by Lewis-Beck and Steigmaier (2013), the development of the literature leads popularity functions to be composed of two distinct sections, the economic part (e-part) on the one hand and the political part (p-part) on the other hand⁸. There are already several papers that has used popularity function in the context of Germany with macro (Döpke and Pierdzioch, 2006; Kirchgässner, 2009; Williams et al., 2017) and micro-level data (Enkelmann, 2013). Then, we base our estimation on these previous studies and we introduce our textometric measures interacted with pre-electoral dummies to investigate on the presence of potential PROPMCs. This methodology is comparable to the one use on the United Kingdom in the previous chapter when we are

⁸As expressed in Section 3.2, *p-part* is often neglected by economists (Lewis-Beck and Steigmaier, 2013). That is why a particular attention is given to the selection of political events introduced within our model.

looking for indirect effects of the Bank of England actions on the popularity of the Conservative party and the Labour party.

3.3 Data and Summary Statistics

3.3.1 Politics in Germany

Germany is a federal country composed of 16 *Länders* and characterised by a bicameral parliamentary regime. On the one hand, federal elections are held every 4 years maximum to elect members of the *Bundestag* in which the chancellor and the government are designated. On the other hand, local elections are organized in each *Länder* to elect members of every *Landtag*. The second chamber (called *Bundesrat*) is composed of an aggregation of several *Landtag*⁹ officials in every *Länder*. In addition to these federal and local elections, the country is also impacted by elections to the EP in which Germany is the most represented country with 96 officials since February 2020. In this paper, we study the potential existence of a PROPMC in before these 3 types of election. Then, a comprehensive presentation of politics in Germany is provided in this section.

First, we present the 6 political parties included in this study: the alliance between Christian Democratic Union of Germany (*CDU*) and Christian Social Union in Bavaria (*CSU*)¹⁰ referred as *CDU/CSU*; the Social Democratic Party of Germany (*SPD*); the Free Democratic Party (*FDP*); the alliance between *Bündnis 90* and *Die Grünen* (*Greens*); *Die Linke*¹¹ (*Linke*) and Alternative for Germany (*AfD*). From a partisan point of view, we follow the classification of German political parties developed by Piketty and Kosse (2020). Specifically, *SPD*, the *Green Party* and *Linke* are considered as left-wing parties and *CDU/CSU*, *FDP* and *AfD* as right-wing parties¹².

Second, it is pertinent to insist on the importance of governing coalitions in the German parliamentary system. Indeed, as presented by Debus et al. (2014), the members of the coalition and their relative importance among the coalition may impact both the *e-part* and the *p-part* of the popularity function. To ensure that the German political context is clear enough for the reader, we present in Figure 3.2 the composition of the different running coalitions from 2000 to 2022. Between the snap election implemented by Gerhard Schröder in September 2005¹³ and September 2021 election, the Chancellor is a member of the *CDU/CSU* alliance (*i.e.* Angela Merkel). Otherwise, the dominant party among the coalition is the *SPD* (respectively with Gerhard Schröder

⁹We will use the expression *Landtag* throughout the paper even though it is called *Bürgerschaft* in *Hamburg* and *Bremen* and *Abgeordnetenhaus* in *Berlin*

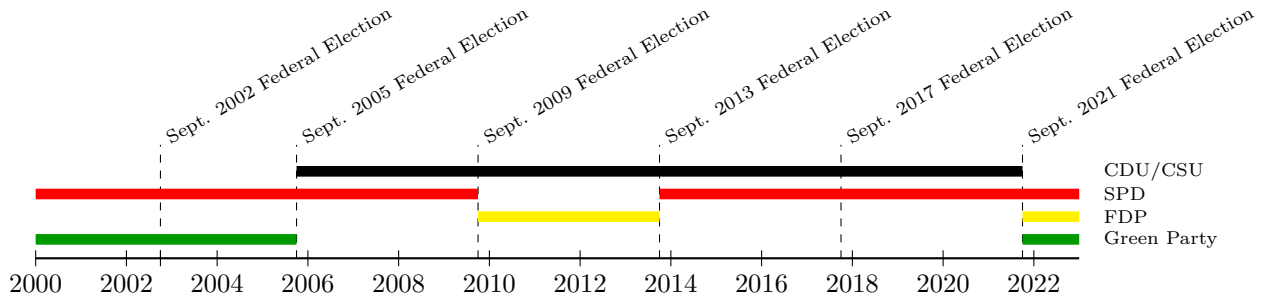
¹⁰*CSU* only runs in elections taking place in *Bayern* (Bavaria).

¹¹*Die Linke* was found in June 2007 when the Party of Democratic Socialism (*PDS*) from former East Germany merged with the Labour and Social Justice – The Electoral Alternative (*WASG*) party formed in 2004 in West Germany. In the sake of simplicity, electoral results for *Die Linke* are the ones from the *PDS* before 2007. Indeed, the *WASG* has never won a seat in Federal, European and local elections before the merger.

¹²For more information on every German political parties' ideological position, see Tanguiane (2022) or the political compasses produced before every Federal election since 2005 on <https://www.politicalcompass.org/>

¹³For some context on the September 2005 snap election, see Richter (2006).

Figure 3.2: Members of the governing coalitions

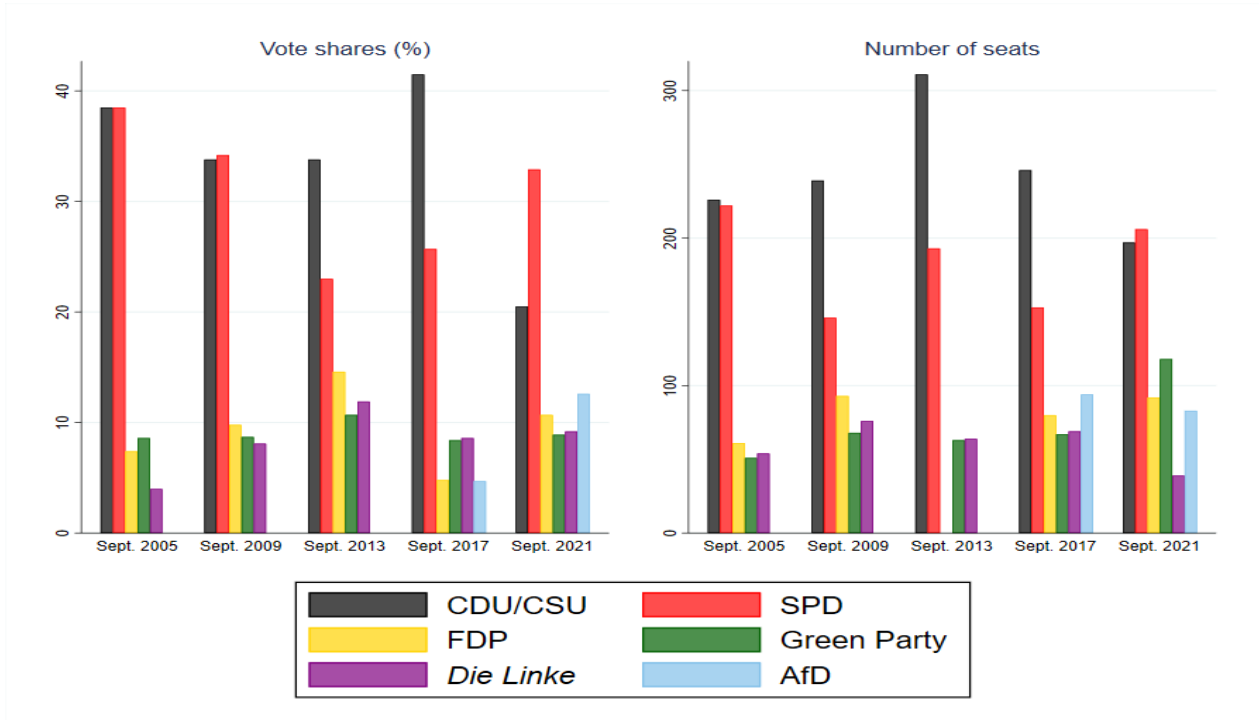


before September 2005 and Olaf Scholz after September 2021 as Chancellors). Moreover, the three party coalition inherited from the September 2021 Federal election (*SPD*, *FDP* and *Green Party*) is unique in recent German political history.

Third, in Figure 3.3, we present the results in terms of vote percentage and number of seat in the 5 Federal elections implemented in our study period. We can observe a relative dominance of both *CDU/CSU* and *SPD* until the September 2017 Federal election. Since this scrutiny, political parties are much closer to each other in terms of popularity. Indeed, if we compute the absolute difference between the most and the least preferred parties (among the 6 studied), this figure is around 35 percentage points in September 2002. However, in September 2021, the difference is only around 20 percentage points. In the EU, this ideological convergence is documented and explained by the fact that voters tend to vote for less mainstream parties, nearer there real partisan preferences (Spoon and Klüver, 2019). This reasoning can explain the important score of *AfD* in the federal election of September 2017 and 2021 despite the youth of this party founded in 2013.

As explained above, we consider alternative electoral events within the study for the sake of completeness. More precisely, we study potential PROPMC before elections to the EP and before elections to the local *Lantags*. In the case of elections to the EP, they are implemented every 5 years since 1979 and through the former Federal Republic of Germany (FDR), Germany has participated to all of them. The importance of these EP elections is growing in recent years in the country. This is due to the apportionment rules within the EP that induce that Germany is the country with the highest number of elected officials with 96 members out of the 705 total number of members since February 2020. In addition, we can observe that since 2009 EP election, the average turnout in Germany is above the EU average¹⁴. As developed by Braun and Grande (2021), it seems that elections to the EP are more and more politicized, slowly passing from second-order to first-order elections. Then, as done in the case of federal elections, we display in Figure 3.4 the vote shares of each political party in the European elections in both Germany and the EU. As national political

¹⁴More precisely, the German turnout is 43.27% (against 42.97% in the Union) in 2009, 48.10% (against 42.61%) in 2014 and 61.38% (against 50.66%) in 2019. These figures are provided by the EP Electoral Commission and are available here: <https://www.europarl.europa.eu/election-results-2019/en/turnout/>

Figure 3.3: Vote shares and number of seats in the *Bundestag*

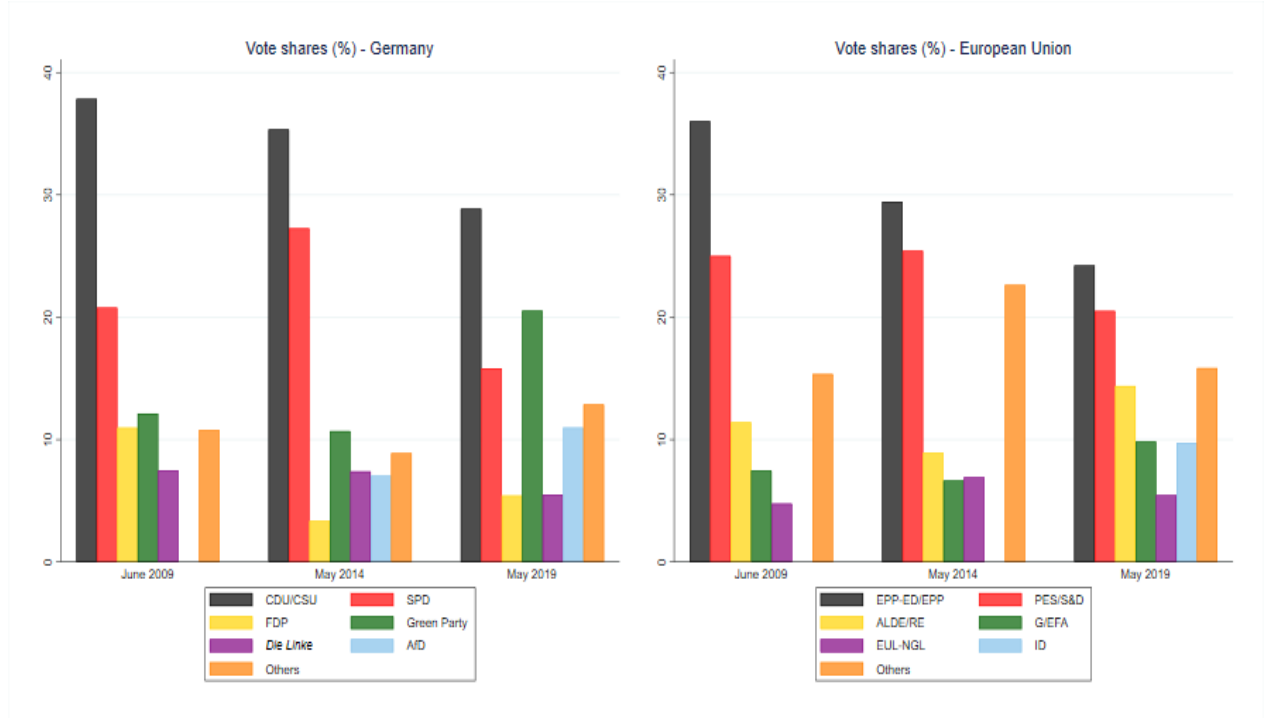
Source: The German Federal Returning Officer (*Bundeswahlleiter*), see <https://www.bundeswahlleiter.de>

parties are part of transnational political groups within the EP, each German party is compared to the mean vote share of its political group in the Union. Information on the membership of each German party in a group within the Parliament is available in Table A3.17 in the Appendix. Vote patterns in Germany and in the EU are comparable apart from two slight differences: *CDU/CSU* is more dominant in Germany than the *EPP* in the EP and *Greens* are more popular in Germany than the *G/EFA* in the EP.

We also introduce local *Landtag* election periods using our econometric specification. However, when studying elections at the local level, the situation is more complex and highly depend on specific local issues. Moreover, in Germany this effect is reinforced by the fact that each *Länder* has its own electoral agenda and electoral system¹⁵. In Table 3.1, we present electoral agendas, growth regional product (GRP), population figures, election month and dominant parties in the 16 German *Länder*. We also take advantage of Table 3.1 to present which *Länder* was part of German Democratic Republic (GDR) and FDR. Moreover, in Figures A3.17 to A3.32 in the Appendix, we present vote shares and the number of seat obtained by each party in every *Landtag* election. Contrary to the Federal and EP elections, additional political parties have elected officials within some *Länder Landtags*. It is the case in more than half of *Länders*. More precisely, other political parties were elected in *Bayern*, *Berlin*, *Brandenburg*, *Bremen*, *Mecklenburg-Vorpommern*,

¹⁵For more information on the German local elections systems and their potential impacts on local and national electoral results, see Linhart and Eichborn (2022)

Figure 3.4: Vote shares and number of seats in the EP



Source: EP, see: <https://www.europarl.europa.eu/>

*Nordrhein-Westfalen, Rheinland-Pfalz, Saarland, Sachsen and Schleswig-Holstein*¹⁶. These additional political parties with representatives within *Landtags* in our study period are: *Freie Wähler* (Free Voters), *Piraten* (Pirate Party), *Bürger in Wut* (Citizens in Rage), *Nationaldemokratische Partei Deutschlands* (NPD) and *Südschleswigscher Wählerverband* (SSW)¹⁷. In the sake of simplicity, we consider these different parties in a common category referred as *Others*.

Several conclusions on German local politics can be drawn using Figures A3.17 to A3.32 in Appendix and Table 3.1. First, with a few exceptions, when a party is dominant at the local level, it remains dominant on the overall period. Second, on average, every *Länder* faces a decreasing distance between this dominant party and its competitors as observable in national politics. Third, north-eastern *Länders* located near the Polish border (*Berlin, Brandenburg* and *Mecklenburg-Vorpommern*) are dominated by the *SPD* while the South part of the country (*Baden-Württemberg, Bayern, Hessen* and *Saarland*) is dominated by the *CDU/CSU*¹⁸. Fourth, former GDR *Länders* does not have a significant preference for *SPD* nor left-wing parties as half of them elected *CDU/CSU* in majority. Finally, when we look at the electoral results of *Linke* and *Afd* – the most radical parties considered in this study (Tanguiane, 2022) –, they are significantly higher among East German *Länders*.

¹⁶Refer to Figures A3.17 to A3.32 in the Appendix for more information on *Lantag* electoral results

¹⁷Again, for more information on these political parties and their ideological positions, the reader may refer to the work done by Tanguiane (2022)

¹⁸With the exception of *Rheinland-Pfalz* in which citizens vote in majority for *SPD*.

Table 3.1: Characteristics of elections in *Landtags*

<i>Länder</i>	FDR	GDR	GRP in 2021† (% of total)	Population in 2021 (% of total)	Time in office	Election dates within the sample (Party with the highest number of seats)
<i>Baden-Württemberg</i>	✓		536.04 ($\simeq 15\%$)	11.124.642 ($\simeq 13\%$)	5 years	March 2006 (<i>CDU</i>); March 2011 (<i>CDU</i>); March 2016 (<i>Green Party</i>); March 2021 (<i>Green party</i>)
<i>Bayern</i>	✓		661.54 ($\simeq 19\%$)	13.176.989 ($\simeq 16\%$)	5 years	September 2008 (<i>CSU</i>); September 2013 (<i>CSU</i>); October 2018 (<i>CSU</i>)
<i>Berlin</i>		✓	162.95 ($\simeq 5\%$)	3.677.472 ($\simeq 4\%$)	5 years	September 2006 (<i>SPD</i>); September 2011 (<i>SPD</i>); September 2016 (<i>SPD</i>); September 2021 (<i>SPD</i>)
<i>Brandenburg</i>		✓	78.66 ($\simeq 2\%$)	2.537.868 ($\simeq 3\%$)	5 years	September 2009 (<i>SPD</i>); September 2014 (<i>SPD</i>); September 2019 (<i>SPD</i>)
<i>Bremen</i>	✓		34.21 ($\simeq 1\%$)	676.463 ($\simeq 1\%$)	4 years	May 2007 (<i>SPD</i>); May 2011 (<i>SPD</i>); May 2015 (<i>SPD</i>); May 2019 (<i>CDU</i>)
<i>Hamburg</i>	✓		126.71 ($\simeq 4\%$)	1.853.935 ($\simeq 2\%$)	5 years	February 2008 (<i>CDU</i>); February 2011 (<i>SPD</i>); February 2015 (<i>SPD</i>); February 2020 (<i>SPD</i>)
<i>Hessen</i>	✓		302.53 ($\simeq 8\%$)	6.295.017 ($\simeq 7\%$)	5 years	January 2008 (<i>CDU & SPD</i>); January 2009 (<i>CDU</i>); September 2013 (<i>CDU</i>); October 2018 (<i>CDU</i>)
<i>Mecklenburg-Vorpommern</i>		✓	49.46 ($\simeq 1\%$)	1.611.160 ($\simeq 2\%$)	5 years	September 2006 (<i>CDU</i>); September 2011 (<i>SPD</i>); September 2016 (<i>SPD</i>); September 2021 (<i>SPD</i>)
<i>Niedersachsen</i>	✓		315.81 ($\simeq 9\%$)	8.027.031 ($\simeq 10\%$)	5 years	January 2008 (<i>CDU</i>); January 2013 (<i>CDU</i>); October 2017 (<i>SPD</i>)
<i>Nordrhein-Westfalen</i>	✓		733.26 ($\simeq 20\%$)	17.924.591 ($\simeq 21\%$)	5 years	May 2005 (<i>CDU</i>); May 2010 (<i>CDU & SPD</i>); May 2012 (<i>SPD</i>); May 2017 (<i>CDU</i>)
<i>Rheinland-Pfalz</i>	✓		162.22 ($\simeq 4\%$)	4.106.485 ($\simeq 5\%$)	5 years	March 2006 (<i>SPD</i>); March 2011 (<i>SPD</i>); March 2016 (<i>SPD</i>); March 2021 (<i>SPD</i>)
<i>Saarland</i>	✓		35.64 ($\simeq 1\%$)	982.348 ($\simeq 1\%$)	5 years	August 2009 (<i>CDU</i>); March 2012 (<i>CDU</i>); March 2017 (<i>CDU</i>)
<i>Sachsen</i>		✓	134.51 ($\simeq 4\%$)	4.043.002 ($\simeq 5\%$)	5 years	August 2009 (<i>CDU</i>); August 2014 (<i>CDU</i>); September 2019 (<i>CDU</i>)
<i>Sachsen-Anhalt</i>		✓	67.11 ($\simeq 2\%$)	2.169.253 ($\simeq 3\%$)	5 years	March 2006 (<i>CDU</i>); March 2011 (<i>CDU</i>); March 2016 (<i>CDU</i>); June 2021 (<i>CDU</i>)
<i>Schleswig-Holstein</i>	✓		104.51 ($\simeq 3\%$)	2.922.005 ($\simeq 4\%$)	5 years	February 2005 (<i>CDU</i>); September 2009 (<i>CDU</i>); May 2012 (<i>CDU & SPD</i>); May 2017 (<i>CDU</i>)
<i>Thüringen</i>		✓	65.47 ($\simeq 2\%$)	2.108.863 ($\simeq 3\%$)	5 years	August 2009 (<i>CDU</i>); September 2014 (<i>CDU</i>); October 2019 (<i>Die Linke</i>)

FDR: Federal Republic of Germany; GDR: German Democratic Republic (including Berlin)

† GRP stands for Gross Regional Product. Figures are expressed at current prices in billion euros

Source: The German Federal Returning Officer (*Bundeswahlleiter*), see <https://www.bundeswahlleiter.de> and German Federal Statistical Office (*Destatis*) for GRP and Population, see <https://www.destatis.de>

3.3.2 Political Events

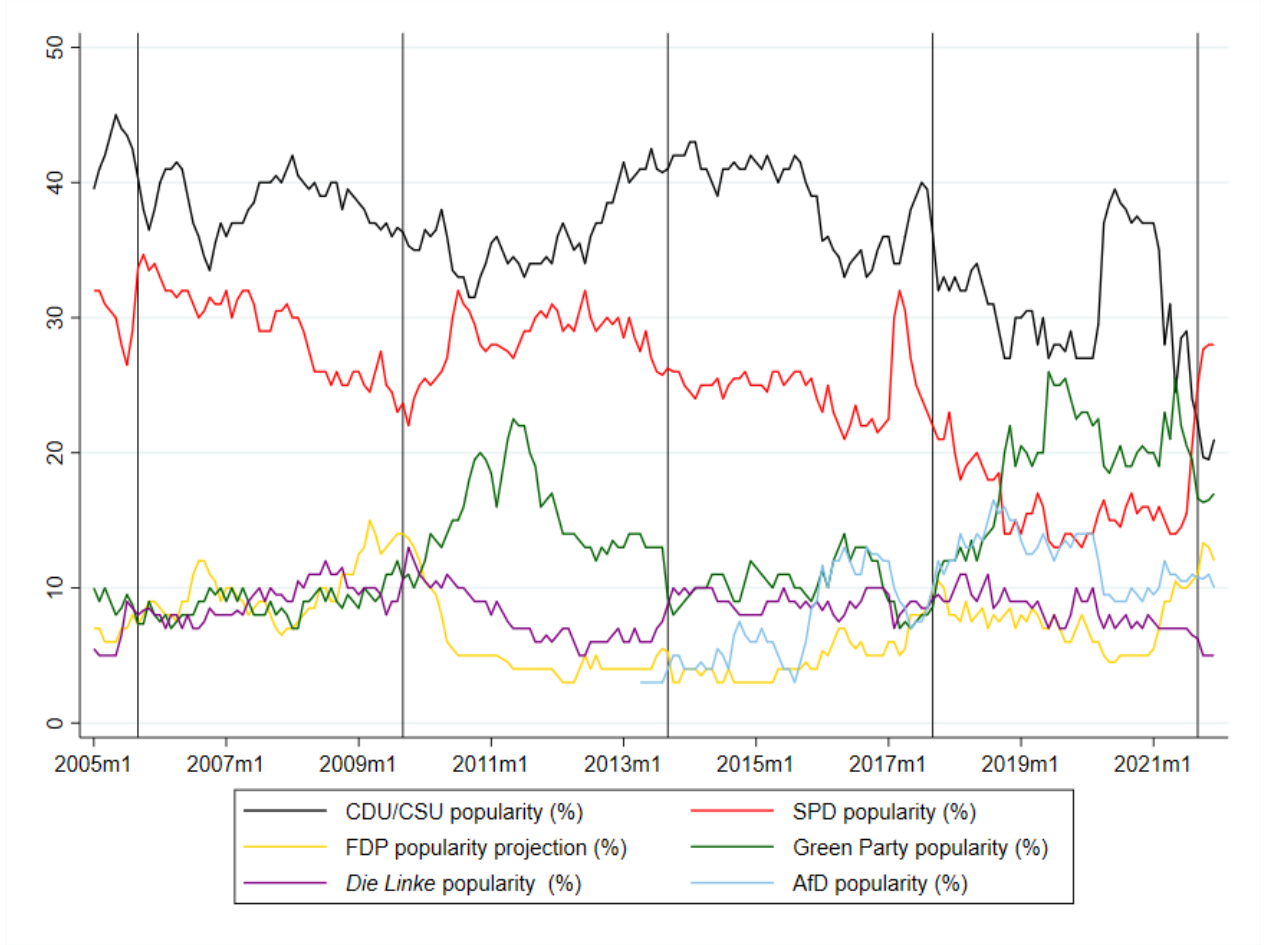
A particular attention is given to the political events introduced within the model because, in the specific case of Germany, there are ongoing debates on the estimation of popularity functions. On the one hand, Kirchgässner (2009) insists on the lack of validity of the *e-part* of the popularity function under the Schröder government (1998m10-2002m10) contrary to the common understanding (Lewis-Beck, 1986). However, on the other hand, Debus et al. (2014) who underlines that economic voting is significant for the Chancellor’s party while other members of the ruling coalition do not face any significant increase in their popularity if the economic situation is favourable. Moreover, as described by Lewis-Beck and Steigmaier (2013), the estimation of popularity functions is biased as the importance of the *p-part* is often underestimated by economists. Then, a high number of these political events are introduced within the model and we only keep the ones that are significant in at least one popularity function as advocated by Sanders (2004). Some of these events have already been studied in German popularity functions as *Fukushima* or *Stuttgart 21* (Williams et al., 2017). To introduce other events that were not studied by the existing literature, we follow the classification of political events developed by Bytzek (2011), considering several types of political shocks. First, political scandals (*e.g.* German Visa Affair) that represents a violation of societal values by politicians leading their popularity to decrease. Second, political crises (*e.g.* *Reichstag* Storm) that forces politicians to react; reaction which is impacting their popularity. Third, events that relies on the “*rally-round the flag*” effect (*e.g.* *Berlin Truck Attack*). As developed by Mueller (1970), it represents the rise in incumbent’s popularity that follows events like a declaration of war, a military invasion or a terrorist attack. The events included in the estimation performed in this study are presented and developed in Table A3.16 in Appendix.

3.3.3 Popularity of Political Parties

In Figure 3.5, we present the evolution of each party’s popularity from January 2001 to December 2021. Data on German parties’ popularity at the national level comes from the *Politbarometer* (May 2022 version) developed by the Institute for Election Research (*Forschungsgruppe Wahlen e.V.*). More precisely, we use the *Projektion* database that represents aggregation of individual answers to the following questions: “*If there were a federal election next Sunday, would you go to the polls? And which party would you vote for?*”¹⁹ traditionally called the “*Sunday question*”. The answers are weighted by parameters like personal political beliefs or affiliation with parties. In this study, we collect these augmented vote intentions for the 6 main German political forces (*CDU/CSU*, *SPD*, *FDP*, *Greens*, *Linke* and *AfD*). To avoid any problem due to potential stationarity of these

¹⁹In German: “*Wenn am nächsten Sonntag Bundestagswahl wäre, würden Sie dann zur Wahl gehen? Und welche Partei würden Sie wählen?*”. For more information on the methodology used to compute this database, see: <https://www.forschungsgruppe.de/Umfragen/Politbarometer/Methodik/>

Figure 3.5: Popularity of each party (all Germany)



popularity ratings, they are all introduced as their first differences ($dCDU/CSU$, $dSPD$, $dFDP$, $dGreens$, $dLinke$ and $dAfD$) within the model.

Second, we mobilize monthly popularity series on more granular level splitting the sample in between the 16 German *Länders* to study PROPMC in *Lantag* elections. Data on “*Sunday question*” answers at the local level are available on the *Walrecht* website²⁰. Specifically, the question is asked to the respondents in the context of *Landtag* elections. This choice is motivated by the availability of the data which is much more important at the *Länder* level for local elections than federal ones. However, an important bias exists in this local sample as it is composed of eight different data sources²¹ aggregated at the monthly level. Even if all of these computation are performed through comparable methodological framework based on individual answers to the “*Sunday question*”, the aggregation of these data sources may introduce some biases within the estimations. Moreover, this dataset is characterized by a significant proportion of missing values

²⁰See <https://www.wahlrecht.de/index.htm>

²¹More precisely, the “*Sunday question*” answers provided on this website come from *Allensbach*, *Kantar*, *forsa*, *Forschungsgruppe Wahlen e.V.*, *Infratest dimap*, *INSA* and *Yougov*.

(from 1% for *CDU/CSU* and *SPD* to 16% for *FDP*). Then, the results of these local estimations have to be interpreted with caution.

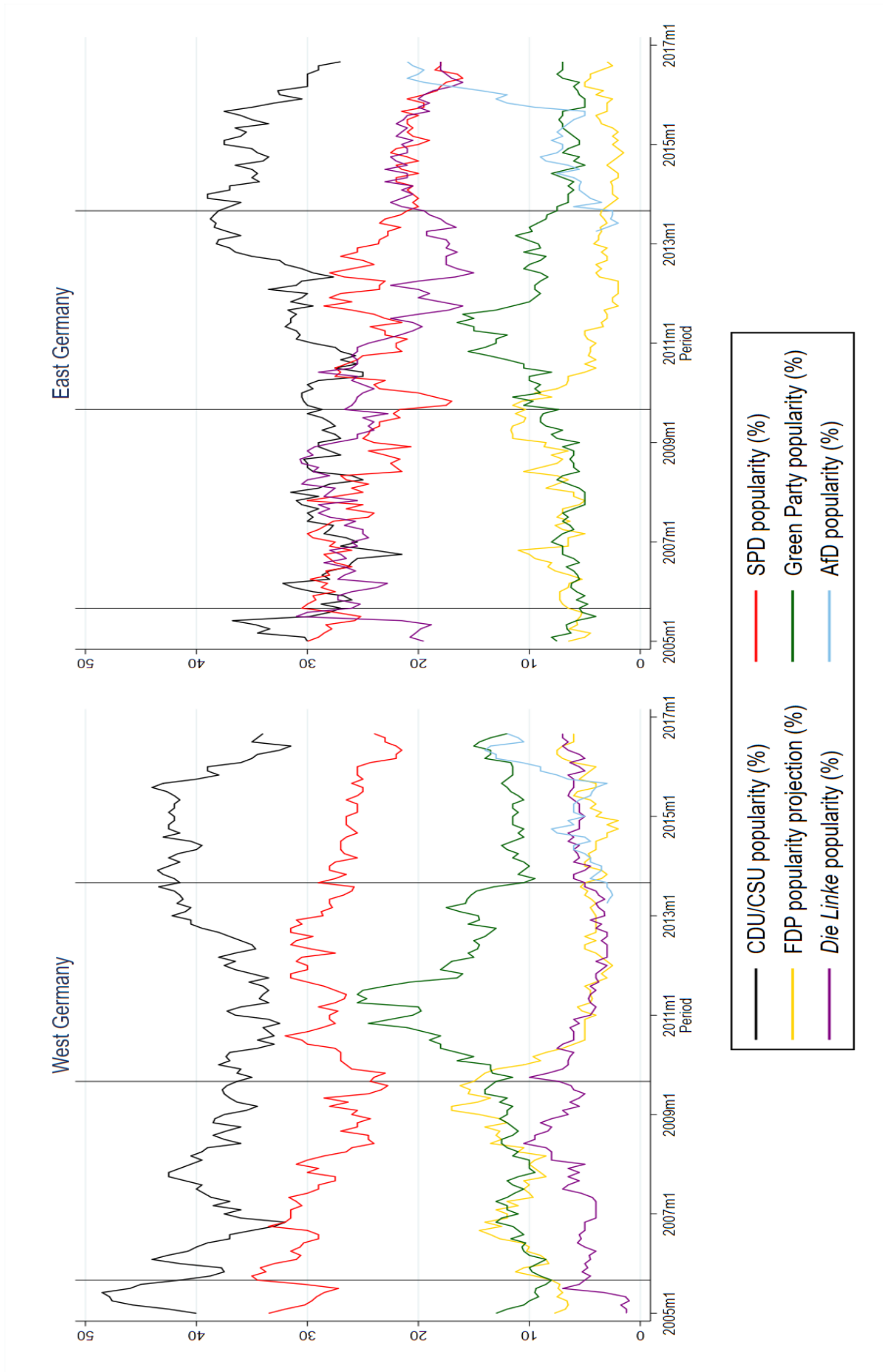
Third, to ensure the robustness of our estimation technique, we estimate our main model splitting the country in between the former GDR and FDR²². Answers to the “*Sunday question*” split in between former GDR and FDR are provided by the *Infratest dimap*. They aggregate answers about federal election to obtain monthly separated observations for East and West Germany. Unfortunately, *Infratest dimap* stopped publishing these monthly series since September 2016. Then, we have to restrict our estimations on this alternative dataset on the period 2005m1-2016m9. Figure 3.6 represents the fluctuations of popularity ratings in this sample split between East and West Germany. Similar patterns are observable in Figure 3.5 and Figure 3.6. For instance, we can observe the relative dominance of *CDU/CSU* and *SPD* among the period in both vote share and number of seats in the *Bundestag*. This dominance is decreasing over time as the number of seats won by *Green Party* and *AfD* are increasing. This result is in the line with the concept of ideological convergence discussed above (Spoon and Klüver, 2019). Nevertheless, this ideological convergence is not impacting the whole German territory in an uniform way. As presented in Figure 3.6, the popularity of each party is significantly different between former GDR and FDR. On the one hand, in West Germany, popularity series follow similar patterns that in the overall country (see Figure 3.5) before the September 2017 election. National politics are dominated by *CDU/CSU* and *SPD* with a breakthrough of the *Green Party* in 2011-2012. Moreover, the convergence pattern is less observable in West Germany around the September 2021 Federal election than in the overall country. On the other hand, the situation is very different in East Germany. Three parties are located around 30% popularity ratings on the sample period: *CDU/CSU*, *SPD* and *Die Linke*. This particular situation is supposedly due to differences in political culture (Alesina and Fuchs-Schündeln, 2007; Dalton and Weldon, 2010) and preferences (Hebenstreit, 2022) between the former GDR and the rest of the territory. Then, the political landscape appears more disputed in East Germany, especially following *AfD* breakthrough that represents already around 20% in terms of popularity ratings in 2016. These differences between West and East Germany are also observable in Figures A3.17 to A3.32 that present results of local election and the distribution of seats in every *Landtag* (see the Appendix, pp. 195-202).

3.3.4 Textual Analysis

To measure media coverage of monetary policy, we focus our analysis on newspaper articles related to the European Central Bank. We extract, from Europress, Factiva or webscrapping, articles

²²For the sake of simplicity, even if *Berlin* was split between East and West Germany, it is considered as part of East Germany throughout this study. A complete classification of *Länders* between former GDR and FDR is available in Table 3.1.

Figure 3.6: Popularity of each party (West vs. East Germany)



mentioning at least once the ECB in 5 German newspapers with different political orientations: *Bild*, *Die Welt*, *Der Spiegel*, *Frankfurter Rundschau* and *Süddeutsche Zeitung*. From the period between January 2005 and December 2021, our dataset includes 26.000 articles. Characteristics of these 5 newspapers, their orientations, and the number of articles are provided in Table 3.2.

Table 3.2: Characteristics of German newspapers in the textometric analysis

Newspaper	Daily Circulation	Monthly Website Visits	Political Orientation	No. of articles in dataset
<i>Bild</i>	1.516.399 [2022Q1]	> 200.000.000	Center-right/populist	406
<i>Der Spiegel</i>	629.884 [2022Q1]	> 200.000.000	Center-left	8463
<i>Die Welt</i>	99.097 [2022Q1]	[100.000.000; 150.000.000]	Conservative	3864
<i>Frankfurter Rundschau</i>	112.411 [2013Q1]	[10.000.000; 20.000.000]	Left liberal	1395
<i>Handelsblatt</i>	40.725 [2022Q1]	[20.000.000; 30.000.000]	Liberal	7640
<i>Süddeutsche Zeitung</i>	247.567 [2022Q1]	[50.000.000; 100.000.000]	Left	4241

Circulation figures come from the German Audit Bureau of Circulation (*Informationsgemeinschaft zur Feststellung der Verbreitung von Werbeträgern*), see <https://www.ivw.de/>

Monthly visits on each newspaper website come from Eurotopics provided by the Federal Agency for Civic Education (*Bundeszentrale für politische Bildung*) <https://www.eurotopics.net/en/>

Political orientation come from the Warwick German Studies Web, see <https://warwick.ac.uk/>

For *Der Spiegel* and *Handelsblatt*, information on political orientation comes from Eurotopic

We first count, as a proxy the overall importance of monetary policy in public discussions, the number of articles related to the ECB, labeled *Count* and its variation *dCount* at a monthly frequency. Therefore for a given month m , $dCount_m$ is the change of the number of articles in our database mentioning at least once the ECB. Then we study the content of the articles through (i) words' occurrences and (ii) the sentiment they convey. First, a word or a group of words occurrences for a period t are measured by :

$$Occur_words_t = \sum_{i=1}^n Occurrences_words_n \quad (3.1)$$

where n represents all articles published during the period t and *words* is either a word or a group of words. We count references to the institution itself in the articles, $Occur_{ECB}$, through the occurrences of the group of words “European Central Bank” or “ECB”²³. As communications from different members of the central bank have different effects on market participants (Ehrmann and Fratzscher, 2007), we also consider, in addition to references to the institution, references to ECB governing council members which include: the President, members of the Executive Board, and heads of the national central banks of the Eurosystem. This measure is labelled $Occur_Perso..$ As a last measure of occurrences, we pay a closer attention to the importance of price levels in the published articles. The variable $Occur_Infl.$ measures occurrences of words related to both the prices and inflation²⁴

²³We used the terms “*europäische zentralbank*” and all its declensions as well as “*ezb*.”

²⁴List of words considered: “*inflationsrate*”, “*inflation*”, “*inflationsprognosen*”, “*teuerungsrate*”, “*inflationsziel*”,

Second, we estimate the overall sentiment of the articles through journalists' choice of words in the German dictionary. To obtain a classified dictionary that differentiate positive and negative words, we use the *SentimentWortschatz* (*SentiWS*) dictionary developed by Remus et al. (2010)²⁵. It includes all possible words conjugations and declinations and provides, for each word, the probability of being used in a positive or a negative context. Using this lexicon, we construct two sentiment measures :

$$sentiment1_j = \frac{\Sigma(Positive_Words_j) - \Sigma(Negative_Words_j)}{\Sigma(Positive_Words_j + Negative_Words_j)} \quad (3.2)$$

$$sentiment2_j = \frac{\Sigma(Positive_Words_j) - \Sigma(Negative_Words_j)}{\Sigma(Words_j)} \quad (3.3)$$

where j denotes the article studied; $Positive_Words_j$ and $Negative_Words_j$ represent respectively the number of word classified as “positive” and “negative” by the *SentiWS* dictionary in article j and $Words_j$ is to the total number of words within article j .

The two variables *sentiment1* and *sentiment2* are normalized and then, they are introduced within the model as their first difference.

We present in Figure 3.7 and in Figure 3.8 the distribution of our four textometric variables. First, Figure 3.7 displays the number of articles (*dCount*) and the number of inflation related terms (*dOccur_Infl.*). We can observe that the two variables are evolving in the same proportions with a few exceptions (2008, 2011, 2017 and 2021) in which the occurrences of inflation related terms are way ahead the number of articles. Second, Figure 3.7 demonstrates that both *dOccur_ECB* and *dOccur_Perso.* distributions are comparable and evolving in the same proportions. Moreover, in Figure A3.11, we display the distribution of the first difference of our national inflation series. This Figure A3.11 ensures the reader that the extreme values of our textual measures are not driven by huge variations in inflation.

Finally, we present summary statistics on our main variable in Table 3.3 for the national database, in Table A3.19 to Table A3.26 in Appendix for *Länder* dataset and in Table A3.27 in Appendix for the East versus West database. One can argue that our popularity ratings are characterized by low (high) minimum (maximum) values and important standard deviations (see Table A3.19 to Table A3.26 in Appendix). This is due to the important number of data sources used to compute these popularity ratings²⁶. Unfortunately, there is no alternative data sources on *Länder* popularity to the best of our knowledge.

²⁵“preisniveau”, “preisklasse”.

²⁶See Haselmayer and Jenny (2017) and Rauh (2018) for discussions on German dictionaries.

²⁶As a reminder, the 7 following data sources are aggregated to compute our *Länder* popularity ratings based on “Sunday questions”: Allensbach, Kantar, forsa, Forschungsgruppe Wahlen e.V., Infratest dimap, INSA and Yougov.

Figure 3.7: Number of articles and mention of inflation related terms

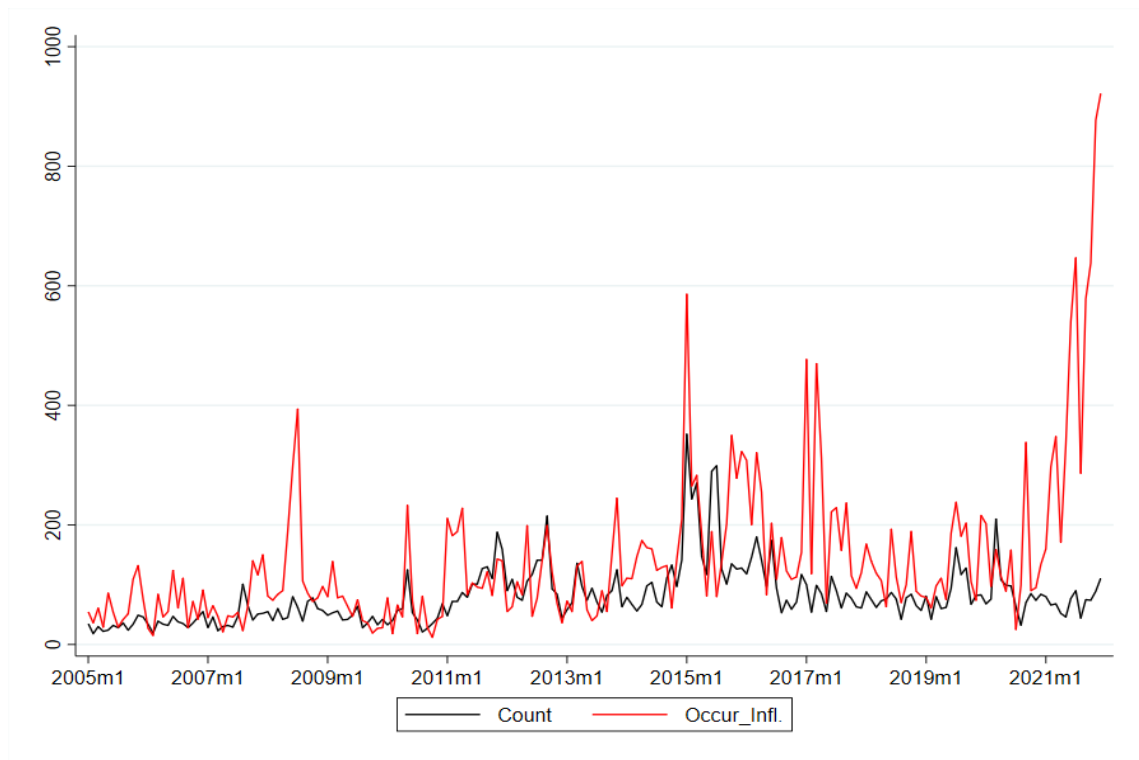


Figure 3.8: Number mention of ECB related terms

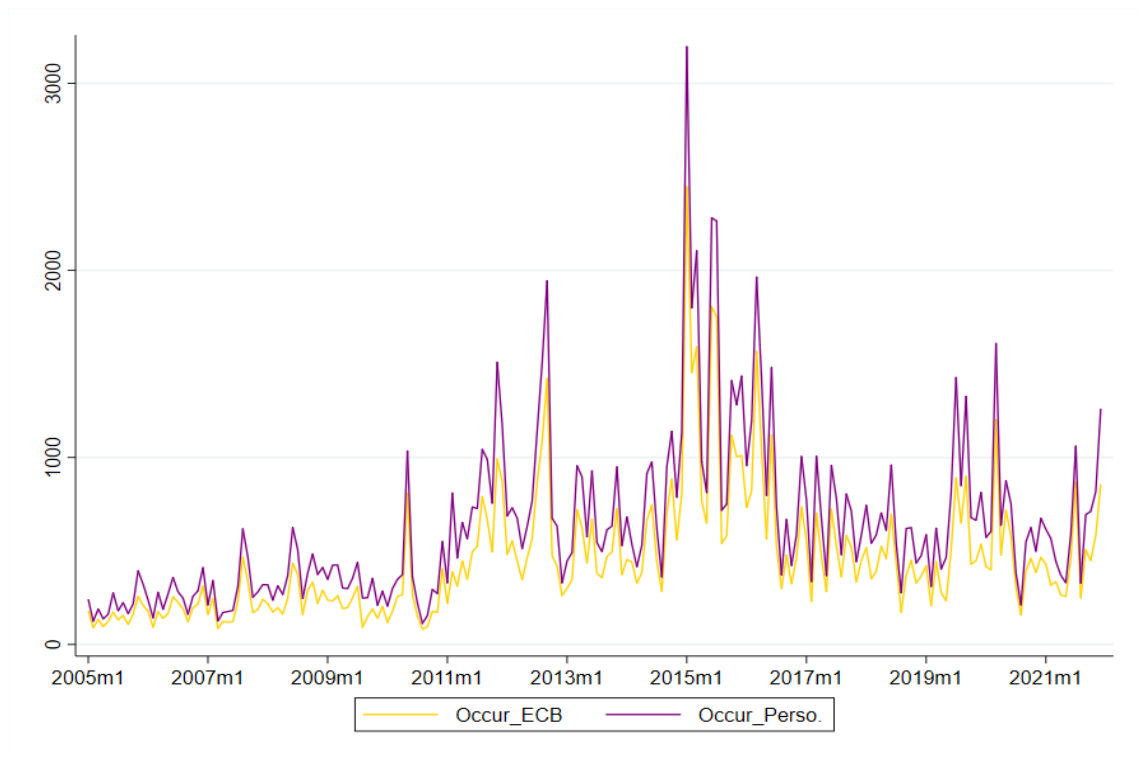


Table 3.3: Summary statistics on national database

Variable	Mean	Std. Dev.	Min.	Max.	N
dCDU_CSU	-0.098	1.57	-7	7.5	204
dSPD	-0.01	1.391	-4.5	7.5	204
dFDP	0.025	0.803	-2.25	2.5	204
dGreens	0.034	1.291	-3.75	6	204
dLinke	-0.005	0.773	-2.5	2.5	204
dAfD	0.067	1.041	-2.5	2.667	104
dUnemployment	-0.037	0.079	-0.2	0.3	204
dInflation	0.126	0.372	-1	1	204
dCount	0.328	39.498	-173	211	204
dOccur_ECB	3.216	295.624	-1211	1646	204
dOccur_Perso.	4.77	390.026	-1547	2063	204
dOccur_Infl.	4.24	100.689	-361	377	204
dsentiment1	0.037	15.544	-37.413	41.037	204
dsentiment2	0.043	15.97	-38.824	47.83	204

3.4 Econometric Specification

To investigate the impact of monetary policy related press articles on party popularity, we implement two distinct estimation techniques on our three datasets. As a reminder, these three datasets represent national popularity ratings (2005m2-2021m12), Länder popularity ratings (2005m1-2021m12) and East versus West popularity ratings (2005m1-2016m9) for the 6 political parties studied. On these three distinct databases, we first estimate an independent popularity function for each party with an Ordinary Least Square (OLS) estimator with Newey and West (1987) correction as follows:

$$dPop_t^J = \beta_1 dPop_{t-1}^J + \beta_2 Election_t + \beta_3 Textot_t + \beta_4 (Election_t) * (Textot_t) + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_t \quad (3.4)$$

where $dPop_t^J$ represents the first-difference of party J 's popularity in year in year t and $t - 1$ measured in percentage of positive answer to the “*Sunday question*”; $Election_t$ denotes a dummy variable taking the value 1 in the month preceding an election (Federal, European or Local); $Textot_t$ stands for one of our textometric measure; $(Election_t) * (Textot_t)$ is the interaction term between $Election_t$ and $(Textot_t)$; X_t^{POL} is composed of dummies representing several national political events (see Table A3.16 in Appendix) considered as the political part (p -part) of the popularity function; X_t^{ECO} is composed of the first difference of the inflation rate in year t and $t - 1$ and the first difference of the unemployment rate in year t and $t - 1$ considered as the economic part (e -part)²⁷. and ε_t an error term.

²⁷Inflation and unemployment rates come from the computations performed by the German Federal Statistical Office (*Destatis*) on both national and *Länder* basis. As *Destatis* does not provide data split between former East and West Germany, we computed them using mean values of inflation and unemployment in the *Länders* that were

As developed by Lewis-Beck and Stegmaier (2013), popularity functions estimations are biased due to heteroscedasticity and autocorrelation. To control for these potential biases, our six popularity functions are estimated with Newey and West (1987) standard errors²⁸ as done by Döpke and Pierdzioch (2006) or Kirchgässner (2009) while studying Germany. Moreover, as developed in Section 3.1, popularity ratings and textometric measures are introduced in the model as their first-differences to avoid nonstationarity issues.

Second, each party's popularity is statistically linked to the others as popularity ratings are restricted to values between 0% and 100%. In other words, an increase in party J 's popularity induces a decrease in other parties' popularity. To control for these interdependencies, we estimate our popularity functions using a SUR model (Zellner, 1962) as performed by Williams et al. (2017). This leads our model to be the following system of equation:

$$\begin{cases} dPop_t^{CDU} = \beta_1 dPop_{t-1}^{CDU} + [...] + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_{CDU,t} \\ dPop_t^{SPD} = \beta_1 dPop_{t-1}^{SPD} + [...] + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_{SPD,t} \\ dPop_t^{FDP} = \beta_1 dPop_{t-1}^{FDP} + [...] + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_{FDP,t} \\ dPop_t^{Gre.} = \beta_1 dPop_{t-1}^{Gre.} + [...] + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_{Gre.,t} \\ dPop_t^{Lin.} = \beta_1 dPop_{t-1}^{Lin.} + [...] + \beta_5 X_t^{POL} + \beta_6 X_t^{ECO} + \varepsilon_{Lin.,t} \end{cases} \quad (3.5)$$

where $dPop_t^J$ represents the first-difference of party J popularity in year t measured in percentage of positive answer to the “*Sunday question*”; X_t^{POL} the p -part of the popularity function; X_t^{ECO} the e -part of the popularity function and $\varepsilon_{J,t}$ denote error terms correlated among equations of the system.

This system of equation is estimated using Generalized Least Squares with robust standard errors. As our time series databases are composed of a low number of observations (see Table A3.18 in Appendix) the small-sample adjustment is used²⁹. Moreover, to guarantee the validity of our results, we perform our estimates until coefficients converge to their maximum likelihood values.

part of the GDR and FDR. Again, to simplify *Berlin* is considered as part of East Germany. Unfortunately, data on unemployment in each *Länder* are only available since January 2005 following the promulgation of the last phase of Hartz reforms that deeply modified unemployment insurance scheme. For more information on these reforms and their effects, see Engbom et al. (2015). As previously explained in the above section, we guarantee stationarity of the inflation and unemployment series by using their first difference ($dInflation$ and $dUnemployment$) in the estimations

²⁸We will follow Greene (2011) and implement this procedure with $T^{1/4}$ maximum lags in the autocorrelation structure (p. 920), leading our specifications to be performed with 3 lags.

²⁹More precisely, this adjustment consists in computing the covariance matrix replacing the standard divisor (the number of observation n) by the following one: $\sqrt{(n - k_i)(n - k_j)}$, where k_i and k_j represent the number of parameters in equations i and j . For more information on this point, see Greene (2011) (p. 296).

3.5 Main Results

Table A3.28 and Table A3.29 display our main model without textometric variables using Newey and West (1987) and Zellner (1962) methodologies presented in the previous Section. It is interesting to discuss the significance of our explanatory variables to ensure the robustness of our estimation strategy. First, there are no inconsistencies between the two estimations strategies. More precisely, every coefficient is characterized by comparable coefficients in terms of sign and magnitude. In the case of the *e-part* of the popularity functions, our estimates are in line with Kirchgässner’s (2009) findings that the negative relationship between unemployment, inflation and government approval is debatable in recent years in Germany. If we consider political parties within ruling coalitions (see Figure 3.2), only *SPD* and *FDP* experience significant inflation or unemployment rate. Table A3.29 shows that *SPD*’s popularity is negatively impacted by an increase of the inflation rate in year $t - 1$ as expected. However, this effect is positive in the case of *FDP* for $dInflation(t-1)$ but also for $dUnemployment$. A simple explanation of this phenomenon can be found using the comparative advantage argument. As developed by Debus et al. (2014): “*The FDP [...] does not benefit from a positive view of the economy: the chances that voters choose the Liberals significantly decrease if they have a positive evaluation of the German economic situation.*” (p. 58). In other words, an increase in unemployment or inflation will increase *FDP*’s popularity as the party is considered as competent in fighting unemployment or inflation. On the contrary, the party experience a lower popularity when the country is experiencing a favourable economic situation as it destroys its comparative advantage. Finally, on the *e-part* of the popularity function, we can observe in Table A3.28 that an increase in $dUnemployment(t-1)$ induces a decrease in *AfD*’s popularity rating. On this point, Weisskircher (2020) underlines that there is no statistical link between the current level of unemployment and the popularity of the far-right populist party; nevertheless, he develops that past experiences of the voters with unemployment significantly increases *AfD*’s popularity contrary to our findings. Weisskircher (2020) explains this surprising result by the high differences in terms of politico-economic situation between East and West Germany (see Figure 3.6 for more information).

On the *p-part* of the popularity functions, political events introduced in the model are impacting parties’ popularity in the right direction when significant. More precisely, political scandals impacting incumbent parties (*e.g.* *German Visa Affair* or *Erdogate*) have a negative effect on all the members of the running coalition. On the contrary, political scandals affecting members of the opposition (*e.g.* *AfD Donation Scandal*) increase incumbents’ popularity. Moreover, terrorist attacks (*e.g.* *Berlin Truck Attack*) increase the popularity of the leader of the incumbent coalition as developed by Mueller (1970) in his “*rally-round the flag*” effect. Finally, environmental scandals (*e.g.* *Fukushima*) increase *Greens* approval rate while environmental protests (*e.g.* *Stuttgart 21*)

decrease it.

However, two issues have to be addressed while presenting these estimations. First, contrary to the characteristics of popularity functions presented by Lewis-Beck and Steigmaier (2013), our estimates denote low R-squared (between 0.231 and 0.112). This result is surprising but has already been observed before (Veiga, 1998; Asteriou and Price, 2001). Veiga (1998) explains this result by the fact that popularity also depends on unmeasured “*personality factors*” (p. 356). Second, contrary to the common sense, the lagged popularity variable ($Popularity(t-1)$) appears significant and negative in some cases. In Table A3.28 it is observable in the case of the *Greens* and in Table A3.28 and Table A3.29 for *Die Linke*. It means that an increase in popularity in year $t - 1$ has a negative impact on popularity in year t . This can be explained by the relative absence of trend in the popularity series for these two political parties on the 2005m1-2021m12 period (see Figure 3.5 and Figure 3.6).

3.5.1 National Popularity Ratings

Federal *Bundestag* Elections

In Table 3.4, we present estimated coefficients of *Pre Federal Election 1 month*, our four textometric variables³⁰ and their interaction terms estimated with Newey and West (1987) standard errors. As developed above, we interpret the significance of the interaction term between the pre-electoral dummy and one of our textometric variables as a proof of the existence of a PROPMC.

First, in the case of *CDU/CSU*, an increase in $dCount$ and $dOccur_ECB$ in the month preceding a Federal election have a negative impact on the party’s popularity. More precisely, when the number of published articles increase by 10 in the month before a federal election, the popularity of *CDU/CSU* decreases by 0.243 percentage point. Moreover, when the number of mention of the ECB increases by 10 in the month before a federal election, *CDU/CSU*’s popularity decreased by 0.04 percentage point. We can explain this effect through a reasoning in terms of comparative advantage (Clark and Arel-Bundock, 2013; Menuet et al., 2021). Indeed, as the ECB is designed to promote low inflation and macroeconomic stability, the conservative party (*CDU/CSU*) cannot use its ability to fight inflation as an electoral argument. Then, mentioning the ECB before the election would impact the voters’ assessment of the *CDU/CSU* by reminding them that the ECB is already fighting inflation (*i.e.* the comparative advantage of the party). Moreover, as stated by the comparative advantage argument, the opposite effect can be observed in the *SPD*’s popularity function. When the ECB is more mentioned in the month prior to a federal election, the comparative advantage of the conservative party (*CDU/CSU*) is negatively impacted and its

³⁰These variables are: $dCount$, $dOccur_ECB$, $drelevant$ and $docc_inflation$. For more information, see Section 3.4.

more liberal opponent (*SPD*) appears as a more pertinent option. More precisely, 10 additional mention of ECB related terms in the month before a Federal election increases the *SPD* popularity by 0.156 percentage point.

Second, *FDP*'s popularity function is interesting because this party faces significant interaction terms for *drelevant* with a positive sign. This is an expected result as economic parameters are fundamental in the party's identity. As expressed by Bucher-Koenen and Lusardi (2011), there is a positive relationship between financial literacy and vote for the *FDP*. In this situation, it seems obvious that press articles mentioning monetary policy related topics are important for this electorate.

Third, the situation faced by the *Green Party* is exactly the same than the one experienced by *CDU/CSU*, respectively with a magnitude of 0.054 and 0.338. Moreover, *Linke*'s ratings are not impacted by the studied press articles.

Then, it is also interesting to observe that the far-right populist party popularity (*AfD*) is significantly and negatively impacted by every interaction terms. Two arguments can be emphasized to explain this situation. First, *AfD* is marked by strong euroscepticism (Grimm, 2015), the mention of EU related institutions like the ECB is undeniably impacting party's popularity. More precisely, the more ECB or executive board members are mentioned in press articles, the less popular the populist party is. This argument is reinforced by the sentiment analysis provided in Table 3.12 in which we observe that a more positive mention of the ECB is decrease *AfD*'s popularity. Second, as expressed by Jankowski et al. (2017) the ordoliberal identity of the party³¹ induces that the party is positioned near *FDP* in terms of economic preferences. Thus, global macroeconomic situation appears as an important determinant of the *AfD*'s popularity. Unfortunately, as it is impossible to include *AfD* popularity ratings in the SUR model estimations due to the low number of observations, it is important to be careful in the interpretation of these results.

Finally, when using a SUR model to estimate our popularity functions (see Table A3.30 in Appendix), the results remain approximately the same.

EP Elections

While studying EP elections, the issue of euroscepticism is critical. Indeed, preferences of German people and German political parties regarding the EU and its institutions have a significant impact on political campaigns and press communication around EP elections. First, we present an approximation of the German people views on the EU in Figure A3.12. Using the Eurobarometer, we compute the average percentage of “*tend not to trust*” answers to the following questions: “*How much trust do you have in the EU? Do you tend to trust it or tend not to trust it?*” for

³¹At least until mid-2015 and the foundation of the *Allianz für Fortschritt und Aufbruch* by some members of the *AfD*. For more information on this July 2015 political split among *AfD* members, see Jäger (2021).

3.5. MAIN RESULTS

Table 3.4: Main model estimated with Newey and West's (1987) standard errors - Federal elections

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke	AfD
Pre Federal Election	-0.6145***	1.9922***	0.6911***	-0.5359***	0.0207	-1.1483***
1 month	(0.1913)	(0.2027)	(0.1554)	(0.1633)	(0.2946)	(0.2766)
dCount	-0.0030	-0.0040*	-0.0002	0.0030	0.0021*	-0.0001
	(0.0028)	(0.0021)	(0.0012)	(0.0023)	(0.0013)	(0.0020)
dCount X Pre Federal	-0.0243***	0.1035***	0.0079	-0.0338***	-0.0080	-0.0607***
Election 1 month	(0.0056)	(0.0062)	(0.0060)	(0.0094)	(0.0082)	(0.0158)
Pre Federal Election	-0.5309**	1.6174**	0.6078***	-0.4666**	0.1435	-0.2361
1 month	(0.2404)	(0.7942)	(0.2253)	(0.2031)	(0.3673)	(0.1642)
dOccur_ECB	-0.0004	-0.0005*	-0.0001	0.0002	0.0003**	0.0001
	(0.0004)	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0003)
dOccur_ECB X Pre Federal	-0.0040***	0.0156***	0.0007	-0.0054***	-0.0002	-0.0052***
Election 1 month	(0.0013)	(0.0040)	(0.0013)	(0.0017)	(0.0019)	(0.0014)
Pre Federal Election1	-0.4364*	1.4060*	0.6768***	-0.2756	0.1841	-0.2518
	(0.2368)	(0.7366)	(0.1808)	(0.2344)	(0.3920)	(0.1634)
dOccur_Perso.	-0.0002	-0.0004**	-0.0000	0.0002	0.0002**	0.0000
	(0.0003)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
dOccur_Perso. X Pre Federal	-0.0024	0.0104**	0.0011*	-0.0027	0.0002	-0.0029***
Election 1 month	(0.0015)	(0.0041)	(0.0006)	(0.0019)	(0.0016)	(0.0008)
Pre Federal Election	-0.1951	0.4003	0.5561***	-0.0399	0.1964	0.1582
1 month	(0.2609)	(0.8922)	(0.1761)	(0.2997)	(0.2353)	(0.2038)
dOccur_Infl.	-0.0013	0.0000	-0.0005	-0.0004	0.0006	0.0001
	(0.0012)	(0.0017)	(0.0007)	(0.0011)	(0.0007)	(0.0010)
dOccur_Infl. X Pre Federal	-0.0042	0.0195	0.0015	-0.0048	0.0039	-0.0065***
Election 1 month	(0.0045)	(0.0133)	(0.0030)	(0.0050)	(0.0033)	(0.0021)
Nbr. observations	204	204	204	204	204	103

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

the EU and Germany³². Figure A3.12 underlines that euroscepticism among German people is near the European average, reflecting a low level of public euroscepticism in Germany (Taggart and Szczerbiak, 2002). However, euroscepticism in Germany is higher than the European average before 2016 and lower than the European average around the EP election held in May 2019. This result can be explained by the sliding from euroscepticism to europragmatism of *Linke* before the 2019 EP scrutiny but also by the fluctuations of *FDP*'s views on the EU³³. Second, we present a classification of the degree of euroscepticism within German political parties in Table A3.31. In line with the findings of Paterson (2010), *CDU/CSU* is characterized by strong euroenthusiasm despite recent internal party debates³⁴. We can also consider *FDP* as close to *CDU/CSU* in terms of euroenthusiasm. Then, we consider throughout the paper that *CDU/CSU* and *FDP* are the least critical of the EU. Other parties classified as europramatic and eurosceptic are considered as doubtful (at least) regarding European institutions. We clearly observe this distinction in terms

³²The phrasing of the question has been slightly modified throughout the years. Moreover, for the EU, value presented are means of the total number of EU members at the time the survey is conducted.

³³For more information on this point, see Polk et al. (2017).

³⁴These debates between Angela Merkel on the one hand and the *CSU* accompanied by a part of *CDU* focus on immigration Hertner (2022), a topic related directly to European integration and the EU.

of views of the EU when we study EP elections in Table 3.5.

Table 3.5 presents estimations of our main model considering the EP elections instead of the German federal elections. As developed in Section 5.1.1, mentioning the EU or the ECB is a significant explanation of the PROPMC in German popularity ratings. This argument is reinforced by the apparition of a comparable opportunistic cycle prior to the EP elections in Table 3.5. In the case of *CDU/CSU*, an increase in one of our textometric measure (except *dOccur_Infl.*) impacts positively its popularity. We explain this result by the euroenthusiast position of the *CDU/CSU* (see Table A3.31 in Appendix for more information). Mentions of EU related institutions impact positively the popularity of this party that strongly values European integration (Rohrschneider and Whitefield, 2017). A comparable result is observable for *FDP* for *dOccur_Infl.*. Again this result is due to the relative degree of euroenthusiasm of the party³⁵.

On the contrary, we can observe that more europragmatic or eurosceptic parties are negatively impacted by occurrences of EU and ECB related terms in the media. *SPD*, *Greens*, *Linke* and *AfD* are negatively impacted by every textometric variable in the month prior to an EP election³⁶. More precisely, as these parties are characterized by more critical visions of the EU, the mention of EU related terms before the scrutiny will decrease their overall popularity. Moreover, as the EP elections aims at appointing EU officials, criticism of the EU can deter the legitimacy of these parties in this scrutiny. This point is reinforced by the sentiment analysis (see Table 3.14) in which *SPD*, *Greens* and *AfD* behave in similar ways in terms of PROPMC³⁷.

Then, the impact of our variable *dOccur_Infl.* can be surprising in the estimation of the popularity function of *Linke*. Indeed, we develop the argument that our textometric variables should have a negative impact on the most eurosceptic parties before an EP election but *dOccur_Infl.* is significantly and positively impacting *Linke*'s popularity. A potential explanation to this phenomenon can be found in Hartmann et al. (2022) work. The authors underline that the population in which support for *Linke* is the most important is the poorest population that has perceived their income as having been modified (positively or negatively) in recent times. Then, an increase in the occurrence of inflation related terms in the media may increase anticipations of inflation and increase fear of future loss in income. In this situation, an increase in *dOccur_Infl.* before the EP election can lead to a more popular *Linke* as its electorate grows. Nevertheless, Table A3.32 nuanced this surprising result as *dOccur_Infl.* does not appear significant in the case of *Linke*.

Finally, as for the federal election results presented in Section 5.1, the estimation with a SUR model (Zellner, 1962) available in Table A3.32 in the Appendix Section are in line with the ones

³⁵As explained in Section 3.2.1, *FDP* is more eurorealist than euroenthusiast (Polk et al., 2017). Nevertheless, these two positions are close enough to explain that *CDU/CSU* and *FDP* are experiencing same situation before EP elections.

³⁶With the exception of *dOccur_Infl.* for *Linke*.

³⁷With the exception of *AfD* when studying *sentiment1*.

3.5. MAIN RESULTS

Table 3.5: Main model estimated with Newey and West's (1987) standard errors - European Elections

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke	AfD
Pre European Election	-0.7065**	0.7352**	-0.5763	0.2452	-0.0484	0.0775
1 month	(0.2756)	(0.3568)	(0.6108)	(0.1593)	(0.2075)	(0.1427)
dCount	-0.0030	-0.0036*	-0.0003	0.0029	0.0021	-0.0002
	(0.0028)	(0.0020)	(0.0012)	(0.0023)	(0.0013)	(0.0020)
dCount X Pre European Election 1 month	0.0799***	-0.0440***	0.0314	-0.0219*	-0.0207	-0.0468***
	(0.0220)	(0.0163)	(0.0306)	(0.0111)	(0.0127)	(0.0143)
Pre European Election	-0.5459**	0.6495	-0.5436	0.2138	-0.0936	-0.0575
1 month	(0.2370)	(0.4128)	(0.6967)	(0.1594)	(0.2121)	(0.1363)
dOccur_ECB	-0.0004	-0.0005*	-0.0001	0.0002	0.0003**	0.0001
	(0.0004)	(0.0003)	(0.0001)	(0.0003)	(0.0002)	(0.0003)
dOccur_ECB X Pre European Election 1 month	0.0111***	-0.0055**	0.0034	-0.0029*	-0.0031*	-0.0064***
	(0.0028)	(0.0024)	(0.0043)	(0.0015)	(0.0016)	(0.0020)
Pre European Election	-0.6624**	0.6942**	-0.5494	0.2375	-0.0555	0.0648
1 month	(0.2944)	(0.3459)	(0.6041)	(0.1538)	(0.2156)	(0.1410)
dOccur_Perso.	-0.0002	-0.0004*	-0.0000	0.0002	0.0002**	-0.0000
	(0.0003)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
dOccur_Perso.X Pre European Election 1 month	0.0074***	-0.0041***	0.0032	-0.0021**	-0.0019	-0.0043***
	(0.0021)	(0.0015)	(0.0028)	(0.0010)	(0.0012)	(0.0013)
Pre European Election	-0.8316	1.0394***	-1.0551***	0.3460	-0.1028	2.3554***
1 month	(0.5950)	(0.3602)	(0.1769)	(0.2182)	(0.1786)	(0.7531)
dOccur_Infl.	-0.0013	0.0002	-0.0005	-0.0005	0.0006	0.0000
	(0.0012)	(0.0017)	(0.0007)	(0.0011)	(0.0007)	(0.0010)
dOccur_Infl. X Pre European Election 1 month	-0.0095	-0.0246*	0.0505***	-0.0056	0.0138*	-0.1034***
	(0.0257)	(0.0134)	(0.0073)	(0.0076)	(0.0077)	(0.0317)
Nbr. observations	204	204	204	204	204	103

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

presented in Table 3.5. Again, we can conclude that our results are not driven by the unobserved correlation between each party's popularity function.

Alternative Pre-electoral Periods

To guarantee the robustness of our results, we estimated our main model with alternative pre-electoral periods. Each model is estimated with interaction terms representing alternative pre-electoral periods. More precisely, for each party, Equation 3.4 is estimated with our 4 textometric variables interacted with 6 pre-electoral periods. Pre Federal Election 1 month is a dummy variable taking the value 1 in the month prior to a Federal election and 0 otherwise. Pre Federal Election 2 months denotes a dummy equals to 1 only in the month before Pre Federal Election 1 month and 0 otherwise, and so on until Pre Federal Election 6 months that is equal to 1 only 6 months before the scrutiny. In other words, every interaction terms is only different from 0 on 1 month preceding a Federal election. For instance, in the first sub-figure of Figure 3.9, we present the coefficient of the following variables: $(Pre\ Federal\ Election\ 1\ month) * (dCount)$; $(Pre\ Federal$

Election 2 months)*(dCount); ...; (*Pre Federal Election 6 months*)*(dCount).

Looking at Figure 3.9 and Figure 3.10, two main results can be drawn. First, our results seem more persistent for EP elections than federal ones. Indeed, 20 out of 24 sub-figures ($\simeq 83\%$) in Figure 3.10 present at least 2 significant coefficients against 14 (50%) in Figure 3.9. In terms of political parties, *SPD* and *FDP* are characterized by the most persistent results with all their interactions terms characterised 2 or more significant periods. Second, with only one exceptions in estimations for *FDP* (*drelevant*), there are no estimation in which significant coefficients are both positive and negative. However, changes in signs are not a serious problem for this sub-figure as it concerns distant periods (1 versus 6 months). Along with the robustness of our estimates, it ensures the validity of their signs.

3.5.2 *Länder* Popularity Ratings

In subsection 5.1, we study the potential presence of PROPMCs before federal and EP elections from a national perspective. In this section, we apply the same methodology to investigate on a comparable phenomenon before local *Landtag* elections from a *Länder* perspective. Regarding the structure of our local dataset, one can argue that the use of panel estimators is more accurate as it would allow us to perform our estimates with more than 3200 observations. However, there are important differences between German *Länders* with respect to politics (Schmidt, 2016) and economics (see Table 3.1). For instance, depending on the membership of *Länders* in former FDR or GDR, political culture (Alesina and Fuchs-Schündeln, 2007; Dalton and Weldon, 2010) and preferences (Hebenstreit, 2022) are significantly different. Moreover, as developed by Jeffery et al. (2016), these differences has increased since the 2006 reforms that have impacted German federalism itself. Then, the use of a panel estimation strategy would eliminate these *Länder* specificities, bias our results and lead to insignificant results due to positive and negative effects offsetting each other³⁸. These arguments lead us to use a comparable methodology than in Section 5.1 estimating each *Länder*'s popularity ratings in separate time series. First, we use Newey and West (1987) standard errors in our estimates (see Table 3.6 to Table 3.9) and then a Zellner (1962) SUR model (see Table A3.33 to A3.36 in Appendix) to control for all the potential biases raised in Section 4. Unfortunately, as the number of estimations performed in this Section is important (384), we only present coefficients and standard errors attached to the interaction terms between our textometric measures and the dummy *Pre Länder Election 1 month*³⁹ in Table 3.6 to Table 3.9 for the sake of clarity⁴⁰.

³⁸We performed estimations of Equation 3.4 in panel with pooled OLS and random effects estimator without meaningful results. These estimations are available upon request.

³⁹This dummy variable is constructed in the exact same way than *Pre Federal Election 1 month* or *Pre European Election 1 month*. More precisely, it takes the value 1 in the month prior to a *Landtag* election and 0 otherwise. For more information on election dates in *Landtags*, refer to Table 3.1

⁴⁰Every estimations is available in its entirety upon request.

Figure 3.9: Main model with Newey and West's (1987) standard errors - From 1 to 6 months before a Federal election (90% confidence intervals)

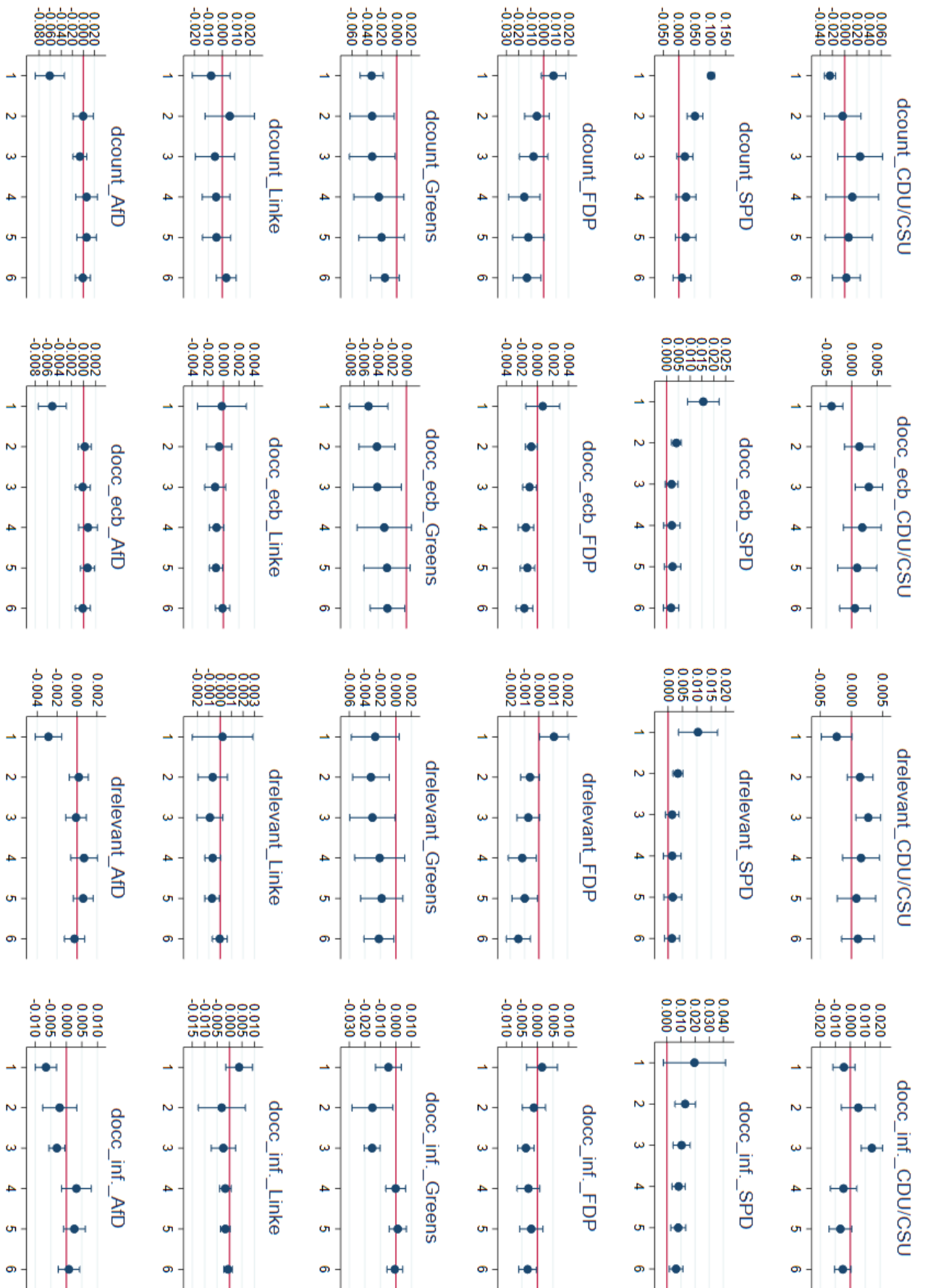
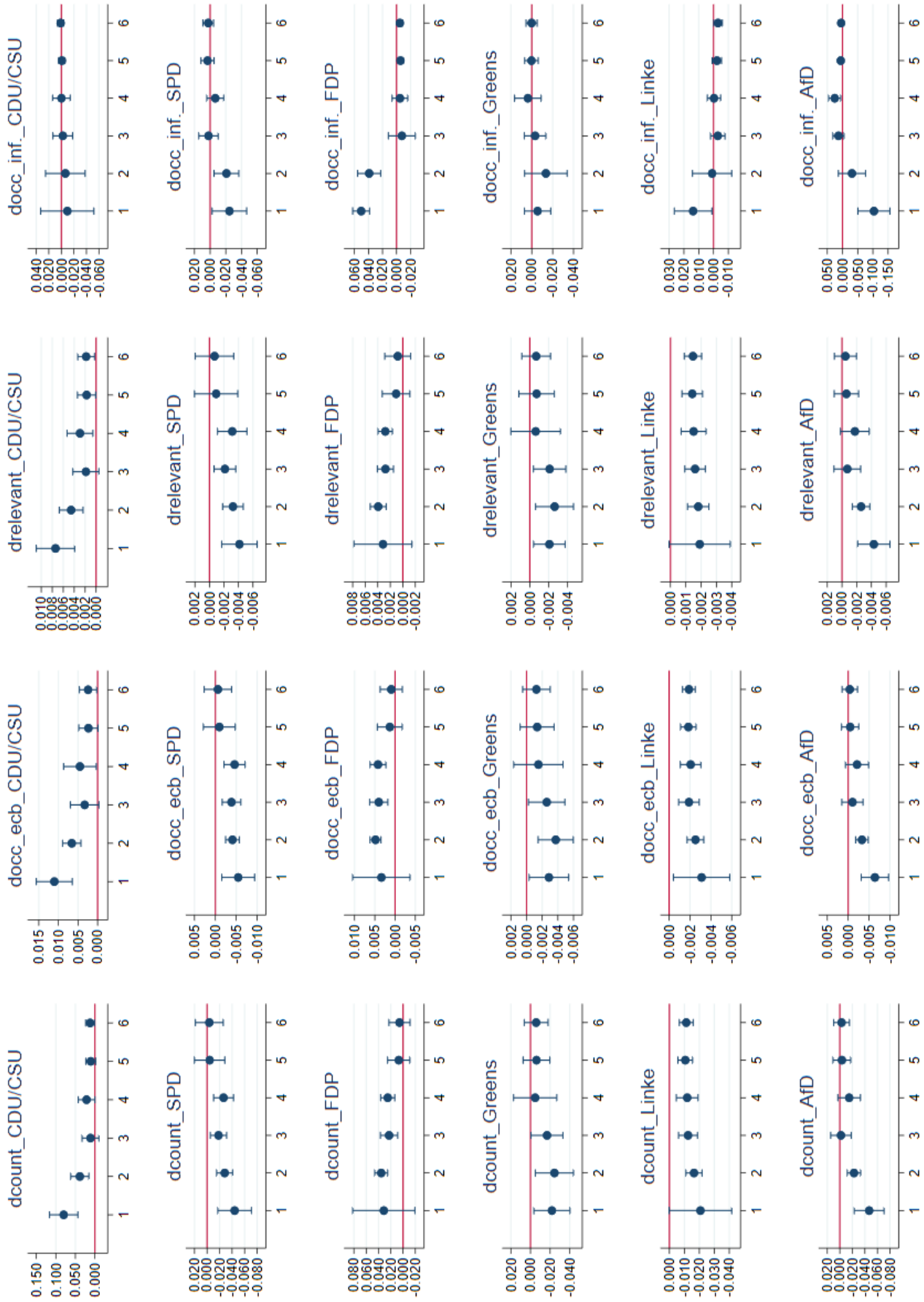


Figure 3.10: Main model with Newey and West's (1987) standard errors - From 1 to 6 months before an EP election (90% confidence intervals)



In Table 3.6, we present our estimates *Länder* by *Länder* for the interaction term *dCount X Pre Länder Election 1 month*. Then in Table 3.7, we display our results for the interaction term *dOccur_ECB X Pre Länder Election 1 month* and so on down to Table 3.9 presenting results for *dinf. X Pre Länder Election 1 month*. We can draw several general conclusions from these tables. First, despite the presence of the headquarters of the ECB and the *Bundesbank* in the city of Frankfurt in *Hessen*, the *Länder* is not experiencing PROPMCs before *Landtag* elections when considering *dCount*, *dOccur_ECB* or *drelevant*. However, occurrences of inflation related terms (*dOccur_Infl.*) are negatively impacting the popularity of *CDU/CSU*, *FDP*, *Greens* and *AfD* while it has a positive effect on *Linke*. Then, we can consider that *Hessen* is characterized by a certain importance of inflation related topics, partly due to the presence of two central bank headquarters.

Second, *Greens* seem to be the most favoured party when looking at local PROPMCs. From Table 3.6 to Table 3.9, we can observe that each interaction terms is significant and positive for at least 10 *Länders* in each table with a vast majority of positive coefficients. Several explanations can be underlined to explain these positive effects of monetary policy related terms in the press prior to local elections: (i) the origin of the party anchored in local social movements and political struggles (Milder, 2010), (ii) the importance of local politics among members of the party (Poguntke and Schmitt-Beck, 1994), (iii) the German energy transition itself focused on decentralised *Länder*-based solutions (Strunz, 2014), and (iv) the increasing respectability and credibility of the party at both national and local levels (Jungjohann, 2013).

Third, local PROPMCs seem to be non-existent for *Sachsen-Anhalt* with the exception of *dOccur_Infl.* (see Table 3.9). An explanation of this result is observable in Figure A3.30 where it is obvious that local politics in the *Länder* is very disputed. Indeed, with the exception of *CDU/CSU*, 3 parties (*SPD*, *Linke* and then *AfD*) with opposed ideologies obtain more than 15% of votes.

Fourth, in the two states in which *CDU/CSU* has been overthrown as the dominant party within the *Länder*⁴¹, the new dominant parties are characterized by significant and negative PROPMCs. This is due to the fact that these two political parties do not rely on the press to win these elections. According to Blumenberg and Blumenberg (2018), *Greens* won in *Baden-Württemberg* thanks to the global context around ecology following the Fukushima nuclear disaster and the personality of the individual heading: Winfried Kretschmann. In the case of *Thuringen*, the relative domination of *Linke* can be explained by the introduction of the party within the Eastern Germany political establishment (Patton, 2019). Finally, we can observe in Table 3.6 to Table 3.7 that former GDR *Länders* are characterised by similar patterns in terms of PROPMCs. When significant, the vast

⁴¹We refer to *Baden-Württemberg* where *Greens* is the dominant party in March 2015 and March 2021 elections (See Figure A3.17) and *Thuringen* where *Linke* is the dominant party in October 2016 election (see Figure A3.32).

majority of Eastern Germany *Länders* are impacted in a comparable way by our textometric measures with a few exceptions. For instance in the case of *dOccur_ECB X Pre Länder Election 1 month*, we can observe that former GDR *Länders* are positively impacted by the interaction term in the case of *CDU/CSU*, *FDP* and *Greens* and negatively impacted for *SPD*, *Linke* and *AfD*.

As in Section 5, we estimate our results on *Landtags* with SUR model (Zellner, 1962) to guarantee the robustness of our results. Luckily, this alternative estimation technique provide the same results than the ones with Newey and West (1987) standard errors. These estimations are provided in Tables A3.33 to A3.36 in Appendix.

3.6 Robustness

3.6.1 East versus West Popularity Ratings

As explained above in Section 3.2.1, the membership in former FDR or GDR is still a significant determinant of German politics nowadays. Indeed, former GDR and former FDR *Länders* are characterized by different political culture (Alesina and Fuchs-Schündeln, 2007; Dalton and Weldon, 2010), political preferences (Hebenstreit, 2022), economic conditions (Gramlich, 2019) and economic behavior (Ockenfels and Weimann, 1999). To ensure the validity and the robustness of our methodology, we apply our estimation strategy to an additional database composed of East versus West Germany In Table 3.10 and Table 3.11. To build this database, we compute time series of unemployment and inflation for East and West Germany. To do so, we follow the Pew Research Center that includes Berlin in East German figures⁴². Then, we merge these data with popularity ratings based on the “*Sunday question*” split between East and West Germany provided by *Infratest dimap* (see Section 3.1.1 for more information). Unfortunately, these popularity ratings are only available until September 2016 and we have to use a shorter time period in this Section (2005m1-2016m9)⁴³.

Moreover, as in Section 5.1, estimations on this dataset with SUR model (Zellner, 1962) are available in Appendix (see Table A3.37 to Table A3.38). Likewise, alternative pre-electoral period estimations comparable to Figure 3.9 and Figure 3.10 are available for West and East Germany in the Appendix (see Figure A3.13 to A3.16) for robustness purposes. Results remain comparable when using these alternative estimation strategies.

⁴²See for instance : <https://www.pewresearch.org/fact-tank/2019/11/06/east-germany-has-narrowed-economic-gap-with-west-germany-since-fall-of-communism-but-still-lags/>

⁴³This shorter time period force us to exclude *AfD* from our estimations as the number of observation for this party become really low (41).

Table 3.6: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections 1/4

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dCount X Pre Länder Election 1 month</i>						
Baden-Württemberg	0.175* (0.104)	-0.589*** (0.074)	-0.087*** (0.017)	-0.187*** (0.066)	0.557*** (0.127)	0.294*** (0.077)
Bayern	-0.190*** (0.052)	0.254*** (0.034)	0.091*** (0.008)	0.049** (0.024)	-0.011 (0.054)	-0.233*** (0.060)
Berlin	0.152*** (0.056)	-0.101* (0.052)	0.027* (0.014)	0.147*** (0.031)	-0.169*** (0.048)	-0.141 (0.095)
Brandenburg	1.071*** (0.196)	0.098 (0.147)	-0.526*** (0.035)	0.448*** (0.156)	-0.608** (0.272)	-0.209*** (0.039)
Bremen	-0.086 (0.052)	-0.059* (0.033)	-0.089*** (0.034)	0.059 (0.045)	0.088*** (0.026)	0.035*** (0.012)
Hamburg	-0.042 (0.041)	0.047 (0.038)	-0.131*** (0.032)	-0.023 (0.026)	0.045 (0.030)	0.004 (0.012)
Hessen	-0.020 (0.079)	0.195 (0.156)	0.032 (0.028)	0.104*** (0.027)	-0.160** (0.076)	-0.076** (0.033)
Mecklenburg-Vorpommern	0.209** (0.086)	-0.414*** (0.062)	0.047** (0.018)	0.251*** (0.058)	-0.106 (0.101)	-0.120** (0.053)
Niedersachsen	-0.320*** (0.056)	-0.257*** (0.059)	0.002 (0.012)	0.076* (0.044)	0.346*** (0.065)	0.115*** (0.034)
Nordrhein-Westfalen	1.134 (1.102)	-0.005 (0.323)	0.276*** (0.078)	0.194 (0.476)	-2.011*** (0.360)	-0.051 (0.104)
Rheinland-Pfalz	0.111 (0.067)	-0.159* (0.090)	-0.023 (0.026)	-0.422*** (0.069)	0.262*** (0.058)	0.181*** (0.041)
Saarland	0.020 (0.026)	0.237*** (0.032)	-0.085*** (0.007)	-0.190*** (0.020)	0.114*** (0.031)	0.098** (0.046)
Sachsen	-0.291*** (0.037)	0.245*** (0.030)	0.014* (0.008)	0.117*** (0.025)	0.017 (0.040)	-0.124*** (0.031)
Sachsen-Anhalt	0.114 (0.213)	0.001 (0.145)	0.000 (0.063)	-0.250 (0.164)	0.069 (0.105)	0.173 (0.123)
Schleswig-Holstein	0.237** (0.107)	-0.617*** (0.136)	0.105*** (0.038)	-0.048 (0.075)	0.195** (0.080)	-0.084 (0.092)
Thuringen	1.315*** (0.079)	-0.575*** (0.080)	0.033* (0.017)	0.550*** (0.038)	-0.976*** (0.077)	-0.646*** (0.065)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table 3.7: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections 2/4

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dOccur_ECB X Pre Länder Election 1 month</i>						
Baden-Württemberg	0.039* (0.022)	-0.126*** (0.021)	-0.018*** (0.004)	-0.040*** (0.015)	0.116*** (0.032)	0.062*** (0.016)
Bayern	-0.027*** (0.007)	0.035*** (0.005)	0.014*** (0.001)	0.008*** (0.003)	-0.002 (0.008)	-0.041*** (0.011)
Berlin	0.009* (0.005)	-0.008* (0.005)	0.003** (0.001)	0.011*** (0.003)	-0.011*** (0.004)	-0.010 (0.007)
Brandenburg	0.442*** (0.079)	0.040 (0.059)	-0.217*** (0.014)	0.185*** (0.063)	-0.253** (0.110)	-0.038*** (0.007)
Bremen	-0.015* (0.008)	-0.008 (0.005)	-0.011*** (0.004)	0.011* (0.007)	0.012*** (0.004)	0.005*** (0.002)
Hamburg	-0.008 (0.005)	0.008* (0.005)	-0.025*** (0.006)	-0.002 (0.003)	0.005 (0.004)	-0.000 (0.002)
Hessen	0.010 (0.017)	0.039 (0.043)	0.011 (0.007)	0.029*** (0.005)	-0.057*** (0.014)	-0.014** (0.006)
Mecklenburg-Vorpommern	0.013* (0.007)	-0.030*** (0.005)	0.004*** (0.002)	0.018*** (0.005)	-0.006 (0.008)	-0.009** (0.004)
Niedersachsen	-0.036*** (0.006)	-0.029*** (0.007)	0.001 (0.001)	0.009* (0.005)	0.039*** (0.007)	0.012*** (0.004)
Nordrhein-Westfalen	-0.027 (0.067)	0.005 (0.019)	0.010 (0.006)	0.036* (0.019)	-0.133*** (0.024)	-0.005 (0.006)
Rheinland-Pfalz	0.023 (0.017)	-0.034 (0.022)	-0.005 (0.006)	-0.087*** (0.020)	0.056*** (0.012)	0.037*** (0.008)
Saarland	0.003 (0.004)	0.038*** (0.005)	-0.014*** (0.001)	-0.031*** (0.003)	0.019*** (0.004)	0.014** (0.006)
Sachsen	-0.054*** (0.007)	0.045*** (0.005)	0.003** (0.001)	0.022*** (0.004)	0.002 (0.008)	-0.022*** (0.006)
Sachsen-Anhalt	-0.004 (0.055)	0.024 (0.037)	0.009 (0.016)	-0.037 (0.047)	0.003 (0.029)	0.061 (0.043)
Schleswig-Holstein	0.009 (0.032)	-0.127*** (0.032)	0.005 (0.011)	0.010 (0.016)	0.035** (0.016)	-0.007 (0.006)
Thuringen	0.061*** (0.005)	-0.029*** (0.004)	0.002* (0.001)	0.024*** (0.002)	-0.043*** (0.004)	-0.031*** (0.003)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table 3.8: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections 3/4

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dOccur_Perso. X Pre Länder Election 1 month</i>						
Baden-Württemberg	3.457 (4.261)	-2.958 (2.485)	0.199 (0.547)	-4.205** (1.869)	-0.669 (3.660)	-0.367 (2.124)
Bayern	-0.019*** (0.005)	0.024*** (0.004)	0.009*** (0.001)	0.005** (0.002)	-0.001 (0.005)	-0.024*** (0.006)
Berlin	0.007* (0.004)	-0.007* (0.004)	0.002* (0.001)	0.009*** (0.002)	-0.009** (0.003)	-0.008 (0.006)
Brandenburg	0.023*** (0.005)	0.003 (0.004)	-0.011*** (0.001)	0.011*** (0.004)	-0.014** (0.007)	-0.017*** (0.003)
Bremen	-0.011* (0.006)	-0.006 (0.004)	-0.008*** (0.003)	0.008 (0.005)	0.009*** (0.003)	0.004** (0.002)
Hamburg	-0.006 (0.004)	0.006 (0.004)	-0.010*** (0.002)	-0.002 (0.003)	0.004 (0.003)	0.000 (0.001)
Hessen	-0.001 (0.010)	0.029* (0.018)	0.004 (0.003)	0.015*** (0.003)	-0.024** (0.011)	-0.008** (0.003)
Mecklenburg-Vorpommern	0.011** (0.006)	-0.026*** (0.004)	0.003*** (0.001)	0.016*** (0.004)	-0.006 (0.007)	-0.008** (0.003)
Niedersachsen	-0.025*** (0.005)	-0.020*** (0.005)	0.000 (0.001)	0.006 (0.003)	0.027*** (0.005)	0.009*** (0.003)
Nordrhein-Westfalen	-0.028 (0.047)	0.004 (0.014)	0.006 (0.005)	0.027** (0.012)	-0.104*** (0.019)	-0.003 (0.005)
Rheinland-Pfalz	0.018** (0.008)	-0.025** (0.010)	-0.002 (0.003)	-0.057*** (0.007)	0.034*** (0.008)	0.027*** (0.006)
Saarland	0.003 (0.003)	0.031*** (0.004)	-0.012*** (0.001)	-0.026*** (0.002)	0.016*** (0.003)	0.010** (0.005)
Sachsen	-0.025*** (0.003)	0.020*** (0.003)	0.002** (0.001)	0.010*** (0.002)	0.002 (0.004)	-0.010*** (0.002)
Sachsen-Anhalt	0.017 (0.027)	-0.002 (0.018)	-0.000 (0.008)	-0.033 (0.020)	0.010 (0.013)	0.022 (0.015)
Schleswig-Holstein	-0.029 (0.017)	-0.032 (0.048)	-0.010 (0.007)	0.019*** (0.006)	0.006 (0.016)	-0.004 (0.004)
Thuringen	0.034*** (0.003)	-0.016*** (0.002)	0.001* (0.001)	0.013*** (0.002)	-0.023*** (0.003)	-0.017*** (0.002)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table 3.9: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections 4/4

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dOccur_Infl. X Pre Länder Election 1 month</i>						
Baden-Württemberg	-0.034 (0.022)	0.057 (0.039)	0.011* (0.006)	0.025 (0.017)	-0.050 (0.040)	-0.052*** (0.016)
Bayern	-0.029* (0.015)	0.035*** (0.011)	0.017*** (0.002)	0.012* (0.007)	-0.008 (0.017)	-0.272*** (0.074)
Berlin	0.027* (0.014)	-0.039*** (0.015)	0.005* (0.003)	0.039*** (0.008)	-0.029** (0.014)	0.005 (0.011)
Brandenburg	0.449*** (0.081)	0.033 (0.058)	-0.217*** (0.014)	0.184*** (0.064)	-0.260** (0.108)	-0.155*** (0.029)
Bremen	-0.052 (0.079)	-0.077* (0.045)	-0.029 (0.027)	0.088 (0.057)	0.059* (0.035)	0.039*** (0.011)
Hamburg	-0.003 (0.024)	-0.019 (0.022)	0.041*** (0.011)	-0.010 (0.011)	0.027* (0.016)	0.007 (0.005)
Hessen	-0.598*** (0.207)	0.202 (0.183)	-0.195*** (0.022)	-0.188* (0.109)	0.929*** (0.224)	-0.082** (0.040)
Mecklenburg-Vorpommern	0.009 (0.015)	-0.043*** (0.012)	-0.000 (0.003)	0.011 (0.008)	-0.017 (0.015)	0.010 (0.009)
Niedersachsen	-0.094*** (0.018)	-0.094*** (0.020)	-0.002 (0.004)	0.025* (0.013)	0.109*** (0.022)	0.040*** (0.011)
Nordrhein-Westfalen	0.027 (0.080)	-0.016 (0.023)	0.017*** (0.006)	0.028 (0.029)	-0.126*** (0.025)	-0.004 (0.011)
Rheinland-Pfalz	-0.003 (0.019)	0.008 (0.026)	0.006 (0.004)	0.044 (0.034)	-0.040** (0.018)	-0.035*** (0.007)
Saarland	0.012 (0.010)	0.025** (0.010)	-0.017*** (0.002)	-0.035*** (0.007)	0.026*** (0.009)	0.010 (0.007)
Sachsen	-0.201*** (0.026)	0.170*** (0.021)	0.008 (0.006)	0.091*** (0.019)	-0.002 (0.030)	-0.091*** (0.026)
Sachsen-Anhalt	-0.087*** (0.026)	0.044** (0.022)	0.020** (0.008)	0.081*** (0.013)	-0.037** (0.018)	-0.026 (0.016)
Schleswig-Holstein	-0.041* (0.023)	-0.043 (0.058)	-0.012 (0.008)	0.022** (0.009)	0.013 (0.021)	-0.001 (0.010)
Thuringen	1.462*** (0.091)	-0.654*** (0.094)	0.034* (0.019)	0.644*** (0.037)	-1.099*** (0.087)	-0.718*** (0.073)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Federal *Bundestag* Elections

Table 3.10 present estimations of Equation 3.4 split between West Germany (right part of tables) and East Germany (left part). These tables represent results comparable to the ones observable in Table 3.4 and Table 3.5. Generally speaking, in the case of *CDU/CSU* (*SPD*), coefficients computed for our interaction terms are negative (positive) as found in Table 3.4 and Table 3.5 for both East and West Germany (Clark and Arel-Bundock, 2013; Menuet et al., 2021). For *FDP* results are mixed because when significant, coefficients are negative before federal elections in Table 3.4 and Table 3.5. Then, for *Greens*, results are the same in West Germany than in the national ratings but estimations for the East lead to opposite results. Finally, *Linke* shows non significant coefficients in West Germany and positive ones in East around federal elections. However, our interactions terms' significance vary between East and West Germany. For instance, on the one hand, in the case of *CDU/CSU*, *dOccur_Infl.* impacts popularity rating of the party prior to a federal Election in West Germany. On the other hand, *dOccur_ECB*, *drelevant* and *dCount* have the same negative impact in East Germany.

Despite the important number of estimations, two interesting results may have a more elaborate discussion. First, *FDP* is negatively impacted by every significant interaction term contrary to the previously found results. We only find this stunning result in Table 3.10, then, we explain this by the different time period studied in this Section. Indeed, performing our estimations until September 2016 avoid two Federal election to be included in the analysis (September 2017 and September 2021). As observable in Figure 3.5, the period prior to the September 2021 Federal election is marked by a significant increase in *FDP*'s popularity that has been nearly multiply by 2 in less than a year. It leads *FDP* to be part of the ruling coalition after the election and the absence of this 2016-2021 period may be the explanation of this different result⁴⁴. Second, as observable in Figure 3.6, *Linke* is more popular in East Germany. It is in line with the results displayed in Table 3.10 in which every interaction term appear positively related with the party popularity in East Germany. Moreover the surprising positive impact of *dOccur_Infl.* on *Linke*'s popularity found in Table A3.28 is still observable in Table A3.30 in East Germany. As popularity of *Linke* in East Germany is way ahead of the West, it seems compatible with Hartmann et al. (2022) findings.

EP Elections

The potential PROPMC prior to EP elections in East and West Germany is studied in Table 3.11. These results correspond to the exact same estimations than Table 3.5 but split between East and West Germany on the period 2005m1-2016m9. First, when significant, our textometric measures appear positive for *FDP* in Table 3.5 and Table 3.11 (see also Table A3.32 and Table

⁴⁴As this alternative time period only leads to the omission of one EP election (May 2019), it is not inconsistent that we do not observe such a result in Section 6.1.2.

Table 3.10: Main model estimated with Newey and West's (1987) standard errors - East vs. West Germany

Popularity of Parties (%)	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Pre Federal Election 1 month	-0.2841 (0.6131)	1.9825*** (0.4592)	0.0732 (0.1948)	-1.0510*** (0.2665)	0.0340 (0.6143)	-2.2800*** (0.4407)	0.8471 (0.7518)	-0.1654 (0.1498)	0.0500** (0.2333)	0.4904 (1.2323)
dCount	-0.0066** (0.0028)	-0.0020 (0.0020)	0.0063*** (0.0018)	0.0047** (0.0021)	0.0014 (0.0012)	-0.0039 (0.0041)	-0.0048 (0.0037)	0.0031** (0.0015)	0.0017 (0.0018)	0.0044* (0.0023)
dCount_X Pre Federal Election 1 month	-0.0107 (0.0229)	0.0855*** (0.0141)	-0.0297*** (0.0042)	-0.0088 (0.0092)	-0.0272 (0.0176)	-0.1101*** (0.0174)	0.0514* (0.0280)	-0.0327*** (0.0033)	0.0250*** (0.0072)	0.0472 (0.0420)
Pre Federal Election 1 month	0.0612 (0.8713)	1.5412 (1.0630)	0.1626 (0.2914)	-1.1476*** (0.3023)	0.2866 (0.7634)	-1.7353* (0.9115)	0.3668 (1.2426)	-0.0576 (0.2721)	0.3422 (0.3756)	0.5385 (0.8989)
dOccur_ECB	-0.0008*** (0.0003)	-0.0004 (0.0002)	0.0008*** (0.0002)	0.0007** (0.0003)	0.0001 (0.0002)	-0.0007 (0.0005)	-0.0006 (0.0005)	0.0004* (0.0002)	0.0002 (0.0002)	0.0005* (0.0003)
dOccur_ECB_X Pre Federal Election 1 month	0.0018 (0.0040)	0.0113** (0.0047)	-0.0043*** (0.0012)	-0.0027** (0.0014)	-0.0022 (0.0031)	-0.0161*** (0.0047)	0.0035 (0.0058)	-0.0049*** (0.0012)	0.0032* (0.0018)	0.0109** (0.0042)
Pre Federal Election 1 month	-0.0912 (0.7629)	1.6518** (0.7341)	0.1463 (0.2261)	-1.0940*** (0.2951)	0.1892 (0.6834)	-1.8465*** (0.5897)	0.5519 (1.0135)	-0.0719 (0.1841)	0.3792 (0.2861)	0.4440 (1.0668)
dOccur_Perso.	-0.0006** (0.0002)	-0.0003 (0.0002)	0.0007*** (0.0002)	0.0005** (0.0002)	0.0001 (0.0001)	-0.0005 (0.0004)	-0.0005 (0.0004)	0.0003* (0.0002)	0.0002 (0.0002)	0.0004* (0.0002)
dOccur_Perso.X Pre Federal Election 1 month	-0.0006 (0.0044)	0.0143*** (0.0039)	-0.0048*** (0.0010)	-0.0020 (0.0016)	-0.0037 (0.0034)	-0.0196*** (0.0040)	0.0066 (0.0058)	-0.0056*** (0.0009)	0.0042*** (0.0016)	0.0108* (0.0063)
Pre Federal Election 1 month	-0.1244 (0.4511)	0.6537 (0.9769)	0.4634 (0.2998)	-0.9305*** (0.1739)	0.4102 (0.5176)	-0.2266 (0.9302)	0.2508 (0.7767)	0.3464 (0.3104)	0.0700 (0.3239)	-0.6263 (0.3986)
dOccur_Infl.	-0.0011 (0.0013)	-0.0019 (0.0012)	0.0012 (0.0012)	0.0021** (0.0009)	0.0003 (0.0008)	-0.0013 (0.0021)	-0.0001 (0.0017)	0.0024* (0.0012)	-0.0010 (0.0008)	-0.0002 (0.0017)
dOccur_Infl. X Pre Federal Election 1 month	0.0204* (0.0107)	0.0135 (0.0212)	-0.0070 (0.0057)	-0.0128*** (0.0030)	0.0047 (0.0089)	-0.0309 (0.0221)	-0.0151 (0.0183)	-0.0107 (0.0066)	0.0044 (0.0073)	0.0397*** (0.0037)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
Newey and West (1987) standard errors are provided in parenthesis

A3.38 in the Appendix). Then, national results for *SPD* (*Greens*) are driven by West (East) Germany. However, *Linke* and more specifically *CDU/CSU* present mixed results when studying EP elections. In Table 3.32 and Table 3.38 *Linke* presents only positive coefficients in both West and East Germany while in Table 3.5, the coefficient attached to *dOccur_ECB* appears negative. Nevertheless, as *dOccur_Infl.* is significant and positive in Table 3.5, we can credibly consider our results as coherent. In the case of *CDU/CSU*, the results are more complicated to interpret. Indeed, our textometric measures are significant and positive when using national popularity ratings (Table 3.5 and Table A3.32 in Appendix) but they are significant and negative in both East and West Germany in Table 3.11 and Table 3.38. Unfortunately, the only explanation of this surprising result we find is the difference in terms of sample period (2005m1-2021m12 versus 2005m1-2016m9) leading May 2019 EP election to be out of the East versus West dataset.

3.6.2 Sentiment Analysis

We develop in Section 5 that an increase in the number of occurrences of ECB and monetary policy related terms in the German press prior to every type of election (federal, EP and *Länder*) has a significant impact on the popularity of German political parties. Then, it seems obvious that, in addition to the occurrences, the tone of these press articles may impact as well popularity ratings.

To study this question, we develop two measures of the tone of studies press articles: *sentiment1* and *sentiment2* detailed in Section 3.1.4 (see Equation 3.2 and Equation 3.3). We interacted these two sentiment measures with our pre-electoral dummies (*Pre Federal Election 1 month*, *Pre European Election 1 month* and *Pre Local Election 1 month*) and estimated our model with these new interaction terms. Results of the estimation of Equation 3.4 with Newey and West (1987) procedure are presented in Table Table 3.12 for national dataset, in Table 3.13 and Table 3.14 for *Länder* datasets and in Table 3.15 for the East versus West dataset. Again, estimations of Equation 3.5 with a SUR model (Zellner, 1962) are available in the Appendix⁴⁵.

National Popularity Ratings

Comparing the first part of Table 3.12 and Table 3.4 ensures us about the coherence of our sentiment analysis for the 6 political parties studied in the context of federal elections. First, despite the significance and the negative coefficients of some textometric measures in Table 3.5, *CDU/CSU* and *Greens* are experiencing a negative PROPMC that does not depend on the tone of press articles. Second, *Linke* is not experiencing a PROPMC prior to federal elections in occurrences nor in sentiment. Third, PROPMCs faced by *SPD*, *FDP* and *AfD* prior to federal elections are coherent in terms of occurrences and sentiment. In the case of *SPD*, Table 3.5 shows is that the

⁴⁵See Table A3.39 for national dataset, Table A3.40 and Table A3.41 for *Länder* dataset and Table A3.42 for East versus West Germany dataset.

Table 3.11: Main model estimated with Newey and West's (1987) standard errors - East vs. West Germany

Popularity of Parties (%)	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Pre European Election 1 month dCount	1.6787*** (0.3106)	1.9088*** (0.3024)	-1.7375*** (0.3806)	-0.7104*** (0.2571)	-0.8814*** (0.2001)	0.0152 (0.3270)	-1.3869*** (0.2819)	-0.3221* (0.1782)	1.3062*** (0.1705)	0.1822 (0.4508)
dCount X Pre European Election 1 month	-0.0066** (0.0027)	-0.0017 (0.0019)	0.0049** (0.0018)	0.0049** (0.0021)	0.0011 (0.0012)	-0.0042 (0.0040)	-0.0046 (0.0036)	0.0029* (0.0015)	0.0018 (0.0018)	0.0046** (0.0023)
	-0.1879*** (0.0176)	-0.0983*** (0.0169)	0.1680*** (0.0240)	0.0200 (0.0138)	0.0762*** (0.0148)	-0.1835*** (0.0106)	0.2410*** (0.0111)	0.0260*** (0.0077)	-0.1544*** (0.0155)	0.1841*** (0.0091)
Pre European Election 1 month dOccur_ECB	1.6782*** (0.3105)	1.9015*** (0.3005)	-1.7129*** (0.3861)	-0.7123*** (0.2522)	-0.8856*** (0.1985)	-0.0123 (0.3244)	-1.3587*** (0.2835)	-0.3258* (0.1778)	1.2898*** (0.1705)	0.1877 (0.4494)
dOccur_ECB X Pre European Election 1 month	-0.0008*** (0.0003)	-0.0003 (0.0002)	0.0008*** (0.0002)	0.0007** (0.0003)	0.0001 (0.0002)	-0.0007 (0.0005)	-0.0006 (0.0005)	0.0004* (0.0002)	0.0002 (0.0002)	0.0006* (0.0003)
	-0.0353*** (0.0033)	-0.0182*** (0.0031)	0.0312*** (0.0045)	0.0040 (0.0025)	0.0144*** (0.0027)	-0.0339*** (0.0019)	0.0444*** (0.0020)	0.0050*** (0.0014)	-0.0285*** (0.0029)	0.0344*** (0.0016)
Pre European Election 1 month dOccur_Perso.	1.4470*** (0.2973)	1.7783*** (0.2920)	-1.4904*** (0.3613)	-0.6736*** (0.2416)	-0.7930*** (0.1855)	-0.2288 (0.3197)	-1.0838*** (0.2851)	-0.2903 (0.1796)	1.1126*** (0.1607)	0.4119 (0.4464)
dOccur_Perso.X Pre European Election 1 month	-0.0006** (0.0002)	-0.0003 (0.0002)	0.0007*** (0.0002)	0.0005** (0.0002)	0.0001 (0.0001)	-0.0005 (0.0004)	-0.0005 (0.0004)	0.0003* (0.0002)	0.0003 (0.0002)	0.0004* (0.0002)
	-0.0158*** (0.0015)	-0.0081*** (0.0014)	0.0138*** (0.0020)	0.0016 (0.0011)	0.0065*** (0.0012)	-0.0152*** (0.0009)	0.0203*** (0.0010)	0.0022*** (0.0006)	-0.0130*** (0.0013)	0.0154*** (0.0008)
Pre European Election 1 month dOccur_Infl.	0.7590*** (0.2651)	1.4338*** (0.2741)	-0.9347*** (0.2966)	-0.6166*** (0.2122)	-0.5173*** (0.1483)	-0.8883*** (0.3001)	-0.2024 (0.2868)	-0.1863 (0.1858)	0.5493*** (0.1484)	1.0602** (0.4292)
dOccur_Infl.X Pre European Election 1 month	-0.0011 (0.0013)	-0.0018 (0.0012)	0.0011 (0.0012)	0.0020** (0.0009)	0.0004 (0.0008)	-0.0015 (0.0021)	-0.0002 (0.0017)	0.0024* (0.0012)	-0.0010 (0.0008)	-0.0001 (0.0017)
	-0.0434*** (0.0043)	-0.0216*** (0.0038)	0.0387*** (0.0056)	0.0044 (0.0034)	0.0176*** (0.0033)	-0.0412*** (0.0028)	0.0541*** (0.0027)	0.0046** (0.0018)	-0.0342*** (0.0036)	0.0429*** (0.0022)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Newey and West (1987) standard errors are provided in parenthesis

more monetary policy related terms are mentioned in the press in the month before a federal election, the more popular is the party. In addition, Table 3.12 presents that this PROPMC is greater when the press mention these terms in a positive way. Looking at *drelevant* for *FDP* in Table 3.5, we can have the same conclusion in terms of PROPMC while studying Table 3.12. Finally, the opposite pattern can be observed in *AfD*'s popularity. More precisely, the more ECB related terms are mentioned in the press in the month before a federal election, the less popular is *AfD*. This effect is reinforced by the results presented in Table 3.12 where we can observe that a positive tone used by the media to talk about monetary policy will have a negative impact on *AfD*'s popularity. This result is consistent with the claimed euroscepticism of the party (see Table A3.31 in Appendix).

Then, in the second part of Table 3.12, we present the coefficients of *dsentiment1 X Pre European Election 1 month* and *dsentiment2 X Pre European Election 1 month* deriving from the estimation of Equation 3.5. This table provide result in line with the ones presented in the first half of the table for *CDU/CSU*, *SPD*, *FDP* and *Linke*. More precisely, PROPMCs experienced by *CDU/CSU* and *Linke* do not depend on the sentiment of the media. Moreover, the negative (positive) PROPMC observable for *SPD* (*FDP*) in Table 3.5 is stronger when the tone of articles is negative. If we consider *SPD* as a liberal party from an economic perspective and *FDP* as a more conservative ones, this situation is in line with the comparative advantage argument cla13, men21 developed Section 5.1. In the case of *Greens*, Table 3.5 demonstrates a negative PROPMC before EP elections. This cycle seem broader when the sentiment of the press about the European monetary policy is negative. Finally, the case of *AfD* is astonishing. Our results show that the party is experiencing a positive PROPMC before EP elections (see Table 3.5). However, contrary to federal elections, EP elections PROPMC for *AfD* is more important when the media coverage is negative. In other words, despite its euroscepticism, *AfD* seem to benefit positive rhetoric about the ECB prior to an election to the EP. This result is in line with Hayo and Neuenkirch (2014) when they develop that informed citizens on the policy implemented by the ECB tend to trust less the institution. Thus, *AfD* voters reading positive articles about the European monetary policy may be supported in their euroscepticism.

As robustness, we estimate Equation 3.5 for federal and Ep elections with a SUR model (Zellner, 1962) in Table A3.39 in Appendix.

Länder Popularity Ratings

In Table 3.13 and Table 3.14, we present estimations of our main model *Länder* by *Länder* estimated in Section 5.2 with our sentiment measures. Several results can be drawn from these estimations. First, the effect of sentiment on PROPMCs in *Lantag* elections for *CDU/CSU* seem to be highly

Table 3.12: Main model estimated with Newey and West's (1987) standard errors - Sentiment analysis

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke	AfD
Federal Elections						
Pre Federal Election	0.026	-0.427	0.455***	0.140	0.120	0.156
1 month	(0.259)	(0.693)	(0.107)	(0.346)	(0.193)	(0.197)
dsentiment1	-0.007	0.012*	-0.006	-0.008	0.005	0.005
	(0.005)	(0.007)	(0.004)	(0.005)	(0.004)	(0.009)
dsentiment1 X Pre Federal Election 1 month	-0.006	0.047*	0.015***	-0.003	-0.004	-0.027**
	(0.010)	(0.025)	(0.004)	(0.011)	(0.010)	(0.011)
Pre Federal Election1	0.020	-0.414	0.450***	0.130	0.145	0.040
1 month	(0.249)	(0.644)	(0.100)	(0.319)	(0.218)	(0.182)
dsentiment2	-0.006	0.009	-0.004	-0.007	0.003	0.007
	(0.006)	(0.007)	(0.004)	(0.005)	(0.004)	(0.009)
dsentiment2 X Pre Federal Election 1 month	-0.006	0.042**	0.012***	-0.002	-0.005	-0.032***
	(0.009)	(0.019)	(0.003)	(0.009)	(0.009)	(0.011)
European Elections						
Pre European Election	-0.355	0.197	0.148	0.065	-0.004	-0.119
1 month	(0.306)	(0.193)	(0.148)	(0.142)	(0.112)	(0.135)
dsentiment1	-0.006	0.013*	-0.004	-0.009*	0.005	0.003
	(0.005)	(0.007)	(0.003)	(0.005)	(0.004)	(0.009)
dsentiment1 X Pre European Election 1 month	-0.029	0.028***	-0.048***	0.024***	-0.004	0.037**
	(0.026)	(0.010)	(0.012)	(0.009)	(0.011)	(0.015)
Pre European Election	-0.291	-0.078	0.607***	-0.025	0.075	-0.433**
1 month	(0.368)	(0.208)	(0.125)	(0.153)	(0.125)	(0.176)
dsentiment2	-0.005	0.010	-0.001	-0.007	0.003	0.005
	(0.005)	(0.007)	(0.003)	(0.005)	(0.004)	(0.008)
dsentiment2 X Pre European Election 1 month	-0.030	0.043***	-0.070***	0.026**	-0.007	0.054***
	(0.036)	(0.012)	(0.011)	(0.011)	(0.014)	(0.020)
Nbr. observations	204	204	204	204	204	103

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$
Newey and West (1987) standard errors are provided in parenthesis

dependent of the membership in former GDR/FDR. On the one hand, with the exception of *Sachsen*, a positive media coverage of monetary policy related topics has a positive effect on *CDU/CSU* popularity in *Länder* that are located in East Germany. Moreover, *Thuringen* presents very high coefficients (3.939 in Table 3.13 and 2.779 in Table 3.14). We explain this situation by how contested local elections are in *Thuringen* (see Figure A3.32 in Appendix) but also by the fact that voters tend to be sure of their vote decisions closer to the election date (Schmidt-Beck and Partheymüller, 2012). On the other hand, with the exception of *Bremen*, *Hessen* and *Saarland*, former FDR *Länder* are characterized by a negative impact of media coverage sentiment on their PROPMCs. In the case of *Hessen*, the positive effect can be explained by the presence of *Bundestag* and ECB headquarters in Frankfurt leading the population of this *Länder* to be more careful with monetary policy. This is reinforced by the fact that the same effect is observable for *FDP* (*i.e.* the other conservative party in terms of economics) and also by the negative PROPMC detected in this *Länder* when inflation is discussed in the media (see Table 3.9). If we do not

consider *Niedersachsen*, *SPD* is characterized by opposite effects in comparison to *CDU/CSU* when significant. Again, this result is in line with the comparative advantage argument (Clark and Arel-Bundock, 2013; Menuet et al., 2021).

Second, in addition to our results presented in Section 5.2, *textitGreens* positive *PROPMC* found in Table 3.6 to Table 3.9 is reinforced by a positive media coverage of monetary policy related articles in 7 *Länders* (*Bayern, Mecklenburg-Vorpommern, Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz, Sachsen* and *Thuringen*). The opposite effect is observable in 3 *Länders* (*Bremen, Saarland, Sachsen-Anhalt*) while there are no significant coefficients in the 5 remaining *Länders*.

Then, the popularity of *Linke* is positively (negatively) impacted by a positive tone within our corpus in *Berlin, Hamburg, Niedersachsen, Saarland, Sachsen-Anhalt* (*Baden-Württemberg, Hessen, Nordrhein-Westfalen* and *Thuringen*).

Finally, while studying *AfD*, an important issue has to be addressed. More precisely, Table 3.13 and Table 3.14 denote opposed coefficients for *Baden-Württemberg* and *Rheinland-Pfalz*. Indeed, for *Baden-Württemberg*, Table 3.13 displays positive coefficients for these two *Länders* while Table 3.14 displays negative ones. This inconsistency is surprising as we can not observe it Table A3.40 and A3.41 that both present negative or insignificant coefficients. Moreover, coefficients for these two *Länders* are broad in Table 3.14 with respective values of -17.274 and -9.713. The most likely explanation is that these estimation are performed on a low number of observations (95 and 86, see in Table A3.18 in Appendix) in *Länders* where other parties represent an important share of votes in *Lantag* elections (see Figure A3.17 and Figure A3.27 in Appendix).

Again, to ensure the robustness of our econometric specification, estimations has been performed with a SUR model (Zellner, 1962). Results are available in Tables A3.40 and A3.41 in Appendix and they are in line with the one presented in this Section.

East versus West Popularity Ratings

As the dataset that splits our sample between East and West Germany has been introduced in Section 6.1, sentiment analysis is also conducted on this dataset and presented in Table 3.15 for *sentiment1* and *sentiment2* prior to federal and European elections. As a reminder, the availability of popularity ratings for East and West Germany forces us to perform our estimations on the sub-period 2005m1-2016m9 that avoids us from studying *AfD*. First, in the case of federal elections, *CDU/CSU* and *SPD* are characterized by significant and opposed coefficients in terms of signs. *FDP* is negatively impacted by a positive tone in press articles dealing with monetary policy prior to a federal election in West and East Germany. In opposition, this effect is positive for *Greens*. *Linke* is the only party presenting various effect between West and East. More precisely, *Linke* is

Table 3.13: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections - Sentiment Analysis 1/2

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dsentiment1 X Pre Länder Election 1 month</i>						
Baden-Württemberg	0.143 (0.301)	0.332 (0.710)	0.049 (0.121)	0.123 (0.287)	-0.636 (0.716)	1.594*** (0.396)
Bayern	-1.841*** (0.485)	2.312*** (0.247)	0.857*** (0.058)	0.623*** (0.141)	-0.400 (0.524)	-0.461*** (0.134)
Berlin	-0.089 (0.132)	-0.739*** (0.101)	-0.026 (0.021)	0.012 (0.116)	0.852*** (0.131)	-0.447*** (0.067)
Brandenburg	0.539*** (0.110)	0.048 (0.089)	-0.277*** (0.024)	0.201* (0.115)	-0.238 (0.160)	-0.915*** (0.199)
Bremen	0.351*** (0.102)	-0.059 (0.108)	0.037 (0.027)	-0.237** (0.118)	-0.068 (0.099)	0.154*** (0.046)
Hamburg	-1.064* (0.558)	0.361 (0.770)	0.193*** (0.044)	0.162 (0.209)	0.706* (0.380)	-0.268*** (0.075)
Hessen	0.280** (0.127)	0.123 (0.225)	0.072* (0.037)	0.092 (0.057)	-0.502*** (0.100)	-0.085 (0.104)
Mecklenburg-Vorpommern	0.563*** (0.111)	-0.382*** (0.071)	0.116*** (0.016)	0.587*** (0.064)	-0.032 (0.100)	-0.523*** (0.072)
Niedersachsen	-0.426*** (0.096)	-0.327*** (0.085)	-0.006 (0.015)	0.129** (0.062)	0.426*** (0.082)	0.132** (0.056)
Nordrhein-Westfalen	-0.571** (0.261)	0.080 (0.141)	0.005 (0.037)	0.169*** (0.061)	-2.428*** (0.465)	-0.032 (0.185)
Rheinland-Pfalz	-0.412** (0.196)	0.451 (0.283)	-0.108*** (0.034)	0.318 (0.458)	0.119 (0.310)	0.931*** (0.184)
Saarland	1.075*** (0.228)	-0.684*** (0.187)	-0.320*** (0.043)	-0.489*** (0.164)	0.549*** (0.206)	0.489** (0.187)
Sachsen	-1.377*** (0.178)	1.167*** (0.142)	0.057 (0.036)	0.614*** (0.107)	-0.025 (0.192)	-0.616*** (0.170)
Sachsen-Anhalt	0.645*** (0.158)	-0.485*** (0.116)	-0.189*** (0.028)	-0.522*** (0.145)	0.377** (0.164)	0.226 (0.145)
Schleswig-Holstein	-0.474*** (0.156)	0.525 (0.507)	-0.223*** (0.044)	0.183* (0.103)	-0.199 (0.203)	-0.073 (0.185)
Thuringen	3.939*** (0.244)	-1.752*** (0.274)	0.090* (0.054)	1.713*** (0.116)	-2.976*** (0.227)	-1.890*** (0.197)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table 3.14: Main model estimated with Newey and West's (1987) standard errors - *Länder* elections - Sentiment Analysis 2/2

<i>Länder</i>	Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke	AfD
<i>dsentiment2 X Pre Länder Election 1 month</i>						
Baden-Württemberg	-0.180 (0.328)	1.127** (0.562)	0.173* (0.097)	0.396 (0.241)	-1.346*** (0.493)	-17.274*** (4.740)
Bayern	-3.906*** (1.068)	5.203*** (0.498)	1.868*** (0.127)	1.360*** (0.314)	-1.240 (1.236)	-0.480*** (0.138)
Berlin	-0.098 (0.156)	-0.877*** (0.125)	-0.030 (0.026)	0.004 (0.134)	0.998*** (0.149)	-0.356*** (0.061)
Brandenburg	0.314*** (0.085)	0.043 (0.066)	-0.182*** (0.019)	0.116 (0.088)	-0.099 (0.120)	-0.641*** (0.140)
Bremen	0.400*** (0.125)	-0.069 (0.152)	0.060*** (0.021)	-0.375*** (0.130)	-0.069 (0.110)	0.190*** (0.052)
Hamburg	-0.894*** (0.178)	0.505 (0.366)	0.088*** (0.023)	-0.041 (0.085)	0.645*** (0.119)	-0.313*** (0.084)
Hessen	0.332*** (0.100)	-0.030 (0.258)	0.101*** (0.029)	0.102 (0.069)	-0.538*** (0.094)	-0.099 (0.101)
Mecklenburg-Vorpommern	0.445*** (0.094)	-0.337*** (0.061)	0.096*** (0.013)	0.470*** (0.057)	0.000 (0.087)	-0.417*** (0.064)
Niedersachsen	-0.472*** (0.095)	-0.341*** (0.089)	-0.001 (0.016)	0.149** (0.071)	0.445*** (0.081)	0.131** (0.057)
Nordrhein-Westfalen	-0.758** (0.361)	0.093 (0.174)	-0.002 (0.047)	0.271*** (0.074)	-4.279*** (0.777)	-0.051 (0.199)
Rheinland-Pfalz	-0.584*** (0.132)	0.643*** (0.152)	-0.077 (0.051)	0.807** (0.333)	-0.161 (0.278)	-9.713*** (2.258)
Saarland	1.150*** (0.235)	-0.669*** (0.199)	-0.332*** (0.045)	-0.527*** (0.167)	0.538** (0.219)	0.482** (0.197)
Sachsen	-0.957*** (0.129)	0.788*** (0.102)	0.041 (0.025)	0.416*** (0.074)	0.011 (0.133)	-0.424*** (0.121)
Sachsen-Anhalt	0.570*** (0.171)	-0.470*** (0.116)	-0.180*** (0.026)	-0.458*** (0.156)	0.354** (0.154)	0.251 (0.159)
Schleswig-Holstein	-0.395*** (0.140)	0.599* (0.340)	-0.183*** (0.040)	0.118 (0.096)	-0.195 (0.154)	-0.081 (0.205)
Thuringen	2.779*** (0.173)	-1.241*** (0.195)	0.066* (0.038)	1.207*** (0.088)	-2.094*** (0.172)	-1.317*** (0.139)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Newey and West (1987) standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

penalized in terms of popularity when media coverage of monetary is positive in West Germany. On the contrary, there are no significant effects in terms of tone induced PROPMC in East Germany.

The bottom section of Table 3.15 presents the study of pre-EP elections phenomenon. In West Germany, *CDU/CSU* and *SPD* (*FDP* and *Linke*) are facing a positive (negative) impact on their popularity when German press is using positive discourse when speaking about monetary policy. Moreover, there are no significant effect for *Greens*. When studying East Germany, the situation remains the same for *CDU/CSU* and *Linke*. *FDP* faces no significant coefficient for *sentiment1* and *sentiment2* while *SPD* faces the opposite effect with negative coefficients. Then, contrary to its situation in West Germany, a positive tone related to monetary policy articles in the press has a positive effect on the popularity of the *Greens*.

Finally, results of these estimations with a SUR model (Zellner, 1962) are available in Table A 3.42 in the Appendix.

3.7 Conclusion

This paper underlines a new type of political cycle experienced by every party despite their partisanship or their membership in governing coalitions. Specifically, this study treat the question of opportunistic political monetary cycles induced by media coverage of ECB's actions. Using three alternative databases composed of national, Est versus West and *länder* by *länder* German data, we underline the existence of these PROPMCs at different level of data granularity. Depending on the type of election, the sub-region (East Germany, West Germany or one of the 16 German *Länders*) or the partisanship of German political parties, we underline the existence of positive, negative or insignificant PROPMCs even though ECB is implementing the monetary policy of 19 countries. More precisely, the more robust results of the paper are the following: (i) PROPMCs are broader before EP elections; (ii) *CDU/CSU* and *SPD* are impacted by PROPMCs a the opposite one from the other; (iii) the most positively impacted party by local PROPMCs is *Greens* due to its local anchorage; (iv) *Linke* is more popular in East Germany and it leads to positive PROPMCs in this regions and (v) *AfD* is experiencing negative PROPMCs in the vast majority of our estimates due to its anti-elite and eurosceptic rhetoric. Then, our results are robust to estimations using two distinct econometric strategies *i.e.* Newey and West (1987) standard errors time series and SUR Model (Zellner, 1962). These two methods allow us to control for heteroscedasticity and autocorrelation inherent to the estimation of popularity functions (Lewis-Beck and Steigmaier, 2013) but also for statistical interdependencies between our different parties' popularity series. Moreover, we ensure the robustness of our estimates using alternative pre-electoral periods, different databases and sentiment analysis that do not impact significantly our results and their consistency.

Table 3.15: Main model estimated with Newey and West's (1987) standard errors - East vs. West Germany - Sentiment analysis

Popularity of Parties (%)	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Federal Elections										
Pre Federal Election	0.841	-1.635***	1.060***	-1.061**	1.305***	2.372***	-1.516	1.063***	-0.665***	-1.114
1 month	(1.023)	(0.200)	(0.228)	(0.455)	(0.440)	(0.769)	(1.055)	(0.194)	(0.095)	(1.564)
dsentiment1	0.008	-0.006	-0.001	-0.016**	-0.001	0.007	-0.003	-0.005	0.007	-0.015
	(0.011)	(0.008)	(0.008)	(0.007)	(0.005)	(0.012)	(0.011)	(0.008)	(0.006)	(0.012)
dsentiment1 X Pre Federal Election 1 month	-0.051*	0.125***	-0.031***	0.019	-0.045**	-0.156***	0.087***	-0.033***	0.032***	0.052
	(0.030)	(0.011)	(0.010)	(0.014)	(0.017)	(0.034)	(0.028)	(0.009)	(0.008)	(0.059)
Federal Elections										
Pre Federal Election	0.908	-1.163**	0.910***	-1.162***	1.227***	1.555	-1.430**	0.849***	-0.518***	-0.539
1 month	(0.727)	(0.471)	(0.308)	(0.376)	(0.214)	(1.259)	(0.584)	(0.322)	(0.167)	(1.489)
dsentiment2	0.005	-0.003	0.003	-0.017**	-0.005	0.009	-0.004	-0.004	0.008	-0.020
	(0.010)	(0.009)	(0.006)	(0.008)	(0.006)	(0.013)	(0.012)	(0.007)	(0.006)	(0.014)
dsentiment2 X Pre Federal Election 1 month	-0.047**	0.088***	-0.025***	0.025**	-0.032***	-0.106***	0.076***	-0.022**	0.020***	0.026
	(0.019)	(0.014)	(0.008)	(0.012)	(0.009)	(0.039)	(0.016)	(0.009)	(0.007)	(0.041)
European Elections										
Pre European Election	0.010	1.063***	-0.261	-0.535***	-0.214*	-1.591***	0.718**	-0.094	-0.039	1.827***
1 month	(0.237)	(0.273)	(0.234)	(0.188)	(0.123)	(0.298)	(0.300)	(0.201)	(0.153)	(0.414)
dsentiment1	0.005	-0.004	0.000	-0.017**	-0.000	0.003	0.000	-0.005	0.007	-0.015
	(0.010)	(0.009)	(0.007)	(0.007)	(0.006)	(0.011)	(0.011)	(0.008)	(0.006)	(0.012)
dsentiment1 X Pre European Election 1 month	0.051***	0.032***	-0.050***	0.007	-0.022***	0.050***	-0.068***	-0.003	0.038***	-0.039***
	(0.011)	(0.010)	(0.008)	(0.006)	(0.005)	(0.010)	(0.012)	(0.008)	(0.007)	(0.013)
European Elections										
Pre European Election	-0.430*	0.833***	0.118	-0.430**	-0.038	-2.018***	1.245***	-0.023	-0.398**	2.298***
1 month	(0.231)	(0.284)	(0.216)	(0.177)	(0.125)	(0.295)	(0.307)	(0.203)	(0.166)	(0.415)
dsentiment2	0.002	-0.000	0.004	-0.017**	-0.004	0.005	-0.000	-0.004	0.007	-0.021
	(0.009)	(0.009)	(0.006)	(0.007)	(0.006)	(0.011)	(0.012)	(0.007)	(0.006)	(0.014)
dsentiment2 X Pre European Election 1 month	0.065***	0.035***	-0.063***	0.005	-0.024***	0.060***	-0.082***	-0.007	0.047***	-0.046**
	(0.010)	(0.010)	(0.009)	(0.007)	(0.006)	(0.010)	(0.012)	(0.007)	(0.008)	(0.015)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01
Newey and West (1987) standard errors are provided in parenthesis

With this new type of political cycle that significantly impacts national politics even in a monetary union, it is of high importance to generalize the investigation on potential PROPMPs. According to us, it would be interesting to study other European countries as France, Spain or Italy but also countries like the United States or the United Kingdom in which textometric analysis is feasible and monetary policy represents an important issue. Moreover, in this paper we present an empirical investigation on this concept of PROPMP but for the sake of clarity, we do not provide a theoretical framework justifying PROPMP existence. As developed in the paper, it would be interesting to build a theoretical model based on the comparative advantage framework (Clark and Arel-Bundock, 2013; Menuet et al., 2021) in which the press is introduced. As the comparative advantage theory seems relevant in explaining the variations in *CDU/CSU* and *SPD* popularity ratings, it could be an interesting starting point.

Finally, this paper clearly aims at introducing the concept of PROPMP and to give it legitimacy by providing arguments in favor of its existence in the case of Germany. However, it could be interesting to investigate a comparable press related political business cycle in how the media covers fiscal policy or even a political cycle induced by media coverage of unemployment, inequalities or every economic topics that is supposedly relevant in public debates prior to an election.

3.8 Appendix

Table 3.16: Political events and the month in which they occurred

Political Events	Month in which we coded it as 1	Description
German Visa Affair	February, March, April, May & June 2005	The new German visa policy implemented in 2000 was violating several European laws. This visa policy is directly responsible of an important number of visa granted to criminals mainly from Ukraine. This affair leads to the resignation of the Minister of State Ludger Volmer (Green party).
FIFA World Cup	June & July 2006	The football World Cup is organized from 4 June to 4 July in Germany.
<i>Sachsensumpf</i>	June, July & August 2007	An important number of powerful persons are involved in several judiciary scandals in the state of <i>Sachsen</i> and more precisely in the city of <i>Leipzig</i> .
Wikileaks Controversy	December 2010	In December 2010, the website Wikileaks published classified documents showing that Guido Westerwelle (leader of the FDP) is a mole of the US government.
Guttenberg Plagiarism	February 2011	The Minister of Defence Karl-Theodor zu Guttenberg (CSU) resigned after accusations of plagiarism of his doctoral dissertation. His dissertation has been withdrawn on 23 February.
Fukushima	March, April, May & June 2011	Major nuclear disaster in Japan following a violent earthquake and tsunami occurring on 11 March.
Stuttgart 21	September, October & November 2011	Protests against an urban development project in Stuttgart that is considered by the protesters as bad for the environment. The protests peaked at the end of 2011 just before the 27 November referendum on this issue.
Wulff Case	February 2012	The German Federal President Christian Wulff resigned due to several corruption scandals.
<i>Bayern</i> Nepotism Scandal	April 2013	79 members of Bavarian parliament have employed family members as their assistants in well-paid assistant roles. This practice has already been banned in 2000.
Erdogate	March & April 2016	On 31 March 2016, Jan Böhmermann broadcasted a satire that insulted Turkish president Erdogan. On 15 April, the Chancellor Angela Merkel announced that the German government had approved Böhmermann's criminal prosecution. The CDU/CSU has been highly criticized for this decision.
Montblanc Scandal	August 2016	On 24 August, the names of MPs responsible for buying 70.000 euros luxury writing materials with public funds were released in the press.
Berlin Truck Attack	December 2016	A terrorist attack claimed by the Islamic State killed 13 persons in Berlin on 19 December.
Regensburg Donation Scandal	January 2017	The mayor of the city of Regensburg in Bavaria (Joachim Wolbergs from the SPD) is arrested on January 18 due to corruption.
Same Sex Marriage	June 2017	The law allowing same sex marriage in Germany is debated in <i>Bundestag</i> .
BAMF Corruption Scandal	April & May 2018	On April 20, employees at the regional BAMF office in Bremen were accused of having illegally accepted hundreds of asylum applicants between 2013 and 2017. On May 23, the German Interior Ministry prohibited the regional BAMF office in Bremen from giving asylum in the country
AfD Donation Scandal	November 2018	Before the 2017 Federal election, an AfD regional office in <i>Baden-Württemberg</i> received 132.000 euros in an illegal way. Therefore, the AfD has been ordered to pay over 5000.000 euros to the Federal government. The political party was under initial suspicion on 14 November.
New CDU/CSU chairwoman	December 2018	Angela Merkel is replaced by Annegret Kramp-Karrenbauer as new CDU/CSU chairwoman.
Hanau Shootings	February 2020	Far-right activists killed 11 persons in a terrorist attack in shisha bars in Hanau (state of <i>Hessen</i>).
First Lockdown	March, April & May 2020	First national lockdown following the COVID-19 pandemic outbreak.
<i>Reichstag</i> Storm	August 2021	Far-right protesters tried to storm the <i>Reichstag</i> in reaction to the COVID-19 restrictions.

Table 3.17: Associated political group in the EP to each German political party

German Political Party	Political Group in the EP
<i>CDU/CSU</i>	European People's Party – European Democrats (EPP-ED) [2004] European People's Party (EPP) [2009; 2014; 2019]
<i>SPD</i>	Party of European Socialists (PES) [2004] Progressive Alliance of Socialists and Democrats (S&D) [2009; 2014; 2019]
<i>FDP</i>	Alliance of Liberals and Democrats for Europe (ALDE) [2004; 2009; 2014] Renew Europe (RE) [2019]
<i>Green Party</i>	Greens/European Free Alliance (G/EFA) [2004; 2009; 2014; 2019]
<i>Die Linke</i>	European United Left/Nordic Green Left (EUL-NGL) [2004; 2009; 2014; 2019]
<i>AfD</i>	/ [2004; 2009] No Affiliation [2014] Identity and Democracy (ID) [2019]

Source: EP, see: <https://www.europarl.europa.eu/>

Table 3.18: Number of observations by *Länder* and political party in local databases

<i>Länder</i>	CDU/ CSU	SPD	FDP	Greens	Linke	AfD	SUR Model†
Baden-Württemberg	166	166	147	163	157	95	140
Bayern	164	164	139	161	154	94	134
Berlin	160	160	143	155	158	87	141
Brandenburg	167	167	147	167	158	89	143
Bremen	179	179	153	174	168	93	145
Hamburg	161	161	132	157	154	91	130
Hessen	181	181	158	176	176	91	153
Mecklenburg-Vorpommern	166	166	150	164	156	91	146
Niedersachsen	139	139	121	135	136	89	119
Nordrhein-Westfalen	160	160	143	157	154	90	139
Rheinland-Pfalz	161	161	139	155	148	86	135
Saarland	147	147	130	147	143	90	129
Sachsen	162	162	147	159	151	92	133
Sachsen-Anhalt	157	157	127	146	148	89	124
Schleswig-Holstein	156	156	135	153	149	92	133
Thuringen	153	153	132	144	150	94	126

Table 3.19: Summary statistics on *Länder* database - 1/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Baden-Württemberg</i>					
dCDU_CSU	-0.141	11.917	-28	34	201
dSPD	-0.133	10.469	-28.143	25	201
dFDP	-0.009	2.489	-6.5	7	185
dGreens	-0.028	7.335	-21	25.2	199
dLinke	0.169	12.074	-35	31	193
dAfD	0.202	7.146	-19	18.571	99
dUnemployment	-0.016	0.178	-0.4	0.6	201
dInflation	0.131	0.627	-1.4	1.9	178
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Bayern</i>					
dCDU_CSU	-0.081	12.571	-31	33	201
dSPD	-0.039	10.724	-27	25	201
dFDP	0.032	2.272	-5	8	182
dGreens	-0.092	6.868	-20	17.5	199
dLinke	-0.026	11.541	-30	32	192
dAfD	0.198	6.558	-16.333	19	96
dUnemployment	-0.028	0.305	-0.9	1.2	201
dInflation	0.107	0.661	-1.4	2.1	175
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.20: Summary statistics on *Länder* database - 2/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Berlin</i>					
dCDU_CSU	-0.147	12.665	-34.4	34	201
dSPD	0.045	10.516	-23	28	201
dFDP	-0.002	2.386	-6.5	8.199	184
dGreens	0.061	8.039	-29	25.2	197
dLinke	0.052	11.624	-30	32	194
dAfD	0.139	6.024	-15	15	97
dUnemployment	-0.05	0.343	-0.700	1.4	201
dInflation	0.133	0.748	-2.2	2.3	171
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Brandenburg</i>					
dCDU_CSU	-0.142	12.411	-33	34	201
dSPD	-0.005	10.298	-25.143	24.5	201
dFDP	0.028	2.645	-7	8.199	181
dGreens	0	8.294	-26.5	25.2	201
dLinke	0.107	12.033	-30	31	192
dAfD	0.202	6.281	-16	16	99
dUnemployment	-0.074	0.466	-1	2.1	201
dInflation	0.106	0.789	-2.6	2.3	179
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.21: Summary statistics on *Länder* database - 3/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Bremen</i>					
dCDU_CSU	-0.132	11.822	-28	28	201
dSPD	-0.005	10.506	-23	25	201
dFDP	0.03	2.495	-7	9.700	182
dGreens	0.005	7.711	-20.5	29	197
dLinke	0.021	11.417	-29	31	192
dAfD	0.227	5.535	-18	16	97
dUnemployment	-0.038	0.274	-0.8	1	201
dInflation	0.121	0.718	-1.6	2.3	187
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Hamburg</i>					
dCDU_CSU	-0.142	12.137	-28	34	201
dSPD	-0.005	9.914	-25.143	26	201
dFDP	0.056	2.333	-6.5	8.199	177
dGreens	-0.01	8.167	-25	22	197
dLinke	0.106	11.131	-30	31	194
dAfD	0.237	6.302	-15	16	97
dUnemployment	-0.018	0.241	-0.5	1	201
dInflation	0.117	0.743	-2.5	2.5	174
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.22: Summary statistics on *Länder* database - 4/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Hessen</i>					
dCDU_CSU	-0.142	12.721	-33	34	201
dSPD	-0.005	10.578	-25.5	24	201
dFDP	0.055	2.388	-6.5	8.199	182
dGreens	-0.046	7.68	-22	17.5	195
dLinke	0.054	11.223	-30	31	196
dAfD	0.237	7.583	-16	21.5	95
dUnemployment	-0.023	0.214	-0.5	0.700	201
dInflation	0.125	0.682	-2.3	2.2	187
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Mecklenburg-Vorpommern</i>					
dCDU_CSU	-0.142	11.654	-32.333	29.75	201
dSPD	-0.005	10.318	-25.143	28.5	201
dFDP	0.051	2.555	-7	7	186
dGreens	-0.03	7.36	-26	25.2	199
dLinke	0.029	11.245	-30	22.667	192
dAfD	0.224	5.922	-15	16	98
dUnemployment	-0.083	0.658	-1.7	2.5	201
dInflation	0.133	0.734	-1.7	2.7	177
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.23: Summary statistics on *Länder* database - 5/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Niedersachsen</i>					
dCDU_CSU	-0.226	11.57	-28	29.75	201
dSPD	0	10.591	-25.143	29.833	201
dFDP	0.032	2.394	-7	8.199	177
dGreens	-0.097	8.022	-21	25.2	195
dLinke	-0.01	11.873	-30	31	194
dAfD	0.227	6.415	-15	16	97
dUnemployment	-0.036	0.266	-0.700	0.9	201
dInflation	0.117	0.724	-1.8	2	156
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Nordrhein-Westfalen</i>					
dCDU_CSU	-0.144	12.53	-37	34	201
dSPD	-0.082	10.404	-25	24.5	201
dFDP	-0.016	2.642	-7.8	6.8	184
dGreens	-0.086	7.989	-22	30	199
dLinke	0.105	11.999	-32.5	32	196
dAfD	0.151	6.875	-19	16	97
dUnemployment	-0.021	0.221	-0.4	1.2	201
dInflation	0.124	0.684	-1.9	2.1	174
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.24: Summary statistics on *Länder* database - 6/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Rheinland-Pfalz</i>					
dCDU_CSU	-0.132	12.47	-26.25	29.75	201
dSPD	-0.03	11.501	-38	35	201
dFDP	0.07	2.586	-6.5	8	181
dGreens	0.02	8.316	-30.5	25.2	197
dLinke	0.055	10.949	-30	25	190
dAfD	0.211	6.331	-18.5	16	95
dUnemployment	-0.024	0.252	-0.6	0.8	201
dInflation	0.138	0.722	-2.2	2.1	173
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Saarland</i>					
dCDU_CSU	-0.142	11.865	-28	29.75	201
dSPD	-0.005	10.229	-25.143	29	201
dFDP	0.077	2.346	-5	7	182
dGreens	0.015	8.213	-22	25.2	197
dLinke	0.038	11.676	-30	31	196
dAfD	0.227	6.578	-15	16	97
dUnemployment	-0.021	0.247	-0.4	0.8	201
dInflation	0.135	0.671	-1.7	2.4	164
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.25: Summary statistics on *Länder* database - 7/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Sachsen</i>					
dCDU_CSU	-0.142	12.401	-33	34	201
dSPD	-0.005	10.707	-32	28	201
dFDP	-0.003	2.447	-7.5	8.199	185
dGreens	0.038	7.437	-24.5	19.5	197
dLinke	0.008	11.739	-30	31	192
dAfD	0.202	6.456	-16.333	16	99
dUnemployment	-0.069	0.46	-1.3	2	201
dInflation	0.12	0.758	-1.5	2.7	175
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Sachsen-Anhalt</i>					
dCDU_CSU	-0.143	12.312	-27	32	201
dSPD	0.029	10.598	-30	30.5	201
dFDP	0.07	2.252	-6	6	178
dGreens	0.054	8.108	-22	25	193
dLinke	0.183	10.997	-41	29.5	192
dAfD	0.062	6.328	-16	13	97
dUnemployment	-0.076	0.534	-1.3	2.1	201
dInflation	0.137	0.711	-2.1	2.7	173
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.26: Summary statistics on *Länder* database - 8/8

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Schleswig-Holstein</i>					
dCDU_CSU	-0.122	12.366	-27	29.75	201
dSPD	0.015	10.885	-26.2	29	201
dFDP	0	2.607	-8	6	180
dGreens	0.08	7.235	-23	25.2	199
dLinke	0.076	10.356	-32	31	195
dAfD	0.073	6.183	-19	18.571	96
dUnemployment	-0.039	0.288	-0.8	0.9	201
dInflation	0.162	0.655	-1.5	2.3	171
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203
<i>Thuringen</i>					
dCDU_CSU	-0.142	11.676	-30	28	201
dSPD	-0.005	12.095	-32.5	32	201
dFDP	0.058	2.532	-6.5	8.199	183
dGreens	0.083	7.623	-21	25.2	193
dLinke	0.038	10.748	-30	31	196
dAfD	0.194	6.654	-16	17	98
dUnemployment	-0.068	0.494	-1.2	2.1	201
dInflation	0.126	0.668	-1.6	2.2	167
dCount	0.374	39.59	-173	211	203
dOccur_ECB	3.335	296.35	-1211	1646	203
dOccur_Perso.	5.02	390.974	-1547	2063	203
dOccur_Infl.	4.271	100.937	-361	377	203
dsentiment1	-0.149	16.039	-39.048	42.83	203
dsentiment2	-0.159	16.652	-41.006	50.518	203

Table 3.27: Summary statistics on East vs. West database

Variable	Former West Germany						Former East Germany					
	Mean	Std. Dev.	Min.	Max.	N		Mean	Std. Dev.	Min.	Max.	N	
dCDU_CSU	-0.052	1.496	-3.5	4	141		-0.028	1.757	-6.95	4.25	141	
dSPD	-0.066	1.349	-4	4.25	141		-0.085	1.696	-5.5	5	141	
dFDP	-0.009	1.056	-2.5	3	141		-0.026	1.013	-4.5	3	141	
dGreens	-0.002	1.224	-4.25	5.5	141		0	1.042	-3	3.167	141	
dLinke	0.038	0.879	-1.667	3.75	141		-0.012	1.715	-4	9.5	141	
dAFD	0.22	1.198	-3	3.5	41		0.415	1.466	-2.5	4.5	41	
dUnemployment	-0.035	0.24	-0.58	0.73	140		-0.092	0.536	-1.033	1.933	140	
dInflation	0.104	0.32	-0.923	0.738	141		0.107	0.324	-1.033	0.767	141	
dCount	0.213	41.801	-173	211	141		0.213	41.801	-173	211	141	
dOcur_ECB	1.957	311.411	-1211	1646	141		1.957	311.411	-1211	1646	141	
dOcur_Perso.	2.702	405.752	-1547	2063	141		2.702	405.752	-1547	2063	141	
dOcur_Infl.	0.468	79.613	-321	377	141		0.468	79.613	-321	377	141	
dsentiment1	-0.036	16.349	-37.413	41.037	141		-0.036	16.349	-37.413	41.037	141	
dsentiment2	0.015	16.836	-38.824	47.83	141		0.015	16.836	-38.824	47.83	141	

Figure A3.11: Variation of the inflation rate on national dataset

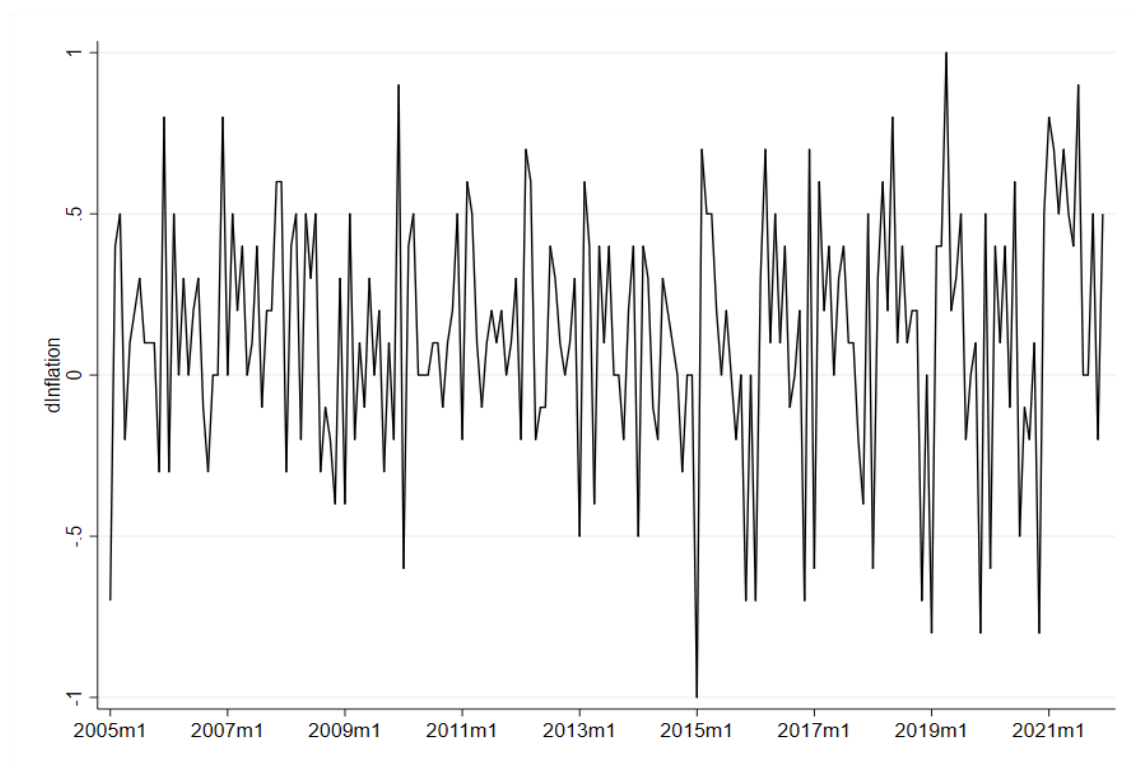


Table A3.28: Main model estimated with Newey and West's (1987) standard errors

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke	AfD
dPopularity(t-1)	-0.118 (0.124)	0.179* (0.099)	0.027 (0.080)	-0.194* (0.106)	-0.130* (0.076)	-0.037 (0.108)
dInflation	0.074 (0.346)	0.239 (0.271)	0.058 (0.164)	0.106 (0.219)	-0.044 (0.164)	-0.554 (0.343)
dInflation(t-1)	0.034 (0.368)	-0.494 (0.311)	0.325* (0.185)	-0.013 (0.219)	-0.027 (0.154)	-0.134 (0.291)
dUnemployment	-1.685 (1.529)	-0.297 (1.218)	1.864** (0.838)	0.390 (1.223)	0.280 (0.619)	2.507 (1.685)
dUnemployment(t-1)	1.229 (1.366)	0.936 (1.447)	-0.315 (0.778)	-0.500 (1.335)	-0.900 (0.721)	-3.443* (1.869)
German Visa Affair	1.307*** (0.489)	-0.988*** (0.322)	-0.206 (0.344)	-0.493* (0.255)	0.222 (0.351)	
FIFA World Cup	-1.932*** (0.197)	-0.578*** (0.213)	1.049*** (0.385)	-0.094 (0.138)	-0.072 (0.341)	
<i>Sachsensumpf</i>	1.021*** (0.292)	-0.814** (0.348)	0.336** (0.138)	-0.588** (0.266)	0.033 (0.284)	
Wikileaks Controversy	1.370*** (0.347)	-0.275 (0.171)	0.022 (0.119)	-0.570*** (0.164)	-0.058 (0.086)	
Guttenberg Plagiarism	0.708** (0.339)	-0.384 (0.304)	0.333* (0.174)	-2.838*** (0.230)	0.834*** (0.161)	
Fukushima	-0.282 (0.299)	0.146 (0.231)	-0.233 (0.150)	1.552*** (0.496)	-0.626*** (0.144)	
Stuttgart 21	0.504*** (0.187)	0.235 (0.311)	-0.036 (0.078)	-1.690*** (0.450)	-0.277 (0.273)	
Wulff Case	1.305*** (0.351)	-1.793*** (0.289)	-0.314** (0.134)	-1.934*** (0.241)	0.595*** (0.145)	
<i>Bayern</i> Nepotism Scandal	0.689*** (0.234)	-0.555** (0.248)	0.041 (0.123)	-0.019 (0.168)	-0.872*** (0.158)	
Erdogate	-0.492 (0.309)	-1.388*** (0.399)	0.751*** (0.138)	1.398*** (0.189)	-0.809*** (0.104)	0.947** (0.381)
Montblanc Scandal	0.667*** (0.204)	-1.663*** (0.242)	0.537*** (0.120)	0.143 (0.173)	0.446*** (0.090)	0.036 (0.219)
Berlin Truck Attack	1.555*** (0.317)	0.173 (0.347)	0.117 (0.157)	-2.239*** (0.205)	-0.102 (0.177)	-0.726** (0.286)
Regensburg Donation Scandal	0.421 (0.335)	0.813*** (0.305)	0.769*** (0.161)	-1.421*** (0.337)	-0.531*** (0.162)	-0.433 (0.315)
Same Sex Marriage	1.496*** (0.315)	-1.532*** (0.309)	-0.124 (0.203)	0.265** (0.132)	0.055 (0.093)	0.435* (0.239)
BAMF Corruption Scandal	1.298*** (0.338)	0.389** (0.174)	-0.620 (0.401)	-0.111 (0.548)	-1.119*** (0.156)	0.589*** (0.221)
AfD Donation Scandal	0.092 (0.381)	0.985** (0.497)	0.423*** (0.142)	2.649*** (0.404)	-0.919*** (0.190)	-1.518*** (0.326)
New CDU Chairwoman	3.307*** (0.276)	0.568** (0.281)	-1.325*** (0.150)	-2.728*** (0.324)	-0.173 (0.157)	-0.307 (0.325)
Hanau Shootings	0.320 (0.273)	-0.721* (0.430)	-0.994*** (0.183)	-1.145*** (0.208)	1.040*** (0.174)	0.059 (0.334)
First Lockdown	4.534*** (0.841)	0.150 (0.597)	-0.780*** (0.208)	-1.530*** (0.545)	-0.701 (0.513)	-1.524*** (0.482)
<i>Reichstag</i> Storm	-4.566*** (0.446)	5.272*** (0.316)	0.137 (0.190)	-1.435*** (0.360)	-0.589*** (0.144)	0.101 (0.353)
Constant	-0.283** (0.117)	0.087 (0.115)	0.039 (0.069)	0.106 (0.114)	0.023 (0.076)	0.176 (0.143)
Nbr. observations	204	204	204	204	204	103
R2	0.231	0.173	0.124	0.190	0.112	0.180

Significance levels are: * p < 0.10; ** p < 0.05; *** p < 0.01

Newey and West (1987) standard errors are provided in parenthesis

Table A3.29: Main model estimated with a SUR model (Zellner, 1962)

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke
dPopularity(t-1)	-0.056 (0.063)	0.015 (0.055)	0.015 (0.058)	-0.059 (0.064)	-0.153** (0.065)
dInflation	0.050 (0.333)	0.294 (0.237)	0.051 (0.162)	0.113 (0.229)	-0.056 (0.153)
dInflation(t-1)	0.078 (0.337)	-0.577* (0.295)	0.338** (0.158)	-0.024 (0.255)	-0.010 (0.155)
dUnemployment	-1.717 (1.392)	-0.676 (1.231)	1.882** (0.809)	0.250 (1.218)	0.282 (0.693)
dUnemployment(t-1)	1.465 (1.347)	0.730 (1.362)	-0.261 (0.838)	-0.449 (1.204)	-0.847 (0.706)
German Visa Affair	1.210** (0.544)	-0.908** (0.406)	-0.219 (0.370)	-0.418 (0.426)	0.209 (0.363)
FIFA World Cup	-1.863*** (0.183)	-0.570 (0.350)	1.061 (0.697)	-0.123 (0.132)	-0.069 (0.600)
<i>Sachsensumpf</i>	0.938** (0.445)	-0.980* (0.532)	0.335** (0.163)	-0.489 (0.309)	0.046 (0.405)
Wikileaks Controversy	1.270*** (0.239)	-0.559*** (0.166)	0.026 (0.106)	-0.633*** (0.176)	-0.054 (0.085)
Guttenberg Plagiarism	0.624** (0.289)	-0.417 (0.287)	0.344** (0.166)	-2.718*** (0.219)	0.822*** (0.164)
Fukushima	-0.279 (0.358)	0.086 (0.288)	-0.234 (0.156)	1.426** (0.620)	-0.633*** (0.165)
Stuttgart 21	0.465** (0.232)	0.324 (0.383)	-0.037 (0.083)	-1.407* (0.800)	-0.286 (0.361)
Wulff Case	1.172*** (0.268)	-1.937*** (0.278)	-0.315** (0.137)	-1.739*** (0.204)	0.614*** (0.144)
<i>Bayern</i> Nepotism Scandal	0.597*** (0.195)	-0.752*** (0.186)	0.030 (0.123)	-0.012 (0.159)	-0.865*** (0.146)
Erdogate	-0.502* (0.298)	-1.348*** (0.519)	0.750*** (0.125)	1.373*** (0.321)	-0.818*** (0.142)
Montblanc Scandal	0.582*** (0.170)	-1.386*** (0.189)	0.523*** (0.109)	0.014 (0.145)	0.422*** (0.088)
Berlin Truck Attack	1.502*** (0.232)	-0.077 (0.349)	0.132 (0.154)	-2.232*** (0.208)	-0.081 (0.177)
Regensburg Donation Scandal	0.283 (0.269)	1.017*** (0.249)	0.751*** (0.170)	-1.125*** (0.247)	-0.554*** (0.157)
Same Sex Marriage	1.348*** (0.170)	-2.090*** (0.225)	-0.096 (0.159)	0.345*** (0.116)	0.065 (0.095)
BAMF Corruption Scandal	1.225*** (0.334)	0.520*** (0.179)	-0.623 (0.693)	-0.134 (1.077)	-1.139*** (0.261)
AfD Donation Scandal	0.161 (0.294)	0.334 (0.299)	0.417*** (0.156)	2.199*** (0.266)	-0.912*** (0.173)
New CDU Chairwoman	3.307*** (0.264)	0.540* (0.293)	-1.314*** (0.135)	-2.990*** (0.247)	-0.188 (0.154)
Hanau Shootings	0.304 (0.271)	-0.540 (0.389)	-1.008*** (0.193)	-1.131*** (0.232)	1.045*** (0.186)
First Lockdown	4.266*** (1.495)	0.394 (0.760)	-0.803*** (0.282)	-1.325 (0.988)	-0.730 (0.682)
<i>Reichstag</i> Storm	-4.644*** (0.369)	5.522*** (0.277)	0.127 (0.168)	-1.204*** (0.302)	-0.604*** (0.143)
Constant	-0.252** (0.109)	0.056 (0.128)	0.043 (0.077)	0.092 (0.101)	0.028 (0.079)
Nbr. observations	203	203	203	203	203
R2	0.229	0.158	0.124	0.175	0.112
Root-Mean-Square Error	1.473	1.360	0.804	1.256	0.780

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Robust standard errors are provided in parenthesis

Table A3.30: Main model estimated with a SUR model (Zellner, 1962) - Federal elections

Popularity of Parties (%)					
	CDU/CSU	SPD	FDP	Greens	Linke
Pre Federal Election	-0.6167***	1.8141***	0.6865***	-0.6136***	0.0957
1 month	(0.1823)	(0.1473)	(0.1427)	(0.1544)	(0.2452)
dCount	-0.0029	-0.0037*	-0.0002	0.0029	0.0021*
	(0.0025)	(0.0021)	(0.0010)	(0.0021)	(0.0012)
dCount X Pre Federal Election	-0.0239***	0.1007***	0.0079	-0.0359***	-0.0059
1 month	(0.0056)	(0.0054)	(0.0055)	(0.0090)	(0.0064)
Pre Federal Election	-0.5237**	1.4522**	0.6043***	-0.5256**	0.2019
1 month	(0.2510)	(0.6839)	(0.2035)	(0.2106)	(0.3041)
dOccur_ECB	-0.0004	-0.0004	-0.0001	0.0003	0.0003**
	(0.0003)	(0.0003)	(0.0001)	(0.0003)	(0.0001)
dOccur_ECB X Pre Federal Election	-0.0038***	0.0152***	0.0007	-0.0056***	0.0001
1 month	(0.0013)	(0.0034)	(0.0012)	(0.0017)	(0.0016)
Pre Federal Election	-0.4151*	1.2456*	0.6738***	-0.3307	0.2682
1 month	(0.2507)	(0.6446)	(0.1711)	(0.2517)	(0.3187)
dOccur_Perso.	-0.0002	-0.0003	-0.0000	0.0002	0.0002**
	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0001)
dOccur_Perso.X Pre Federal Election	-0.0021	0.0101***	0.0011*	-0.0028	0.0006
1 month	(0.0013)	(0.0036)	(0.0006)	(0.0018)	(0.0013)
Pre Federal Election	-0.1927	0.2762	0.5552***	-0.0759	0.2413
1 month	(0.2730)	(0.7924)	(0.1617)	(0.2980)	(0.1917)
dOccur_Infl.	-0.0012	0.0005	-0.0005	-0.0003	0.0006
	(0.0012)	(0.0018)	(0.0006)	(0.0011)	(0.0006)
dOccur_Infl. X Pre Federal Election	-0.0033	0.0189	0.0015	-0.0049	0.0046*
1 month	(0.0039)	(0.0120)	(0.0028)	(0.0049)	(0.0025)
Nbr. observations	203	203	203	203	203

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01
Robust standard errors are provided in parenthesis

Table A3.31: Typology of party positions on Europe

		Support for European Integration	
		Europhile	Europhobe
Support for EU	EU-optimism	Euroenthusiasm <i>CDU/CSU; FDP*</i>	Europragmatism <i>FDP*; Greens; SPD; Linke (after 2019)†</i>
	EU-pessimism	Euroscepticism <i>AfD; Linke (before 2019)†</i>	Eurorejection /

* FDP has fluctuated between Europhilia and Europhobia throughout the period adopting a position named by Polk et al. (2017) eurorealism

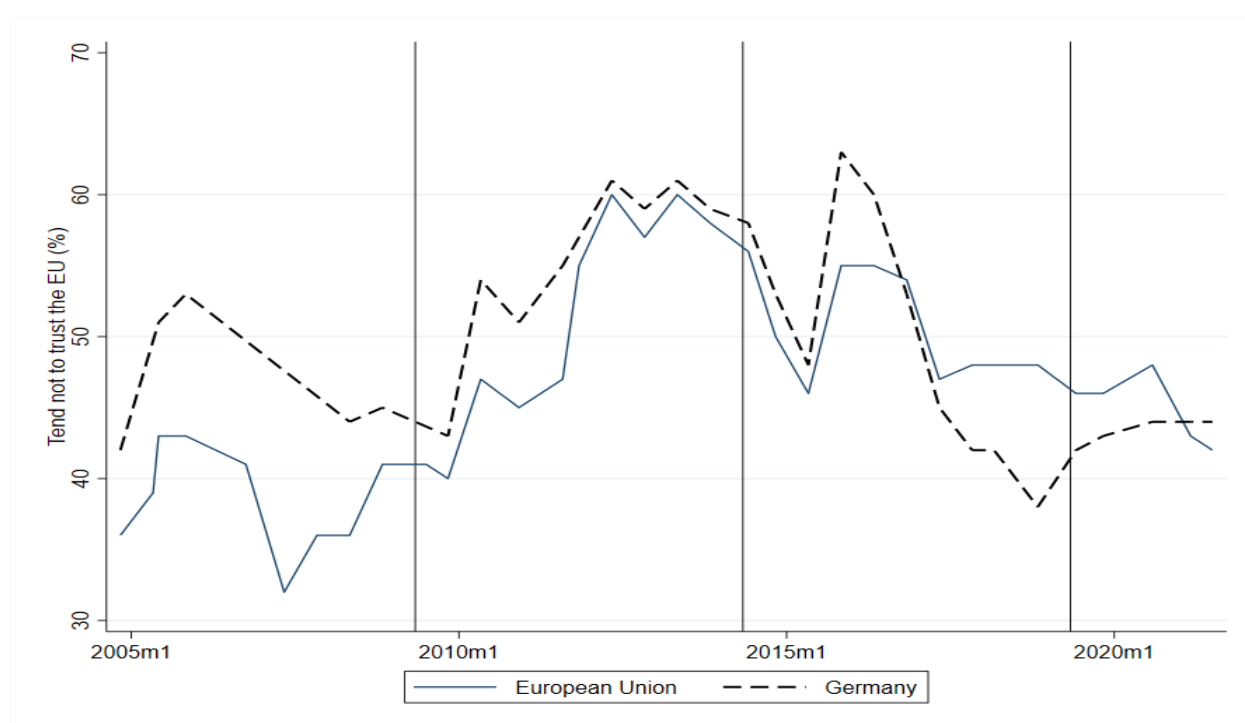
† As developed by Wagner (2021), prior to the 2019 EP elections, *Die Linke's* position on the EU is sliding from Euroscepticism to Europragmatism

The typology used to classify parties comes from Kopecký and Mudde (2002, p. 303)

The classification of *Linke* is provided by Charlambous (2011)

The classification of *AfD* is based on the work of Jankowski et al. (2017) and Jäger (2021)

Table A3.12: Euroscepticism within German people



Source: Eurobarometer, see: <https://europa.eu/eurobarometer/screen/home>

Table A3.32: Main model estimated with a SUR model (Zellner, 1962) - European elections

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke
Pre European Election	-0.7043***	0.9413***	-0.5893	0.3203**	-0.0601
1 month	(0.2354)	(0.3401)	(0.5454)	(0.1496)	(0.2009)
dCount	-0.0030	-0.0032	-0.0003	0.0028	0.0020*
	(0.0025)	(0.0021)	(0.0010)	(0.0021)	(0.0012)
dCount X Pre European Election 1 month	0.0824***	-0.0368**	0.0305	-0.0263**	-0.0206*
	(0.0165)	(0.0180)	(0.0281)	(0.0112)	(0.0113)
Pre European Election	-0.5402***	0.8750**	-0.5579	0.2789*	-0.1056
1 month	(0.1979)	(0.3953)	(0.6230)	(0.1545)	(0.2057)
dOccur_ECB	-0.0004	-0.0004	-0.0001	0.0003	0.0003**
	(0.0003)	(0.0003)	(0.0001)	(0.0003)	(0.0001)
dOccur_ECB X Pre European Election 1 month	0.0113***	-0.0044*	0.0033	-0.0034**	-0.0031**
	(0.0021)	(0.0026)	(0.0039)	(0.0015)	(0.0015)
Pre European Election	-0.6576***	0.9067***	-0.5628	0.3083**	-0.0676
1 month	(0.2506)	(0.3321)	(0.5392)	(0.1434)	(0.2081)
dOccur_Perso.	-0.0002	-0.0003	-0.0000	0.0002	0.0002**
	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0001)
dOccur_Perso.X Pre European Election 1 month	0.0077***	-0.0035**	0.0031	-0.0025**	-0.0019*
	(0.0016)	(0.0016)	(0.0026)	(0.0010)	(0.0011)
Pre European Election	-0.8577	1.2655***	-1.0707***	0.4404**	-0.1165
1 month	(0.5427)	(0.2845)	(0.1731)	(0.2135)	(0.1740)
dOccur_Infl.	-0.0012	0.0006	-0.0005	-0.0003	0.0006
	(0.0012)	(0.0018)	(0.0006)	(0.0011)	(0.0006)
dOccur_Infl. X Pre European Election 1 month	-0.0067	-0.0299***	0.0509***	-0.0071	0.0138*
	(0.0240)	(0.0108)	(0.0070)	(0.0086)	(0.0071)
Nbr. observations	203	203	203	203	203

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Robust standard errors are provided in parenthesis

Table A3.33: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections 1/4

<i>Länder</i>	Popularity of Parties (%)				
	CDU/CSU	SPD	FDP	Greens	Linke
<i>dCount X Pre Länder Election 1 month</i>					
Baden-Württemberg	0.177** (0.086)	-0.608*** (0.079)	-0.088*** (0.014)	-0.200*** (0.055)	0.562*** (0.097)
Bayern	-0.246*** (0.048)	0.258*** (0.032)	0.088*** (0.007)	0.047* (0.026)	0.025 (0.040)
Berlin	0.145*** (0.051)	-0.098** (0.047)	0.031*** (0.011)	0.149*** (0.031)	-0.163*** (0.049)
Brandenburg	1.048*** (0.176)	0.046 (0.141)	-0.534*** (0.036)	0.366*** (0.131)	-0.311 (0.234)
Bremen	-0.757*** (0.143)	0.093 (0.183)	-0.082** (0.034)	0.453*** (0.168)	0.365*** (0.103)
Hamburg	1.113*** (0.079)	-0.584*** (0.059)	-0.130*** (0.027)	-0.020 (0.045)	-0.755*** (0.077)
Hessen	0.004 (0.063)	0.215 (0.140)	0.033 (0.026)	0.088*** (0.028)	-0.158** (0.073)
Mecklenburg-Vorpommern	0.319*** (0.083)	-0.449*** (0.073)	0.044** (0.018)	0.209*** (0.061)	-0.074 (0.104)
Niedersachsen	-0.356*** (0.060)	-0.264*** (0.059)	0.006 (0.014)	0.130*** (0.034)	0.311*** (0.063)
Nordrhein-Westfalen	1.596*** (0.330)	0.191 (0.290)	0.265*** (0.062)	-0.073 (0.203)	-2.040*** (0.295)
Rheinland-Pfalz	0.140* (0.084)	-0.210** (0.087)	-0.021 (0.023)	-0.454*** (0.056)	0.292*** (0.053)
Saarland	0.029 (0.025)	0.231*** (0.029)	-0.084*** (0.006)	-0.190*** (0.017)	0.119*** (0.029)
Sachsen	0.243** (0.120)	-0.578*** (0.120)	0.092** (0.037)	-0.044 (0.071)	0.111 (0.090)
Sachsen-Anhalt	0.035 (0.205)	-0.005 (0.147)	0.002 (0.057)	-0.244* (0.145)	0.090 (0.089)
Schleswig-Holstein	0.243** (0.120)	-0.578*** (0.120)	0.092** (0.037)	-0.044 (0.071)	0.111 (0.090)
Thuringen	1.196*** (0.065)	-0.604*** (0.073)	0.044*** (0.017)	0.539*** (0.035)	-0.955*** (0.067)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.34: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections 2/4

<i>Länder</i>	Popularity of Parties (%)				
	CDU/CSU	SPD	FDP	Greens	Linke
<i>dOccur_ECB X Pre Länder Election 1 month</i>					
Baden-Württemberg	0.040** (0.018)	-0.128*** (0.020)	-0.019*** (0.003)	-0.043*** (0.012)	0.114*** (0.024)
Bayern	-0.035*** (0.007)	0.035*** (0.005)	0.013*** (0.001)	0.008** (0.004)	0.003 (0.006)
Berlin	0.008* (0.005)	-0.008* (0.005)	0.003*** (0.001)	0.012*** (0.003)	-0.010** (0.005)
Brandenburg	0.439*** (0.072)	0.024 (0.057)	-0.220*** (0.015)	0.146*** (0.053)	-0.134 (0.096)
Bremen	-0.092*** (0.019)	0.010 (0.024)	-0.010** (0.004)	0.058*** (0.020)	0.044*** (0.013)
Hamburg	0.209*** (0.014)	-0.108*** (0.011)	-0.024*** (0.005)	-0.004 (0.008)	-0.142*** (0.013)
Hessen	0.015 (0.013)	0.041 (0.039)	0.011* (0.006)	0.027*** (0.005)	-0.056*** (0.012)
Mecklenburg-Vorpommern	0.021*** (0.007)	-0.034*** (0.006)	0.004** (0.002)	0.015*** (0.005)	-0.003 (0.008)
Niedersachsen	-0.041*** (0.007)	-0.030*** (0.007)	0.001 (0.002)	0.015*** (0.004)	0.035*** (0.007)
Nordrhein-Westfalen	0.107*** (0.022)	0.011 (0.020)	0.018*** (0.004)	-0.006 (0.014)	-0.135*** (0.020)
Rheinland-Pfalz	0.027 (0.019)	-0.043** (0.021)	-0.005 (0.005)	-0.089*** (0.016)	0.058*** (0.011)
Saarland	0.004 (0.003)	0.037*** (0.004)	-0.014*** (0.001)	-0.032*** (0.003)	0.021*** (0.004)
Sachsen	0.010 (0.029)	-0.112*** (0.032)	0.003 (0.010)	0.008 (0.014)	0.031** (0.013)
Sachsen-Anhalt	-0.021 (0.053)	0.022 (0.038)	0.010 (0.014)	-0.037 (0.042)	0.010 (0.025)
Schleswig-Holstein	0.010 (0.029)	-0.112*** (0.032)	0.003 (0.010)	0.008 (0.014)	0.031** (0.013)
Thuringen	0.056*** (0.004)	-0.030*** (0.004)	0.003** (0.001)	0.024*** (0.002)	-0.043*** (0.004)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.35: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections 3/4

<i>Länder</i>	Popularity of Parties (%)				
	CDU/CSU	SPD	FDP	Greens	Linke
<i>dOccur_Perso.X Pre Länder Election 1 month</i>					
Baden-Württemberg	0.025** (0.011)	-0.083*** (0.010)	-0.012*** (0.002)	-0.026*** (0.008)	0.076*** (0.012)
Bayern	-0.024*** (0.005)	0.024*** (0.003)	0.009*** (0.001)	0.005** (0.003)	0.003 (0.004)
Berlin	0.007* (0.004)	-0.007* (0.004)	0.002** (0.001)	0.009*** (0.003)	-0.008** (0.004)
Brandenburg	0.021*** (0.004)	-0.000 (0.003)	-0.012*** (0.001)	0.010*** (0.003)	-0.006 (0.006)
Bremen	-0.068*** (0.015)	0.007 (0.018)	-0.007** (0.003)	0.044*** (0.015)	0.033*** (0.010)
Hamburg	0.080*** (0.006)	-0.042*** (0.005)	-0.010*** (0.002)	-0.002 (0.004)	-0.055*** (0.006)
Hessen	0.003 (0.008)	0.031* (0.016)	0.004 (0.003)	0.013*** (0.003)	-0.024** (0.011)
Mecklenburg-Vorpommern	0.019*** (0.005)	-0.029*** (0.005)	0.003** (0.001)	0.013*** (0.004)	-0.003 (0.007)
Niedersachsen	-0.028*** (0.005)	-0.021*** (0.005)	0.001 (0.001)	0.010*** (0.003)	0.025*** (0.005)
Nordrhein-Westfalen	0.084*** (0.017)	0.008 (0.015)	0.014*** (0.003)	-0.004 (0.011)	-0.106*** (0.015)
Rheinland-Pfalz	0.021** (0.010)	-0.031*** (0.010)	-0.002 (0.003)	-0.059*** (0.006)	0.037*** (0.007)
Saarland	0.004* (0.003)	0.030*** (0.003)	-0.012*** (0.001)	-0.027*** (0.002)	0.018*** (0.003)
Sachsen	-0.029* (0.017)	-0.025 (0.040)	-0.010* (0.005)	0.015*** (0.005)	0.016* (0.009)
Sachsen-Anhalt	0.007 (0.026)	-0.002 (0.019)	-0.000 (0.007)	-0.033* (0.018)	0.013 (0.011)
Schleswig-Holstein	-0.029* (0.017)	-0.025 (0.040)	-0.010* (0.005)	0.015*** (0.005)	0.016* (0.009)
Thuringen	0.031*** (0.003)	-0.017*** (0.002)	0.001** (0.001)	0.013*** (0.002)	-0.023*** (0.003)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.36: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections 4/4

<i>Länder</i>	Popularity of Parties (%)				
	CDU/CSU	SPD	FDP	Greens	Linke
<i>dOccur_Infl. X Pre Länder Election 1 month</i>					
Baden-Württemberg	-0.031* (0.018)	0.056 (0.035)	0.012** (0.005)	0.032** (0.013)	-0.047 (0.035)
Bayern	-0.044*** (0.013)	0.034*** (0.011)	0.017*** (0.002)	0.016** (0.007)	0.002 (0.012)
Berlin	0.024* (0.014)	-0.043*** (0.012)	0.006** (0.003)	0.046*** (0.007)	-0.030** (0.013)
Brandenburg	0.437*** (0.074)	0.016 (0.056)	-0.221*** (0.015)	0.145*** (0.053)	-0.131 (0.096)
Bremen	-0.044 (0.182)	-0.023 (0.134)	-0.034 (0.026)	0.172 (0.131)	0.017 (0.090)
Hamburg	-0.392*** (0.027)	0.192*** (0.022)	0.041*** (0.009)	0.004 (0.015)	0.271*** (0.025)
Hessen	-0.550*** (0.170)	0.224 (0.176)	-0.197*** (0.021)	-0.215** (0.095)	0.871*** (0.203)
Mecklenburg-Vorpommern	0.029** (0.012)	-0.054*** (0.011)	-0.000 (0.003)	0.015* (0.009)	-0.011 (0.013)
Niedersachsen	-0.101*** (0.020)	-0.095*** (0.019)	-0.000 (0.005)	0.040*** (0.011)	0.097*** (0.020)
Nordrhein-Westfalen	0.104*** (0.022)	-0.007 (0.021)	0.019*** (0.005)	-0.001 (0.014)	-0.126*** (0.020)
Rheinland-Pfalz	0.000 (0.021)	0.006 (0.024)	0.006* (0.004)	0.041 (0.026)	-0.032** (0.015)
Saarland	0.013 (0.008)	0.026*** (0.007)	-0.017*** (0.002)	-0.033*** (0.006)	0.026*** (0.008)
Sachsen	-0.042* (0.022)	-0.037 (0.048)	-0.012* (0.006)	0.019** (0.008)	0.027** (0.012)
Sachsen-Anhalt	-0.069** (0.027)	0.044** (0.020)	0.021*** (0.007)	0.085*** (0.012)	-0.035** (0.016)
Schleswig-Holstein	-0.042* (0.022)	-0.037 (0.048)	-0.012* (0.006)	0.019** (0.008)	0.027** (0.012)
Thuringen	1.293*** (0.073)	-0.674*** (0.080)	0.047** (0.019)	0.646*** (0.034)	-1.064*** (0.074)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.37: Main model estimated with a SUR model (Zellner, 1962) - Federal elections - East vs. West Germany

Popularity of Parties (%)	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Pre Federal Election 1 month dCount	-0.4110 (0.6178) -0.0068***	1.9871*** (0.3890) -0.0020	0.0762 (0.1613) 0.0063***	-1.0441*** (0.2641) 0.0049***	0.0228 (0.4180) 0.0014	-2.3790*** (0.3627) -0.0038	0.8690 (0.7222) -0.0047	-0.1585 (0.1705) 0.0031**	0.5160** (0.2110) 0.0016	0.6013 (0.7548) 0.0044**
dCount X Pre Federal Election 1 month	(0.0026) -0.0148 (0.0224)	(0.0018) 0.0855*** (0.0130)	(0.0017) -0.0295*** (0.0036)	(0.0018) -0.0089 (0.0084)	(0.0011) -0.0275** (0.0131)	(0.0038) -0.1139*** (0.0127)	(0.0033) 0.0502* (0.0265)	(0.0015) -0.0325*** (0.0037)	(0.0017) 0.0255*** (0.0061)	(0.0021) 0.0505** (0.0247)
Pre Federal Election 1 month dOccur_ECIB	-0.0427 (0.8944) -0.0009***	1.5408 (0.9528) -0.0004*	0.1643 (0.2487) 0.0008***	-1.1397*** (0.2966) 0.0007***	0.2631 (0.5919) 0.0001	-1.8626** (0.8317) -0.0006	0.3748 (1.1667) -0.0006	-0.0239 (0.2436) 0.0004**	0.3595 (0.3476) 0.0002	0.6129 (0.5528) 0.0005*
dOccur_ECIB X Pre Federal Election 1 month	(0.0003) 0.0013 (0.0041)	(0.0002) 0.0113** (0.0044)	(0.0002) -0.0043*** (0.0011)	(0.0002) -0.0027** (0.0013)	(0.0002) -0.0022 (0.0026)	(0.0005) -0.0169*** (0.0039)	(0.0004) 0.0032 (0.0054)	(0.0002) -0.0049*** (0.0010)	(0.0002) 0.0033** (0.0016)	(0.0003) 0.0112*** (0.0024)
Pre Federal Election 1 month dOccur_Perso.	-0.1978 (0.7736) -0.0006***	1.6515** (0.6458) -0.0003*	0.1489 (0.1886) 0.0007***	-1.0870*** (0.2899) 0.0005***	0.1713 (0.5029) 0.0001	-1.9545*** (0.4974) -0.0005	0.5743 (0.9583) -0.0004	-0.0676 (0.1829) 0.0003**	0.3961 (0.2632) 0.0002	0.5288 (0.6677) 0.0004*
dOccur_Perso. X Pre Federal Election 1 month	(0.0002) -0.0012 (0.0044)	(0.0002) 0.0143*** (0.0036)	(0.0002) -0.0048*** (0.0009)	(0.0002) -0.0020 (0.0015)	(0.0001) -0.0038 (0.0027)	(0.0004) -0.0204*** (0.0030)	(0.0003) 0.0063 (0.0055)	(0.0001) -0.0056*** (0.0008)	(0.0002) 0.0043*** (0.0014)	(0.0002) 0.0113*** (0.0036)
Pre Federal Election 1 month dOccur_Infl.	-0.2062 (0.5070) -0.0012	0.6518 (0.8672) -0.0019*	0.4630* (0.2554) 0.0012	-0.9265*** (0.1689) 0.0021**	0.3750 (0.3981) 0.0003	-0.3086 (0.9285) -0.0012	0.2928 (0.7381) -0.0000	0.3514 (0.2696) 0.0024**	0.0795 (0.2989) -0.0010	-0.5502* (0.3281) -0.0002
dOccur_Infl. X Pre Federal Election 1 month	(0.0013) 0.0203* (0.0113)	(0.0011) 0.0135 (0.0201)	(0.0012) -0.0070 (0.0054)	(0.0009) -0.0127*** (0.0028)	(0.0006) 0.0047 (0.0089)	(0.0018) -0.0318 (0.0220)	(0.0019) -0.0158 (0.0170)	(0.0010) -0.0109* (0.0059)	(0.0009) 0.0046 (0.0067)	(0.0015) 0.0400*** (0.0040)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01

Newey and West (1987) standard errors are provided in parenthesis

Table A3.38: Main model estimated with a SUR model (Zellner, 1962) - European elections - East vs. West Germany

Popularity of Parties (%)	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Pre European Election 1 month	1.8345*** (0.2974)	1.8970*** (0.2824)	-1.7442*** (0.2580)	-0.7576*** (0.2431)	-0.8991*** (0.1664)	0.1094 (0.2982)	-1.3723*** (0.2566)	-0.3227* (0.1706)	1.3177*** (0.1747)	0.1340 (0.3131)
dCount	-0.0068*** (0.0026)	-0.0017 (0.0018)	0.0061*** (0.0017)	0.0050*** (0.0018)	0.0011 (0.0011)	-0.0042 (0.0038)	-0.0045 (0.0033)	0.0029* (0.0015)	0.0017 (0.0017)	0.0046** (0.0021)
dCount X Pre European Election 1 month	-0.1918*** (0.0194)	-0.0986*** (0.0151)	0.1685*** (0.0188)	0.0211 (0.0145)	0.0786*** (0.0128)	-0.1884*** (0.0116)	0.2427*** (0.0122)	0.0264*** (0.0072)	-0.1559*** (0.0118)	0.1851*** (0.0079)
Pre European Election 1 month	1.8365*** (0.2976)	1.8818*** (0.2823)	-1.7318*** (0.2590)	-0.7549*** (0.2410)	-0.9045*** (0.1642)	0.0839 (0.2959)	-1.3566*** (0.2587)	-0.3000* (0.1684)	1.3025*** (0.1741)	0.1354 (0.3116)
dOccur_ECB	-0.0009*** (0.0003)	-0.0003 (0.0002)	0.0008*** (0.0002)	0.0007*** (0.0002)	0.0001 (0.0001)	-0.0007 (0.0005)	-0.0006 (0.0004)	0.0004** (0.0002)	0.0002 (0.0002)	0.0005** (0.0003)
dOccur_ECB X Pre European Election 1 month	-0.0366*** (0.0036)	-0.0183*** (0.0028)	0.0315*** (0.0035)	0.0042 (0.0027)	0.0148*** (0.0023)	-0.0349*** (0.0021)	0.0446*** (0.0022)	0.0052*** (0.0013)	-0.0288*** (0.0022)	0.0345*** (0.0014)
Pre European Election 1 month	1.5946*** (0.2823)	1.7583*** (0.2730)	-1.5115*** (0.2428)	-0.7162*** (0.2280)	-0.8087*** (0.1538)	-0.1365 (0.2939)	-1.0677*** (0.2586)	-0.2902* (0.1722)	1.1233*** (0.1669)	0.3641 (0.3108)
dOccur_Perso.	-0.0006*** (0.0002)	-0.0003* (0.0002)	0.0007*** (0.0002)	0.0005*** (0.0002)	0.0001 (0.0001)	-0.0005 (0.0004)	-0.0004 (0.0003)	0.0003* (0.0001)	0.0002 (0.0002)	0.0004* (0.0002)
dOccur_Perso.X Pre European Election 1 month	-0.0161*** (0.0016)	-0.0081*** (0.0013)	0.0139*** (0.0016)	0.0017 (0.0012)	0.0067*** (0.0011)	-0.0157*** (0.0010)	0.0205*** (0.0011)	0.0022*** (0.0006)	-0.0132*** (0.0010)	0.0155*** (0.0007)
Pre European Election 1 month	0.9325*** (0.2458)	1.4127*** (0.2512)	-0.9486*** (0.2008)	-0.6532*** (0.1954)	-0.5242*** (0.1227)	-0.8127*** (0.2899)	-0.1826 (0.2622)	-0.1849 (0.1748)	0.5532*** (0.1534)	1.0247*** (0.3011)
dOcc _{it} f.	-0.0011 (0.0013)	-0.0019* (0.0011)	0.0011 (0.0012)	0.0020** (0.0009)	0.0004 (0.0006)	-0.0013 (0.0018)	-0.0001 (0.0019)	0.0024** (0.0010)	-0.0010 (0.0009)	-0.0002 (0.0015)
dOccur_Inf. X Pre European Election 1 month	-0.0446*** (0.0045)	-0.0217*** (0.0035)	0.0391*** (0.0044)	0.0046 (0.0036)	0.0182*** (0.0029)	-0.0425*** (0.0029)	0.0544*** (0.0032)	0.0047*** (0.0016)	-0.0346*** (0.0028)	0.0431*** (0.0019)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01
Newey and West (1987) standard errors are provided in parenthesis

Figure A3.13: Main model estimated with Newey and West's (1987) standard errors (1 to 6 months) - West Germany

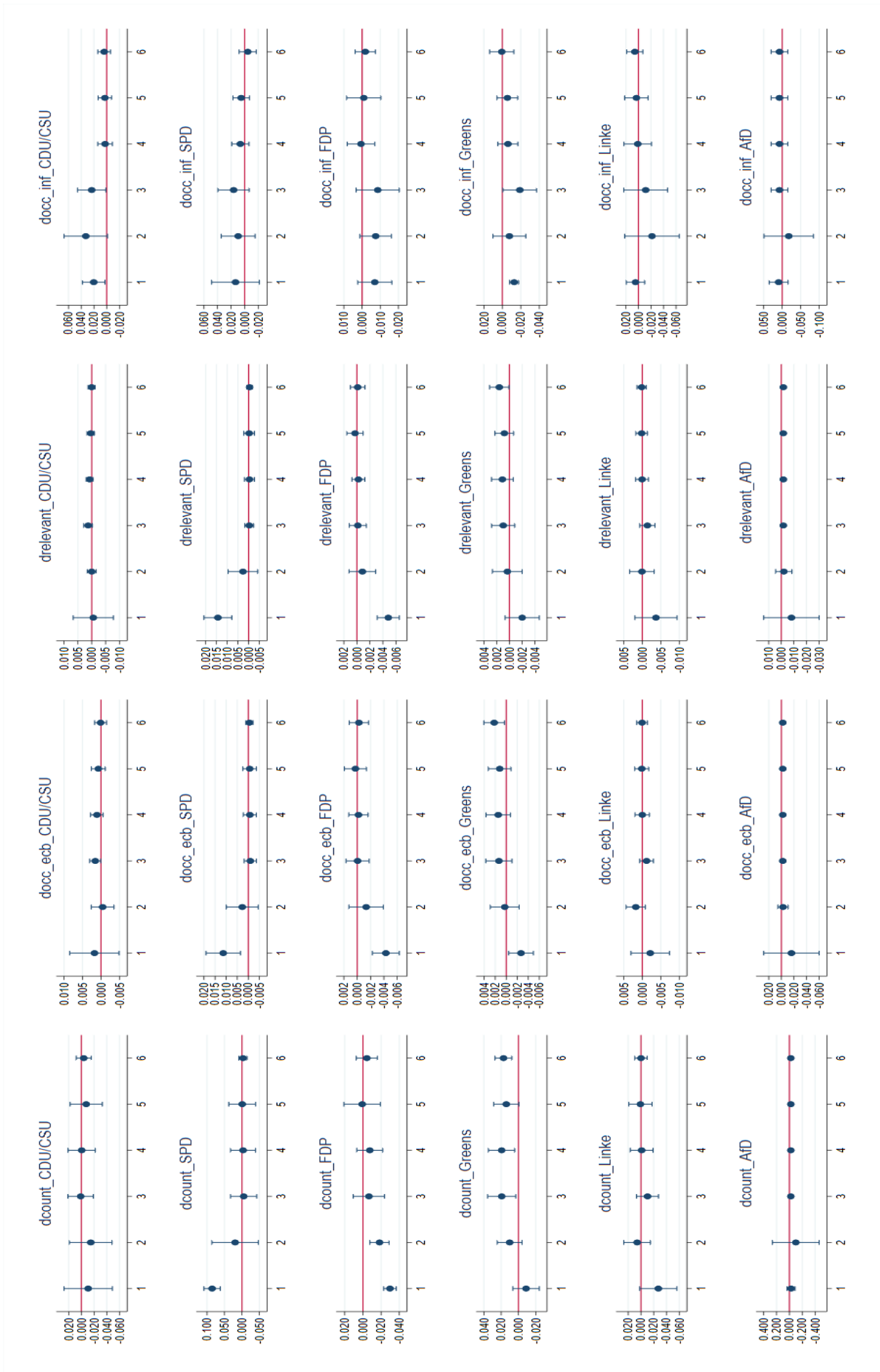


Figure A3.14: Main model estimated with Newey and West's (1987) standard errors - Federal election (1 to 6 months) - East Germany

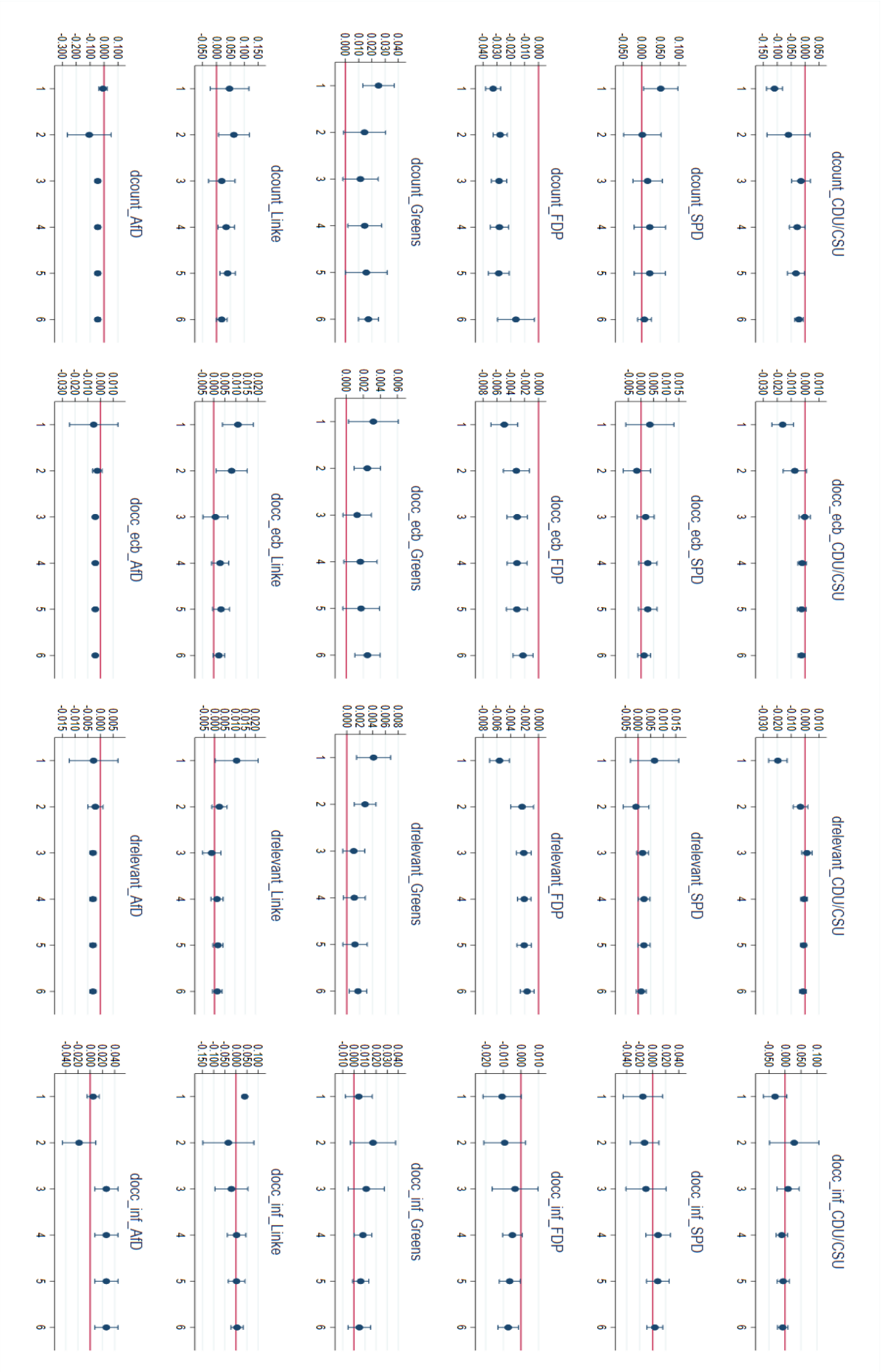


Figure A3.15: Main model estimated with Newey and West's (1987) standard errors - European election (1 to 6 months) - West Germany

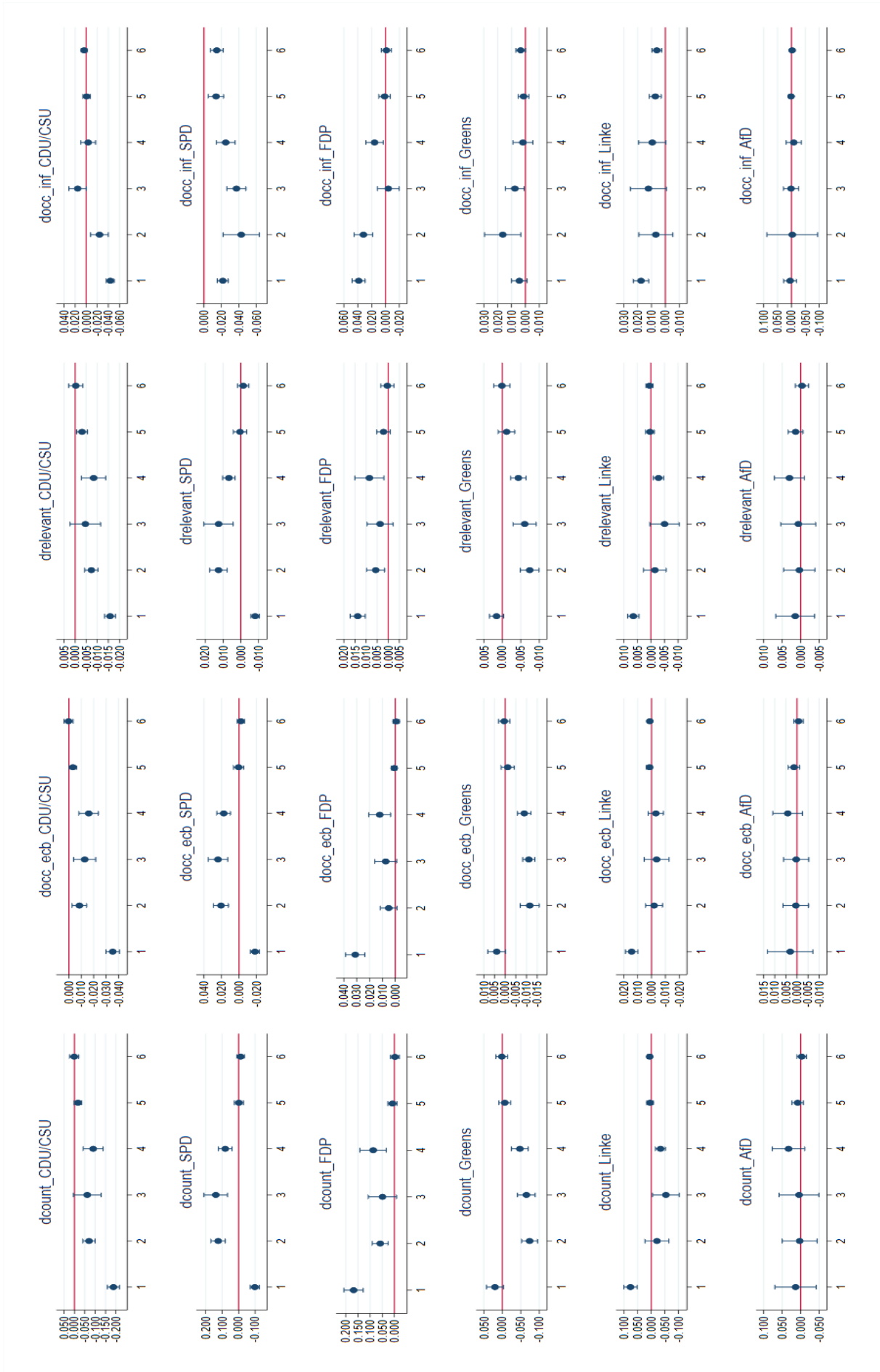


Figure A3.16: Main model estimated with Newey and West's (1987) standard errors - European election (1 to 6 months) - East Germany

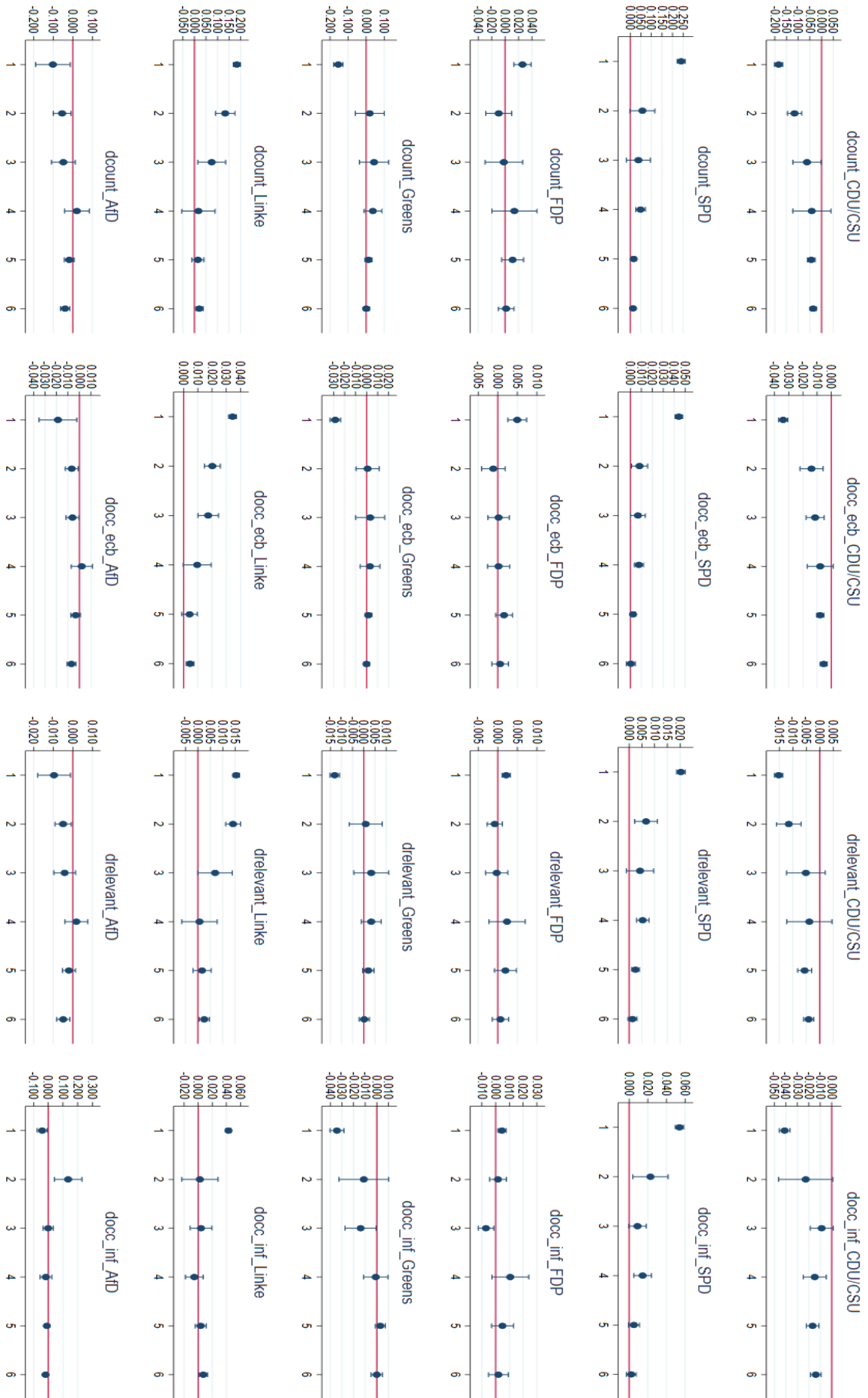


Table A3.39: Main model estimated with a SUR model (Zellner, 1962) - Sentiment analysis

Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke
Federal Elections					
Pre Federal Election	0.0071	-0.5551	0.4568***	0.1175	0.1387
1 month	(0.2641)	(0.5973)	(0.1057)	(0.3316)	(0.1866)
dsentiment1	-0.0071	0.0095	-0.0058*	-0.0080	0.0047
	(0.0054)	(0.0063)	(0.0033)	(0.0052)	(0.0039)
dsentiment1 X Pre Federal Election	-0.0051	0.0486**	0.0148***	-0.0043	-0.0019
1 month	(0.0101)	(0.0232)	(0.0036)	(0.0122)	(0.0091)
Pre Federal Election	0.0035	-0.5374	0.4500***	0.1098	0.1659
1 month	(0.2517)	(0.5558)	(0.1000)	(0.3085)	(0.2152)
dsentiment2	-0.0055	0.0059	-0.0036	-0.0071	0.0030
1 month	(0.0053)	(0.0062)	(0.0032)	(0.0051)	(0.0043)
dsentiment2 X Pre Federal Election	-0.0050	0.0432**	0.0122***	-0.0029	-0.0025
1 month	(0.0084)	(0.0173)	(0.0032)	(0.0100)	(0.0081)
European Elections					
Pre European Election	-0.2965	0.3850**	0.1374	0.1049	-0.0196
1 month	(0.2426)	(0.1540)	(0.1220)	(0.1262)	(0.1092)
dsentiment1	-0.0060	0.0099	-0.0033	-0.0091*	0.0050
	(0.0052)	(0.0064)	(0.0031)	(0.0051)	(0.0038)
dsentiment1 X Pre European Election	-0.0329	0.0310***	-0.0480***	0.0276***	-0.0042
1 month	(0.0228)	(0.0085)	(0.0113)	(0.0085)	(0.0103)
Pre European Election	-0.2055	0.0826	0.5974***	-0.0063	0.0610
1 month	(0.2844)	(0.1670)	(0.1152)	(0.1436)	(0.1155)
dsentiment2	-0.0045	0.0065	-0.0010	-0.0080	0.0033
	(0.0050)	(0.0064)	(0.0031)	(0.0049)	(0.0041)
dsentiment2 X Pre European Election	-0.0352	0.0471***	-0.0706***	0.0305***	-0.0071
1 month	(0.0318)	(0.0098)	(0.0110)	(0.0106)	(0.0132)
Nbr. observations	203	203	203	203	203

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

Table A3.40: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections - Sentiment Analysis 1/2

<i>Länder</i>	Popularity of Parties (%)				
	CDU/CSU	SPD	FDP	Greens	Linke
<i>dsentiment1 X Pre Länder Election 1 month</i>					
Baden-Württemberg	-0.020 (0.290)	0.329 (0.676)	0.021 (0.106)	-0.050 (0.256)	-0.523 (0.601)
Bayern	-2.095*** (0.381)	2.217*** (0.237)	0.832*** (0.061)	0.621*** (0.139)	0.008 (0.351)
Berlin	-0.106 (0.110)	-0.751*** (0.096)	-0.043** (0.021)	-0.151* (0.091)	0.834*** (0.105)
Brandenburg	0.497*** (0.095)	0.059 (0.092)	-0.280*** (0.023)	0.155* (0.086)	-0.097 (0.125)
Bremen	0.375*** (0.088)	-0.094 (0.085)	0.027 (0.023)	-0.260** (0.110)	-0.079 (0.080)
Hamburg	-1.695*** (0.107)	0.887*** (0.092)	0.193*** (0.040)	0.033 (0.071)	1.127*** (0.116)
Hessen	0.259*** (0.099)	0.107 (0.210)	0.072** (0.035)	0.102* (0.055)	-0.468*** (0.091)
Mecklenburg-Vorpommern	0.411*** (0.106)	-0.409*** (0.079)	0.112*** (0.019)	0.545*** (0.060)	-0.128 (0.103)
Niedersachsen	-0.492*** (0.084)	-0.347*** (0.080)	-0.002 (0.017)	0.174*** (0.056)	0.438*** (0.085)
Nordrhein-Westfalen	1.907*** (0.427)	0.283 (0.364)	0.321*** (0.078)	-0.157 (0.262)	-2.449*** (0.375)
Rheinland-Pfalz	-0.521*** (0.196)	0.456* (0.272)	-0.111*** (0.029)	0.326 (0.405)	0.037 (0.269)
Saarland	1.155*** (0.163)	-0.710*** (0.167)	-0.318*** (0.039)	-0.415** (0.165)	0.554*** (0.201)
Sachsen	-0.509*** (0.164)	0.496 (0.414)	-0.210*** (0.043)	0.166* (0.097)	-0.002 (0.177)
Sachsen-Anhalt	0.571*** (0.161)	-0.460*** (0.129)	-0.194*** (0.025)	-0.517*** (0.142)	0.335** (0.159)
Schleswig-Holstein	-0.509*** (0.164)	0.496 (0.414)	-0.210*** (0.043)	0.166* (0.097)	-0.002 (0.177)
Thuringen	3.525*** (0.203)	-1.789*** (0.221)	0.125** (0.049)	1.714*** (0.102)	-2.894*** (0.198)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.41: Main model estimated with a SUR model (Zellner, 1962) - *Länder* elections - Sentiment Analysis 2/2

<i>Länder</i> Popularity of Parties (%)	CDU/CSU	SPD	FDP	Greens	Linke
<i>dsentiment2 X Pre Länder Election 1 month</i>					
Baden-Württemberg	-0.331 (0.298)	1.170** (0.545)	0.150 (0.097)	0.266 (0.253)	-1.230*** (0.468)
Bayern	-4.395*** (0.855)	5.057*** (0.483)	1.821*** (0.134)	1.364*** (0.307)	-0.350 (0.784)
Berlin	-0.117 (0.128)	-0.859*** (0.115)	-0.049* (0.026)	-0.186* (0.106)	0.960*** (0.123)
Brandenburg	0.273*** (0.072)	0.055 (0.070)	-0.184*** (0.017)	0.089 (0.069)	-0.013 (0.091)
Bremen	0.448*** (0.115)	-0.113 (0.141)	0.052** (0.022)	-0.385*** (0.121)	-0.091 (0.098)
Hamburg	-0.861*** (0.067)	0.431*** (0.060)	0.089*** (0.022)	0.006 (0.050)	0.601*** (0.074)
Hessen	0.302*** (0.083)	-0.041 (0.243)	0.102*** (0.028)	0.123* (0.064)	-0.504*** (0.103)
Mecklenburg-Vorpommern	0.320*** (0.087)	-0.356*** (0.065)	0.095*** (0.017)	0.442*** (0.052)	-0.081 (0.088)
Niedersachsen	-0.533*** (0.088)	-0.363*** (0.086)	0.003 (0.019)	0.193*** (0.063)	0.458*** (0.089)
Nordrhein-Westfalen	3.388*** (0.713)	0.457 (0.624)	0.532*** (0.134)	-0.252 (0.446)	-4.289*** (0.629)
Rheinland-Pfalz	-0.699*** (0.121)	0.675*** (0.154)	-0.083* (0.045)	0.788*** (0.288)	-0.231 (0.240)
Saarland	1.246*** (0.167)	-0.700*** (0.178)	-0.330*** (0.041)	-0.453*** (0.170)	0.536** (0.213)
Sachsen	-0.425*** (0.146)	0.563** (0.282)	-0.171*** (0.039)	0.105 (0.089)	-0.035 (0.150)
Sachsen-Anhalt	0.525*** (0.166)	-0.450*** (0.126)	-0.186*** (0.024)	-0.448*** (0.153)	0.295* (0.153)
Schleswig-Holstein	-0.425*** (0.146)	0.563** (0.282)	-0.171*** (0.039)	0.105 (0.089)	-0.035 (0.150)
Thuringen	2.499*** (0.145)	-1.272*** (0.158)	0.089** (0.035)	1.210*** (0.077)	-2.046*** (0.144)

Significance levels are: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Robust standard errors are provided in parenthesis

The exact number of observations in each estimations is available in Table A3.18

Table A3.42: Main model estimated with a SUR model (Zellner, 1962) - East vs. West Germany - Sentiment analysis

Popularity of Parties (%)										
	Former West Germany					Former East Germany				
	CDU/CSU	SPD	FDP	Greens	Linke	CDU/CSU	SPD	FDP	Greens	Linke
Federal Elections										
Pre Federal Election	0.890	-1.623***	1.050***	-1.051**	1.305***	2.394***	-1.471	1.043***	-0.665***	-1.174
1 month	(0.953)	(0.177)	(0.189)	(0.430)	(0.404)	(0.677)	(0.974)	(0.184)	(0.097)	(1.345)
dsentiment1	0.008	-0.007	-0.001	-0.016***	-0.001	0.007	-0.003	-0.005	0.007	-0.015
	(0.008)	(0.008)	(0.007)	(0.006)	(0.005)	(0.011)	(0.009)	(0.006)	(0.006)	(0.011)
dsentiment1 X Pre Federal Election 1 month	-0.057***	0.125***	-0.030***	0.020	-0.045***	-0.158***	0.086***	-0.033***	0.032***	0.060
	(0.027)	(0.009)	(0.008)	(0.012)	(0.014)	(0.027)	(0.027)	(0.009)	(0.007)	(0.042)
European Elections										
Pre Federal Election	0.953	-1.152***	0.900***	-1.149***	1.227***	1.571	-1.389**	0.839***	-0.517***	-0.586
1 month	(0.653)	(0.431)	(0.261)	(0.361)	(0.199)	(1.150)	(0.541)	(0.301)	(0.147)	(1.358)
dsentiment2	0.006	-0.004	0.003	-0.017***	-0.005	0.009	-0.004	-0.003	0.008	-0.020
	(0.008)	(0.008)	(0.006)	(0.007)	(0.006)	(0.012)	(0.009)	(0.006)	(0.006)	(0.013)
dsentiment2 X Pre Federal Election 1 month	-0.053***	0.089***	-0.024***	0.025**	-0.032***	-0.107***	0.076***	-0.021**	0.020***	0.034
	(0.017)	(0.012)	(0.008)	(0.010)	(0.008)	(0.030)	(0.014)	(0.009)	(0.007)	(0.034)
European Elections										
Pre European Election	0.154	1.073***	-0.270	-0.583***	-0.210**	-1.546***	0.745***	-0.091	-0.040	1.784***
1 month	(0.221)	(0.237)	(0.175)	(0.175)	(0.106)	(0.296)	(0.280)	(0.190)	(0.150)	(0.298)
dsentiment1	0.006	-0.004	0.000	-0.017***	-0.000	0.003	0.000	-0.005	0.007	-0.014
	(0.008)	(0.008)	(0.006)	(0.006)	(0.005)	(0.011)	(0.009)	(0.006)	(0.005)	(0.011)
dsentiment 1 X Pre European Election 1 month	0.052***	0.032***	-0.050***	0.007	-0.023***	0.052***	-0.068***	-0.004	0.038***	-0.040***
	(0.010)	(0.008)	(0.007)	(0.006)	(0.005)	(0.011)	(0.009)	(0.006)	(0.006)	(0.010)
European Elections										
Pre European Election	-0.297	0.848***	0.113	-0.474***	-0.028	-1.981***	1.280***	-0.020	-0.400***	2.251***
1 month	(0.216)	(0.240)	(0.173)	(0.163)	(0.105)	(0.305)	(0.289)	(0.198)	(0.153)	(0.297)
dsentiment2	0.003	-0.000	0.004	-0.017***	-0.004	0.005	-0.001	-0.003	0.007	-0.020
	(0.008)	(0.009)	(0.006)	(0.006)	(0.006)	(0.012)	(0.009)	(0.005)	(0.006)	(0.013)
dsentiment2 X Pre European Election 1 month	0.067***	0.035***	-0.064***	0.005	-0.025***	0.062***	-0.082***	-0.007	0.047***	-0.047***
	(0.010)	(0.009)	(0.007)	(0.006)	(0.006)	(0.011)	(0.009)	(0.006)	(0.006)	(0.012)
Nbr. observations	139	139	139	139	139	139	139	139	139	139

Significance levels are: * p < 0.10 ; ** p < 0.05 ; *** p < 0.01
Newey and West (1987) standard errors are provided in parenthesis

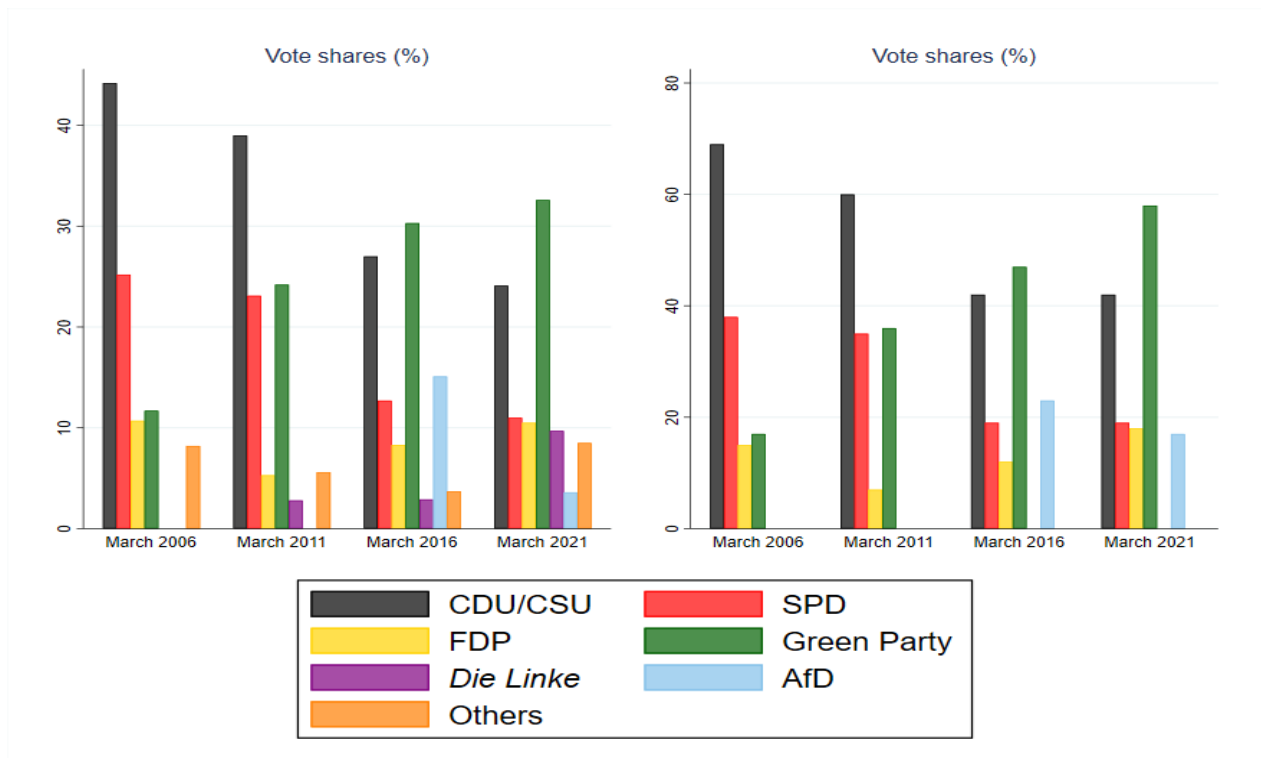
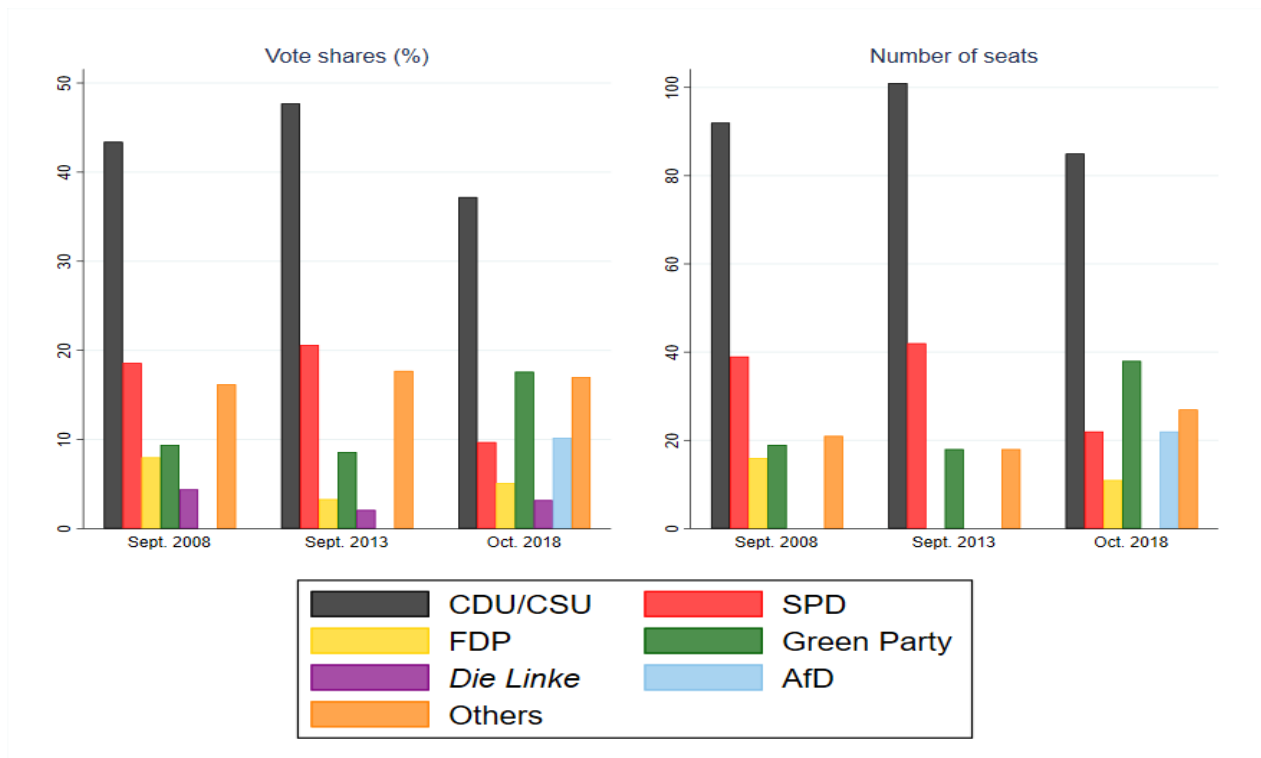
Table A3.17: Vote shares and number of seats in the *Landtag of Baden-Württemberg*Table A3.18: Vote shares and number of seats in the *Landtag of Bayern*

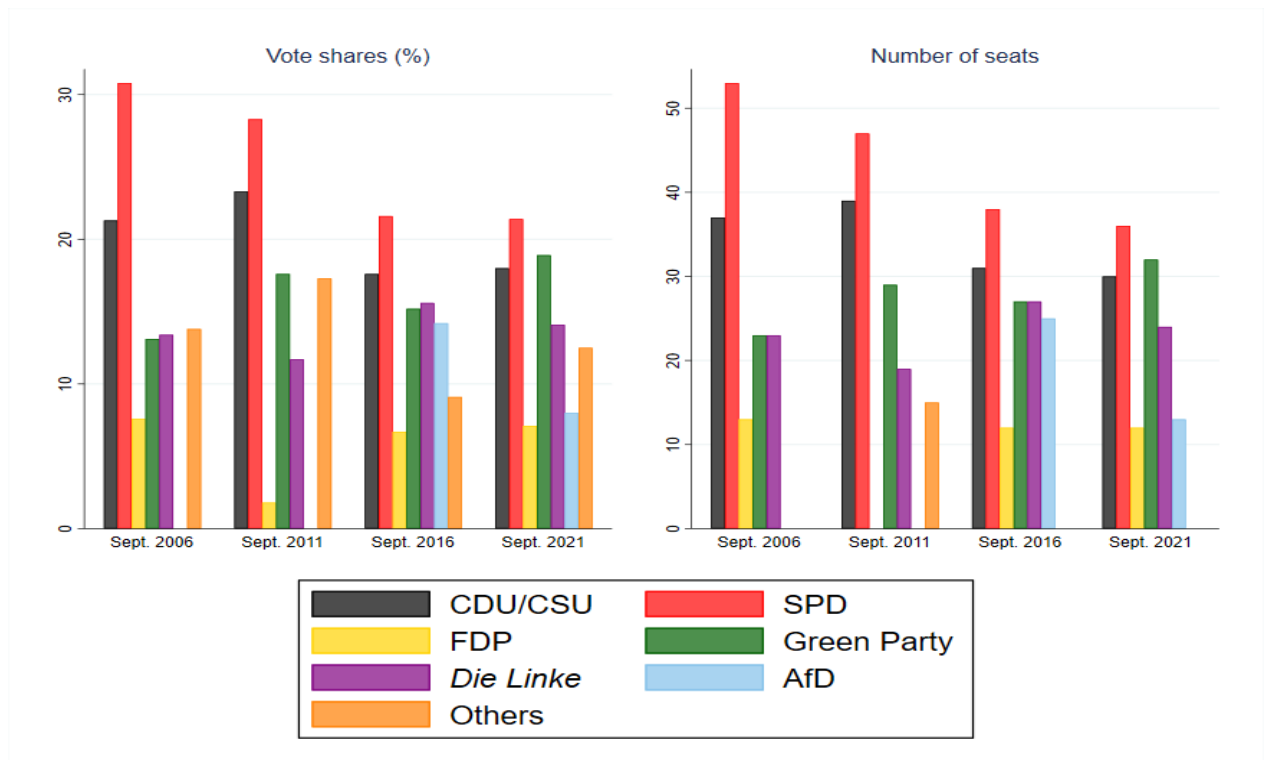
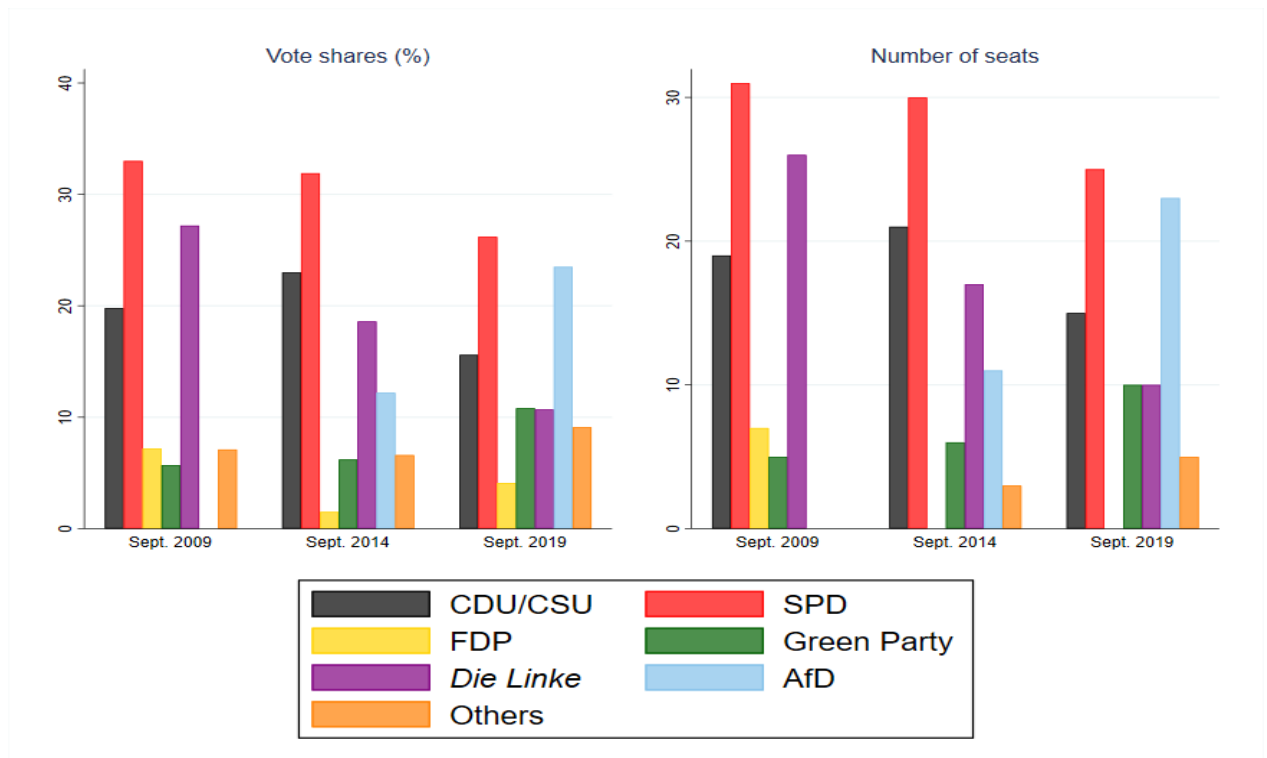
Table A3.19: Vote shares and number of seats in the *Abgeordnetenhaus of Berlin*Table A3.20: Vote shares and number of seats in the *Landtag of Brandenburg*

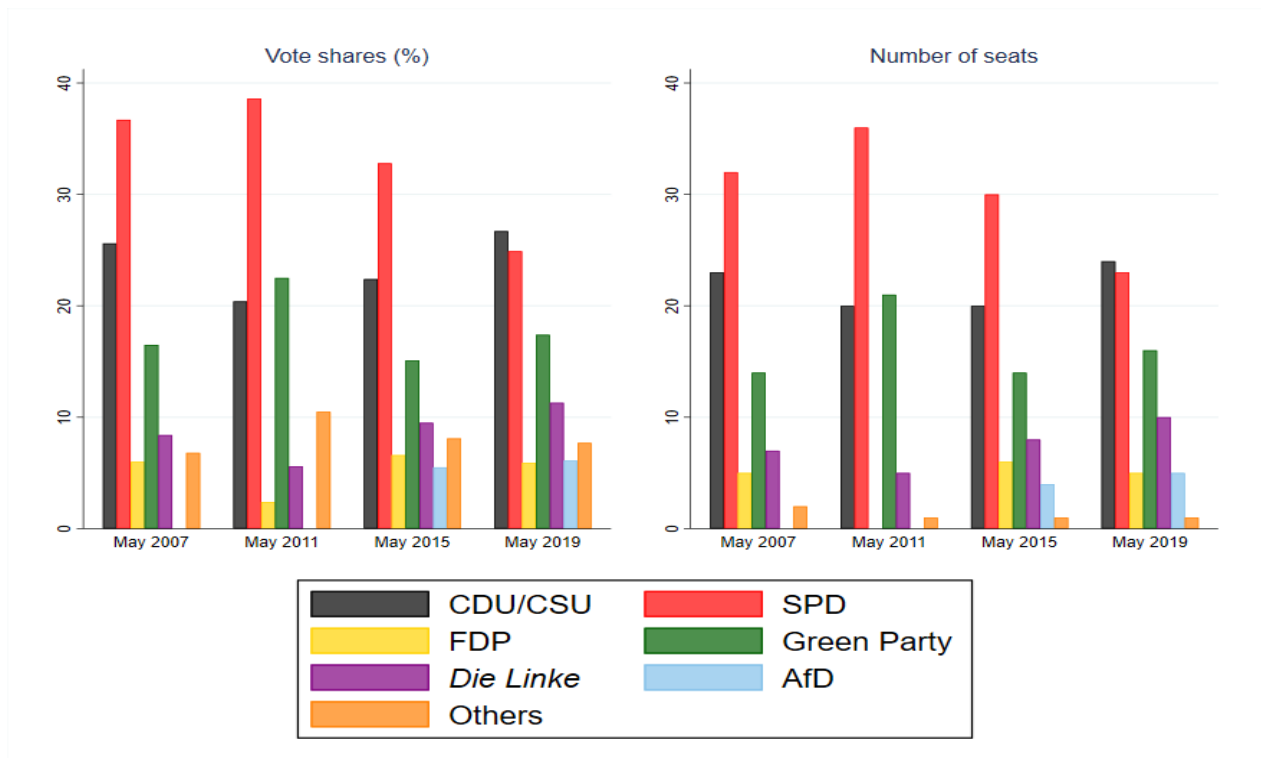
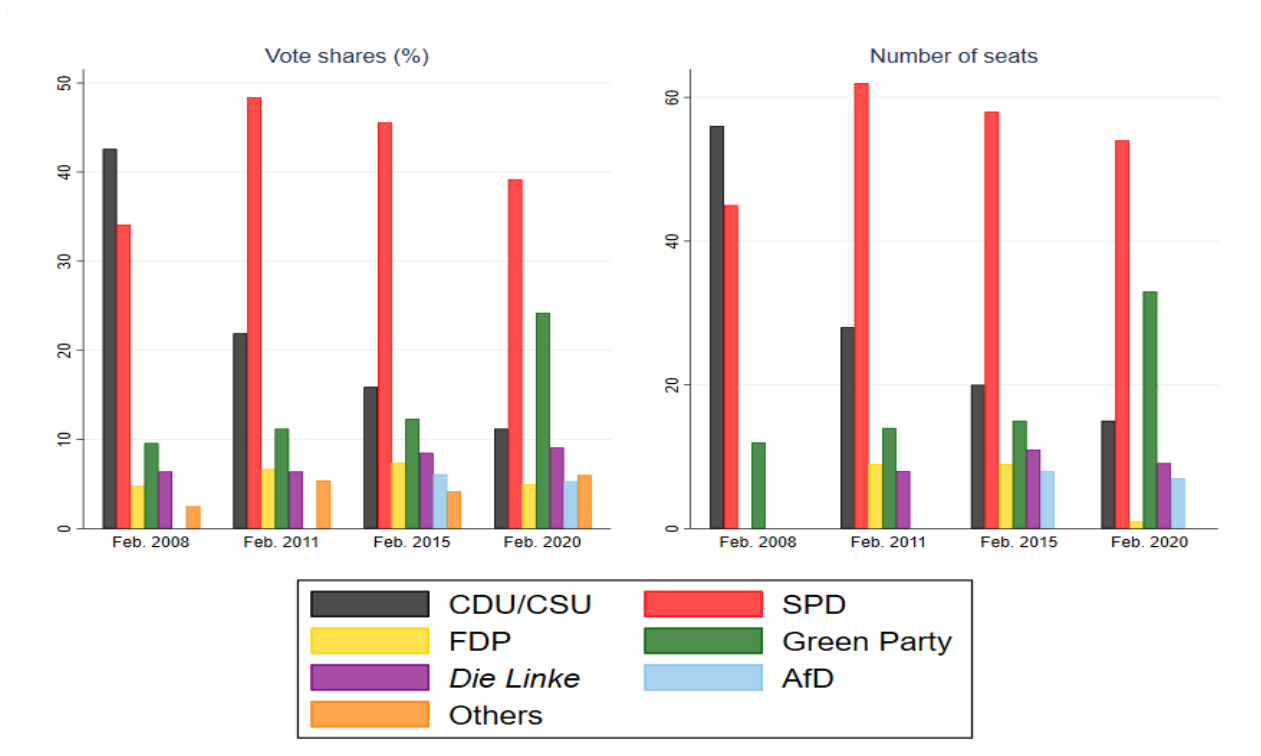
Table A3.21: Vote shares and number of seats in the *Bürgerschaft* of *Bremen*Table A3.22: Vote shares and number of seats in the *Bürgerschaft* of *Hamburg*

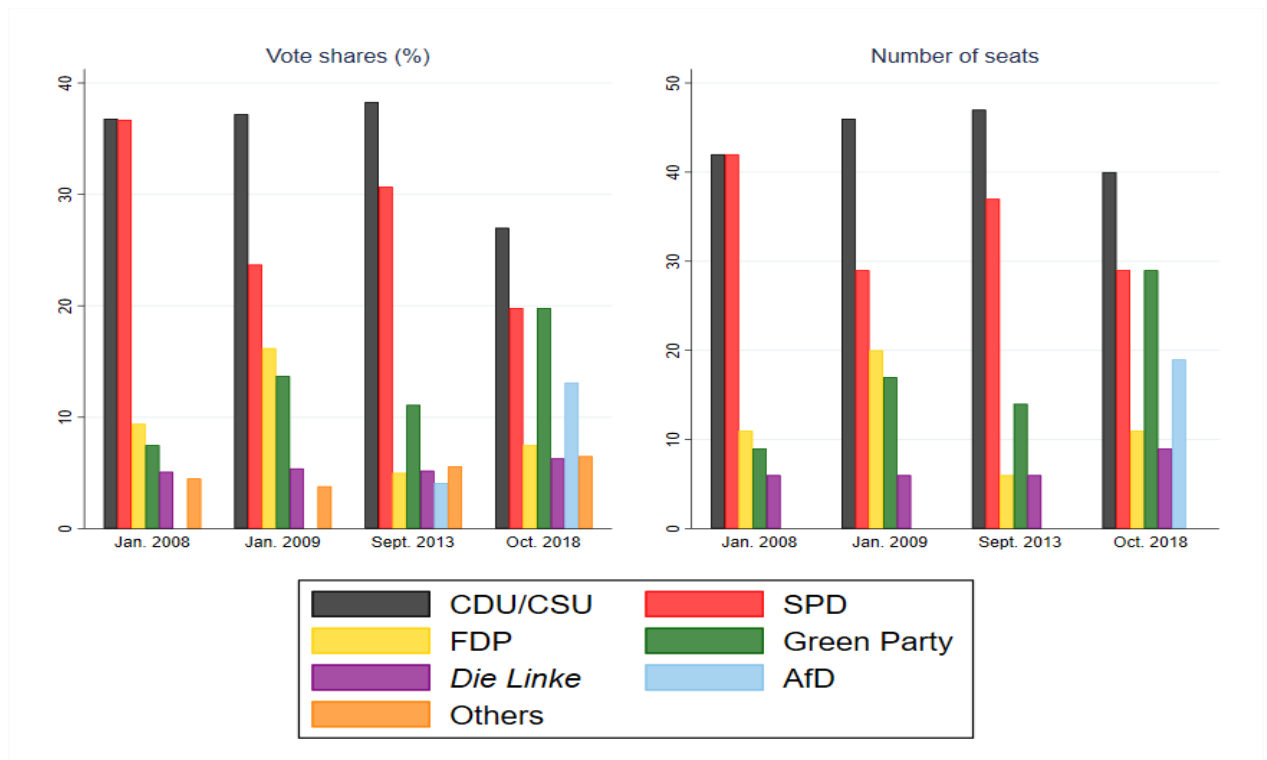
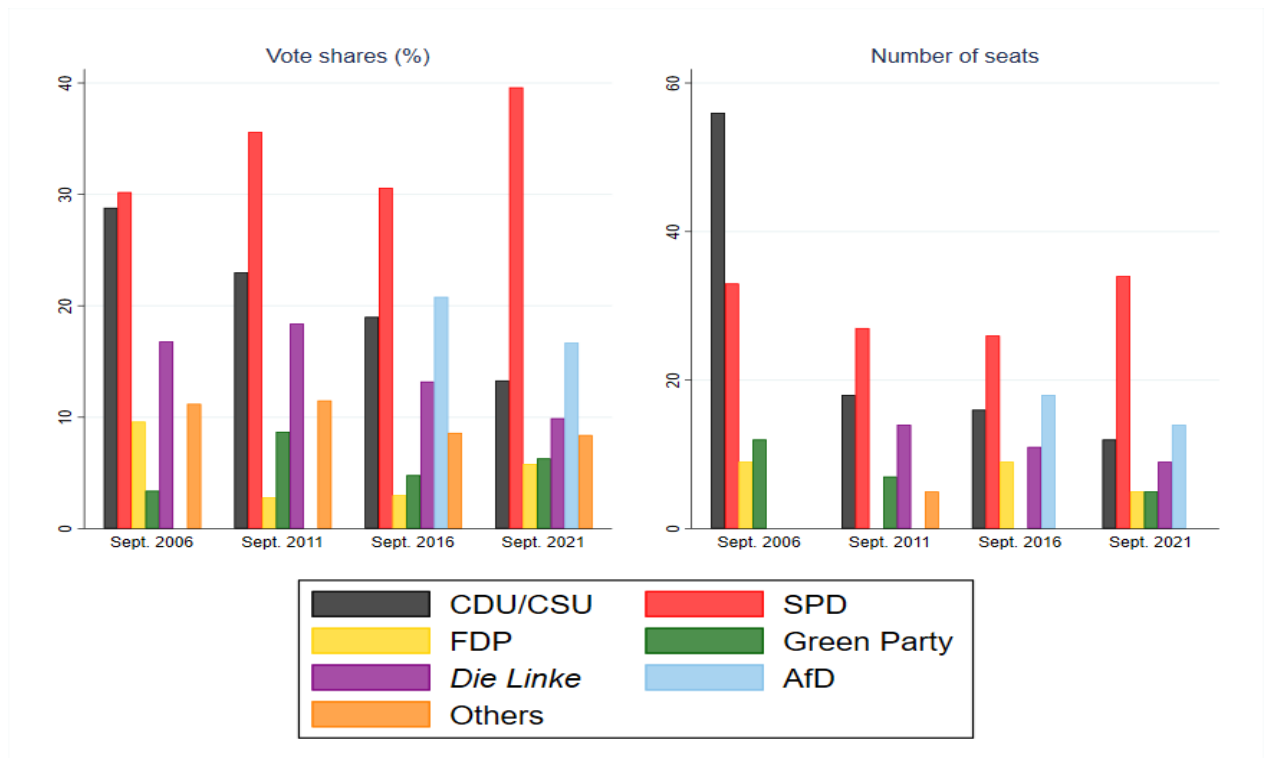
Table A3.23: Vote shares and number of seats in the *Landtag of Hessen*Table A3.24: Vote shares and number of seats in the *Landtag of Mecklenburg-Vorpommern*

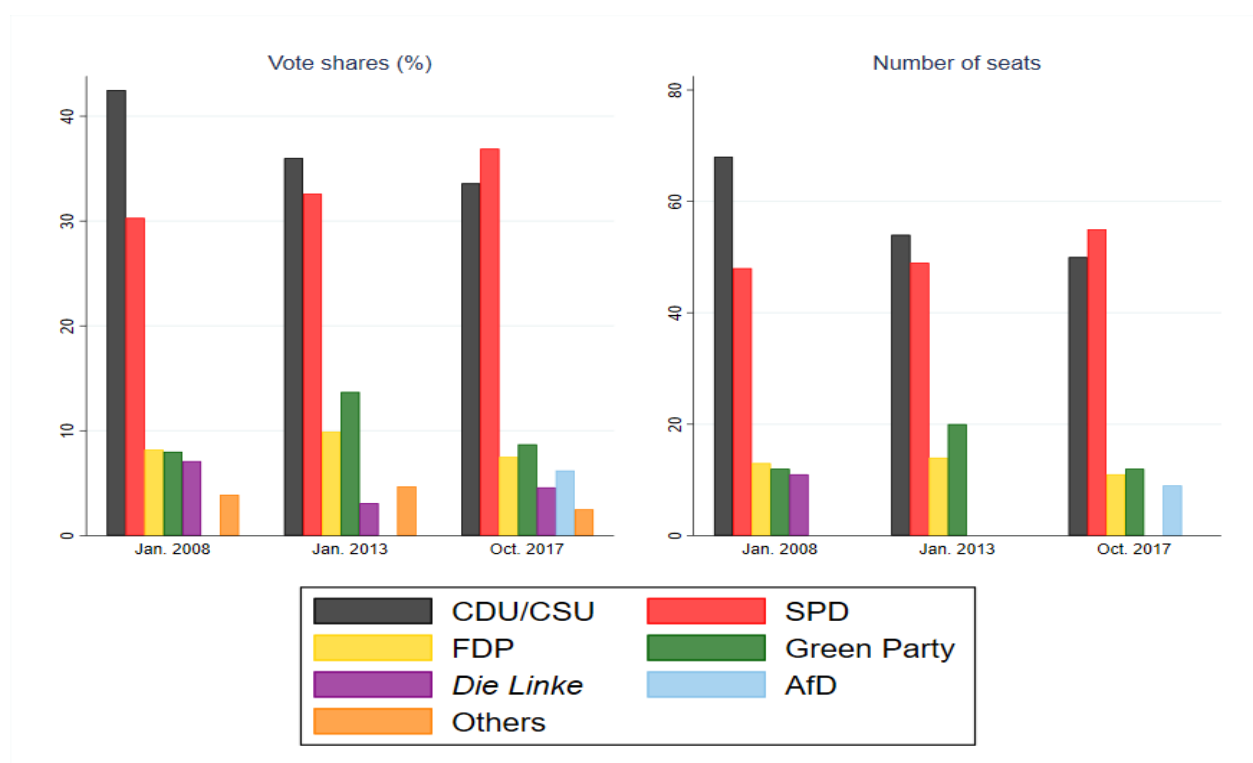
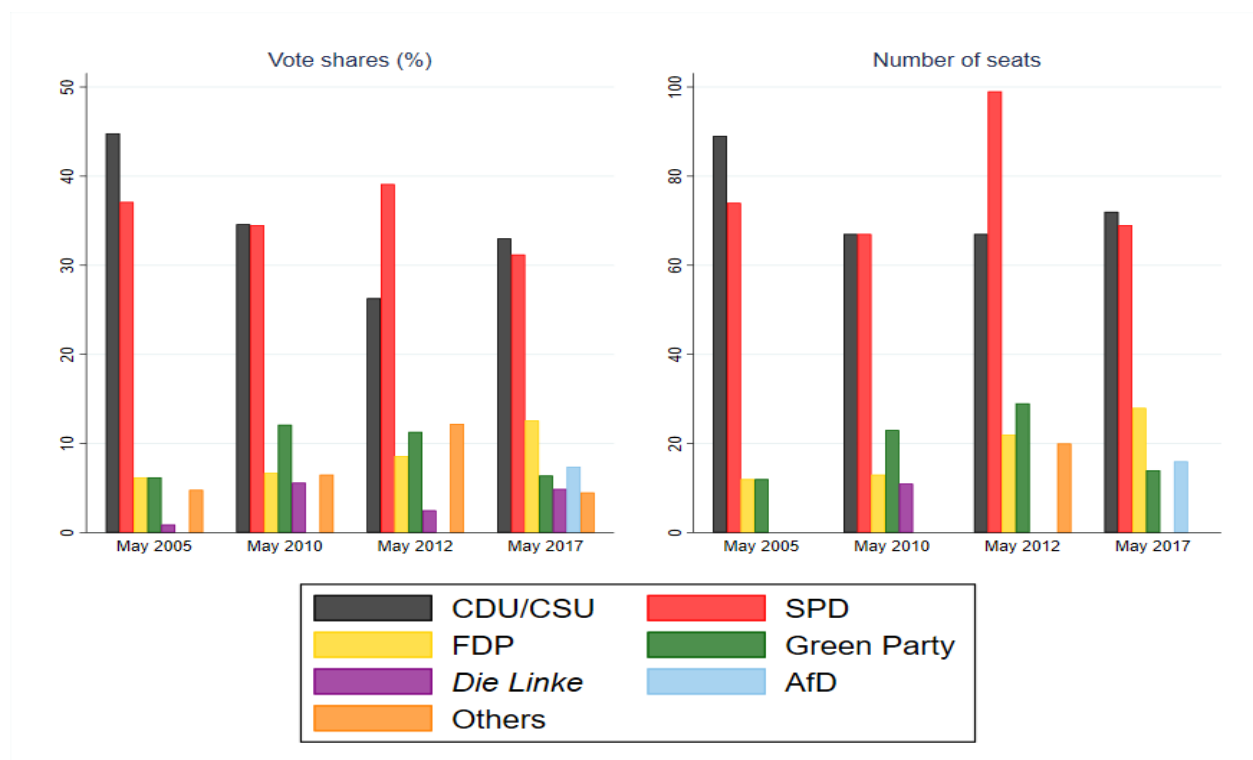
Table A3.25: Vote shares and number of seats in the *Landtag* of *Niedersachsen*Table A3.26: Vote shares and number of seats in the *Landtag* of *Nordrhein-Westfalen*

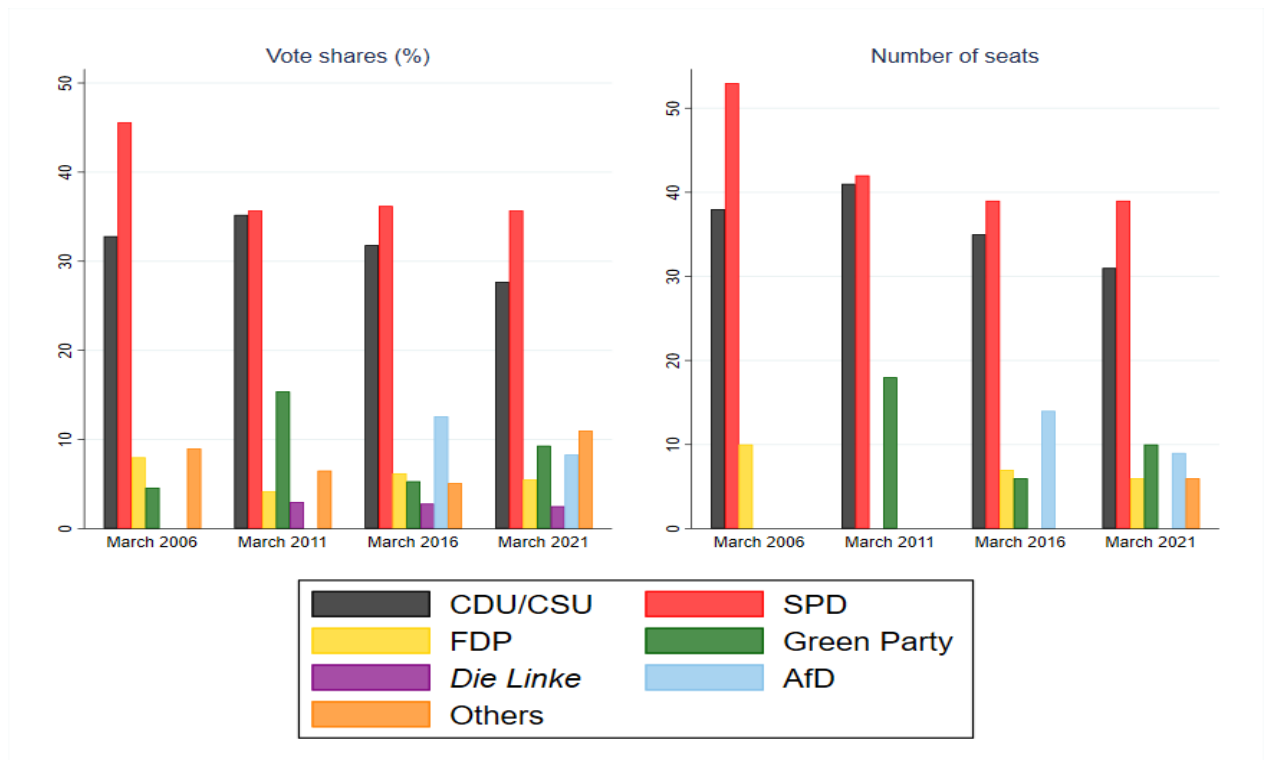
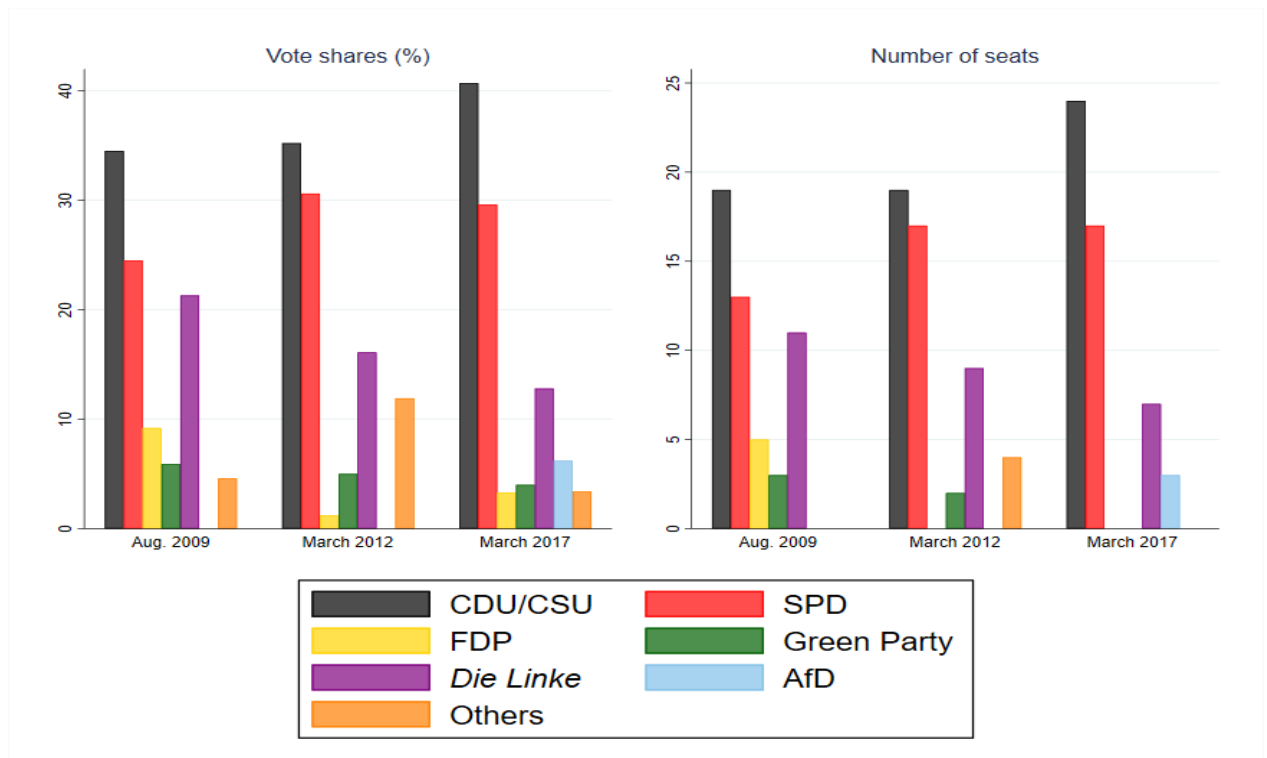
Table A3.27: Vote shares and number of seats in the *Landtag* of *Rheinland-Pfalz*Table A3.28: Vote shares and number of seats in the *Landtag* of *Saarland*

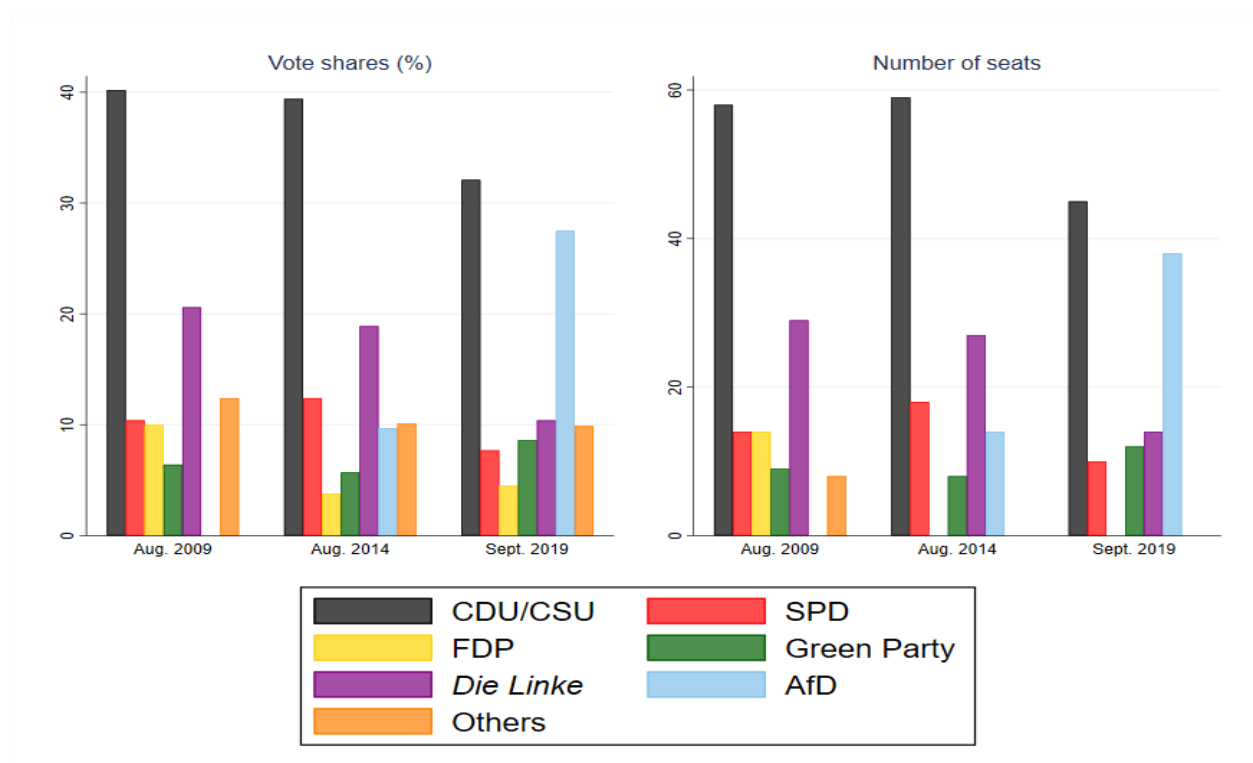
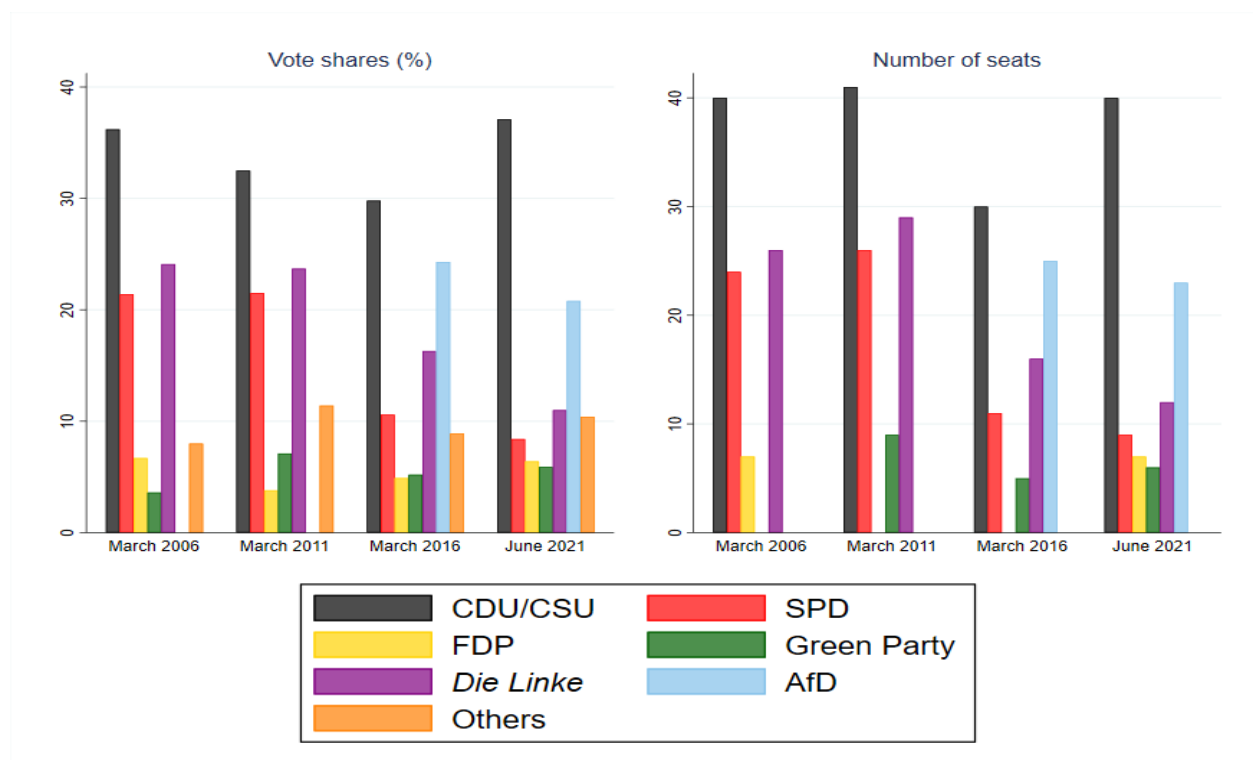
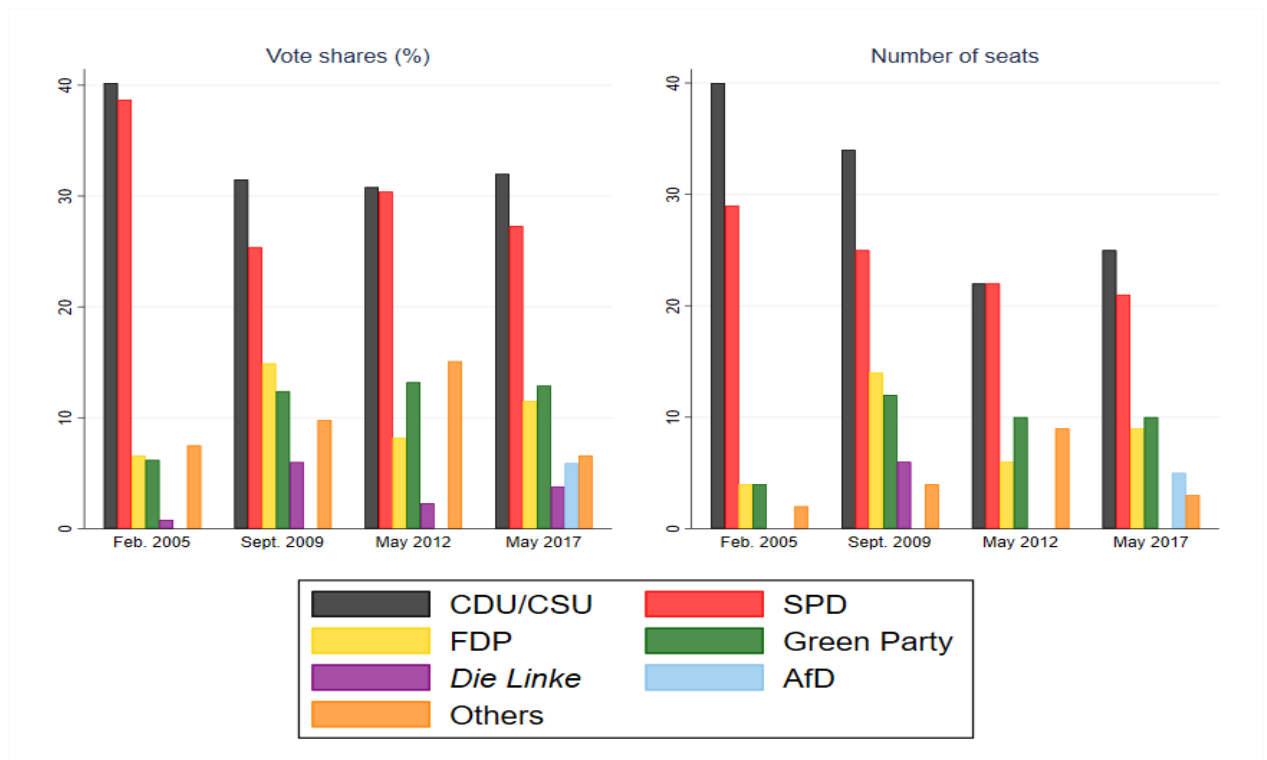
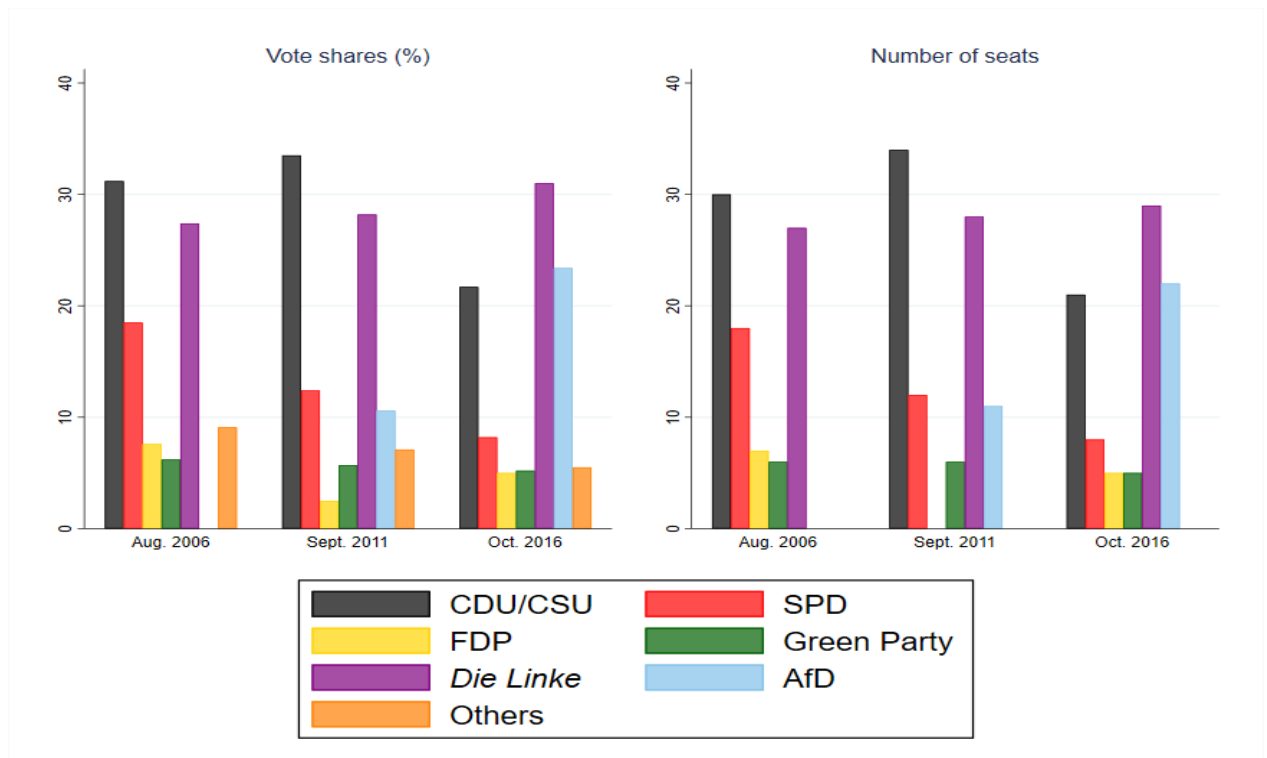
Table A3.29: Vote shares and number of seats in the *Landtag of Sachsen*Table A3.30: Vote shares and number of seats in the *Landtag of Sachsen-Anhalt*

Table A3.31: Vote shares and number of seats in the *Landtag of Schleswig-Holstein*Table A3.32: Vote shares and number of seats in the *Landtag of Thüringen*

Conclusion Générale

Conclusion Générale

Les chocs exogènes que sont la crise de 2007-2008, la crise des dettes souveraines en Europe ou encore la pandémie de COVID-19 ont profondément marqué les banques centrales. À leur suite, la politique monétaire est plus contrainte, plus en adéquation avec les intérêts des gouvernements mais également plus importante d'un point de vue de la politique nationale. Ce rôle central de la politique monétaire implique une probabilité plus importante que la banque centrale monétise les déficits publics et plus généralement qu'elle mette en place une politique monétaire accommodante avant une élection nationale. En conséquence, il apparaît primordial d'analyser ces phénomènes afin de comprendre plus en détail ces nouvelles relations entre l'autorité monétaire et le gouvernement. Plus précisément, ce contexte laisse craindre un retour des cycles politico-monnaires décrits comme l'utilisation, consciente ou non, de la politique monétaire à des fins politiques. Cette thèse étudie ces cycles politico-monnaires en apportant des preuves empiriques et théoriques de leur existence.

Après avoir présenté la littérature portant sur le cycle politico-monnaire au sein du Chapitre Introductif, les Chapitres 1, 2 et 3 proposent d'étudier ce phénomène en mobilisant différentes approches. D'une part, le Chapitre 1 mobilise une base de données composée de 110 pays sur la période 1985-2016. En plus de présenter et d'analyser simplement le concept, une telle étude permet de démontrer sa pertinence. D'autre part, ce Chapitre 1 met en avant des paramètres économiques et politiques qui impactent la persistance du cycle. Par exemple, les pays expérimentant des élections libres, une banque centrale ancienne ou encore un calendrier électoral exogène connaissent, en moyenne, des cycles politico-monnaires moins marqués. Le cycle politico-monnaire mis en avant par ce Chapitre est robuste aux caractéristiques politiques (régime politique, idéologie du gouvernement en place, concours du parti au pouvoir au prochain scrutin) et économiques (appartenance à une union monétaire, politique de ciblage d'inflation, niveau d'indépendance de la banque centrale) pouvant impacter la mise en place de la politique monétaire. De même, l'utilisation de différentes variables expliquées ($M0$, $M2$, *policy rate*), l'utilisation de périodes pré-électorales alternatives ou encore la prise en compte de potentiels effets post-électorales n'ont pas d'impact significatif sur le cycle.

Par la suite, le Chapitre 2 mobilise une approche théorique du phénomène. Plus précisément,

il propose un modèle théorique basé sur une approche en termes de théorie des jeux du *policy-mix* avant une élection nationale. Dans ce contexte, le modèle souligne que la mise en place d'une politique monétaire restrictive a un impact significatif sur la popularité pré-électorale du parti politique le plus conservateur. Cet effet s'explique au sein du modèle par un raisonnement basé sur l'avantage comparatif comme suit : en luttant efficacement contre l'inflation, la banque centrale empêche le parti le plus conservateur d'utiliser sa capacité à lutter contre l'inflation comme un argument électoral. En conséquence, bien que partageant une préférence pour une inflation modérée avec le parti conservateur, la banque centrale impacte négativement la probabilité que le dit parti gagne le futur scrutin. Ce résultat est également validé par une étude empirique utilisant des données mensuelles portant sur le Royaume-Uni de janvier 1987 à décembre 2015. La validation de l'hypothèse développée au sein du modèle est robuste à l'étude de périodes pré-électorales alternatives, à la prise en compte de la troisième force politique du pays (le *Liberal Party*) mais aussi à l'existence potentielle d'un processus de mémoire longue au sein des séries de popularité.

Enfin, le Chapitre 3 définit et étudie le concept de *Press-related opportunistic political monetary cycle*. Ce concept correspond à un cycle politico-économique opportuniste (*i.e.* pré-électoral) passant par la couverture médiatique de l'action de la banque centrale. Afin d'étudier ce phénomène, le Chapitre 3 mobilise une analyse textuelle portant sur la couverture médiatique des actions de la banque centrale européenne. Cette analyse textuelle porte sur six des principaux journaux allemands. L'analyse souligne que la popularité des partis politiques allemands de portée nationale est impactée par la couverture médiatique de la banque centrale européenne au cours du mois précédant un scrutin fédéral mais aussi une élection européenne et une élection locale. L'existence ainsi que l'amplitude de ces cycles dépendent alors du parti politique mais également du type de scrutin. Par exemple, les deux partis historiques que sont le *CDU/CSU* et le *SPD* connaissent des cycles de signes opposés avant une élection fédérale là où le parti d'extrême droite populiste (*AfD*) fait face à des cycles négatifs quelque soit l'élection considérée. De plus, les résultats sont robustes à l'utilisation de deux méthodes d'estimation, d'une base de données alternative séparant les popularités entre les anciens *Länders* d'Allemagne de l'Est et de l'Ouest mais aussi à des périodes pré-électorales de 1 à 6 mois.

Ce travail de thèse remet au goût du jour le concept de cycle politico-monnaire et insiste sur sa pertinence dans l'explication du comportement récent des banques centrales. Qu'ils soient mis en place de façon consciente ou non, les cycles ont des effets significatifs sur la vie politique nationale et sur l'orientation de la politique monétaire. Ces cycles sont d'autant plus importants que l'autorité monétaire occupe une place centrale au sein de la politique nationale tant sur le plan monétaire (Chapitre 1) que sur le plan électoral (Chapitre 2 et 3). Il apparaît alors nécessaire d'étudier ces liens entre politique nationale et actions de la banque centrale afin d'anticiper les évolutions futures

de la situation économique. De plus, le cadre légal et le cadre institutionnel régissant la mise en place de la politique monétaire sont différents d'un pays à l'autre. L'autorité monétaire peut avoir un mandat simple, double ou plus. Elle peut utiliser la croissance de la masse monétaire ou le taux d'intérêt comme instrument. Elle a également la possibilité de gérer la politique monétaire d'un ou de plusieurs états ou encore de prêter directement ou non au gouvernement. Ces différentes caractéristiques sont peu évoquées au sein de cette thèse alors qu'elles impactent incontestablement les cycles politico-monnaires en influençant le comportement de la banque centrale. Parallèlement, les banques centrales font en sorte que leurs actions soient de plus en plus lisibles et transparentes ces dernières années (Laurens et al., 2009). Cette hausse de la transparence finit même, dans certains cas, par se substituer aux engagements contraignants traditionnellement utilisés pour garantir l'indépendance de l'autorité monétaire (Duffy et Heinemann, 2021). L'effet de cette transparence sur les cycles politico-monnaires est indéterminé. D'une part, elle limite les marges de manœuvre de la banque centrale l'empêchant de mettre en place un cycle politico-monnaire. D'autre part, l'effet inverse est envisageable car cette transparence croissante contraint la banque centrale à mieux communiquer, ce qui lui permet d'avoir un impact plus important sur la politique nationale via un *Press-related opportunistic political monetary cycle* de plus grande amplitude.

Étant donné les modifications récentes du fonctionnement des banques centrales, il est évident que l'analyse présentée dans cette thèse est vouée à connaître de nombreux développements. Kappes et al. (2022) proposent une vision du mode de fonctionnement futur des banques centrales au travers de plusieurs éléments : (i) les effets de la politique monétaire sur la distribution des revenus ; (ii) la présence de femmes au sein des conseils d'administration des banques centrales ou encore (iii) la prise en compte du rôle de la politique monétaire dans la lutte contre le changement climatique. Il apparaît alors nécessaire de prendre en compte ces évolutions du mode de fonctionnement de l'institution monétaire afin de mieux comprendre les cycles politico-monnaires et leurs évolutions.

Dans un premier temps, l'effet de la politique monétaire sur la distribution des revenus est largement identifié (Doepke et al., 2015; Bonifacio et al., 2021). Une politique monétaire accommodante, comme celle mise en place par de nombreux pays pendant la pandémie de COVID-19, a tendance à augmenter les inégalités. De plus, les politiques monétaires non conventionnelles héritées de la crise de 2007-2008 semblent avoir un effet comparable en termes d'augmentation des inégalités. Dans ce contexte, la banque centrale impacte volontairement ou non la popularité des partis politiques nationaux. En effet, un accroissement des inégalités implique une diminution du taux de participation des populations les plus pauvres aux élections (Schattschneider, 1960). En conséquence, la politique monétaire, en plus de favoriser les partis économiquement libéraux (cf. Chapitre 2), peut avoir tendance à exclure une partie de l'électorat du scrutin.

Dans un second temps, le nombre de femmes au sein des conseils d'administration des banques

centrales pourrait avoir un effet direct sur la mise en place ou non d'un cycle politico-monnaire. Les travaux d' O'Brien et Piscopo (2019) soulignent que la présence de femmes en politique a un effet significatif sur le type de politique adoptée, la façon dont elles sont mises en place mais aussi sur l'opinion que le grand public a de ces politiques. De plus, García et Hayo (2022) et Profeta et Accettura (2022) soulignent qu'au sein de la politique locale, un maire de sexe masculin a tendance à recourir plus facilement aux cycles politico-budgétaires qu'une maire de sexe féminin. Il semble donc plausible qu'une distribution plus égalitaire entre hommes et femmes au sein des banques centrales ait un effet sur la mise en place des cycles politico-budgétaires et politico-monnaires.

Enfin, il est important de souligner que la question du changement climatique représente un enjeu clé de la future politique monétaire. Comme développé par Dietz et al. (2016), un changement climatique incontrôlé fait peser un risque significatif sur la stabilité des marchés financiers impactant *in fine* la banque centrale et la mise en place de la politique monétaire. Campiglio et al. (2018) ajoutent également que les banques centrales ayant des objectifs en termes de stabilité des taux de change, de lutte contre le chômage ou encore de promotion de la croissance économique se retrouvent directement impactées par les problématiques environnementales. En effet, comme définit par Persson et Tabellini (1998), les problématiques électorales empêchent le gouvernement de prendre des engagements sur le long terme. En conséquence, grâce à son indépendance, la banque centrale est isolée du jeu politique ce qui lui permet de s'occuper de la lutte contre le changement climatique qui nécessite des actions sur le long terme. De plus, l'impact de la politique monétaire sur le crédit pourrait renforcer cet effet en favorisant les emprunteurs dont l'activité ne nuit pas à l'environnement. Cette vision des choses est résumée par Christine Lagarde dans un entretien accordé à *Madame Figaro* en août 2022⁴⁶ de la façon suivante : « S'il y a de plus en plus de désastres climatiques, de sécheresses, de famines dans le monde, cela aura des répercussions sur les prix, les primes d'assurance, le secteur financier... Il faut en tenir compte. ». Certaines banques centrales se retrouvent même à communiquer ouvertement sur leur volonté de « verdir » leur politique monétaire. Pour reprendre l'exemple de la banque centrale européenne, cette dernière a publié en juillet 2022 un programme d'action pour le climat⁴⁷ au sein duquel l'institution s'engage sur des mesures concrètes visant à prendre en compte le changement climatique. En conséquence, l'existence du cycle politico-monnaire pourrait avoir un impact sur la capacité des banques centrales à mener ces politiques de lutte contre le changement climatique.

Comme évoqué tout au long de cette thèse, il est primordial de prendre en compte les cycles politiques existants au sein de la politique monétaire. En effet, en plus de prendre de nombreuses formes, ces derniers impactent significativement la stabilité économique et la politique nationale.

⁴⁶L'entretien dans son ensemble peut être consulté sur le site de la banque centrale européenne à l'adresse suivante : <https://www.ecb.europa.eu/press/inter/date/2022/html/ecb.in220825-7c5db6d1b3.fr.html>

⁴⁷Le détail de ces engagements est disponible sur le site de la banque centrale européenne : https://www.ecb.europa.eu/ecb/climate/managing_mitigating_climatel_risk/html/index.fr.html

De plus, les cycles politico-économiques vont indubitablement évoluer, que ce soit dans leur forme ou dans leur origine. Comme évoqué précédemment, il semble probable que l'accession au pouvoir des partis écologistes, puisse accélérer le « verdissement » de la politique monétaire et budgétaire affectant ainsi la situation macroéconomique. Il semble alors évident que les économistes et les politologues doivent considérer la banque centrale, et plus largement la politique monétaire comme une part intégrante de la représentation qu'ils se font de la politique nationale.

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Hugo ORIOLA

Le cycle politico-monnaire ou comment l'action de la banque centrale influence la politique nationale

Résumé :

La présente thèse étudie les interactions politiques entre les gouvernements et les banquiers centraux. Pour ce faire, ce travail se base sur l'étude du concept de cycle politico-monnaire. Ce cycle est défini comme un phénomène opportuniste induit par l'action (volontaire ou non) de la banque centrale précédant une élection. Le chapitre introductif présente la littérature traitant du cycle opportuniste mais aussi partisan. Le premier chapitre traite de la question du cycle d'un point de vue globale via l'analyse d'un grand nombre de pays. Il permet d'apporter des preuves de l'existence du cycle dans un nombre non-négligeable de pays. Le second chapitre étudie la question au travers du développement d'un modèle théorique. Ce dernier démontre que la banque centrale a un impact involontaire sur la politique nationale en luttant contre l'inflation. En effet, en étant conservatrice, la banque centrale empêche le parti politique le plus conservateur de mobiliser ce conservatisme économique comme un argument électoral. Une application empirique basée sur le Royaume-Uni soutient la légitimité de ce résultat théorique. Enfin, le troisième chapitre poursuit notre réflexion sur le cycle politico-monnaire en développant le concept de *press-related opportunistic political monetary cycle*. Ce concept correspond à un cycle politico-monnaire opportuniste induit par la couverture médiatique des actions de la banque centrale. Au travers de données portant sur les journaux et les partis politiques allemands, ce chapitre apporte des preuves de l'existence du cycle politico-médiatique. De plus, nous suggérons que le dit cycle dépend grandement du parti politique, du type de scrutin et de la granularité des données mobilisées.

Mots clés : Élections, Cycle politique, Politique monétaire, Cycle politico-monnaire, Banque centrale, Avantage comparatif, Couverture médiatique, Économétrie des données de panel, Économétrie des séries temporelles, Modèle théorique, Analyse textuelle.

Political Monetary Cycles or how central bank action impacts national politics

Abstract :

This thesis analysis political interactions between incumbents and central bankers. To do so, it investigates the concept of political monetary cycle defined as an opportunistic phenomenon. The cycle is due to central bank action prior to an election whether the implementation of the cycle is voluntary or not. The introductory chapter presents the existing literature dealing with political monetary cycles both from an opportunistic and a partisan point of view. Then, the first chapter studies the cycle from a general point of view analyzing a large number of countries. This chapter underlines that the political cycle studied exists and represents a pertinent concept while studying modern central banking. The second chapter use a theoretical approach to justify the existence of political monetary cycle. It demonstrates that, a conservative monetary policy prevents conservative politicians to use their ability to fight inflation in their political campaign. This theoretical result is not induced by a will of the central banker to promote the conservative party. An empirical analysis based on data from the United-Kingdom presents arguments in favour of our theoretical mechanism. Finally, the third chapter investigates further the concept of political monetary cycle by defining the concept of press-related opportunistic political monetary cycle. It corresponds to an opportunistic political monetary cycle induced by media coverage of central bank actions. Using German data on media coverage and popularity of political parties, we provide evidence to support the existence of this media political cycle. Moreover, this cycle appears to depend on the political party, the type of electoral events and the level of data granularity used.

Keywords : Elections, Political cycle, Monetary policy, Political monetary cycle, Central bank, Comparative advantage, Media coverage, Econometrics of panel data, Econometrics of time series, Theoretical model, Textual analysis.