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Analysis of Monetary Policy Cycles and Economic Elites/Analyse des cycles de politique monétaire et des élites économiques

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Résumé

Cette thèse est structurée autour de deux grandes thématiques indépendantes, chacune articulée en deux chapitres distincts. La première porte thématique sur l'économie des élites, avec une attention particulière aux mécanismes de rotation des élites dans les organisations internationales et les systèmes politiques nationaux.

Le premier chapitre se concentre sur le Fonds Monétaire International (FMI), en examinant les déterminants de la rotation des membres de l'administration entre 2009 et 2021. L'analyse montre que les crises économiques, notamment les crises de la dette, ont un impact significatif sur la durée des mandats de ces élites, mettant en lumière l'importance des facteurs externes sur leur stabilité, en parallèle avec des facteurs impliqués tels que l'expérience professionnelle ou l'éducation. Cette approche permet de mieux comprendre les pressions systémiques auxquelles sont confrontées ces élites technocratiques dans les environnements de crise.

Ce chapitre a été co-écrit avec Etienne FARVAQUE ,Maqsood ASLAM et Franck MALAN.

Le deuxième chapitre traite des élites politiques, avec un focus sur l'accès des femmes au pouvoir dans les démocraties modernes. Nous avons appliqué une méthodologie quantitative rigoureuse basée sur une base de données inédite des chefs d'État de 1950 à 2015. Les résultats révèlent que les crises économiques et politiques jouent un rôle clé dans l'accession des femmes au pouvoir, confirmant l'existence du phénomène de la "falaise de verre", où les femmes sont plus souvent nommées dans des contextes à haut risque. Cette analyse approfondie contribue à la littérature sur le genre et le leadership politique, en

soulignant les défis spécifiques auxquels les femmes sont confrontées dans les systèmes dominés par des structures masculines. Ce chapitre, je l'ai écrit seul.

La deuxième thématique de cette thèse se concentre sur les cycles politico-économiques.

Le troisième chapitre examine les dynamiques spécifiques aux cycles en Haïti, un pays en proie à de fortes instabilités économiques et politiques. L'étude démontre que les élections en Haïti sont souvent associées à des manipulations économiques considérables, exacerbées par un environnement institutionnel fragile et dominé par des pratiques clientélistes. L'analyse des données montre que les fluctuations de la masse monétaire et les épisodes d'inflation sont directement corrélés aux périodes électorales, illustrant les défaillances des mécanismes de régulation budgétaire et monétaire du pays. Ce chapitre a été co-écrit avec Etienne FARVAQUE, Maqsood ASLAM et Raulin CADET

Le quatrième chapitre se focalise sur le cas du Royaume-Uni, en analysant les cycles politico-monétaires avant l'indépendance de la Banque d'Angleterre en 1997. L'étude révèle que la manipulation de la politique monétaire avant les élections était courante, surtout sous les gouvernements libéraux. Cette analyse démontre l'importance des réformes institutionnelles dans la stabilisation des cycles économiques et souligne la nécessité d'une gestion indépendante des instruments monétaires pour garantir la stabilité à long terme. Ce chapire a été co-écrit avec Etienne FARVAQUE et Antoine PARENT.

Ainsi, cette thèse propose des contributions majeures aux études sur la rotation des élites et les cycles politico-économiques, tout en ouvrant des pistes de recherche prometteuses.

Abstract

This thesis is structured around two main independent themes, each articulated in two separate chapters. The first focuses on the economics of elites, with particular attention to the mechanisms of elite rotation in international organizations and national political systems.

The first chapter focuses on the International Monetary Fund International Monetary Fund (IMF), examining the determinants of Executive Board turnover between 2009 and 2021. The analysis shows that economic crises, particularly debt crises, have a significant impact on the tenure of these elites, highlighting the importance of external factors on their stability, alongside implicated factors such as professional experience or education. This approach provides a better understanding of the systemic pressures faced by these technocratic elites in crisis environments.

The second chapter deals with political elites, with a focus on women's access to power in modern democracies. We have applied a rigorous quantitative methodology based on an unpublished database of heads of state from 1950 to 2015. The results reveal that economic and political crises play a key role in women's accession to power, confirming the existence of the "glass cliff" phenomenon, where women are more often appointed in high-risk contexts. This in-depth analysis contributes to the literature on gender and political leadership, highlighting the specific challenges women face in systems dominated by male structures.

The second theme of this thesis focuses on political-economic cycles.

The third chapter examines the specific dynamics of cycles in Haiti, a country beset by economic and political instability. The study shows that elections in Haiti are often associated with considerable economic manipulation, exacerbated by a fragile institutional

environment dominated by clientelistic practices. Data analysis shows that money supply fluctuations and inflation episodes are directly correlated with election periods, illustrating the failings of the country's fiscal and monetary regulation mechanisms.

The fourth chapter focuses on the United Kingdom, analyzing the politico-monetary cycles prior to the Bank of England's independence in 1997. The study reveals that pre-election manipulation of monetary policy was commonplace, especially under Liberal governments. This analysis demonstrates the importance of institutional reforms in stabilizing economic cycles, and underlines the need for independent management of monetary instruments to guarantee long-term stability.

This thesis makes major contributions to the study of elite rotation and political-economic cycles, while opening up promising avenues of research.

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ARIMA AutoRegressive Integrated Moving Average. 108

CEP Provisional Electoral Council. 102

Diff-in-Diff Difference-in-Differences. 58

DPI Database on Political Institutions. 35

EB Executive Board Members. 17

GDP Gross Domestic Product. 35

IHSI Institut Haïtien de Statistique et d'Informatique. 99

IMF International Monetary Fund. v

IPU Inter-Parliamentary Union. 52

MINUSTAH United Nations Stabilization Mission in Haiti. 102

OAS Organization of American States. 102

OECD Organisation for Economic Co-operation and Development. 33

TED The Technocratic and Education Dataset. 29

UK United Kingdom. 59

US United States. 59

V-Dem Varieties of Democracy. 59

WTO World Trade Organization. 59

Introduction Générale

Dans cette thèse, nous avons cherché à analyser deux thématiques complémentaires qui se trouvent au cœur de l'économie politique contemporaine : les cycles politico-économiques et la question des élites, tant politiques qu'internationales. La première partie se concentre sur la question des élites, à la fois dans les institutions politiques et dans les organisations internationales comme le Fonds Monétaire International (FMI). Cette partie examine, d'une part, la rotation des élites internationales, en s'interrogeant sur les facteurs qui influencent la durée des mandats au sein du FMI. Nous analysons, d'autre part, les obstacles auxquels les femmes font face lorsqu'elles cherchent à accéder aux plus hautes fonctions politiques. Dans cette partie, nous mettons en lumière les dynamiques de pouvoir et les inégalités qui persistent, même dans des institutions censées promouvoir la stabilité économique mondiale.

La seconde partie est consacrée à l'étude des cycles politico-économiques, un phénomène bien documenté dans la littérature économique. Les gouvernements, souvent motivés par des impératifs électoraux, modifient les politiques économiques pour stimuler temporairement l'économie et maximiser leurs chances de réélection. Ce comportement opportuniste crée des cycles économiques qui ne répondent pas uniquement aux forces du marché, mais aussi à des considérations politiques. En étudiant les cycles politico-économiques, nous cherchons à comprendre comment les gouvernements manipulent l'économie à court terme et quelles sont les conséquences sur la stabilité macroéconomique de ces manipulations.

0.0.1 Elites politiques nationales et internationales

Le terme d'élite fait référence à un groupe restreint d'individus exerçant des positions d'influence ou de pouvoir au sein d'une société. Ces individus se démarquent par leur capacité à prendre des décisions majeures concernant les structures politiques, économiques, sociales ou culturelles. Les élites internationales, qu'elles soient politiques ou liées aux organisations internationales comme le Fonds Monétaire International (FMI),

jouent un rôle fondamental dans la gestion des affaires publiques à l'échelle mondiale. Leur influence dépasse les frontières des pays d'origine de leurs décideurs et leurs décisions influencent la trajectoire économique et politique de nombreuses nations, en particulier celles en proie à des crises. La question de leur sélection, de leur renouvellement et de leur maintien au pouvoir suscite de vifs débats, tant dans la littérature académique que dans les sphères politiques Kountouri (2018). La façon dont les élites internationales accèdent aux postes de responsabilité, ainsi que la durée de leur mandat, a des implications majeures pour la gouvernance et la stabilité mondiale.

L'idée d'élite en tant que concept structurant est issue d'une longue tradition théorique. Au début du XXe siècle, les sociologues Vilfredo Pareto et Gaetano Mosca ont été parmi les premiers à formaliser des théories sur la nature des élites. Pareto (1916), dans sa théorie de la circulation des élites (1916), soulignait que dans toute société, il existe une minorité dominante qui occupe les postes de pouvoir, et que cette minorité est régulièrement remplacée par une nouvelle élite lorsque les premières deviennent inefficaces ou corrompues. Pareto affirmait que la circulation des élites est un processus inévitable, une sorte de mouvement constant au sein de la société où les élites se succèdent, soit à cause de leurs compétences, soit par des manœuvres politiques.

Mosca (1939), quant à lui, dans son œuvre *La classe dirigeante* , explique que toutes les sociétés, peu importe leur système politique, sont dirigées par une minorité organisée, un groupe restreint qui parvient à maintenir son pouvoir en contrôlant les ressources et les institutions. Cette minorité, ou élite, est capable d'imposer sa volonté sur la majorité, en partie grâce à sa capacité à légitimer son pouvoir par des moyens idéologiques, et en partie grâce à sa compétence technique et administrative. Ces théories fondatrices sont à la base de l'analyse contemporaine des élites, qu'elles soient politiques ou économiques.

Dans les décennies suivantes, l'étude des élites a pris une nouvelle dimension avec les travaux de Robert Michels, qui a introduit le concept de la "loi d'airain de l'oligarchie". Selon Michels (1915), toute organisation, même démocratiques, tend à produire une élite dirigeante qui finit par monopoliser le pouvoir. Il soutient que cette concentration du pouvoir est inévitable, car les organisations nécessitent une certaine structure pour fonctionner efficacement, et que les dirigeants, une fois en place, mettent en œuvre des mécanismes pour protéger leur position Michels (1915). Michels observe ce phénomène au sein des partis politiques, mais ses conclusions pourraient facilement s'appliquer aux institutions internationales comme le FMI, où une élite technocratique exerce une influence considérable sur la politique économique mondiale.

Cette perspective sur la pérennité du pouvoir des élites peut également être mise en

parallèle avec les théories modernes de la gouvernance internationale. Depuis la Seconde Guerre mondiale, la création d'institutions comme le FMI et la Banque mondiale a renforcé le rôle des élites technocratiques dans la gestion des affaires économiques mondiales. Ces institutions, souvent dominées par des élites issues des pays développés, agissent comme des gardiennes de la stabilité financière mondiale. Leurs décisions et recommandations influencent directement les politiques économiques de nombreux pays, en particulier ceux qui dépendent de l'aide internationale pour se redresser après une crise.

Ces élites technocratiques se caractérisent par un haut niveau d'éducation et une expérience professionnelle dans des domaines très spécialisés, comme la finance internationale ou la macroéconomie (Fedeli, Forte **and** Leonida (2014), Mourao **and** Popescu (2021)). En outre, elles sont souvent issues des mêmes réseaux académiques et sociaux, ayant fréquenté des universités d'élite et évolué dans des cercles d'influence transnationaux Maoz (2012); Hafner-Burton, Kahler **and** Montgomery (2009). Cependant, la question se pose de savoir ce qui détermine leur sélection et leur maintien au pouvoir. Sont-ce uniquement leurs compétences et leur expérience professionnelle, ou bien d'autres facteurs externes, comme les crises économiques, jouent-ils un rôle dans la rotation des élites au sein de ces institutions ?

Dans le premier chapitre de cette thèse, nous avons analysé la rotation des membres de l'administration du FMI sur la période 2009-2021 pour comprendre les facteurs qui influencent la durée des mandats.

Le Fonds Monétaire International (FMI) occupe une place centrale dans l'architecture économique mondiale depuis sa création en 1944 lors de la conférence de Bretton Woods. Initialement conçu pour stabiliser le système monétaire international après la Seconde Guerre mondiale, le FMI a progressivement étendu ses missions pour inclure le soutien aux pays en difficulté économique, la surveillance des politiques économiques nationales et la promotion de la coopération monétaire internationale. Aujourd'hui, il regroupe 190 pays membres, et son rôle dans la gestion des crises économiques mondiales reste incontournable.

Le FMI, en tant qu'institution, a pour mission de prévenir les crises financières à l'échelle mondiale, d'encourager les échanges internationaux, et d'offrir une assistance technique et financière aux pays en difficulté. L'une de ses fonctions les plus visibles est l'octroi de prêts aux pays confrontés aux crises de balance des paiements. En échange de ces prêts, les pays bénéficiaires doivent souvent mettre en œuvre des programmes de réformes économiques, souvent appelés « ajustements structurels », visant à rétablir leur stabilité macroéconomique. Ces réformes incluent généralement des mesures de

réduction des déficits publics, de lutte contre l'inflation, de libéralisation du commerce et de restructuration des dettes. Le FMI devient ainsi un acteur de premier plan dans la gouvernance économique mondiale, jouant un rôle clé dans les décisions économiques cruciales de nombreux pays.

L'administration du FMI est composée d'une élite technocratique de haut niveau, responsable de la mise en œuvre des politiques de l'institution, de la surveillance des économies nationales et de la gestion des programmes d'ajustement. Ces technocrates, issus d'une grande diversité de pays et de cultures, sont choisis pour leurs compétences techniques, leur expérience professionnelle et leur expertise dans des domaines tels que la macroéconomie, la finance publique et la gestion de crise. Leur sélection suit un processus rigoureux basé sur des critères de compétence, mais aussi sur des considérations géopolitiques. En effet, bien que le FMI soit une institution internationale, la répartition des sièges et des responsabilités au sein de son administration reflète en partie les rapports de force entre les grandes puissances économiques mondiales. Les États-Unis, l'Union européenne et le Japon, par exemple, exercent une influence significative sur les nominations aux postes clés de l'institution.

Le rôle de ces membres de l'administration est crucial. Ils sont responsables de l'analyse des situations économiques nationales, de la formulation des recommandations de politique économique, et de la supervision des programmes de réformes dans les pays qui bénéficient des prêts du FMI. En outre, ils jouent un rôle clé dans les négociations entre le FMI et les pays en difficulté, en veillant à ce que les conditions des prêts soient respectées et que les objectifs des réformes soient atteints. Cependant, malgré leur expertise technique, ces technocrates sont souvent soumis à des pressions politiques importantes, que ce soit de la part des pays bénéficiaires ou des grandes puissances économiques qui financent l'institution.

Un aspect encore peu exploré dans la littérature est la question de la rotation de ces élites au sein de l'administration du FMI. Alors que de nombreuses études se sont concentrées sur l'impact des politiques du FMI sur les économies nationales, très peu ont cherché à comprendre les dynamiques internes de l'institution, notamment la durée des mandats des membres de l'administration et les facteurs qui influencent leur rotation. Cette question est pourtant essentielle, car elle touche à la stabilité de l'institution et à sa capacité à gérer des crises économiques prolongées.

Traditionnellement, les membres de l'administration du FMI sont sélectionnés pour leurs compétences techniques, et l'on pourrait penser que leur maintien en poste dépend principalement de ces qualités individuelles, comme leur niveau d'éducation, leur domaine d'expertise, et leur expérience professionnelle. Cependant, notre étude montre que

ces facteurs internes, bien qu'importants, ne sont pas les seuls à déterminer la durée des mandats de ces technocrates. En réalité, des facteurs externes, comme les crises économiques, semblent jouer un rôle tout aussi, sinon plus, déterminant dans la rotation des élites au sein de l'administration du FMI. Les crises économiques, en particulier les crises de la dette, ont un impact significatif sur la durée des mandats des membres de l'administration. Lorsqu'un pays représenté par un membre de l'administration du FMI est confronté à une crise de la dette, la pression sur ce dernier augmente considérablement. Non seulement il doit gérer la mise en œuvre des réformes dans un environnement très volatile, mais il est également tenu de justifier l'efficacité des politiques économiques mises en place pour résoudre la crise. Si ces politiques échouent, ou si la situation économique du pays se détériore davantage, la crédibilité du technocrate en poste est remise en question, ce qui peut conduire à son départ. Cela montre que, malgré leur expertise technique, les technocrates du FMI sont particulièrement vulnérables en période de crise, car ils doivent naviguer dans des environnements où les attentes sont très élevées, et où l'échec des réformes peut entraîner des conséquences économiques et politiques graves. Nos résultats révèlent que les crises économiques, en particulier les crises de la dette, augmentent la probabilité qu'un membre de l'administration quitte son poste. En période de crise, les membres du FMI sont sous une pression croissante pour justifier leurs décisions, ce qui peut mener à des changements au sein de l'institution.

En parallèle de ces analyses sur les élites internationales, il est tout aussi crucial de se pencher sur les dynamiques entourant les élites politiques. Ces dernières occupent une place centrale dans le fonctionnement des démocraties modernes. Elles détiennent le pouvoir de façonner les politiques publiques, d'orienter les décisions économiques et de répondre aux attentes des citoyens Dreher, Sturm **and** Haan (2008), Dreher, Sturm **and** Haan (2010) Dans ce rôle, elles influencent directement la vie des populations, tant au niveau local que national, en exerçant une autorité sur des questions cruciales telles que l'économie, l'éducation, la santé ou encore la sécurité nationale. Les élites politiques, en tant que représentants de l'État, agissent au nom de la souveraineté nationale et incarnent les aspirations démocratiques des électeurs.

L'importance des élites nationales ne peut être sous-estimée, car elles constituent les moteurs des réformes politiques et économiques. Elles orientent les priorités du gouvernement, arbitrent entre les différentes demandes sociales et économiques, et mettent en œuvre les programmes de développement qui influencent l'avenir de leur pays. Ce pouvoir est amplifié par leur capacité à mobiliser des ressources et à façonner l'opinion publique, ce qui les place dans une position stratégique pour la prise de décisions critiques. En ce sens, les élites politiques nationales sont les architectes du développement

économique et social des nations.

Historiquement, ces élites ont été majoritairement masculines, façonnées par des dynamiques patriarcales qui ont favorisé l'ascension des hommes au détriment des femmes. Cette domination masculine a été institutionnalisée à travers des structures sociales, économiques et politiques qui ont confiné les femmes à des rôles subalternes, malgré leurs compétences et leurs qualifications. Ce phénomène trouve ses racines dans des siècles de marginalisation des femmes, où la politique était considérée comme un domaine réservé aux hommes. Les stéréotypes de genre ont perpétué l'idée que les qualités de leadership, telles que la rationalité, l'autorité et la prise de décision ferme, étaient inhérentes aux hommes, tandis que les femmes étaient perçues comme trop émotionnelles ou trop sensibles pour diriger.

Ces barrières ont donné naissance au concept de « plafond de verre », qui décrit les obstacles invisibles mais réels qui empêchent les femmes d'accéder aux postes de direction. Ce concept, bien ancré dans la littérature sur les études de genre et le leadership, met en évidence les structures institutionnelles et culturelles qui maintiennent les femmes dans des positions subalternes, même lorsqu'elles possèdent les compétences et l'expérience nécessaires pour accéder aux plus hautes fonctions. Le plafond de verre symbolise non seulement les résistances institutionnelles, mais aussi la persistance des stéréotypes de genre dans les processus de sélection et de promotion au sein des élites politiques.

Cependant, ces dernières décennies ont été marquées par une montée en puissance des mouvements féministes et des réformes politiques en faveur de l'égalité des genres, qui ont permis à un nombre croissant de femmes de franchir ce plafond de verre et d'accéder à des postes de pouvoir. L'émergence de femmes chefs d'État et de gouvernement dans plusieurs démocraties contemporaines a été saluée comme une majeure avancée vers l'égalité des sexes. Toutefois, cette évolution n'a pas été sans difficultés. Les femmes qui réussissent à des postes de leadership sont souvent confrontées à des attentes contradictoires, devant démontrer leur autorité tout en répondant aux attentes génératrices de compassion et d'empathie. Ce double standard rend leur parcours politique particulièrement difficile.

En outre, la théorie de la « falaise de verre », introduite par Ryan **and** Haslam (2005), a apporté un éclairage supplémentaire sur les défis auxquels sont confrontées les femmes leaders. Cette théorie stipule que les femmes accèdent souvent aux postes de pouvoir dans des situations précaires, où le risque d'échec est plus élevé. Elles sont appelées à diriger dans des moments de crise, économique, politique ou sociale, où les attentes de redressement sont particulièrement élevées, mais où les marges de manœuvre sont limitées. Cela signifie que même lorsqu'elles parviennent à accéder au pouvoir, elles le font dans des conditions

défavorables, qui compromettent leurs chances de succès à long terme. Ce phénomène de la falaise de verre a été documenté dans de nombreuses études de cas, où des femmes ont été nommées à des postes de direction dans des entreprises ou des gouvernements en difficulté, souvent pour redorer l'image de l'institution, mais sans disposer des ressources nécessaires pour réussir.

Ces dynamiques sont particulièrement pertinentes dans le contexte des élites politiques, où l'accession au pouvoir est souvent marquée par des jeux de pouvoir complexes, des alliances stratégiques et des luttes internes. L'étude des élites politiques féminines dans ce cadre permet de mieux comprendre comment les femmes parviennent à naviguer dans un environnement traditionnellement dominé par les hommes, et les stratégies qu'elles adoptent pour surmonter les obstacles structurels auxquels elles sont confrontées. Cela pose également des questions sur les critères de sélection des élites féminines : sont-elles choisies pour leur compétence, ou bien parce qu'elles représentent une solution temporaire à un problème institutionnel ou économique plus large ?

Notre étude sur les élites politiques, et en particulier sur l'accession des femmes au pouvoir dans les démocraties modernes, s'inscrit dans cette problématique. À travers une analyse quantitative des données couvrant la période de 1950 à 2015, nous avons cherché à identifier les facteurs qui influencent l'accession des femmes aux postes de leadership politique, plus précisement aux postes de chefs d'État(Présidente ou Première ministre) dans les pays à régime démocratique. Notre objectif était de déterminer si des caractéristiques individuelles, telles que l'éducation, l'âge ou l'expérience professionnelle, jouent un rôle déterminant, ou si ce sont plutôt des facteurs contextuels, tels que les crises économiques ou sanitaires, qui expliquent leur émergence à des postes de pouvoir.

L'un des aspects novateurs de notre travail réside dans l'application de la théorie de la falaise de verre aux crises économiques et politiques contemporaines. Nos résultats montrent que les femmes sont plus susceptibles d'être élues à des postes de leadership pendant les périodes de crise, notamment lors de crises de la dette ou de crises sanitaires. Cela confirme l'idée que les femmes accèdent souvent au pouvoir dans des contextes où le risque d'échec est élevé, ce qui renforce les stéréotypes selon lesquels elles ne seraient pas adaptées à la direction en période de stabilité. Ce constat est particulièrement préoccupant, car il montre que même lorsque les femmes parviennent à surmonter les barrières institutionnelles, elles continuent de faire face à des défis disproportionnés par rapport à leurs homologues masculins.

Nos résultats révèlent également que les facteurs individuels, comme l'âge et l'éducation, jouent un rôle clé dans l'accession des femmes au pouvoir, mais de manière à

perpétuer les inégalités de genre. Par exemple, nous avons constaté que les femmes qui accèdent à des postes de chef d'État sont généralement plus âgées que leurs homologues masculins, ce qui suggère qu'elles doivent accumuler plus d'expérience avant d'être considérées comme légitimes pour diriger. De plus, les femmes sont sous-représentées dans les grandes universités et les institutions prestigieuses, ce qui limite leur accès aux réseaux d'élites politiques et économiques, souvent essentiels pour gravir les échelons du pouvoir.

Ces résultats apportent une contribution originale à la littérature existante sur les élites politiques et les inégalités de genre. Bien que de nombreuses études aient analysé l'accession des femmes au pouvoir, peu ont exploré de manière aussi approfondie l'impact des crises économiques et des caractéristiques individuelles sur cette accession. En combinant l'analyse des données historiques sur les femmes chefs d'État avec une approche théorique axée sur la falaise de verre, nous mettons en évidence les défis structurels auxquels elles sont confrontées, mais aussi les conditions spécifiques dans lesquelles elles émergent en tant que dirigeants politiques.

0.0.2 Cycles politico-économiques

Dans les démocraties contemporaines, les élections constituent des événements nationaux majeurs, attirant une attention considérable sur la scène politique. Elles représentent non seulement un pilier de l'expression populaire, mais également un déterminant fondamental de l'avenir d'un pays, désignant les principaux décideurs et légitimant leur mandat auprès de la population. Cependant, si les élections peuvent promouvoir la démocratie et le développement économique, elles peuvent aussi devenir des instruments de manipulation politique, lorsqu'elles sont attachées à la corruption ou mal organisées. Des élections frauduleuses sapent la confiance des citoyens dans les institutions, affaiblissent la légitimité des dirigeants et alimentent des tensions sociales. Ces dynamiques nuisent non seulement au développement social et économique (Stokes (2005), Robinson **and** Verdier (2013)), mais freinent aussi les réformes nécessaires à l'avancement du bien commun, laissant place à des régimes où l'intérêt personnel prime.

Les économistes accordent de plus en plus d'attention aux processus électoraux en raison de leur impact sur l'économie. Au fil des décennies, diverses théories ont été élaborées pour mieux comprendre les liens entre élections, décisions économiques et comportements des électeurs et des politiciens. Depuis les travaux pionniers Schumpeter (1939), qui a introduit la notion de cycles économiques, l'idée que les fluctuations périodiques de l'économie (inflation, chômage) sont influencées par des facteurs politiques

a gagné en importance. Ces recherches ont été approfondies par Kalecki (1943) avec la théorie des cycles politico-économiques, qui postule que les gouvernements ajustent les politiques économiques en fonction de leurs objectifs électoraux. Cette dynamique se traduit par une volonté de mettre à profit un éventuel arbitrage entre inflation et chômage, où les politiciens, pour satisfaire certains groupes d'électeurs essentiels à leur réélection, ajustent les politiques économiques à court terme. Cela peut inclure une augmentation des dépenses publiques, la manipulation des taux d'intérêt ou d'autres mesures expansionnistes. Cependant, ces ajustements ne sont pas toujours durables et peuvent entraîner des déséquilibres à long terme, notamment une inflation croissante ou une dette publique incontrôlée.

Les cycles politico-économiques peuvent être expliqués selon deux principales théories : opportuniste et partisane. L'approche opportuniste, illustrée par les travaux de Downs (1957), soutient que les gouvernements manipulent l'économie à court terme, principalement avant les élections, afin de maximiser leurs chances de rester au pouvoir. Cela se traduit par des politiques économiques expansionnistes à court terme, avec des effets négatifs sur le long terme. D'un autre côté, la théorie partisane Nordhaus (1975) affirme que les différentes orientations idéologiques des partis politiques influencent directement les politiques économiques. Par exemple, un parti de gauche privilégiera les dépenses publiques importantes et une intervention étatique accumulée pour stimuler l'emploi, tandis qu'un parti de droite mettra l'accent sur le contrôle de l'inflation et la réduction des dépenses publiques. Ces différences influencent les cycles économiques en fonction de l'alternance politique.

Le tournant majeur dans la gestion des cycles politico-économiques a été marqué par la montée de l'indépendance des banques centrales dans les années 1980. Rogoff (1985) a proposé une théorie selon laquelle la nomination de banquiers centraux conservateurs et l'adoption des objectifs monétaires tels que les cibles d'inflation peuvent limiter les pressions politiques sur la politique monétaire. Cette indépendance visa à empêcher les manipulations politiques à court terme et à promouvoir la stabilité des prix sur le long terme. Cependant, malgré cette indépendance, des études plus récentes, telles que celles de Dentler (2019) et Oriola (2023), montrent que même dans des pays dotés de banques centrales indépendantes, des cycles politico-économiques persistent en raison de pressions politiques indirectes, ce qui suggère que l'indépendance des banques centrales n'est pas suffisante pour éliminer ces cycles.

La crise financière mondiale de 2008 a également révélé les limites de cette indépendance dans des périodes de crise extrême, où la coordination entre les politiques budgétaires et monétaires devient cruciale. Les gouvernements ont exercé une pression importante sur les

banques centrales pour adopter des politiques monétaires expansionnistes afin de stabiliser l'économie, démontrant que dans les moments de crise, l'indépendance institutionnelle peut être compromise (Alesina **and** Stella (2010) ;**menuet2024**). Ces événements récents exigent une révision des théories traditionnelles des cycles politico-économiques. Alors que Rogoff prédisait que l'indépendance des banques centrales limiterait les manipulations, il apparaît que cela n'est pas totalement vérifié dans tous les contextes, surtout en période de crise.

Les cycles budgétaires politiques sont également un aspect important à prendre en compte dans ce débat. Contrairement aux politiques monétaires, les gouvernements conservent un contrôle direct sur les politiques fiscales, ce qui leur permet de manipuler les dépenses publiques et les impôts à des fins électorales. Drazen **and** Eslava (2010) montrent que ces cycles budgétaires sont particulièrement prononcés dans les démocraties émergentes, où les institutions sont plus faibles et où les électeurs sont sensibles aux manipulations économiques à court terme. Dans ces contextes, les gouvernements augmentent les dépenses publiques avant les élections, créant des déséquilibres budgétaires importants qu'ils doivent ensuite corriger par des politiques d'austérité post-électorales. Ce phénomène a été bien documenté en Grèce avant la crise de la dette souveraine de 2010, où les politiques budgétaires expansionnistes pré-électorales ont aggravé la situation économique, entraînant des plans de sauvetage internationaux et des mesures d'austérité draconiennes.

Dans les pays développés, bien que les cycles politico-économiques soient moins prononcés, ils existent sous des formes plus subtiles. Les gouvernements de ces pays sont souvent tentés de retarder les réformes impopulaires ou d'accélérer les projets d'infrastructure avant les élections pour obtenir un soutien politique. Bien que cela ne crée pas des déséquilibres économiques majeurs, cela peut affecter la stabilité budgétaire à long terme. Alt **and** Lassen (2006) montrent que même dans des démocraties avancées avec des institutions fortes, des manipulations budgétaires peuvent avoir lieu, bien que de manière plus discrète.

Depuis la crise financière de 2008, une nouvelle forme de cycle politico-économique a émergé dans les pays développés avec l'apparition de politiques monétaires non conventionnelles. Les banques centrales des économies avancées, comme la Réserve fédérale américaine et la Banque centrale européenne, ont adopté des politiques d'assouplissement quantitatif pour stimuler l'économie. Ces mesures, bien que justifiées dans un contexte de crise, ont soulevé des questions sur l'indépendance réelle des banques centrales et sur leur rôle dans la création de bulles spéculatives sur les marchés financiers. Blot **and** Hubert (2020) soutiennent que ces politiques ont contribué à une inflation des actifs financiers, exacerbant ainsi les inégalités économiques et remettant en cause

l'indépendance des banques centrales.

Dans les économies émergentes, les cycles politico-économiques sont encore plus prononcés. Les gouvernements ont souvent un contrôle direct sur la politique monétaire, ce qui leur permet de manipuler les taux d'intérêt ou l'offre de monnaie pour influencer l'économie avant les élections. Cela conduit à des épisodes d'inflation élevée, de dépréciation de la monnaie et à une instabilité économique à long terme. Les recherches de Oriola (2023) montrent que dans de nombreux pays africains et latino-américains, ces cycles restent fréquents malgré les tentatives de réforme institutionnelle. L'une des dimensions les plus importantes des cycles politico-économiques dans les pays en développement est le rôle du clientélisme et de la corruption. Keefer **and** Khemani (2005) soulignent que dans ces contextes, les gouvernements utilisent souvent les ressources publiques pour acheter le soutien des électeurs par des subventions, des emplois publics ou des projets d'infrastructure. Ces pratiques affaiblissent les institutions démocratiques et exacerbent les déséquilibres budgétaires, car les dépenses publiques sont souvent non productives.

Dans le cadre de cette thèse, nous avons choisi d'examiner en profondeur les dynamiques politico-économiques en Haïti et au Royaume-Uni, deux pays très différents tant sur le plan économique que politique. L'étude de ces deux cas illustre la diversité des manifestations des cycles politico-économiques dans des contextes institutionnels et historiques contrastés. En mettant en lumière ces différences, cette recherche tente de démontrer la pertinence et l'importance d'une analyse comparative des cycles politico-économiques à la fois dans les pays en développement et dans les pays développés

Haïti est un pays de l'Amérique latine qui fait face à des défis structurels considérables. L'histoire d'Haïti est celle d'un pays qui, malgré son indépendance proclamée dès 1804, a été marquée par des périodes d'instabilité politique, de dictatures militaires et d'interventions étrangères. Le contexte institutionnel fragile a grandement contribué à la difficulté de construire une économie solide. Haïti est souvent décrit comme l'un des pays les plus pauvres de l'hémisphère occidental, avec un PIB par habitant extrêmement faible et une dépendance accumulée à l'égard de l'aide internationale. Selon des statistiques récentes, plus de 60 % de la population vit en dessous du seuil de pauvreté, et environ 25 % en situation d'extrême pauvreté (Banque mondiale, 2022). Le système politique haïtien, bien que formellement démocratique depuis la chute de la dictature de Jean-Claude Duvalier en 1986, est largement dominé par le clientélisme, la corruption et les pratiques autoritaires. L'absence de cadres institutionnels solides et l'instabilité chronique des gouvernements successifs ont laissé peu de place à l'instauration de réformes économiques pérennes (Anis **and** Ives (2011) , Rotberg (2001) . Haïti a subi de nombreux coups d'État, des troubles civils,

et plus récemment des catastrophes naturelles dévastatrices, comme le séisme de 2010 et les ouragans récurrents, qui ont exacerbé la crise économique et sociale du pays (Cavallo, Powell **and** Becerra (2010) ; Joseph (2022) ; Best **and** Burke (2019)). Ces événements ont non seulement détruit les infrastructures essentielles, mais ont aussi fragilisé les institutions politiques déjà faibles. L'instabilité a créé un environnement où les cycles politico-économiques sont particulièrement prononcés, et où les périodes électorales sont marquées par des fluctuations économiques considérables.

Les élections en Haïti sont souvent caractérisées par l'achat de votes et d'autres pratiques clientélistes (Lindberg, Bue **and** Sen (2022) ; Aidt **andothers** (2020)) . En raison de la faiblesse des institutions de régulation, il n'y a pas de lois strictes sur le financement des campagnes électorales ni de supervision des dépenses publiques liées aux élections. Les candidats, notamment ceux des élites politiques, utilisent d'importants moyens financiers pour obtenir le soutien des électeurs, souvent à travers des programmes de distribution de biens matériels ou de subventions directes dans les quartiers les plus pauvres (Nelson **and** Kumar (1998) ; Hauge (2018)) . Ce phénomène est exacerbé par la précarité économique dans laquelle vit une grande partie de la population, qui se retrouve plus facilement vulnérable aux incitations matérielles. Justesen **and** Manzetti (2023) ont montré que ces pratiques d'achat de votes et de clientélisme sont encore très répandues dans les démocraties fragiles comme Haïti, où les partis politiques utilisent des ressources publiques pour garantir leur réélection. Ce clientélisme ne fait qu'affaiblir davantage les institutions démocratiques et entraîner la mise en œuvre de réformes économiques sérieuses et durables.

En l'absence de structures de contrôle budgétaire et monétaire efficaces, la politique économique d'Haïti est souvent manipulée avant les élections. Le gouvernement en place augmente les dépenses publiques dans les mois qui précèdent les élections, principalement à travers des subventions ou des programmes sociaux destinés à acheter le soutien politique des électeurs. Cela entraîne une inflation temporaire et un déséquilibre budgétaire qui est souvent corrigé après les élections par des politiques d'austérité. Toutefois, cette dynamique électorale ne se limite pas aux simples manipulations budgétaires. La gestion monétaire du pays, en particulier la gestion de la masse monétaire (M0), montre également des signes de cycles politico-économiques.

L'étude que nous avons menée, basée sur des données mensuelles couvrant la période de 2004 à 2018, révèle que l'inflation des prix, en particulier des produits alimentaires et des boissons non alcoolisées, augmente considérablement pendant les périodes électorales, ce qui pourrait être une conséquence de l’agenda electoral. Ce cycle politico-économique, où l'économie est déstabilisée autour des élections, est un facteur important pour comprendre la crise économique chronique d'Haïti, où les périodes de stabilité économique sont souvent

courtes et interrompues par des crises politiques récurrentes.

Il est important de souligner que très peu d'études ont examiné ce phénomène dans le contexte haïtien. Alors que de nombreuses recherches ont été menées sur les cycles politico-économiques dans les pays en développement, comme ceux d'Amérique latine ou d'Afrique, Haïti reste un cas relativement sous-étudié dans la littérature académique. Cette thèse contribue à combler cette lacune en offrant une analyse approfondie des dynamiques politico-économiques dans ce pays, en mettant en lumière l'importance des manipulations économiques avant les élections et l'impact que cela a sur la stabilité économique à long terme.

D'un autre côté, le Royaume-Uni constitue un contraste saisissant avec celui d'Haïti. Le Royaume-Uni est l'une des démocraties les plus anciennes et les plus stables du monde, avec des institutions politiques et économiques solidement ancrées. L'histoire économique du Royaume-Uni est marquée par une industrialisation rapide au XIXe siècle, suivie d'une expansion coloniale qui a consolidé sa place parmi les plus grandes puissances économiques mondiales. À la fin du XIXe et au début du XXe siècle, le Royaume-Uni est resté l'un des plus grands centres financiers du monde, avec la ville de Londres au cœur du système bancaire international.

Cependant, au cours du XXe siècle, l'économie britannique a traversé plusieurs périodes de crise, notamment après les deux guerres mondiales et lors de la crise économique des années 1970. Ces crises ont entraîné des réformes institutionnelles majeures, dont l'une des plus significatives est l'indépendance de la Banque d'Angleterre en 1997. Avant cette date, la politique monétaire britannique était sous le contrôle direct du gouvernement, ce qui laissait la porte ouverte aux manipulations politiques, notamment avant les élections.

L'indépendance de la Banque d'Angleterre a marqué un tournant dans la gestion de la politique monétaire au Royaume-Uni. Depuis lors, la banque centrale est responsable de la fixation des taux d'intérêt et de la gestion de la masse monétaire, avec pour objectif principal de maintenir la stabilité des prix. L'adoption de cibles d'inflation a permis de stabiliser les anticipations des marchés financiers et des consommateurs, rendant plus difficile la manipulation monétaire à des fins politiques. Cependant, avant cette indépendance, les cycles politico-monétaires étaient-ils un phénomène important au Royaume-Uni, où les gouvernements utilisaient la politique monétaire pour influencer l'économie avant les élections, ou étaient-ils canalisés par les régimes monétaires stricts mis en œuvre ?

Dans cette thèse, nous avons analysé la période antérieure à l'indépendance de la Banque d'Angleterre (1870-1997) afin de déterminer si des cycles politico-monétaires

existaient avant cette réforme majeure. En utilisant les données mensuelles de la masse monétaire (M0), nos résultats montrent que les cycles monétaires étaient plus marqués lors des élections régulières que lors des élections anticipées. Cela suggère que les gouvernements utilisaient la politique monétaire de manière stratégique pour influencer les résultats électoraux. De manière intéressante, nos résultats montrent également que ces cycles étaient plus fréquents sous le régime Gold Standard, ce qui indique une plus grande utilisation des manipulations monétaires par ces partis pour soutenir l'économie avant les élections. Ce phénomène, souvent ignoré dans les études sur le Royaume-Uni, montre que même dans des démocraties stables, la politique monétaire a été utilisée de manière opportuniste avant que la banque centrale ne devienne indépendante.

Cette étude contribue à la littérature en complétant les travaux sur les cycles politico-économiques dans les pays développés. Alors que la plupart des recherches récentes se sont concentrées sur les pays où les banques centrales sont déjà indépendantes, notre étude montre que les cycles politico-monétaires étaient bien présents au Royaume-Uni avant 1997. En outre, elle met en évidence l'importance des réformes institutionnelles pour réduire les manipulations économiques autour des élections et garantir une gestion monétaire plus stable et prévisible.

En comparant ces deux contextes très différents, Haïti et le Royaume-Uni, cette thèse offre une analyse comparative précieuse des cycles politico-économiques dans des pays aux niveaux de développement et aux structures institutionnelles radicalement opposées. En Haïti, où les institutions sont fragiles et où le clientélisme est omniprésent, les cycles politico-économiques sont exacerbés par les pratiques électorales corrompues et les manipulations économiques. Au Royaume-Uni, bien que les cycles politico-monétaires soient présents avant l'indépendance de la banque centrale, les réformes institutionnelles ont permis de réduire l'impact des cycles électoraux sur la politique économique.

Cette thèse apporte donc une contribution originale à la littérature sur les cycles politico-économiques en explorant deux cas très différents et en montrant comment les dynamiques économiques peuvent être influencées par des considérations politiques à la fois dans les pays en développement et dans les pays développés. Les résultats de cette recherche mettent en lumière l'importance des institutions dans la gestion des cycles politico-économiques et montrent que, même dans les démocraties les plus avancées, des manipulations économiques peuvent exister en l'absence de mécanisme de régulation solide.

Pour conclure, cette thèse apporte donc des contributions significatives à plusieurs branches de la littérature en économie politique. Chaque chapitre éclaire des dynamiques

spécifiques et enrichit notre compréhension des cycles politico-économiques ainsi que des processus de sélection et de rotation des élites.

Tout d'abord, la thèse enrichit la littérature sur les élites internationales, notamment au sein des grandes institutions financières comme le FMI. Elle apporte des éléments nouveaux sur la durée des mandats et la rotation des membres de l'administration de ces institutions, en démontrant l'importance des crises économiques, notamment les crises de la dette, comme facteurs déterminants. Cette analyse comble une lacune dans les travaux existants qui se concentrent souvent sur les qualités induites des individus, telles que l'expérience ou l'éducation, sans intégrer suffisamment l'impact des facteurs externes.

Se concentrant sur l'accession des femmes aux plus hautes fonctions politiques, la thèse offre une contribution originale à la littérature sur les élites politiques et les questions de genre. Elle révèle le rôle crucial des contextes de crise dans la nomination des femmes aux postes de pouvoir, confirmant les théories comme celle de la « falaise de verre » qui montre que les femmes sont souvent propulsées au pouvoir dans des moments de grande instabilité. Cette étude contribue à mieux comprendre les dynamiques de genre dans l'accès au pouvoir et la persistance des inégalités structurelles.

Deuxièmement, la thèse étudie l'influence des cycles politico-économiques sur les décisions économiques. Elle met en évidence comment les périodes électorales et les jeux politiques influencent non seulement la politique budgétaire et monétaire, mais aussi l'économie dans des contextes aussi différents qu'Haïti et le Royaume-Uni. Cette exploration contribue à la littérature sur les cycles politico-économiques en montrant que même dans des contextes institutionnels contrastés, des dynamiques similaires se manifestent, révélant des manipulations économiques autour des échéances électorales.

Ainsi, la thèse contribue de manière significative à divers champs de l'économie politique, en dépendant des cycles politico-économiques aux élites internationales et nationales, tout en offrant des pistes prometteuses pour de futures recherches sur les crises économiques, le rôle des femmes dans les sphères de pouvoir et la gouvernance mondiale.

Chapter 1

Skyfall : A survival Analysis of the IMF Executive Board Members

Co-authors : Etienne FARVAQUE, Maqsood ASLAM.

Abstract *In the absence of a retirement age constraint at the IMF, this study explores the tenure persistence within the Board of Directors of the International Monetary Fund (IMF) from 2009 to 2021, through a survival analysis. The findings highlight that extrinsic factors, namely sovereign crises, banking crises, the ratio of debt-to-GDP, and political transformations, exert a predominant role in tenure longevity, while sociodemographic characteristics such as age and education or gender, have a negligible influence. In summary, survival within this board is primarily governed by geopolitical and economic variables rather than by individual attributes.*

Keywords : Tenure Persistence, International Monetary Fund (IMF), Cox Survival Model, Debt Crisis, Banking Crisis.

JEL Codes: C41 ; D73 ; F33.

1.1 Introduction

> *"The Executive Board is responsible for conducting the day-to-day business of the IMF. It is composed of 24 Executive Directors, who are elected by member countries or by groups of countries, and the Managing Director, who serves as its Chair. All IMF member countries are represented on its Executive Board, which discusses the national, regional, and global consequences of each member's economic policies and approves IMF financing to help member countries address temporary balance of payments problems, as well as oversees the IMF's capacity development efforts."*[1]

The above quote defines the roles of the executive body of the International Monetary Fund (IMF), and thus reveals the importance of this international institution. Yet, very few is known about the members of the Executive Board Executive Board Members (EB) or the managing directors who manage the Fund. Although belonging to a tiny elite of international civil servants, they are very discrete, and their notoriety is very small. More precisely, more often than not, they become famous when they leave the fund, either due to a scandal (as infamously happened to the managing director Dominique Strauss-Khan) or obtain a position with higher visibility (as when managing director Christine Lagarde left to become President of the European Central Bank).

Given the fundamental role the IMF plays in international finance, it is important to raise the veil on this population of international experts, to assess who they are, where they come from, and the reasons for their departure. More precisely, given their role as key leaders representing countries (and not only theirs, as there are only 24 EB members, while 190 countries belong to the IMF), one can wonder if there is a rotation scheme among countries. If yes, is it respected? If no, then, what drives a change in the representation? In others words, when IMF's board members are removed, is this through a smooth process, or does it occur among (or because of) turbulence?

To our knowledge, despite the critical role played by the IMF, and thus by its decision-makers, no previous empirical attempt has been made to analyze in a systematic way the background, rise and fall for the IMF's EB members. The contribution this paper brings is thus to answer these questions. Thus, we first analyze the profiles of the members of the IMF's executive board, we then study the rotation among members, and then investigate the reasons for their departure. This is realized through a survival analysis, for the members present during the period 2009-2021, covering 132 individuals. The analysis differentiates

[1] Taken from www.imf.org/external/pubs/ft/ar/2021/eng/who-we-are/executive-directors-management-team/ . (Last consulted: September, 18, 2023.)

between the members that are appointed to a one-country-one-seat position, and those that are "elected" among countries to occupy the seat of a "group", and thus represent several countries.

Although there is, in political science and public economics, an abundant literature on various aspects of the political decision-making process in democracies, relatively few studies have considered the very specific form of democracy that exists inside the IMF, at least from the perspective adopted here, that considers both the characteristics of the population of IMF board members, and the reasons for their departure from their seat. More precisely, if the IMF decisions are taken in a democratic way, each country is not equal among the others, and one could better speak of a delegated form of democracy (as each country delegates its vote to a civil servant, who is not necessarily belonging to the delegating country). This makes it even more interesting to look at the qualities of the people that are chosen, and the reasons why they may fall from their position. Can people in such a key position at the international level stay in power indefinitely, or are they vulnerable to economics or political shocks (debt crisis, political crisis, international crisis, ...)? And, if yes, which types of shocks are decisive in explaining their fall?

To answer these questions, we use the survival analysis as our empirical approach. In this type of analysis, survival curves describe the probability of an individual surviving for a certain period of time. The use of the term 'survival' is defined according to the context of the research. In our context, this is an EB membership mandate. The survival curve gives a first view of the length of a stay in power for the population under scrutiny. Then, a survival econometric analysis is realized in order to identify events that may trigger a departure before the theoretical end of tenure (Efron (1988) , Klein **and** Moeschberger (2005)). Now standard in many contexts, from medicine to actuarial science, this type of analysis has been applied in political economy to other types of deciders. Using the survival analysis, Fedeli, Forte **and** Leonida (2014) have studied the members of the Italian Parliament, Scharfenkamp (2018) has looked at German ministers, West **and** Kachoyan (2019) have observed Australian politicians, while Mourão **and** Martinho (2020) did so for Romanian ministers.

Our results reveal that women typically do not enjoy longer tenures at the IMF. Extrinsic factors to the role, notably geopolitical and economic crises, exert a significantly stronger influence on the duration of tenures inside the board, compared to demographic or other biographic specific factors. Importantly, it appears that sovereign debt crises have a negative impact on the likelihood of tenure survival, while banking crises increase it. Regime changes at the national level also contribute to reducing the likelihood of maintaining an administrative position at the IMF, especially when the debt-to-GDP ratio

is high.

The paper is organized as follows. Section 2 reviews the different parts of the literature on which we build to derive the research hypotheses we explore in the rest of the paper. Section 3 provides the rationale for the empirical research, detailing the specificity of this particular population of international civil servants, and provides a picture of the characteristics of this population. Section 4 provides the empirical study and an analysis of the results, as well as some robustness checks, while Section 5 concludes.

1.2 Literature Review

Our analysis builds on several parts of the literature, that we present in turn in this section, and use to derive the research hypothesis that are studied in the empirical part.

1.2.1 Personal background of policy-makers

So far, much of the literature on this topic explores the importance of the personal characteristics of national leaders. This is the "personal biography" approach, as Krcmaric et al. (2020) name it. It assumes that leadership matters and has an incidence on performance, hence that the leaders' characteristics do matter.

Hayo **and** Neumeier (2016), for example, show that government leaders with lower socioeconomic status are more likely to increase public deficits in Organization for Economic Cooperation and Development (OECD) countries, while Pilny **and** Roesel (2020) analyze if doctors are better health ministers (in short, the answer is yes when it comes to investments and hiring, but no for productivity). Fuchs **and** Richert (2018) have also considered the role of ministers in charge of aid, and find that there is a premium to experience, in the sense that ministers who have spent more time in the development office obtain larger aid budgets.

Individual leaders' crucial role in shaping the growth of their nations has been shown Jones **and** Olken (2005). A mechanism is that education and background may forge experience and induce reactions. For example, Göhlman **and** Vaubel (2007) indicate that central bankers' occupational background carries a more significant weight than their education in explaining inflation performance. It has also been shown that education and professional backgrounds are influential in explaining central bankers' actions (Farvaque, Hammadou **and** Stanek (2011) ; Aslam, Farvaque **and** Malan (2021)). Moreover, in the same

field, it has been shown that gender matters: central bank boards with a higher proportion of women are more conservative (i.e., more responsive to inflation - see Masciandaro, Profeta **and** Romelli (2024).

As there is no reason to think that the members of the IMF executive board are different from other policy-makers, the factors that determine their decisions and performance should be consequential for their appointment and dismissal. Hence, we can express a first set of general hypotheses:

H1.: Background should matter for IMF executive board members' appointments and dismissal.

H2.: Gender should matter too.

Although these hypotheses are written in a general way, we expect results from other strands of the literature to allow us making them more precise.

1.2.2 IMF-related literature

The IMF plays an important role in resolving economic crises affecting its member states, whatever the nature of the shocks they face (banking crisis, debt crisis, currency crisis, natural disasters, etc.). The institution's board deals with day-to-day business but, overall, approves the most important decisions the IMF takes. Although the process and dynamics of survival of the IMF's board members are certainly different from those of heads of state or governments, these decision-makers have to perform to satisfy the country or group of countries that appoints them. However, to date, no attention has been paid to the longevity of senior officials at the IMF, while these officials play a crucial role in the provision and repayment of loans to the organization's member countries and have an influence in the functioning of the international financial system Malan (2018).

Moreover, although the "personal biography" approach is more and more considered for national policy-makers, much less is known about international leaders, to whom relatively little attention has been paid. Hence, the role of their personal characteristics is generally ignored. Personal characteristics may also have been overlooked because, from the outside, the institutional constraints that leaders in international organizations often face may seem to prevail. Yet, international organizations, especially of the IMF importance, are institutions where leader-specific characteristics are maybe the most susceptible to generate policy-relevant effects, as much as at the national level Besley,

Montalvo **and** Reynal-Querol (2011). Moreover, it may be in this field that separating the impact of the office from the one of the office-holder may be easier Baturo **and** Elkink (2014) . Nevertheless, a study which is close to ours analyzes how the political leaning of managing directors influence policy's orientations inside the IMF Copelovitch **and** Rickard (2021) . And there is a growing body of research on the importance of leaders of in international organizations. At the World Bank, for example,it is clear that presidents shape both the culture of the Bank and its lending activities Moloney (2022).[2]

For the IMF, although the literature has focused on the structural determinants of lending decisions, including the influence of the United States (USA) hegemony in shaping decisions (Momani (2004) ; Stone (2004), it has also been shown that some non-economic determinants play a role in the decisions taken. In particular, the affinity with the USA, measured by the correlation of votes between the USA and other countries, is a decisive factor. The database assembled by Dreher and his coauthors and used, for example, in Dreher, Sturm **and** Haan (2008) ; Dreher **and** Sturm (2012) ; Dreher, Lang **andothers** (2022) allows revealing the cross-influence between the votes inside the United Nations, and the decisions taken at the IMF. More precisely, Dreher, Lang **andothers** (2022) , it is shown that the USA uses IMF loans to buy other countries' votes in the United Nations Security Council.

Given that IMF executive board members represent groups of countries, for the elected ones, the incentives to vote in line with the interests of the largest country in the group are important, provided the country wants to keep the same representative. In other words, we derive the following hypothesis:

H3.: The affinity of votes at the UN with the largest country in the IMF group should reduce the incentives for a country to change its representative at the IMF executive board. Hence, affinity of votes should have a positive impact on the length of a board member's mandate.

1.2.3 It's (also) the economy

When does the pressure to replace the IMF board members' arise? Ceteris paribus, any representative who allows her influence in the board's decisions to dwindle may be sanctioned by her delegating principal. The situation is however not as simple as that,

[2]The mechanism also applies to the European Union (EU), as it has been shown that the Council President has programming and agenda-setting powers (Tallberg (2003) ; Häge (2017), while Gehring and Schneider (2018) reveal an influence of EU Commissioners on budget allocations.

because if replacing a member of this elite may be costly for her (by the loss of reputation, prestige, and of the perks that are associated with the position), it can be costly for the principal too, as the IMF is also a playground in which (more or less powerful) states interact with each other (see the above discussion, and Momani (2004)).

To our knowledge, no study has considered the determinants of the rotation of staff at the hierarchical level of the IMF's executive board members, although the literature counts several empirical studies of the reasons for the change of positions for ministers or elected members of Parliaments. Quite often, this is done using survival analyses.

It is the case, for example, of Fedeli, Forte **and** Leonida (2014) , who have studied the members of the Italian Parliament. They consider institutional and personal biographical information to analyze the probability of survival of deputies and senators over the different regimes Italy has known in the second part of the 20th century. Their results show that gender matters (with men lasting longer than women), education too, as well as age (a signal of political experience). West **and** Kachoyan (2019) have observed Australian politicians' tenure, and they indicate that women are at a disadvantage, as well as members of the House of Representatives (compared to senators). Gender is also a disadvantage for women in the case of ministers in the United Kingdom, as shown by Berlinski, Dewan **and** Dowding (2007) . This result has a broader relevance, as shown by Bright, Döring **and** Little (2015) , who confirm it for Western European countries. They also show that ministries of higher importance tend to stay in power longer than their counterparts in less important ministries.

Scharfenkamp (2018) looks at German ministers, showing that ministers with a past experience in corporations (or similar institutions) last longer, at least before 1989, with more political profiles dominating afterwards. In this case too, women last less longer than men. If the link with economic conditions is weak, it becomes stronger with Mourão **and** Martinho (2020), who explicitly include economic reasons as potential determinants of the change of positions at the ministerial levels, in the case of Romanian ministers. They observe that when unemployment increases, ministers tend to stay longer in office, while higher inflation rates tend to shorten their tenure. Interestingly, however, Mourão **and** Martinho (2020) show that the effect of unemployment on tenures has the opposite sign in Portugal.[3] This difference in results echoes the conclusion of de Clercy **and** Ferguson (2016), who study the link between economic and financial crises and leadership, showing that the literature is not fully settled on the relation between economic shocks and changes in leadership.

[3]The positive relation between unemployment and the length of a minister's tenure is confirmed by Mourão Mourão (2024) for the dictatorship period Portugal has known between 1926 and 1974.

As no studies have considered the IMF staff under the same methodology, we cannot really conclude on the role of institutional and economic factors for their tenure. Nevertheless, from the above literature and the role of the IMF in the resolution of international financial crises, it is not far-fetched to propose the following hypothesis:

H4.: Economic crises should matter for the length of an IMF executive board member. More specifically, if national economic conditions should reduce the length of a mandate, international crises may extend it.

The mechanisms lying behind this hypothesis are the following. First, IMF representatives are political appointees. We can thus assume that their fate is similar to a minister's one, and that national economic conditions will worsen their perspectives (if only because a change of government may induce that their principal changes). Second, their expertise in international affairs may protect them from being removed when their country needs it the most, in particular during a financial crisis (or a crisis of a similar nature).

1.2.4 Testable hypotheses

Along this survey of the literature, we have derived several research hypotheses. Some of them were however not written in a testable way, for lack of sufficiently converging results. Yet, aggregating the results from the different parts of the literature that we have covered allows us to write them in a more testable way. This is particularly the case for the first two hypothesis, which we can now rewrite as follows:

H1.: Background should matter for IMF executive board members' appointments and dismissal. *In particular, more experienced and educated members should have longer tenures.*

H2.: Gender should matter too. *Women should have shorter mandates.*

H3.: The affinity of votes at the UN with the largest country in the IMF group should reduce the incentives for a country to change its representative at the IMF executive board. *Hence, affinity of votes should have a positive impact on the length of a board member's mandate.*

H4.: Economic crises should matter for the length of an IMF executive board member. *More specifically, if a worsening of national economic conditions should reduce the length of a mandate, international crises may extend it.*

We now turn to the empirical analyses that we use to test our assumptions.

1.3 Personal biography : data analysis

The dataset on board members has been created by using information from various sources: LinkedIn accounts, Wikipedia pages, and the official pages of the board members. LinkedIn accounts often allowed us to obtain information on the level of education, the type of employment before joining the IMF (and/or the board), the exact date of appointment, and the number of years of experience before joining the IMF board. However, some individuals, often those who joined the institution before the 1990s do not have a LinkedIn account. We therefore gathered the required information using sources in several languages (from Arabic to Zulu through Flemish or Polish). As it is considered a privilege to be appointed to the IMF, the designation of a representative on the IMF board is often covered by the media, the press reporting on the news with pride. Wikipedia pages detailing biography, background and dates of appointment and termination of the IMF term have also been used. In the end, we have a dataset covering 132 individuals over a 13-year period (2009-2021).

It is essential to note that there is no fixed retirement age at the IMF. This is exemplified by the case of Shakour Sahlan, a former administrator who accumulated over five decades of experience at the IMF, including about a decade as an administrator, before passing away while still in office, beyond 70. Hence, the constraint of retirement age does not exert an influence on administrators' tenure duration, who in general get positions after their stint at the board. As Table 1 shows, 14% of them find a position in another international organization, and 45% return to the (national) public sector.

Table 1.1: Administrators' careers after the IMF

Type	Share of total
Death	1%
International Organizations	14%
Private Sector	15%
Public Sector	45%
Teaching / Research	4%
Other (no information)	23%

Total	100%

1.3.1 Length of mandate

There are two types of IMF board members, the appointed and the elected ones. The latter represent two thirds of the members (see Table 1.2) in our sample. Only seven countries appoint their representatives directly, while the others have to go through a designation process inside their group of countries[4].

On average, elected members have a shorter mandate than the appointed ones (under three years for the former, against more than three and a half years for the latter). An elected member normally has a two-year mandate on the board, but this duration is rarely respected. The maximum length is superior to eight years for appointed members, while it is superior to 25 years for the elected ones, far above the theoretical 2-year limit.

This may be due to the fact that the two types of board members do not face the same pressures. For example, an elected representative has to satisfy the expectations of a group of countries, whereas an appointed representative has to satisfy the demands of a single one. This would lead one to expect a higher rotation rate for elected members, and this is indeed what we observe (see Table 1.2). However, in Table 3, we compare the effective presence of a country's representatives over the theoretical presence each country should have obtained. For example, if a country belongs to a group of five, its theoretical presence in the board should be equal to 1/5 = 20%. As the figures reveal, the effective presence is much higher, reaching a value of 2.01. This means that countries that obtain a seat in the board tend to keep it much longer than they should, even though the member herself can be changed (as was seen from Table 1.2).

This thus reveals that the groups among which board members are chosen are not composed of equal countries: while a small country (i.e., with a small vote share) that would have obtained the nomination of its representative may not take the chance to lose the position by removing her early, our data reveal that few countries in fact get a seat inside the board, and that these are the bigger ones, who can change the representative while not losing the seat (otherwise, the pressures from inside the groups of countries may lead to a higher degree of turnover among countries, as well as among people).

[4]The countries that appoint their representatives directly are the following: United States of America (USA), United Kingdom (UK), Japan, Germany, France, Saudi Arabia, and China.

Table 1.2: Length of mandate by type of mandate

Appointed: 33.3% of the sample					
Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
1.00	2.00	3.00	3.54	5.00	8.42
Elected: 66.7% of the sample					
Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
1.00	1.42	2.00	2.67	3.00	25.58

Table 1.3: Effective presence vs. theoretical presence, total and by type of mandate

	Mean
Total	1.67
Appointed	1
Elected	2.01

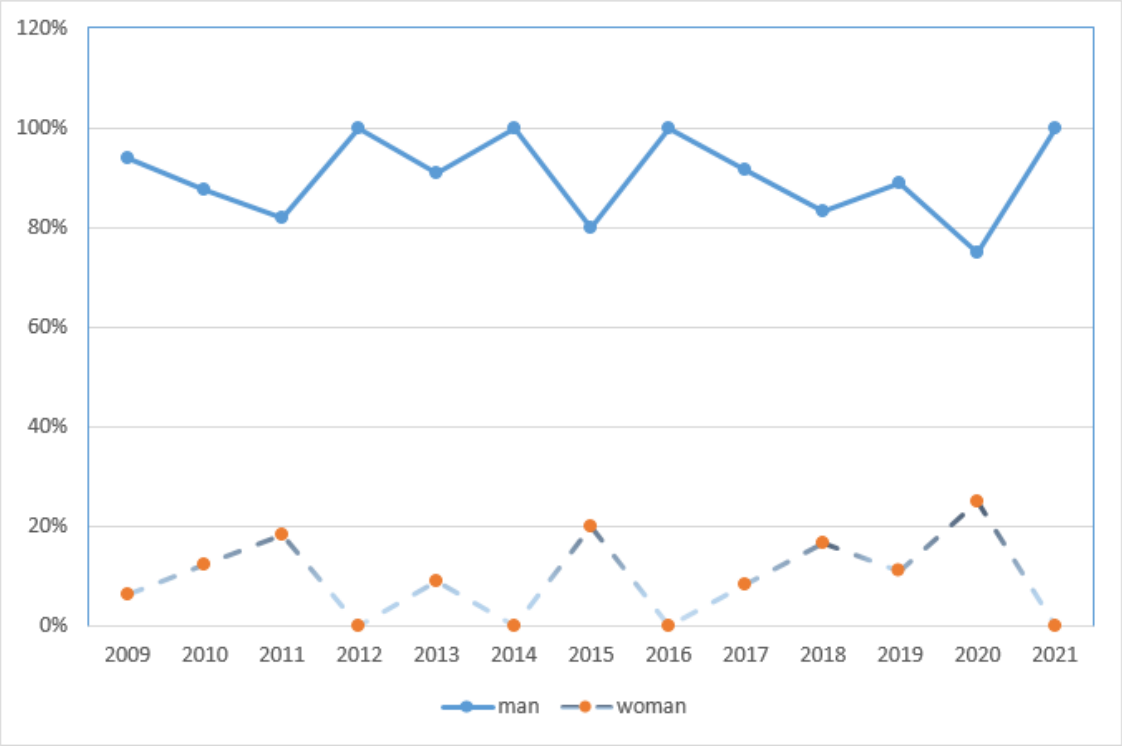
1.3.2 Gender

Also interesting is to look at the gender (im)balance inside the board. As can be seen from Table 4, during the period under review (2009-2021), the gender composition of the board is not at all balanced, with a large majority of IMF directors being men (89% on average). Moreover, as Figure 1 shows, there is no tendency to correct the gender imbalance. Still, the proportion of women is different between the two types of mandates, as women are almost thrice as likely to be appointed to the board, rather than to be elected (Table 1.4). Moreover, comparing the effective to the theoretical presence as above, but separating the members by gender, it appears that men have served on average 1.7 times more than they should have (with regard to the number of countries in their country's constituency). Women, on the other hand, have served only 1.3 times more than they should have. In other words, the gender imbalance is not corrected by a longer length of mandate for women, all the opposite. This is a first indication of the validity of hypothesis H2.

Table 1.4: Distribution by gender and type of mandate (%)

	Total	Appointed	Elected
Male	89	82	93
Female	11	18	7

Figure 1.1: Evolution of the gender shares inside the IMF board



1.3.3 Education and professional backgrounds

Turning to the educational profile of the members of the IMF board, we first observe, from Table 1.5, that if more than half of them holds a Ph.D., this is much more the case for the elected members than for the appointed ones.

The predominance of Ph.D. holders and economists and statisticians testify for the technical type of expertise that is expected from the IMF board members. However, given that the appointed members are less susceptible to hold a Ph.D. and to be economists, this hints at the possibility that, for countries who have a larger share of the votes, technical expertise may be less necessary than diplomatic skills.

This is confirmed by the fact that appointees are more likely to have a legal or administrative background (23% of them, versus 8% for the elected members). From Table 6, it appears that a majority of the board members have a degree in Economics or Statistics, which may again appear as a pre-requisite given the tasks devoted to the institution.

Table 1.5: Type of mandate and level of education (%)

	Master	Ph.D.
Appointed	55	45
Elected	39	61
Total	45	55

Table 1.6: Field of study and level of education (%)

	Master	Ph.D.	Total
Administration / Management / Law	22	4	13
Economics / Statistics	64	87	76
Political Science / Social Sciences	14	9	11
Total	100	100	100

There is a dimension for which there is no (statistically significant) difference between the different types of members, it is experience: before joining the IMF board, elected members have an average of 5.55 years of experience, while the appointed ones have 5.07 years of experience. However, this experience has not exactly been acquired in the same contexts, as elected members more often have acquired an experience in the public sector (66% of them, against 57%), while they are less susceptible to have gained experience through a career either in education and research activities, the private sector, or in (another) international institution.

Table 1.7: Type of mandate and professional activity before joining the IMF (%)

	Appointed	Elected
Education / Research	16	10
International institution	14	11
Private sector	14	13
Public sector	57	66

Interestingly, looking at Table 1.8 reveals that there is no significant difference between men and women in terms of sectors of activity before joining the institution. They are almost equally likely (women and men, 64% and 63%) to have had their first experiences in a public administration. Similarly, men and women who started their professional career in research have almost the same chance of joining the IMF Board (12% and 14%) if only the gender aspect is taken into account.

Table 1.8: Gender and professional activity before joining the IMF (%)

	Man	Woman
Education / Research	12	14
International institution	13	7
Private sector	13	14
Public sector	63	64

1.3.4 Comparing IMF board members with heads of governments

The Technocratic and Education Dataset The Technocratic and Education Dataset (TED) gathered by Flores, Lloyd **and** Nooruddin (2023) provides comprehensive data on the educational and professional backgrounds of the heads of government of all sovereign states between 1946 and 2015. On some dimensions, it is interesting to compare this elite of national leaders to the international elite of IMF board members.

Restricting the TED sample to the period 2009 - 2015, for the sake of comparison with our sample, it appears that 97% of the political elite were men, which is a degree worse than for IMF board members. All women who held a national leadership position during this period graduated, and they all had a background in economics, finance, or public policy. In contrast, only 6% of men reached this level of education, which is a stark difference with the international elite serving at the IMF. 14% had received military training before taking up the position. However, only 32% of the men had an academic or university background in economics, finance, or public policy.

All the women had their first professional experience in international institutions, while the majority of the men (85%) started their career in the public sector. 88% of the men were elected and 12% were appointed, while all women were elected to these national leadership positions.

Overall, thus, it appears that the members of the board of the IMF are quite different from elected or appointed national leaders. This makes this group even more interesting to

study. Hence, having described our novel dataset, we now move to the specific empirical analysis to analyze how the exposed variables influence the mandate length of the IMF board members.

1.4 Econometric Analysis

1.4.1 Demographics and survival

Given our goal, the most appropriate type of modelling is a survival analysis, which gives an expression for the hazard at time t for an individual i, given a set of explanatory variables, that are a vector of potential predictors of the individual hazard. Survival models provide an analytical framework to understand the time until a specific event occurs, shedding light on the temporal dynamics of events. Here, our aim is to understand the survival dynamics of the members of the IMF's executive board and to determine the factors influencing them during the period from 2009 to 2021. In this context, a board member's year of assuming office represents her entry into the board, and conversely, the year of departure signifies her exit. Survival, in this context, is defined as the duration of a member's tenure, representing the years one remained in her position. The difference between the year of departure and the year of assuming office gives us a "lifespan".

A proper indicator of the survival rate is provided by the Kaplan–Meier survival probability estimate (see Efron (1988), Box-Steffenmeier **and** Zorn (2001) , or Klein **and** Moeschberger (2005)). This method enables us to estimate the survival probability of an individual or a group of individuals at various points in time. This estimation is particularly valuable when the data includes individuals who have not yet experienced the failure event by the end of the study or observation. This type of analysis is now standard in the literature on political elites (Fedeli, Forte **and** Leonida (2014), or Castro **and** Martins (2013)), and it is natural to apply it to international elite members, such as the members of the IMF's executive board.

After carefully observing the survival trend of the administrators using the Kaplan-Meier method, we then employed the Cox model to determine which IMF board member's characteristics influence the survival of the member in a mandate that can be terminated at her government's whims. This model is based on the idea that the ratio of hazard rates for two individuals remains constant over time. The regression coefficients will thus be interpreted as expressing the relationship between the proportional change that is to be expected in the hazard function and the changes in the explanatory variables. Therefore, a

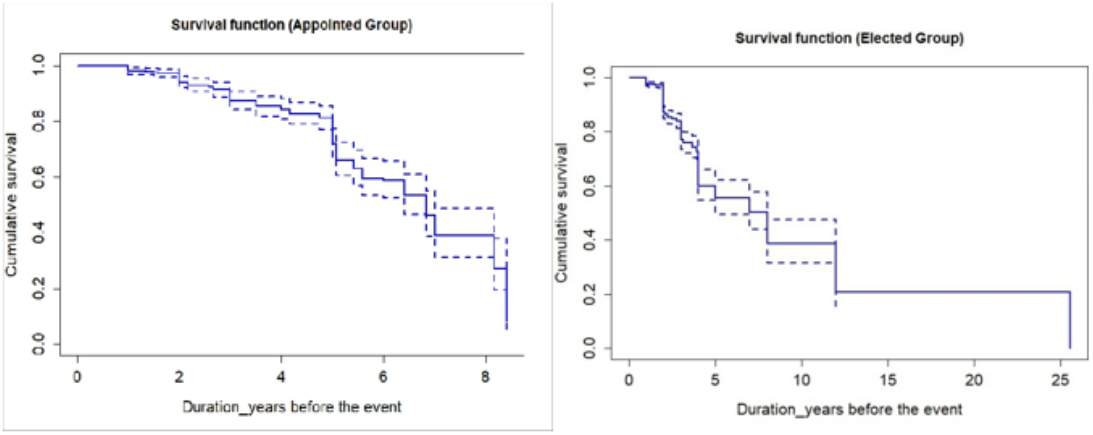
potential determinant receiving a positive estimated coefficient will indicate the member's term of office would be shortened while, conversely, negative significant coefficients increase the probability of having a longer term of office.

As explained above, there are two types of members on the IMF board, the elected and the appointed - the latter coming from countries with the largest share of votes in the Fund's statutes[5]. An elected member normally has a two-year mandate on the board, and must strive during these two years to meet the demands of his group regardless of potential situations that could affect the represented countries' financial and economic health (banking crisis, debt crisis, political crisis...). Appointees, on the opposite, may have the advantage of not being constrained to a fixed term of office and the constraint of satisfying the requests of several countries, depending only on the goodwill of their government. Their behavior is thus certainly different from the one of the elected members and, as a result, their survival dynamics on the board would be different. If the descriptive statistics provided before did support some of these claims, the reasons behind the turnover of the board members are not apparent, and our analysis aims at uncovering if board members are changed at the whims of their government, or if some external shocks can explain the move.

The difference in mandates' length is confirmed in Figure 1.2, that displays the survival function for each group. The vertical lines show the probability of survival of a member at each moment, the vertical distances between the horizons showing the change in the cumulative probability of survival at a given time, as seen on the Y-axis. For example, an elected member has a probability of staying on the board more than 2.67 years (or less than the average life span for an appointed member, see Table 1) that is inferior or equal to 0.88. Note that this probability decreases with time - i.e., the longer a director is elected, the further away from 0.88 the probability of staying on the board becomes. While the probability of surviving 3.5 years (average lifetime of an appointed member) and more for an appointed director decreases over time from a probability of 0.85 to 0.83.

[5]For example, in 2021, the US, with a 17.43% quota share, had 16.5% of the votes. They could therefore prevent essential decisions being taken by the 85% majority. Venezuela, with 0.77% of the quotas, had 0.76% of the votes. It can only marginally influence the essential decisions that are taken by an absolute majority.

Figure 1.2: Estimated survival functions (Kaplan-Meier)



By performing a simple survival analysis with the variable "Type of mandate", it emerges that the type of tenure can indeed be an explanatory factor of the probability of survival on the IMF board during the period 2009-2021, as can be seen in Table 9. All else being equal, an elected executive director would be 1.25 times less likely to survive on the board than an appointed executive director. However, according to the result of the Cox proportional hazard test, the relationship between the survival of directors and their type of mandate must be rejected with a 5% probability of being wrong, since the p-value of the Schoenfeld test (1.1e-08) is largely below the threshold value (0.05). This forces us to discard this variable for further analysis.

By conducting a univariate survival analysis with the gender variable as exogenous, it appears that the p-value of the gender variable takes on a value of 0.12 (see column (3) of table 1.9). This would indicate that gender is not at all a determinant in explaining the survival of Executive Directors on the IMF board over the sample period. However, as explained before, women are much more often appointed than elected.

Hence, conducting an analysis splitting the sample between appointed and elected members, the direction of the relationship between the survival of Executive Directors and gender is significant at 10% level (see column (3) in Table 1.9). For the appointed members, the direction of the relationship between the survival of IMF Executive Directors and gender indicates that, all other things being equal, men would have a higher probability of survival on the IMF Board than women would, validating our research hypothesis H2. The variable years of experience (before joining the IMF) also has a positive impact on the probability of a shorter term, as can be seen in column (4) of Table 1.9.

However, since the p-value associated with the gender variable is inferior to the 5%

threshold, we will not be able to keep this variable in the remainder of the work because it violates the proportional hazard assumption of the Cox model. We can simply conclude that the probability of survival of IMF directors during the period under review depends significantly on the number of years of experience before joining the board. This is also the case for the fields of studies in which the members were trained. A background in political or social sciences does not favor a long term, but the global significance of the model (last row of Table 1.9) is not strong enough to consider this variable as relevant.

Overall, thus, if our research hypothesis H2 (about gender) is validated, the hypothesis H1 (about education) is not confirmed by the data. The only variable that verifies the assumptions related to the Cox model is the one related to the number of years of experience. This variable will thus be kept for the remainder of the analysis, in which we will look at the influence of external events on the survival of the board members.

1.4.2 Economics and survival

As many factors can influence the tenure of Executive Directors at the IMF beyond their personal biographic characteristics, we now enlarge the analysis to these factors, considering economic and political ones. For example, an economic crisis in a country may increase the pressure on the country's representative at the IMF to find support from the institution for any economic recovery. Moreover, as the literature as shown, national economic conditions can play a role in the length of a politician or a civil servant's mandate. We will thus consider economic factors that could validate our research hypothesis H4, controlling for the links between countries (i.e., our hypothesis H3). We thus now consider the potential effects of local or regional political and economic shocks, as well as of local and global politics on the likelihood of an Executive Director's survival.

In 2008, Organisation for Economic Co-operation and Development (OECD) countries were hit by a violent economic shock that led to a severe economic recession, with important repercussions, in particular across European countries. Then, in 2020, the Covid crisis has also led to important fluctuations in economic contexts. Hence, during the period 2009-2021, many, if not all, IMF member countries have faced important economic shocks.

Table 10 displays the coefficients attached to the variables considered in our second type of modeling. In each column, the dependent variable is the "tenure duration" variable. Variations over the columns relate to whether the regression was performed on the total sample of EB members, or a subset of them. For instance, in column (3), the regression between gender and length of mandate was conducted using a subset that includes only

elected administrators. The final row displays the results of the validity test for the Cox model, determining whether the proportional hazard assumption holds true, indicating that the hazard ratio for two individuals remains constant over time. Again, to validate the significance of a variable, its p-value should be greater than 0.05.

Table 1.9: Estimates - Cox proportional hazard model - Length of mandate & biographical variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Elected members				
Type of Mandate (Elected)	0.2432						
	(0.1104)						
Gender (Woman)		-0.0815					
		(0.1652)					
Gender (Woman)[1]			0.5593				
			(0.2930)				
Years of Experience				0.09083***			
				(0.0039)			
Field of Study (Economics/Statistics)					0.0856		
					(0.1511)		
Field of Study (Political or Social Science)					0.3949		
					(0.2077)		
Level of Education (PhD)						0.248	
						(0.1069)	
Field of Activity (International Institution)							0.0167
							(0.2093)
Field of Activity (Private Sector)							0.0017
							(0.1957)
Field of Activity (Public Sector)							0.01575
							(0.1532)
Cox Proportional Hazard Test	1.1e-08	0.14	0.12	0.35	0.0008	0.0001	0.0001
Observations (N)	1716	1716	1144	1716	1716	1716	1716

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In relation to our research hypothesis H4, we analyze the impact of several types of national or local economic crisis: 1) banking crises, which refer to all types of bank failures in a country that render them insolvent; 2) monetary crises, which concern the depreciation of a currency against the dollar or the euro or another strong currency; 3) debt crises which describe any situation where a country fails to meet its principal and/or interest payments on the due date and/or reschedules its debts on less favorable terms. The IMF, given its missions, is often a central actor in responses to such crises[6]. However, debt crises often result in government liabilities that can further undermine economic performance. In such cases, the IMF is empowered to monitor the behavior of states in relation to the commitments they made as part of their membership (Steinwand **and** Stone 2008).

Moreover, some crises are strongly correlated (it is for, example, the case for debt and

[6] Article I of the institution's Articles of Agreement states that its purpose is to promote the development of the resources of all members and to prevent policies that impair global economic growth and disturb the stability of the international monetary system.

currency crises - see the correlation table in the Appendix), and all of them cannot thus be used at the same time in the models we estimate. Given the functions of the IMF, the debt crisis variable was chosen for further analysis. The data used to measure and date these crises come from (Laeven **and** Valencia 2020).[7] We also consider the possibility that regional or international crises impact the institution governing elite. We thus consider: 4) regional economic crises, which are any crisis in a member country of an IMF bloc (and this may be relevant as some members of the board represent regional groups of countries); 5) international crises, which refer to any global economic crisis. A typical example is the Covid-19 health and economic crisis that has hit the world since 2020. Finally, we also include more local (i.e., national) variables, to test for the role of national economic conditions on the length of mandate of the EB members. More precisely, we include 6) the debt-to-GDP ratio, 7) the trade balance, as well as 8) the openness ratio and 9) the GDP growth.

To test for our hypothesis H3, we include a measure of the proximity of countries with the global agenda of their group inside the IMF, assessed by the affinity in voting with the most powerful economic country of each group (similarly as Kim and Russett, 1996, or Dreher et al., 2008, or Voeten, 2013, for example). Gross Domestic Product (GDP) per capita is the criterion used to determine the most powerful state in a group[8].

To construct this variable, the affinity of the group's member countries with the country with the highest GDP per capita was calculated for each year. This relation has been shown as important for the IMF and the World Bank (Dreher and Sturm, 2012), it is thus natural to take it into account here. Yet, as also expressed in our hypothesis H3, it can surely be the case that national political events can also affect the survival of country representatives at the international level. We will thus consider the possibility that a defeat of the incumbent national politician (i.e., an alternation in power at the national level) can impact the respective delegated member of the board. For this, we used the database on political institutions (Database on Political Institutions (DPI), 2020). The variable « exelec » allowed us to know if there had been an executive election during the year and the political party that had won it. From this information, we constructed our "change in power" variable.[9]

[7]Nguyen and al. (2022a), among others, have shown the relation between economic crises, as measured from this database, and political institutions.

[8]The database we have used is available through the Harvard Dataverse, see Voeten et al. (2009).

[9]The Database of Political Institutions presents institutional and electoral results data such as measures of checks and balances, tenure and stability of the government, identification of party affiliation and ideology, and fragmentation of opposition and government parties in the legislature, among others. The current version of the database, which is now hosted at the IDB, expands its coverage to about 180 countries for 42 years, 1975–2017. Missing data have been filled in for the remainder of the study period and for countries not in the database.

Table 10 presents a set of results. Its first column includes the full sample, while the second covers only the elected members. The third column includes only the members who have a career after their stint at the Fund, and the last column presents the optimal model, according to the diagnostics tests. By retaining the variable "years of experience before taking up the administrator position'" from table 1.9, we add one by one the variables related to political and economic shocks. The results confirm that all the variables (Years of experience, sovereign debt crisis, regime change, voting affinity, and banking crises) are significant and respect the Cox proportional hazards assumption. The results of the estimates including these variables are reported in Table 10. First, it has to be signaled that the variables indicating the presence of an international crisis, a regional crisis, a monetary crisis, or a political one, are not significant in explaining the length of the term (and for those who tend to be significant, they are not validated by the Cox proportional hazard test).[10] In the second column of Table 1.10, we include another type of economic crises, namely the banking ones. As can be see, this inclusion does not change the main result, and banking crises are not significant.

Although these results tend to invalidate the hypothesis H4, coefficient attached to the debt crisis variable is positive and highly significant, meaning that such crises reduce the term of a country representative (see column (1)). This lies in conformity with our research hypothesis H3. While it could have been expected that in such a situation a country would have relied on the experience of its representative, the opposite result stands out. The interpretation we can make of this result is that the change in the representative is a signal of commitment from the government needing the help of the Fund, as the reputation capital of the previous member may have been eroded by the deterioration in her country's fiscal situation. This interpretation finds a confirmation in the fact that the coefficient of the debt-to-GDP ratio is also positive and significant (at the 10 percent level) when the sample is restricted to elected members (see column (2) in Table 1.10). This variable becomes negative (and more significant) when the sample is restricted to the members who have made a career after leaving the IMF. This allows us to precise the interpretation: everything happens as if a high level of the debt-to-GDP ratio induces a country to maintain its representative, up to the point where there is a debt crisis, in which case the reputation is too much damaged to keep the representative.

Concerning our research hypothesis H3, the results reveal that a higher voting affinity at the United Nations reduces the term of a representative. While this is not in line with our expectations, it may be interpreted as the fact that a country takes less risk in changing its board member if it expects a larger support from the other countries in its group.

[10]Detailed results available from the authors upon request.

Finally, it appears that debt crises and international politics do play a more important role than local politics. because a change in power at the national level has a significant influence on the probability of having a reduced term, but the size of the coefficient is much smaller.

Table 1.10: Regression Cox for Models 1 to 4

Variable	**1- Full sample**	**2- Elected members**	**3 - Career after IMF**	**4- Optimal**
Years of experience	0.0841 ***	0.0765 ***	0.0811 ***	0.0804 ***
	(0.0044)	(0.0052)	(0.0047)	(0.0046)
Debt Crisis (Yes)	0.9656 ***	0.9899 ***	0.9752 ***	1.0077 ***
	(0.1903)	(0.2105)	(0.2028)	(0.1955)
Change in Power (Yes)	0.5219 ***	0.4890 **	0.3941 *	0.4115 *
	(0.1444)	(0.1782)	(0.1688)	(0.1662)
Voting Affinity	2.2467 ***	2.2255 **	2.1423 ***	2.1527 ***
	(0.6209)	(0.6901)	(0.6202)	(0.6228)
Banking Crisis (Yes)	-0.3547+	-0.1813	-0.4080+	-0.3814+
	(0.2138)	(0.2938)	(0.2275)	(0.2177)
Public Debt (%GDP)	0.0016	0.0055 *	-0.0048 **	-0.0046 **
	(0.0012)	(0.0026)	(0.0018)	(0.0018)
Trade balance (%GDP)	0.0335	0.0295	0.0450+	0.0446+
	(0.0302)	(0.0420)	(0.0266)	(0.0264)
Openness rate	0.0108	0.0090	0.0190	
	(0.0128)	(0.0126)	(0.0585)	
Annual GDP Growth	0.0168	0.0092	-0.0108	
	(0.0158)	(0.0193)	(0.0197)	
Cox Proportional Hazard Test	**0.0000**	**0.0067**	**0.242**	**0.31**
Observation: N	**1716**	**1144**	**1378**	**1378**

Notes: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the appendix, we provide three graphs that present the Kaplan-Meier survival curves for the variables change in power, banking crises, and debt crises. These graphs, the corresponding p-values (all below 0.0001), along with the results of the log-rank test, indicate that the observed differences between groups for each of these variables are statistically significant and relevant.

1.4.3 Robustness analysis

In order to verify the stability of our results, we carried out survival analyses using parametric models such as the exponential model, the Weibull model and the Gompertz model. These are proportional hazard models widely used in survival analysis, each with specific characteristics. To understand their differences, it's essential to go back to their respective theoretical foundations.

The exponential model is based on the assumption of a constant rate of risk. This simple approach, as described by (Kalbfleisch **and** Prentice 2011), is appropriate when the underlying assumption is that the risk of leaving a position does not vary over time. However, this assumption may be restrictive in institutional environments where temporal and contextual factors influence the probability of departure, as is our case here. The exponential model can model the direct effects of explanatory variables, but does not capture well the acceleration or deceleration of risk over extended periods.

The Weibull model, as mentioned by Lawless (2003), allows the rate of risk to vary monotonically. In other words, the hazard rate can increase or decrease over time, making it more flexible than the exponential model. The shape parameter in the Weibull model (k) modulates this temporal evolution. k>1 indicates increasing risk, which is often observed in environments where the probability of leaving a position increases with the accumulation of responsibility or institutional stress.

The Gompertz model, on the other hand, is more appropriate for modeling risks that increase exponentially over time, a characteristic often associated with the processes of aging or institutional attrition - a feature we can encounter in our context. According to Bennett (1983), this model is particularly useful for analyzing contexts where the risk of leaving a position becomes increasingly likely over time, as is often the case in unstable political or economic environments. The Gompertz model captures this dynamic by incorporating an exponentially increasing rate of risk, making it more relevant in contexts where pressure increases over time.

These models were chosen to take account of other aspects not identified by the Cox

model, which may well influence the survival of the IMF's EB members during the period we study. Table 1.11 contains a detailed description of the results. As can be seen, the models fundamentally deliver the same results as the ones obtained with the Cox modeling.

There are difference, though. First, it can be seen that the debt-to-GDP ratio's degree of significance varies over the different types of model, although its influence always goes in the same direction (note that the coefficients in the Weibull and exponential models are of an opposite sign than in the Cox or Gompertz, due to the way the models are written).

Second, in the Gompertz models, the variables related to the trade balance, trade openness, as well as GDP growth, are significant. The coefficients are all positive, meaning that the mandate of an EB member is reduced when these variables reach higher values. For the GDP growth, it means that the first part of our hypothesis H4 is not validated (although such a result would lie in conformity with the ones obtained by Mourão and Martinho, 2020 for Portugal). For the trade balance, that a higher deficit reduces the length of a mandate in our case can find the same interpretation as for the debt crisis variable: given that trade balance troubles fall in the scope of the IMF's missions, a country with troubles on this side would benefit from changing its representative, to repair its reputation.

Table 1.11: Parametrics models

Variable	Weibull Models				Exponentials Models				Gompertz Models			
Intercept	5.233 ***	5.278 ***	3.5037 ***	3.04238 ***	6.9453 ***	6.6193 ***	6.5234	5.9022 ***	0.05198 ***	0.04238 **	0.3648 ***	0.3649 ***
	(0.7771)	(0.8020)	(1.945)	(0.32043)	(1.1522)	(1.1497)	(4.0481)	(0.7615)	(0.0104)	(0.0139)	(0.0261)	(0.0260)
Years of experience	-0.0544 ***	-0.0531 ***	-0.0362 ***	-0.03599 ***	-0.0845 ***	-0.0792 ***	-0.0829 ***	-0.0814 ***	0.0843 ***	0.0783 ***	0.0794 ***	0.0794 ***
	(0.0036)	(0.0047)	(0.0027)	(0.00266)	(0.0043)	(0.0052)	(0.0047)	(0.0043)	(0.0044)	(0.0053)	(0.0047)	(0.0046)
Debt Crisis/Yes	-0.622 ***	-0.793 ***	-0.494 ***	-0.50304 ***	-0.7227 ***	-0.8927 ***	-0.6486 ***	-0.6905 ***	0.7804 ***	0.9718 ***	1.0382 ***	1.0415 ***
	(0.1286)	(0.1502)	(0.0928)	(0.08958)	(0.1829)	(0.2099)	(0.1936)	(0.1875)	(0.1887)	(0.2136)	(0.2025)	(0.1959)
Change in Power/Yes	-0.399 ***	-0.291 **	-0.119	-0.12417	-0.5287 ***	-0.4890 ***	-0.4351 ***	-0.4599 ***	0.5974 ***	0.4821 **	0.2308 ***	0.2333 ***
	(0.0945)	(0.1291)	(0.0784)	(0.07721)	(0.1421)	(0.1746)	(0.1662)	(0.1639)	(0.1435)	(0.1774)	(0.1606)	(0.1645)
Voting Affinity	-1.453 ***	-1.295 ***	-0.9903 ***	-0.99342 ***	-2.5591 ***	-2.0874 **	-2.5936 ***	-2.6028 ***	2.4659 ***	2.0154 ***	2.5755 ***	2.6677 ***
	(0.4383)	(0.4595)	(0.2891)	(0.28994)	(0.6801)	(0.6876)	(0.7218)	(0.7246)	(0.6918)	(0.6749)	(0.6025)	(0.6003)
Banking Crisis/Yes	0.2067	0.3052	0.2202 *	0.21833 *	0.1312	0.1793	0.0998	0.0411	-0.1603	-0.2681	-0.4556	-0.4515 *
	(0.1444)	(0.2101)	(0.1040)	(0.09936)	(0.2065)	(0.2937)	(0.2190)	(0.2072)	(0.2124)	(0.2981)	(0.2275)	(0.2173)
Public Debt(%GDP)	-0.0035 ***	-0.0077 ***	0.0023 **	0.00224 **	-0.0019	-0.0050 *	0.0018	0.0016	0.0041 ***	0.0808 ***	-0.0048 ***	-0.0048 ***
	(0.0007)	(0.0015)	(0.0008)	(0.00082)	(0.0010)	(0.0020)	(0.0015)	(0.0015)	(0.0017)	(0.0021)	(0.0007)	(0.0012)
Trade Balance(%GDP)	-0.022	-0.028	-0.0217	-0.02163	-0.0224	-0.0327	-0.0227	-0.0226	0.0257 ***	0.0360 ***	0.0481 **	0.0482 **
	(0.0224)	(0.0283)	(0.0138)	(0.01376)	(0.0326)	(0.0393)	(0.0331)	(0.0326)	(0.0334)	(0.0336)	(0.0270)	(0.0267)
Openness rate	-0.0074	-0.0072	-0.0067		-0.0084	-0.0093	-0.0098		0.00917 **	0.00933 **	0.0133 ***	
	(0.0088)	(0.0088)	(0.0275)		(0.0129)	(0.0126)	(0.0570)		(0.0138)	(0.0138)	(0.0132)	
Annual GDP Growth	-0.0244 **	-0.0201	0.0028		-0.0109	-0.0099	0.0165		0.0252 **	0.0196 *	0.0263 ***	
	(0.0103)	(0.0135)	(0.0090)		(0.0153)	(0.0188)	(0.0187)		(0.0159)	(0.0158)	(0.0159)	
Observation: N	**1716**	**1144**	**1378**	**1378**	**1716**	**1144**	**1378**	**1378**	**1716**	**1144**	**1378**	**1378**

1.5 Conclusion

Survival dynamics in prestigious positions is an important issue, as several authors have already delved into the factors that influence the duration of political leaders' mandates. However, to our knowledge, no study has embarked on examining the survival within the upper echelons of leadership in international organizations. Our aim was to discern the potential underpinnings that shape the duration of administrators' tenures at the International Monetary Fund (IMF) during the period from 2009 to 2021.

First and foremost, it has been empirically established that women face diminished prospects of securing positions on the IMF's board compared to men. Moreover, the results derived from the Cox proportional hazards model confirm that women typically do not enjoy longer tenures. Extrinsic factors to the role, notably geopolitical and economic crises, exert a significantly stronger influence on the duration of tenures within the IMF administration than demographic or role-specific factors. Specifically, and importantly, it appears that sovereign debt crises have a negative impact on the likelihood of tenure survival, while banking crises increase it. Regime changes also contribute to reducing the likelihood of maintaining an administrative position at the IMF, especially during a regime change.

By analyzing the obtained results and taking into consideration the previously mentioned considerations, it becomes evident that the survival dynamics of administrators within the IMF are closely linked to variables of a political and economic nature. Factors such as sovereign crises, regime changes, and banking crises play a decisive role in the tenure duration. As a result, sociodemographic characteristics such as age, gender, and education level seem to exert no significant influence on this dynamics.

These findings illuminate the complexity of the issues surrounding tenure stability within a prominent international organization like the IMF. Administrators' survival in their roles cannot be isolated from the geopolitical and economic contexts in which they operate. This study offers a fresh perspective on comprehending leadership dynamics within these pivotal international.

1.6 Appendix

Table 1.12: Survival of Appointed Members

Time	n.risk	n.event	Survival	Std. Err	Lower 95% CI	Upper 95% CI
1.00	572	12	0.9790	0.00599	0.9673	0.991
1.33	494	1	0.9770	0.00630	0.9648	0.989
1.50	481	1	0.9750	0.00661	0.9621	0.988
1.58	468	2	0.9708	0.00720	0.9568	0.985
2.00	455	15	0.9388	0.01070	0.9181	0.960
2.17	377	2	0.9339	0.01121	0.9121	0.956
2.17	364	2	0.9287	0.01172	0.9060	0.952
2.58	351	3	0.9208	0.01249	0.8966	0.946
2.67	338	3	0.9126	0.01324	0.8870	0.939
3.00	325	14	0.8733	0.01631	0.8419	0.906
3.50	260	3	0.8632	0.01713	0.8303	0.897
3.50	247	3	0.8527	0.01796	0.8183	0.889
4.00	234	3	0.8418	0.01881	0.8057	0.879
4.17	221	4	0.8266	0.01995	0.7884	0.867
4.75	208	4	0.8107	0.02109	0.7704	0.853
5.00	195	16	0.7442	0.02507	0.6966	0.795
5.00	143	5	0.7181	0.02676	0.6676	0.773
5.08	130	5	0.6905	0.02844	0.6370	0.749
5.08	117	5	0.6610	0.03013	0.6045	0.723
5.42	104	5	0.6292	0.03186	0.5698	0.695
5.58	91	5	0.5947	0.03365	0.5322	0.664
6.00	78	1	0.5870	0.03407	0.5239	0.658
6.42	65	6	0.5328	0.03743	0.4643	0.611
6.83	52	7	0.4611	0.04105	0.3873	0.549
7.00	39	6	0.3902	0.04377	0.3132	0.486
8.17	26	8	0.2701	0.04654	0.1927	0.379
8.42	13	9	0.0831	0.03743	0.0344	0.201

Table 1.13: Survival of Elected Members

Survival of Elected Members						
time	n.risk	n.event	survival	std.err	lower 95% CI	upper 95% CI
1.00	1144	25	0.978	0.00432	0.970	0.987
1.08	910	2	0.976	0.00457	0.967	0.985
1.08	884	1	0.975	0.00470	0.966	0.984
1.17	871	1	0.974	0.00482	0.964	0.983
1.50	858	1	0.973	0.00495	0.963	0.982
1.67	845	2	0.970	0.00520	0.960	0.981
2.00	832	80	0.877	0.01097	0.856	0.899
2.00	391	2	0.873	0.01137	0.851	0.895
2.08	378	2	0.868	0.01177	0.845	0.891
2.08	365	2	0.863	0.01217	0.840	0.887
2.25	352	2	0.858	0.01259	0.834	0.883
2.25	339	2	0.853	0.01301	0.828	0.879
2.51	325	2	0.848	0.01345	0.822	0.875
2.75	313	3	0.840	0.01412	0.813	0.868
3.00	300	25	0.770	0.01863	0.734	0.807
3.17	208	3	0.759	0.01943	0.722	0.798
3.67	195	4	0.743	0.02053	0.704	0.785
3.92	182	4	0.727	0.02165	0.686	0.771
4.00	169	23	0.628	0.02678	0.578	0.683
4.00	91	4	0.600	0.02894	0.546	0.660
5.00	78	6	0.554	0.03228	0.494	0.621
7.00	65	6	0.503	0.03541	0.438	0.577
8.00	52	12	0.387	0.04007	0.316	0.474
12.00	26	12	0.208	0.04355	0.138	0.314
25.58	13	13	0.000	NA	NA	NA

Figure 1.3: Correlogram

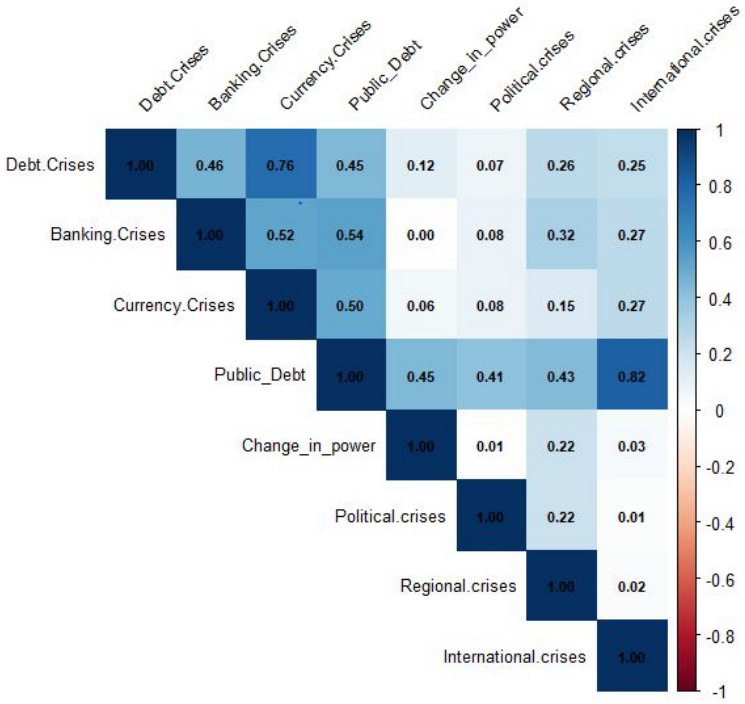
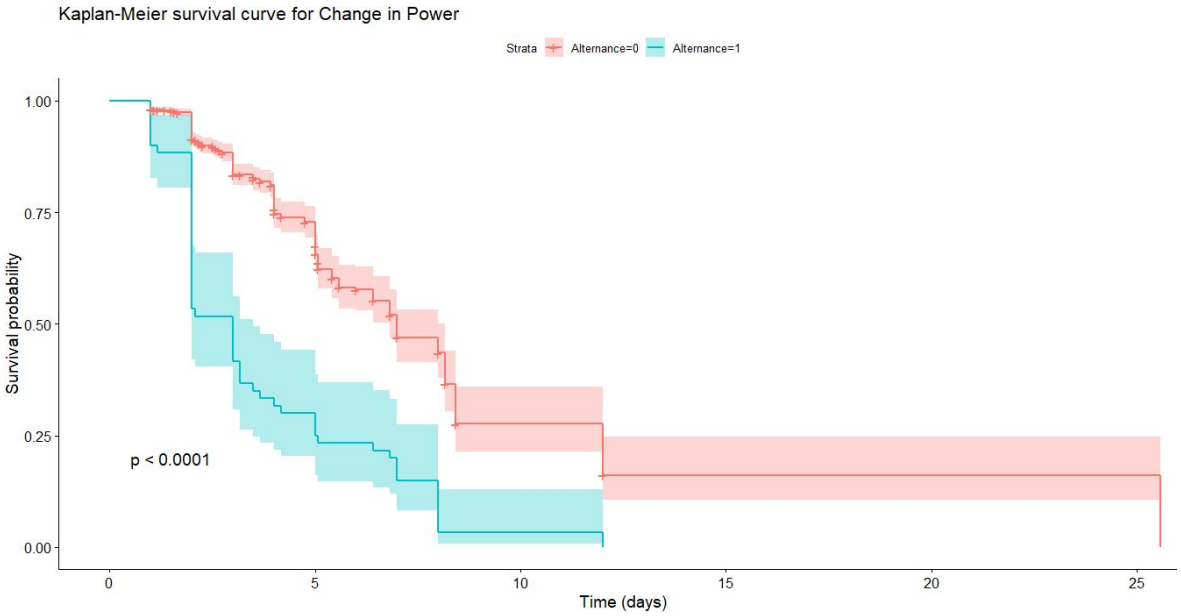
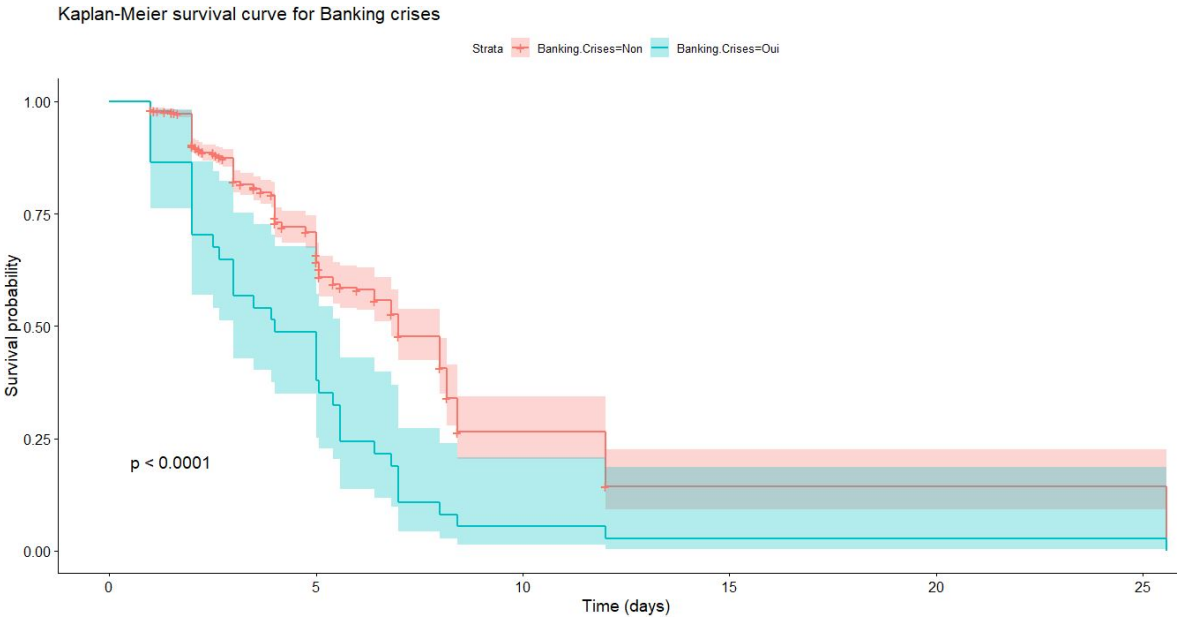


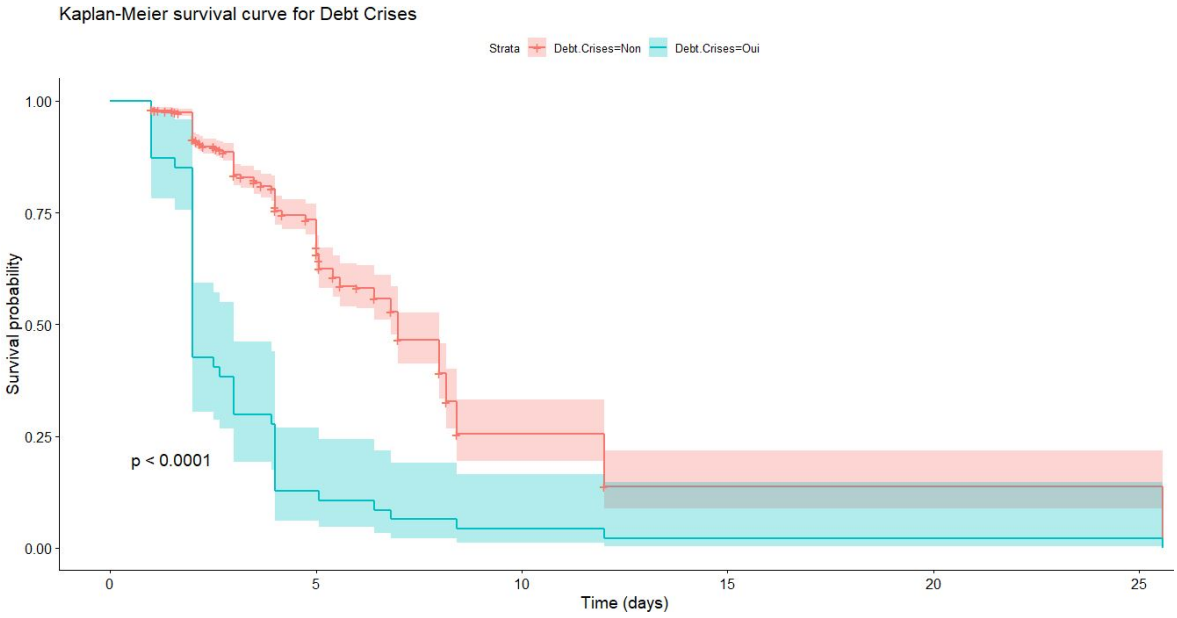
Table 1.14: Variables description

Variables	**Types**	**Modalities**	**Comments**
Gender	Qualitative	1: Man, 0: Woman	
Level of Education	Qualitative	< PhD: 0, PhD: 1	Age of individuals
Field of activity	Qualitative	Education/Research: 0, Public: 1, Private: 2, International Institution: 3	Level of education before joining the IMF board
Field of Study	Qualitative	Law/Admin./Management: 0, Economics/Statistics: 1, Political/Social Sciences: 2	Field of study before joining the IMF board
Years of experience	Quantitative	-	Years of experience before joining the IMF board
Type of Mandate	Qualitative	Elected: 0, Appointed: 1	

Democratic Alternation	Qualitative	No: 0, Yes: 1	Democratic change in the country or region represented
Political crisis	Qualitative	No: 0, Yes: 1	Political crisis in the country or one of the countries' group represented
Regional crisis	Qualitative	No: 0, Yes: 1	Regional crisis in the country or one of the countries' group represented
International crisis	Qualitative	No: 0, Yes: 1	Occurrence of an international crisis during the mandate
Voting affinity	Qualitative	No: 0, Yes: 1	Affinity between countries in voting on proposals at the UN Assembly
Banking crisis	Qualitative	No: 0, Yes: 1	Occurrence of a banking crisis in the country or one of the countries' group represented
Currency crisis	Qualitative	No: 0, Yes: 1	Occurrence of a currency crisis in the country or one of the countries' group represented
Debt crisis	Qualitative	No: 0, Yes: 1	Occurrence of a debt crisis in the country or one of the countries' group represented
Effective presence / Theoretical presence	Quantitative	-	Attendance time of Executive Directors
Public Debt	Quantitative		National public debt as a percentage of GDP (per year)
Trade balance	Quantitative		Trade balance(year) as a percentage of GDP
Openness	Quantitative		Openness ratio
Growth GDP	Quantitative		GDP growth rate (per year)


Kaplan-Meier survival curve for Change in Power
Strata
Alternance=0
Alternance=1
1.00
0.75
0.50
0.25
0.00
Survival probability
p < 0.0001
0
5
10
15
20
25
Time (days)


Kaplan-Meier survival curve for Banking crises
Strata
Banking.Crises=Non
Banking.Crises=Oui
1.00
0.75
0.50
0.25
0.00
Survival probability
p < 0.0001
0
5
10
15
20
25
Time (days)


Kaplan-Meier survival curve for Debt Crises
Strata
Debt.Crises=Non
Debt.Crises=Oui
1.00
0.75
0.50
0.25
0.00
Survival probability
p < 0.0001
0
5
10
15
20
25
Time (days)

Chapter 2

A Steeper Glass Cliff of Women Heads of States

Abstract

This paper investigates the glass ceiling and glass cliff phenomena in the political arena, analyzing how crises affect the election and tenure of female heads of state. Using a dataset of global leaders from 1985 to 2015, we apply a combination of logistic regression, Kaplan-Meier survival curves, and Difference-in-Differences (Diff-in-Diff) models to test glass ceilling and glass cliff effects. Our results reveal that women are more likely to be elected during periods of economic or health crises, consistent with the glass cliff theory. However, these women tend to have shorter tenures compared to men once the crisis subsides. The analysis further shows that crises, particularly debt and health crises, significantly alter the typical tenure dynamics, with female leaders being more vulnerable to replacement. The findings highlight the structural barriers women face, both in accessing power and maintaining leadership roles, particularly in post-crisis stability periods.

2.1 Introduction

The accession of women to the highest political offices represents a crucial advance in the fight for gender equality, but it is still a constant challenge for contemporary societies. Despite the progress achieved over the past decades, women continue to face considerable obstacles in their quest to reach the most powerful positions. The path leading to these roles has been, and remains, fraught with challenges, both institutionally and culturally. To this day, when a woman is elected president or becomes a head of state, it still makes headlines, highlighting how this event is seen as an anomaly rather than a normal event. In 2016, the prospect of Hillary Clinton's election to the U.S. presidency generated immense global media coverage. This media attention, while useful for promoting the visibility of women in politics, also reveals that women's presence in the highest spheres of power is still seen as a novelty (Cassese **and** Holman 2019).these moments of disruption in the male continuity of power reveal the extent of the resistance still present, even within democracies (O'Neill, Pruysers **and** Stewart 2021) ; (Lee **and** McClean 2022).

The rarity of women at the helm of states can be explained by a combination of structural, cultural, and historical factors. The glass ceiling, as highlighted by (Cotter **andothers** 2001), is a metaphor to describe these invisible but very real barriers that block women's progression within professional and political hierarchies. Although many women are qualified, experienced, and competent, they encounter institutional biases and deeply ingrained gender stereotypes that prevent them from climbing the final rungs to the highest positions. Among these stereotypes is the notion that men are intrinsically better equipped to exercise executive responsibilities, especially in critical areas such as defense, security, or the economy (Barnes **and** O'Brien 2018).

History teaches us that women's access to major political roles is a recent and incomplete achievement. It wasn't until 1976 that a woman, Isabel Perón, officially became the president of a country, Argentina, under particularly delicate circumstances. It was not only a first for Argentina but also a global turning point. This first woman to lead a state assumed power in a context of great political instability following the death of her husband, Juan Perón. It is no coincidence that this first woman president took the reins of a country amid a deep crisis, which already, at the time, foreshadowed what (Ryan **and** Haslam 2005) would later conceptualize as the glass cliff.

Indeed, (Ryan **and** Haslam 2005) theorized that women often reach positions of power in contexts of crisis or transition, where the risk of failure is high. This dynamic, coined as the glass cliff, has been confirmed by numerous studies since. Recent research has shown that

women are more likely to rise to political leadership positions during times of significant instability, which exposes them to a higher rate of failure (Heinzel, Kern **and** Metinsoy 2024). This phenomenon not only increases the precariousness of women's power but also reinforces negative stereotypes regarding their ability to lead in more stable contexts.

At the same time, it is also essential to emphasize that, until very recently, in some countries, women did not even have the right to vote, a fundamental right and a prerequisite for access to power. For example, in Switzerland, a country often seen as a model of democracy, women did not obtain the right to vote before 1971, and even then, the last canton, Appenzell Innerrhoden, only granted this right in 1990 following a court ruling. In Saudi Arabia, this right was only granted to women in 2015. These delays in the granting of this right testify to the slow progress and structural resistance to women's participation in political life. These historical delays have had direct repercussions on the low presence of women in political spheres and, by extension, in executive functions (Beauregard 2018).

These structural and media barriers must be confronted with another equally complex dynamic: the glass cliff, where women are more often thrust into power when situations are critical or perilous. Women are called upon to lead nations during crises—economic, political, or social—which offers them opportunities, but in contexts where the margin for error is extremely small. Periods of crisis are conducive to seeking solutions of rupture, and women, perceived as embodying change or transition, are thus seen as adequate figures to manage these troubled times. However, these situations are often characterized by high risks of failure and the possibility of a quick return to male leadership once the storm has passed. For example, several female heads of government have been elected or appointed in contexts of economic crisis or transition, such as Ellen Johnson Sirleaf in Liberia, who took over the reins of a country ravaged by civil war in 2006, or Christine Lagarde, appointed to head the IMF following the global financial crisis of 2008 (Garikipati **and** Kambhampati 2021).

Economic and social crises often represent a window of opportunity for women's ascent to power, but they also place them in precarious positions. Not only do these crises require difficult and unpopular decisions, but they also increase the likelihood of the woman leader being blamed for failure, thereby reinforcing the notion that women are not suited to long-term executive positions (Fox **and** Lawless 2004). This phenomenon, coupled with gendered expectations—where women often have to overperform to prove their competence—creates a hostile environment that is not conducive to the durability of their leadership.

There is an abundance of literature on the appointment of women to high-level positions in private institutions, international organizations and parliaments. Although there is work

on the influence of crises and personal qualifications on women's access to high-level positions, the literature has not yet addressed the aspects that influence the election or appointment of women as heads of state in democracies. Is it their personal qualities (education, years of experience, etc.) or external factors such as crises that influence their choice?

It has yet to address these two dimensions in a comparative and comprehensive way. There is currently no comprehensive study that systematically shows how economic, political and health crises, as extrinsic factors, interact with women's individual qualifications, such as age, level of education and degree of maturity, to determine their chances of accessing positions of responsibility. This gap in the literature calls for a broader reflection on the forces at play when women access leadership positions in times of crisis. Our contribution to this literature will be to fill this gap by comparing the impact of important and extrinsic factors on women's accession to power, focusing specifically on the period from 1985 to 2015. This period includes major economic crises, such as the 2008 recession, as well as health and political crises that have profoundly transformed the global landscape. The aim is to determine whether these crises really did offer women unprecedented opportunities to break through the glass ceiling, or whether it was mainly their personal qualifications that played a role in their progression.

Our results reveal that there is indeed a glass ceiling and glass cliff effect in women's rise to power. People tend to vote for women mainly in times of economic or health turbulence, confirming the glass cliff effect. The obstacles that women face in their path to power are numerous, more so than for men. These obstacles include limited access to elite schools, often essential to facilitating ascent to power, reflecting the glass ceiling they have to break, just as in business to reach top management positions. In addition to educational barriers, women are also subjected to higher standards in terms of qualifications, experience, and perceived competence compared to their male counterparts. This suggests that women must be "overqualified" or have significantly more experience to be considered for leadership roles, which further entrenches the glass ceiling. Even when they do reach leadership positions, they often find themselves in precarious situations, being chosen to lead in moments of crisis when the likelihood of failure is greater. Once the crisis subsides, women are often replaced by men, reinforcing the temporary nature of their leadership during challenging times. This reinforces not only the glass cliff effect but also the perception that women's leadership is contingent upon crisis management, rather than being recognized for long-term governance capabilities. Consequently, the intersection of the glass ceiling and glass cliff dynamics creates a double bind for women, making their rise to and survival in power particularly challenging and conditional.

The paper is structured as follows: section 1 reviews the literature on the representation of women in executive positions. Section 2 presents the data and their sources. In Section 3, the data are analyzed with the help of comparative tables and graphs, highlighting gender and other key factors. Section 4 presents and develops the results of the econometric models used in the study. The final section offers a synthesis of the research.

2.2 Literature review

Women's representation in the political sphere remains a crucial issue in many contemporary democracies. In 2023, only 26.5% of members of national parliaments worldwide were women (Inter-Parliamentary Union (IPU), 2023). However, this proportion varies greatly from country to country. Sweden and Finland, for example, have high rates of female representation, with 47% and 46% respectively of women in parliament. In contrast, countries such as Hungary and Greece have much lower rates, at around 13% and 22% respectively (IPU, 2023). In France, after the 2022 legislative elections, around 39% of seats in the National Assembly were held by women . Despite progress in gender equality and initiatives to promote more balanced representation, women remain underrepresented in parliaments, ministerial cabinets and local governments (Taflaga **and** Kerby 2020) ; (Ono **and** Endo 2024) . Even in countries where quotas have been introduced, women encounter obstacles linked to structural and institutional barriers grouped under the concept of the "glass ceiling" (Cotter et al., 2001; Ryan & Haslam, 2005). These hidden barriers are reinforced by gender stereotypes and differentiated expectations that continue to affect the perception of women in political office.

The irreconcilable expectations placed on women leaders reflect a "double impasse", as (Teele, Kalla **and** Rosenbluth 2018) demonstrate. Women are forced to demonstrate both their authority and respect for gender stereotypes. This paradox complicates their political journey, a phenomenon widely documented in research on the evaluation of women candidates (Cassese **and** Holman 2019) ; (Dittmar 2015). Another example of these difficulties is the 2016 US presidential election, where Hillary Clinton faced unprecedented levels of hostile sexism. (Owen **and** Wei 2024) show that in areas where Donald Trump held rallies, hostile sexism significantly reduced the vote for Clinton. This study underscores the influence of gender bias in voting behavior and highlights the persistent challenges faced by women in American politics. Women leaders also face obstacles in terms of media representation. (Chang, Brichta **andothers** 2024) reveal that, in the 2020 Democratic presidential primaries, women were often judged on criteria such as their appearance or electoral viability, rather than their policies or skills. This only reinforces gender

stereotypes and limits their legitimacy as political leaders.

In addition to stereotypes and lack of financial support, other structural factors, such as electoral systems, play a crucial role in women's under-representation. In many countries, majoritarian electoral systems favor men and reduce women's chances of gaining power (Norris **and** Lovenduski 1995). Although proportional systems are more inclusive, they often require quotas to improve female representation, but these quotas can be abused (Franceschet **and** Piscopo 2008) . For example, in some cases, political parties may place women in non-eligible positions on electoral lists, ensuring that even if they are technically present on the list, they have no real chance of being elected. What's more, male-dominated political parties continue to favor male candidates, believing them to be more likely to succeed (Fox **and** Lawless 2004). Even when they are selected, women often find themselves placed in constituencies where their chances of victory are limited.

2.2.1 Intrinsic factors

Obstacles to women's ascent to positions of power are not just institutional. Intrinsic factors such as education, social class, ethnic origin and religion also influence their access to political and decision-making positions. From an early age, girls are exposed to gendered models that influence their self-concept and political ambition.

Education, for example, is a major factor. Access to higher education has historically been a barrier for women, particularly in developing countries. However, progress in this area has enabled many women to participate more fully in political and economic life (Kabeer 2016) . Nevertheless, even in countries with high rates of female education, women continue to face institutional glass ceilings that limit their progress. these obstacles are rooted in deeply entrenched patriarchal norms (Amakye, Chimhutu **and** Darkwah 2021). In regions such as sub-Saharan Africa and South Asia, women remain largely under-represented in spheres of power, largely due to limited access to education and restrictive cultural norms (Alshdiefat **andothers** 2024) . Women from disadvantaged social backgrounds face specific challenges, including a lack of economic resources and influential networks, which significantly reduce their chances of accessing positions of power . Ethnic origin and religion also play a key role. In multicultural societies, women from ethnic minorities often suffer double discrimination based on their gender and ethnicity (Adamovic **and** Leibbrandt 2024) .

2.2.2 Extrinsic factors: the glass cliff

In addition to institutional barriers, women also have to contend with the "glass cliff" phenomenon. This concept, introduced by (Ryan **and** Haslam 2005) , suggests that women are more likely to rise to leadership positions in times of crisis, when the probability of failure is higher. (Armstrong **andothers** 2024) have shown that during economic crises, women are more often appointed to positions of high responsibility, but they are also more vulnerable to being pushed aside once the crisis has passed. It led to a rethinking of male-dominated power structures, temporarily paving the way for greater diversity, particularly in terms of gender (Morgenroth **andothers** 2020) ; (Glass **and** Cook 2020) . However, these appointments were often precarious. Women were placed in positions where the probability of failure was high, reinforcing the idea that they are called in as a last resort in difficult situations, but rarely in more stable times.

The COVID-19 pandemic highlighted several female leaders, such as Ursula von der Leyen, Jacinda Ardern and Angela Merkel, whose handling of the crisis was widely praised (Garikipati **and** Kambhampati 2021) . These female leaders were perceived as more empathetic and pragmatic than their male counterparts. However, these successes are exceptions and should not mask the reality of the glass ceiling that persists in many countries.

Ellen Johnson Sirleaf, the first elected female president of an African country in 2006, epitomizes the challenges faced by women leaders in times of crisis. Elected after years of civil war in Liberia, Sirleaf was seen as a figure of renewal and reconstruction. However, despite her Nobel Peace Prize, her tenure has been criticized for the slow pace of economic reform. This shows that even when women break initial barriers, they continue to face unrealistic expectations that undermine their long-term legitimacy. A similar case is that of Dilma Rousseff in Brazil, elected in 2011 but impeached in 2016 amid an economic crisis and political scandals. Although her impeachment was officially linked to budgetary manipulation, Rousseff's treatment by her political opponents reflects the increased severity with which women leaders are judged (Krook **and** Sanín 2020) . This shows that even as they rise to power, women remain more exposed to criticism because of their gender.

In short, despite legislative and social advances, women continue to face numerous obstacles when accessing positions of power. These obstacles are both intrinsic, such as gender expectations and socio-economic inequalities, and extrinsic, such as economic or political crises that create precarious opportunities for women leaders. The glass cliff phenomenon demonstrates that women are often called upon to lead in times of crisis, but without prospects of lasting success.

This research aims to provide a new contribution to the topic of women's accession to high-ranking positions. Although the literature on this subject is extensive, little reflection has been made on how citizens in democratic countries elect women as their top representatives. The goal is to explore the "glass cliff" concept, typically used in contexts where appointments are made in corporations or ministries, suggesting that elites tend to appoint men to leadership positions but call on women to resolve crises when the situation becomes critical, as some people point out.

Through this study, we aim to examine this phenomenon on a broader scale, focusing on electoral contexts where millions of voters have the power to choose their leaders. We seek to understand whether women are primarily elected during times of economic turbulence or social tensions. In other words, does a "glass cliff" effect also exist in the electoral process when women rise to power?

Furthermore, elections are a competition where the best candidate should win. Based on this, the electorate acts as the jury, assigning the highest score to the most capable candidate. When two candidates of different genders compete, is this choice influenced by sexist biases? Do women have to meet higher standards in terms of qualifications, experience, or competency to be seen as legitimate? In other words, is there a "glass ceiling" that women must break before they can be considered the people's choice?

In the light of these questions, we formulate three main hypotheses to structure our analysis.

1. **Hypothesis 1: Crises increase the likelihood of women being elected to power.**

   The first hypothesis we wish to test is that women are more likely to be elected in contexts of crisis, whether economic, banking, health or natural disaster-related. This hypothesis fits directly into the glass cliff framework, where women are often propelled into leadership positions when an organization or country goes through turbulent times.

   In this context, the electorate, faced with a crisis situation, may perceive women as being better able to manage exceptional circumstances. This may stem from stereotypes associating women with qualities such as collaboration, empathy or conflict resolution, which are particularly valued in times of crisis. This perception could lead to a preference for women as leaders, but only in these moments of instability.

2. **Hypothesis 2: Women have a shorter length of tenure than men after a crisis.**

The second hypothesis also stems from the glass cliff theory, but this time it focuses on the length of time women spend in power compared to men. If women are elected more often during periods of crisis, it is possible that they are perceived as temporary or transitional solutions, and are quickly replaced once the crisis is over. This hypothesis postulates that women, although elected during turbulent times, have shorter terms of office than their male counterparts once stability returns.

This hypothesis could also be explained by structural or institutional biases, where women are not perceived as long-term leaders, even if they have been deemed fit to manage one-off crises. It is therefore important to examine whether, after being elected in times of crisis, women are replaced more quickly than men.

3. **Hypothesis 3: There is a differentiated effect of crises on the length of mandates for women and men.**

   Finally, the third hypothesis we test is that the effect of crises on survival in power differs according to gender. In other words, while crises may indeed favor the election of women, they could also have a differentiated impact on how women and men manage to stay in power during such periods. In this hypothesis, we seek to ascertain whether specific crises (e.g. banking or health crises) extend women's terms of office relative to men, or whether, on the contrary, they shorten their terms.

   It may be that certain crises, particularly those affecting sectors or fields traditionally associated with gender stereotypes (such as healthcare, often perceived as a more "feminine" field), enable women to stay in power longer than men. On the other hand, in other types of crises, such as banking or economic crises, which are historically male-dominated fields, women may be more vulnerable and therefore see their tenure cut short.

These three hypotheses form the basis of our analysis, which will be tested using a logit model to examine women's access to power during crises, Kaplan-Meier survival curves to compare the duration of mandates between men and women, and a Diff-in-Diff analysis to measure the differential effect of crises on survival in power.

2.3 Methodology

We adopted a three-step methodology to test our hypotheses on the glass cliff effect in the election of women and the duration of their terms as heads of state. Each step relies on

the use of statistical tools well-suited to the nature of the data and the research questions, ensuring robust and precise analysis.

First, we use a logit model to analyze the likelihood of a woman being elected as head of state during a crisis. The logit model is appropriate when the dependent variable is binary, as it is here with the dependent variable being the gender of the head of state (male or female). This model allows us to estimate the probability of an event based on several explanatory variables, while considering individual characteristics of the candidates and the context in which they are elected. Among the explanatory variables, we included indicators of economic, banking, health, and natural crises, as these are central to our main hypothesis that women are more often elected during crises. We also introduced control variables such as age, education level, political experience, and indices measuring the quality of democratic institutions and gender equality. The inclusion of these control variables helps capture the effect of potential biases, such as the higher qualifications often required for women before they are considered legitimate candidates. The goal of this first step is to test whether crises increase the likelihood of a woman being elected head of state, which forms the foundation of the glass cliff hypothesis applied to elections.

The second step of our analysis uses Kaplan-Meier survival curves to compare the duration of men's and women's terms after they take office. These survival curves allow us to visualize and calculate the probability of remaining in power at various points in time, while accounting for censored data—terms that are still ongoing at the time of observation. This methodological choice is relevant for testing the hypothesis that women, although elected during crises, have shorter terms than men once the crisis has passed. Kaplan-Meier curves are particularly well-suited for non-parametric analyses like this one, as they do not rely on any specific assumptions about the distribution of term durations. In addition to the survival curves, we used the log-rank test to determine if the observed differences between the survival curves of men and women are statistically significant. This test is crucial for assessing whether, beyond mere visual trends, women indeed have shorter terms than men after a crisis. The log-rank test strengthens the validity of the results obtained from the survival curves.

Finally, to test the hypothesis that crises have a differential effect on the duration of men's and women's terms, we employed a Difference-in-Differences (Diff-in-Diff) analysis. This method is widely used to estimate the causal effect of an intervention by comparing two groups before and after an event. Here, the two groups are male and female heads of state, and the event is the onset of a crisis. The Diff-in-Diff model captures the effect of crises on term durations, accounting for initial differences between men and women before the crisis. A key condition for applying this method is the parallel trends assumption. This

assumption states that before the crisis, the differences in term duration between men and women should have evolved similarly over time. In other words, both groups would have followed parallel trajectories before the crisis, and any divergence observed afterward can be attributed to the impact of the crisis itself. To verify this assumption, we compared the survival trends of men and women before the crises to ensure they were indeed parallel. Meeting this assumption ensures that the conclusions drawn from the Diff-in-Diff analysis are valid and attributable to the impact of crises on the power survival of women compared to men.

The use a Difference-in-Differences (Diff-in-Diff) analysis is particularly justified in this context, as it allows us to capture the differential effect of crises on both groups (men and women) by measuring changes before and after the crisis. It also controls for temporal biases and initial differences, making it a powerful tool for identifying causal effects. Moreover, the Diff-in-Diff analysis enables us to observe not only whether women have shorter or longer terms than men during crises, but also to determine if certain types of crises have a different impact depending on gender.

Overall, our methodological approach relies on three complementary tools that allow us to rigorously and precisely test our hypotheses. The logit model provides a clear estimate of the impact of crises on the election of women, Kaplan-Meier survival curves allow for comparison of term durations between men and women, and the Diff-in-Diff analysis enables us to measure the causal effect of crises on power survival while accounting for the temporal and structural dynamics specific to each group. These tools allow us to robustly analyze the glass cliff effect on the election and survival of women as heads of state, and to provide empirical answers to the hypotheses formulated in this study.

2.4 Data Description

The dataset at the heart of the analysis is the Technocratic and Education Dataset (TED), compiled by (Flores, Lloyd **and** Nooruddin 2023) , which provides data on the educational and professional backgrounds of sovereign state leaders between 1946 and 2015. From this dataset, we used several key variables. Joining this database with the database on financial crises collected by (Nguyen, Castro **and** Wood 2022) . We set up a database covering the period from 1950 to 2015, since the data on economic crises start from 1950.

Gender is a binary variable (male/female) that plays a crucial role in analyzing the disparities between men and women in attaining leadership roles. Age, derived from the birth year data, provides insight into the different stages in a leader's career and helps

identify whether women are more likely to rise to power at specific points in life, especially during crises. The education level variable identifies the highest degree obtained by a leader, categorized as primary, secondary, undergraduate, graduate, or military education, which is central to understanding the influence of formal education on overcoming political barriers.

Additionally, prestigious educational institutions were considered, focusing on whether a leader studied in highly ranked universities, particularly those in the United States (US), United Kingdom (UK)., or Europe. Such prestigious institutions have historically provided significant leverage for attaining elite political positions, particularly for women striving for leadership roles in traditionally male-dominated fields. This variable helps assess the impact of elite education on career trajectories.

Moreover, professional experience in key financial institutions is examined, particularly regarding institutions such as the IMF, World Bank, regional development banks, and the World Trade Organization (WTO). These institutions have traditionally been male-dominated, and analyzing the influence of this experience on female leaders allows us to explore how working in these sectors correlates with ascending to high office. Furthermore, the dataset includes whether leaders have experience as economists, given that economic expertise is often viewed as critical in times of economic instability.

The variable "working in major center bank" indicates whether the heads of state have had experience in major banks (Goldman Sach, JP Morgan Stanley, Merrill Lynch, Bear Stearns, Lehman Brothers, Citigroup, Deutsche Bank, UBS, Credit Suisse, Barclays, HSBC, Société Générale), while the variable "working in regional banks" indicates whether the heads of state have had experience in institutions (Inter-American Developpement Bank, Europe Central Bank, African Developpement Bank, Asian Developpement Bank).

Another important variable is social class and family background, which indicates whether the leader comes from a privileged or wealthy family. Such backgrounds often offer access to resources and networks essential for political advancement, helping to explain how these factors may facilitate women's political leadership.

The international exposure variable shows whether a leader lived in the U.S. or Europe in the five years preceding their rise to power. Experience abroad, especially in developed countries, can provide an advantage in understanding global politics and economics, contributing to a leader's appeal and effectiveness.

In addition to database, we utilized the Varieties of Democracy Varieties of Democracy (V-Dem) dataset (Coppedge **andothers** 2015) to gain insight into the institutional and democratic context within which these leaders emerged. This dataset provides nuanced measures of the quality of democratic systems, helping us understand how institutional

settings impact women's ability to reach the highest offices.

We also used the EM-DAT (Emergency Events Database) to track significant natural disasters (Delforge 2023) which often create unique opportunities for leadership transitions. Additionally, secondary sources like Wikipedia were used to complement data on coups and health crises.

The data on country economic levels was collected from World Bank information on the classification of countries by income.

The independent variables of interest include gender, age, education level, and professional experience in major financial institutions. We also considered crises—economic, health-related, or political—to determine how these external shocks might influence the likelihood of a woman ascending to a leadership position. The V-Dem democracy indices helped assess how institutional factors such as political equity and democratic quality affect women's rise to power.

The analysis is divided into three periods: 1985-2015, 1985-2000, and 2000-2015, allowing for a detailed look at changes over time, particularly in light of political reforms aimed at increasing female representation and the impact of the 2008 financial crisis. The division into these periods ensures a robust number of observations while accounting for the fact that political leadership, especially prior to 2000, was overwhelmingly male-dominated.

After filtering the regime type variable by the modalities: electoral democracies and liberal democracies, we have a database of 19171 observations for the period 1950 to 2015, divided into 741 women and 18430 men. As the econometric analysis was carried out for the period 1985-2015, we then have a sample of 6889 observations divided into 450 women and 6439 men.

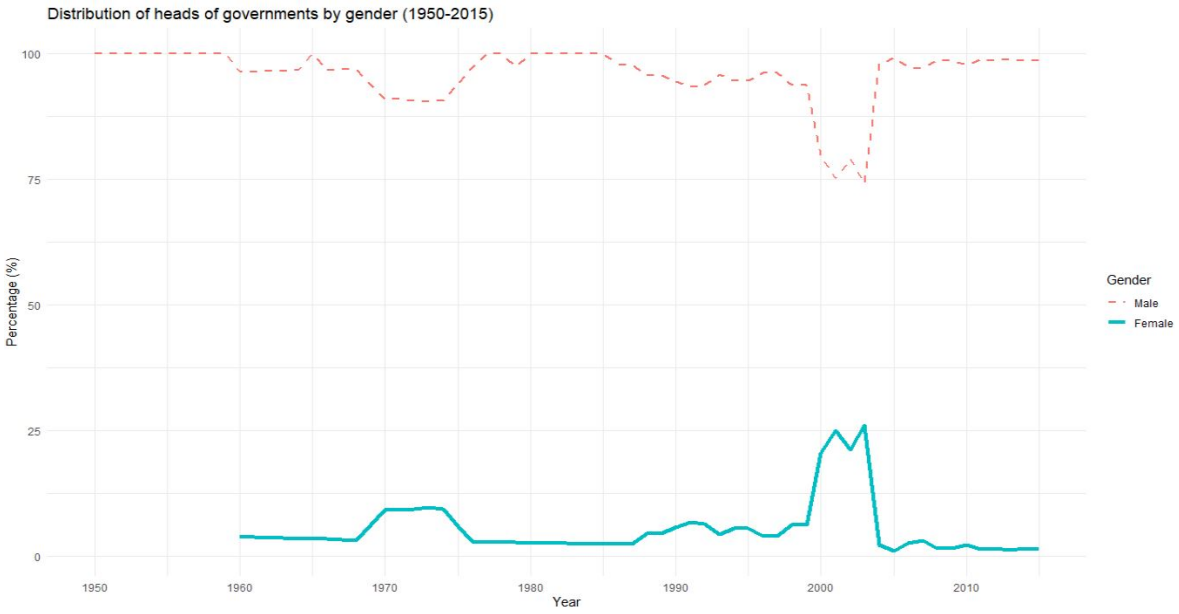
The table 2.1 presents the study variables and their reference modalities for the econometric analysis.

Table 2.1: Description table of variables

Variable	**Type**	**Terms and Conditions**	**Reference Modality**
Gender	Qualitative	Male, Female	Male
Age	Quantitative		
Education	Qualitative	None, Military, Secondary, Graduate, Undergraduate	None
Degree in Politics or Economics	Qualitative	No, Yes	No
Studied Prestigious University	Qualitative	No, Yes	No
Worked in Major Money Center Bank	Qualitative	No, Yes	No
Worked IMF	Qualitative	No, Yes	No
Worked World Bank	Qualitative	No, Yes	No
Worked UN	Qualitative	No, Yes	No
Worked Regional Bank	Qualitative	No, Yes	No
Family Class	Qualitative	Poor, Middle, Rich	Poor
Banking Crisis	Qualitative	No, Yes	No
Debt Crisis	Qualitative	No, Yes	No
Hits	Qualitative	No, Yes	No
Health Crisis	Qualitative	No, Yes	No
Riots	Qualitative	No, Yes	No
Natural Disaster	Qualitative	No, Yes	No
Liberal Democracy Index	Quantitative		
Equity Democracy Index	Quantitative		

Variable	Type	Terms and Conditions	Reference Modality
Gender Political Equity Index	Quantitative		
Liberty Association Index	Quantitative		

Figure 2.1: Distribution of heads of governments by gender(1950-2015)



2.5 Descriptive statistics

The figure 2.1 shows an almost hegemonic distribution of men in positions of global power between 1950 and 2015. The dashed line, representing the male gender, remains close to 100% throughout the period, underlining the virtual absence of significant variation in the occupation of head-of-state positions by men. This trend should be seen in the context of the patriarchal structures that have dominated the world's political systems, where access to power has historically been reserved for men. This phenomenon is not the product of a simple historical contingency, but rather the reflection of a social organization in which political institutions are shaped by gendered norms, perpetuating the idea that executive functions belong to the male domain.

The slight drop in the proportion of men from the 1990s onwards coincides with a reassessment of power dynamics on a global scale, notably with the rise of feminist movements and the democratization of certain regions of the world. However, this inflexion remains marginal, without calling into question male supremacy in the exercise of state power. This constancy of male domination must be understood through theories such as that of social and political capital, in which men accumulate a set of social advantages that enable them to monopolize positions of power. This monopoly remains largely intact, despite the occasional advances made by women in the public sphere.

The rise of women, illustrated by the bold line, shows a tiny progression, particularly from the 1980s onwards. This coincides with a period when gender issues are beginning

to penetrate more deeply into international public debate. A correlation could be drawn between the rise of certain female figures to power and the emergence of social movements advocating greater inclusion of women in political life, as well as the proliferation of quota policies in certain regions, such as Latin America and Europe. Yet despite these relative gains, the proportion of women heads of state remains extremely low, underlining the fact that patriarchal structures have only been partially challenged.

This slow increase in the number of women heads of state is part of a dynamic of gradual transformation of gendered power relations, but the slope of this curve highlights the extent of resistance to this evolution. The "glass ceiling" theory could be invoked here, which postulates that women, despite having acquired a certain level of visibility and participation in the political sphere, encounter structural obstacles that prevent them from accessing the highest offices.

By observing the two curves together, it is possible to formulate an analysis of structures of gendered domination that have not only prevented women from accessing the highest offices, but have also institutionalized this marginalization through deeply-rooted political, social and cultural norms. The slight fluctuation of the dashed line underlines the inertia of traditional power structures, while the bold line testifies to the fragmentary and punctual nature of women's breakthroughs in this sphere, often linked to specific political and social contexts.

The spike observed in the female leadership line around the 2000s may reflect the growing emphasis on gender equality discourses at that time, as well as the rise of prominent female leaders in traditionally male-dominated regions. This trend may also have been influenced by the global economic shock of 2008, which appears to have created opportunities for women to rise to positions of power, as crises often disrupt traditional leadership models and open the door to new players in political arenas, what is referred to in the literature as a “glass cliff.”

Table 2.2: Distribution of Heads of Governments by Education and Gender

Heads of Governments and Gender	**Female**	**Male**
Graduate	5%	95%
Military	0%	100%
None	22%	78%

Heads of Governments and Gender	Female	Male
Primary	3%	97%
Secondary	13%	87%
Undergraduate	2%	98%

It is striking to note from table 2.2 that in the military field, 100% of heads of state are men. This underlines the traditional link between a military career and access to the highest political offices, a path from which women have historically been excluded. The fact that no women feature in this category reflects a correlation between military structures and political power, reinforcing the idea that military institutions remain among the sectors most closed to women, both in terms of accessibility and progression to positions of supreme power.

Then, for individuals with no formal education ("None" category), 22% are women versus 78% men. This higher percentage for women, although still a minority, is interesting because it could suggest that some women rise to power without formal qualifications, potentially through social networks or family dynamics (such as hereditary succession or political dynasties). This phenomenon could also indicate that, in certain contexts, women's access to head-of-state positions is not necessarily via conventional institutional training channels, but through exceptional mechanisms.

Among heads of state who have completed primary education, 97% are male and only 3% female. This highly unbalanced figure shows that basic formal education is still predominantly a male path to power. It also reflects the fact that women's education has long been limited in many parts of the world, preventing them from reaching even the most basic levels of education before turning to political careers.

For secondary education, women represent 13% of heads of state, a figure that remains low but shows an increase compared to lower levels of education. This could indicate that access to secondary education has enabled a number of women to enter the political sphere, although men continue to dominate at 87%. This percentage could be linked to educational reforms in some regions, which have progressively enabled women to continue their studies up to this level, and thus access higher leadership positions.

In the undergraduate category, only 2% of heads of state are women, compared with 98% of men. This highlights the extremely limited access of women to positions of power,

even when they have a university education. It would appear that higher education is not a sufficient factor to compensate for the institutional and social barriers that women continue to face.

Finally, in the "Graduate" category (graduate studies and above), women account for 5% of heads of state. Although this figure is low, it is indicative of the fact that a small minority of women who have pursued advanced studies have succeeded in overcoming these obstacles to reach the highest political positions. However, male dominance remains massive at 95%, showing that even at high levels of education, women continue to be under-represented.

These data suggest that the link between education and access to power remains gender-biased. Men, at all levels of education, are far more represented in positions of power than women, revealing a systemic inequality. What's more, the total absence of women in the military category demonstrates that certain routes to political power, such as the military career, are still virtually inaccessible to women. Finally, the gradual increase in the percentage of women as education advances (from 0% to 5%) illustrates that, although women more frequently reach power with higher education, these gains are still small and structural obstacles persist.

Table 2.3: Education level of heads of government by gender and level of development

Level of development and Education	**Female**	**Male**	**Total**
None	22%	78%	100%
Low income	0%	100%	100%
Lower middle income	55%	45%	100%
Upper middle income	1%	99%	100%
High income	0%	100%	100%
Primary	3%	97%	100%
Low income	0%	100%	100%
Lower middle income	9%	91%	100%
Upper middle income	4%	96%	100%

Table 2.3 – suite

Level of development and Education	Female	Male	Total
High income	0%	100%	100%
Secondary	13%	87%	100%
Low income	0%	100%	100%
Lower middle income	7%	93%	100%
Upper middle income	32%	68%	100%
High income	0%	100%	100%
Military	0%	100%	100%
Low income	0%	100%	100%
Lower middle income	0%	100%	100%
Upper middle income	0%	100%	100%
High income	0%	100%	100%
Undergraduate	2%	98%	100%
Low income	1%	99%	100%
Lower middle income	1%	99%	100%
Upper middle income	0%	100%	100%
High income	4%	96%	100%
Graduate	5%	95%	100%
Low income	2%	98%	100%
Lower middle income	15%	85%	100%
Upper middle income	1%	99%	100%
High income	2%	98%	100%

Men hold 95% of head-of-state positions, highlighting a significant underrepresentation of women in positions of power. This male dominance is observed across all levels of development and education, reflecting the enduring barriers women face in attaining the highest political offices(see table 2.3). With only 5% of these positions held by women, they appear systematically disadvantaged.

Among heads of state who have attained a university education, women account for only 5% of the total. In high-income countries, their presence is even more scarce, with just 2% of leaders holding a university degree. The situation is similarly imbalanced in low-income countries, where only 2% of female graduates hold leadership positions. This disparity is slightly mitigated in lower-middle-income countries, where 15% of degree-holding leaders are women, suggesting that in certain contexts, qualified women manage to reach leadership positions, though such cases remain rare. However, in upper-middle-income countries, the percentage of educated women in power drops to 1%, demonstrating that barriers to women's advancement persist, even when their education levels are high.

The complete absence of women in military head-of-state positions is striking. This male exclusivity shows that certain spheres of power, especially those linked to security and defense, remain largely inaccessible to women. This situation reflects the persistence of gender stereotypes that limit female presence in sectors traditionally viewed as male-dominated.

Conversely, among leaders without any formal education, women represent 22% of heads of state—a significant figure considering their general underrepresentation. This phenomenon is most notable in lower-middle-income countries, where 55% of uneducated heads of state are women. In these contexts, formal education seems less decisive in gaining power, with other factors like community influence or political capital likely playing a more important role.

Women with a primary education level make up just 3% of heads of state, while 97% of leaders with this level of education are men. These low proportions persist regardless of the country's income level. However, in lower- and upper-middle-income countries, women's share reaches 9% and 4%, respectively, indicating that some opportunities exist for women even with minimal education, though men still dominate.

Women with a secondary education level account for 13% of heads of state. This figure is higher in upper-middle-income countries, where 32% of leaders with this education level are women. This suggests that in some developing nations, a secondary education can suffice for women to attain power, though this remains an exception in a male-dominated global context.

For heads of state with an undergraduate university degree, women represent only 2% of the total. This low percentage remains consistent regardless of the country's development level. Even in high-income countries, where access to education is generally broad, women constitute only 4% of degree-holding leaders, indicating that even a high level of qualification does not guarantee equal access to political power for women.

These figures reveal a persistent trend: women are significantly underrepresented in head-of-state roles, across all levels of development and qualification. This situation clearly illustrates the "glass ceiling" that women face. The barriers to women's access to power are numerous, including limited access to education, persistent stereotypes about their abilities, and patriarchal structures that dominate political systems worldwide. Additionally, the few women who manage to gain power seem to do so in contexts where education is not a decisive factor, particularly in lower-middle-income countries.

Table 2.4: Distribution of Heads of Governments by Education in Politics or Economics and Gender

Diploma in Economics or Politics / Gender	**Female**	**Male**
No	5%	95%
Yes	1%	99%
Total	4%	96%

When we look at heads of state without degrees in economics or politics, women account for 5%, compared with 95% for men(see table 2.4). Although women are underrepresented in this category, their presence is proportionately greater than in the group of heads of state with a degree in these fields. This may suggest that, for some women, access to political power is not necessarily conditioned by specialized university training in economics or politics, but may result from other trajectories (political networks, family dynasties, or exceptional historical contexts). By contrast, among heads of state with a degree in economics or politics, the proportion of women drops to just 1%, compared with 99% for men.

Table 2.5: Distribution of Heads of Governments by Education in Foreign Institution and Gender

Education in Foreign Institution	**Female**	**Male**
No	85%	54.49%
Yes	15%	44.31%

Women are clearly under-represented among heads of government who have studied at a foreign institution(table 2.5). Only 15% of women have benefited from such an education, compared to 44.31% of men. This difference reflects a trend observed in international career studies, where access to study abroad plays a crucial role in ascending to leadership positions, particularly in developing countries. According to Jon, Shin **and** Fry (2020) , participants in study-abroad programs acquire global skills and an international network that significantly enhance their career prospects. These skills, often valued in management positions, are particularly important in developing countries, where exposure to foreign education systems enables the acquisition of know-how perceived as modern and competitive.

However, unequal access to these foreign educational opportunities between men and women accentuates the challenges women face in attaining positions of power. (Burke **and** McKeen 1997) points out that, even when women have the opportunity to participate in international assignments, they encounter specific obstacles, which can limit their ability to capitalize fully on these experiences. This imbalance is clearly visible in the data, where men seem to benefit far more often from international education, which strengthens their position within the political elites.

Table 2.6: Distribution of Heads of Governments by Family Class and Gender

Family Class	**Female**	**Male**
Poor	21%	28%
Middle	47%	32%
Rich	32%	40%

Female heads of government from middle-class backgrounds account for 47%,

significantly higher than the figure for middle-class men 32%(see table 2.6). This may suggest that women from middle-class families, where upward mobility is often linked to merit and perseverance, are able to overcome more obstacles to power. Men, on the other hand, are less represented in this category, perhaps indicating that the male political elite comes from a wider range of backgrounds.

By contrast, the proportion of women from wealthy families who rise to positions of power is 32%, compared with 40% for men. This underlines the fact that, although access to resources and networks is important for attaining leadership positions, women from affluent families are less present than men in this category, potentially suggesting that the privileges of the upper social class do not always compensate for gender-specific challenges.

On the other hand, 21% of women come from poor families, a slightly lower proportion than the 28% of men. This could indicate that it is more difficult for women from modest backgrounds to rise to the highest positions, as they have to overcome not only economic obstacles, but also those linked to gender norms in a political system often dominated by men.

Table 2.7: Breakdown of heads of government by gender and type of crisis

Crisis Type	Gender	No (%)	Yes (%)	Chi-Square (p-value)
Banking Crisis	Female	95.68%	4.32%	Chi2 = 0.0597 (p = 0.807)
	Male	96.25%	3.75%	
Currency Crisis	Female	95.70%	4.30%	Chi2 = 10.66125293 (p = 0.001)
	Male	98.65%	1.35%	
Debt Crisis	Female	79.89%	20.11%	Chi2 = 41.2221 (p = 0.000)
	Male	82.73%	17.27%	
Health Crisis	Female	60.86%	39.14%	Chi2 =145.85214688 (p = 0.000)
	Male	73.51%	24.49%	
Natural Disaster	Female	58.57%	41.43%	Chi2 = 1.24888927 (p = 0.264)
	Male	69.64%	30.36%	

The analysis of cross-tabulations between crises (banking, monetary, debt, health, and natural disasters) and gender helps to better understand the presence of men and women in power during crises(table 2.7). The results of the chi-square tests allow us to determine whether the observed differences in the proportion of men and women in power during these crises are statistically significant, revealing interesting dynamics regarding the access

of women to power in specific contexts.

For the banking crises, the chi-square test gives a value of 0.0597 with a p-value of 0.807. This p-value, well above the significance threshold of 0.05, suggests that there is no significant difference between the presence of men and women in power during a banking crisis. In other words, the data do not show that women are more or less likely to be in power during such a crisis compared to men. The observed percentages confirm this, with 4.32% of women in power during a banking crisis compared to 3.75% of men. This slight difference indicates that women and men have similar probabilities of being in power during a banking crisis, which may be explained by a certain gender neutrality in how these crises occur or are handled within political systems.

The monetary crisis, however, presents very different results. The chi-square test reveals a value of 10.661, with a p-value of 0.001. This p-value, well below 0.05, indicates that there is a statistically significant difference between the presence of men and women in power during a monetary crisis. In concrete terms, this means that women are more likely to be in power during a monetary crisis compared to men. Indeed, 5.30% of women were in power during a monetary crisis, compared to only 1.35% of men. This result could be interpreted within the framework of the glass cliff hypothesis, where women are often placed in positions of power when conditions are particularly unstable, especially during monetary crises. This may suggest that women are more likely to rise to power when the economic situation is already complex, reinforcing the idea that their accession to power often occurs in critical moments.

Regarding the debt crisis, the results are equally significant. The chi-square test gives a value of 41.222, with a very low p-value, close to zero. This indicates that there is a highly significant difference between men and women in terms of being in power during a debt crisis. The data show that 20.11% of women were in power during a debt crisis, compared to only 19.22% of men. While the difference seems relatively small in terms of percentages, it is substantial enough to be statistically significant. This suggests that women, although fewer overall in positions of power, are overrepresented among heads of state in office during debt crises. Once again, this could fit into the logic of the glass cliff, where women are more often called to lead during periods of severe economic crisis.

The results related to the health crisis further support this trend. The chi-square test shows a value of 145.852, with an extremely low p-value, indicating a highly significant difference between the presence of men and women in power during a health crisis. The data reveal that 39.14% of women were in power during a health crisis, compared to only 24.49% of men. This suggests that women are much more likely than men to be in office

during health crises. This result is particularly interesting, as it could reflect a tendency to entrust power to women during public health crises, possibly due to gender stereotypes or a perception that women are better suited to handle situations related to collective well-being. It could also indicate that women, when elected or appointed to positions of power, often inherit mandates in the context of an ongoing health crisis, which might explain their overrepresentation in this area.

As for natural disasters, the chi-square test results give a value of 1.249, with a p-value of 0.264. This p-value, being above the 0.05 threshold, indicates that there is no statistically significant difference between the presence of men and women in power during natural disasters. The percentages show that 41.43% of women were in power during a natural disaster, compared to 30.39% of men. While the proportion of women appears higher, this difference is not significant enough to be statistically meaningful. This might suggest that crises related to natural disasters affect heads of state relatively uniformly, regardless of gender, or that women are not specifically appointed or elected in response to this type of crisis.

In summary, the results of the chi-square tests reveal interesting dynamics regarding the presence of men and women in power during different crises. Monetary, debt, and health crises seem to be contexts in which women are more likely to hold positions of power compared to men. These results can be interpreted within the framework of the glass cliff theory, which posits that women are often promoted or elected to leadership positions during periods of crisis when the chances of success are lower and the challenges greater. The analysis clearly shows that women, although overall less represented in power, are overrepresented among leaders during certain economic and health crises.

On the other hand, banking crises and natural disasters do not show significant gender differences. This could be explained by a more neutral perception of gender in these specific contexts, or by the fact that these types of crises do not create situations where women are more likely to rise to power. Banking crises, for example, may be perceived as more structural events that do not depend as much on the gender of the head of state, while natural disasters, which are often unpredictable, may not result in specific changes in gender dynamics within political leadership

Table 2.8: Gender Distribution by Professional Experience and Gender (%)

Gender	**Major Bank (%)**	**World Bank (%)**	**UN (%)**	**WTO/GATT (%)**	**Regional Bank (%)**
Female	3.77	1.88	2.46	0.00	0.00
Male	0.20	1.29	7.80	0.00	2.57

The career paths of heads of state, like their academic careers, reveal marked differences between men and women(table 2.8). These differences are not confined to access to leadership positions, but extend to the sectors of activity in which future leaders have evolved before acceding to power. The data show that women and men followed different career paths, once again underlining the impact of gender norms on access to the highest positions.

As we have seen above, the most striking observations concerns military careers, a field traditionally dominated by men. The data show that 100% of heads of state who have come to power through a military career are men. Not a single woman has taken this route to the highest offices of state. This illustrates the almost insurmountable barrier that the military sector represents for women. Historically, the armed forces have been one of the most closed sectors to women, not only because of the generated nature of the armed forces, but also because political legitimacy in many countries has been associated with the ability to command the armed forces. This has contributed to the perception that political power is male-motivated, reinforcing the idea that executive functions belong to men, capable of "defending" the state.

By contrast, when it comes to other professional sectors, such as international institutions, more women heads of state have worked in these areas. For example, 3.8% of women have worked in a major bank, compared with just 0.2% of men. This over-representation of women in the banking sector can be explained by the fact that international financial institutions, perceived as more meritocratic environments, have been able to offer accumulated opportunities to women. Indeed, globalization and the expansion of financial markets have opened up spaces where economic and financial skills have become assets for gaining access to power. The international banking sector, often less rooted in the traditional power structures of nation-states, may have enabled some women to bypass institutional barriers and position themselves in leadership roles.

Women are also slightly over-represented in World Bank-related career paths, with 1.9% of female heads of state having worked for the institution, compared with 1.3% of men. The World Bank, as an international organization dedicated to development, may have adopted more inclusive policies, favoring the promotion of women to influential positions. This trend may also reflect the growing importance of the economic dimension and crisis management in modern political leadership, areas where women, thanks to their specific skills, have been able to emerge as leaders. A chi-square test was carried out between the variables having worked at the World Bank and the variable Gender. With a p-value of 0.50, the results confirm that the slight difference between the variables having worked at the World Bank and Gender is not significant.

However, this trend does not apply to all international institutions. At the UN, for example, 7.8% of men worked for the organization before becoming Heads of State, compared with just 2.5% of women. This disparity suggests that, even in organizations that advocate gender equality, power networks remain strongly male-dominated. The UN, with its vast diplomatic network and numerous agencies, is an important platform for skills in diplomacy, crisis management and international affairs. The fact that there are more men than women could indicate that access to these networks remains easier for them, reinforcing their ascenst to national leadership positions.

Other institutions such as the WTO or GATT (General Agreement on Tariffs and Trade) have not been significant pathways to power for either men or women. This shows that certain international organizations, while important in the global economic system, do not play a major role in the political trajectories of future heads of state. It may be that these institutions are perceived more as technical or economic, rather than as springboards to national political careers.

Finally, when it comes to regional banks, 2.6% of male heads of state have worked in this sector, compared with zero women. This result highlights once again the over-representation of men in regional financial institutions, which are often closer to local centers of economic power. Regional banks, particularly in developing countries, can offer men opportunities to build political and economic networks, facilitating their ascent to leadership positions. The absence of women in this field may reflect not only the structural obstacles they face in accessing these institutions, but also the strongly generated power dynamics that persist in local economic institutions.

The absence of women in some of these institutions can also be explained by the cultural and social expectations surrounding gender roles. In many societies, women are still perceived as less capable of managing economic and financial affairs, which limits

their opportunities to rise to positions in these fields. Men, on the other hand, benefit from pre-existing networks that enable them to climb the ladder more easily in sectors traditionally dominated by economic power, such as banking and financial institutions.

In conclusion, the career paths of male and female heads of state reveal deep-rooted structural inequalities. While men continue to dominate in traditional fields such as the military and certain local financial institutions, women, when they rise to head-of-state positions, often do so via less conventional routes, notably through international institutions such as the big banks or the World Bank. These differences in pathways underline the importance of the power dynamics generated and show that, although women have begun to gain access to the highest political offices, they often have to bypass institutional obstacles to get there.

Figure 2.2: Head of governments by Gender(1985-2000)

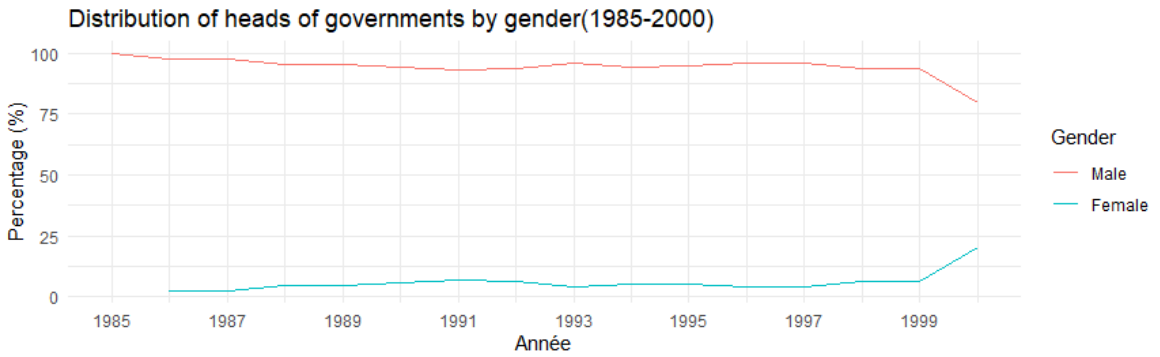
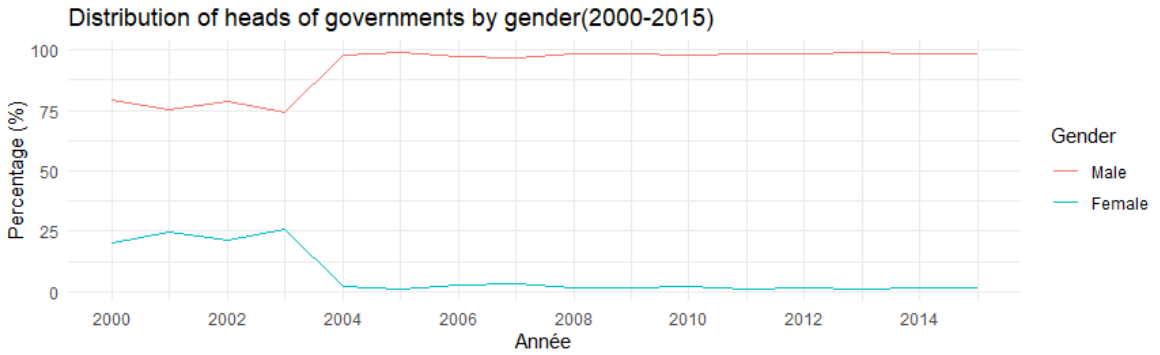


Figure 2.3: Head of governments by Gender(2000-2015)



2.6 Selection of the analysis period

In the initial analysis of the evolution of heads of government by gender, we considered the entire period from 1950 to 2015. However, after closer examination, it became clear that the most interesting and relevant results only began to emerge from 1985 onwards. For this reason, we decided to focus on the more recent period from 1985 to 2015. To allow for more precise analysis, we further subdivided this period into two sub-periods: 1985-2000 and 2000-2015. This division not only enables us to better understand the evolution of women's representation in leadership but also ensures we have a sufficient number of observations to carry out our statistical analysis and draw reliable conclusions. The two figures illustrate the results of this analysis for the two sub-periods, revealing distinct and significant dynamics.

The figure 2.2, covering the period from 1985 to 2000, highlights an almost absolute dominance of men among heads of government. The dashed line representing the proportion of men (Male) remains firmly above 95%, reflecting a stark underrepresentation of women during this period. The bold line, corresponding to women (Female), stays near 0% throughout the period, with only slight upticks towards the late 1990s. This indicates

that, during this first sub-period, women faced significant barriers in accessing positions of head of state or government, making their exclusion from power nearly insurmountable. This persistent phenomenon of excluding women from power mirrors the status quo that prevailed in the 1980s and early 1990s.

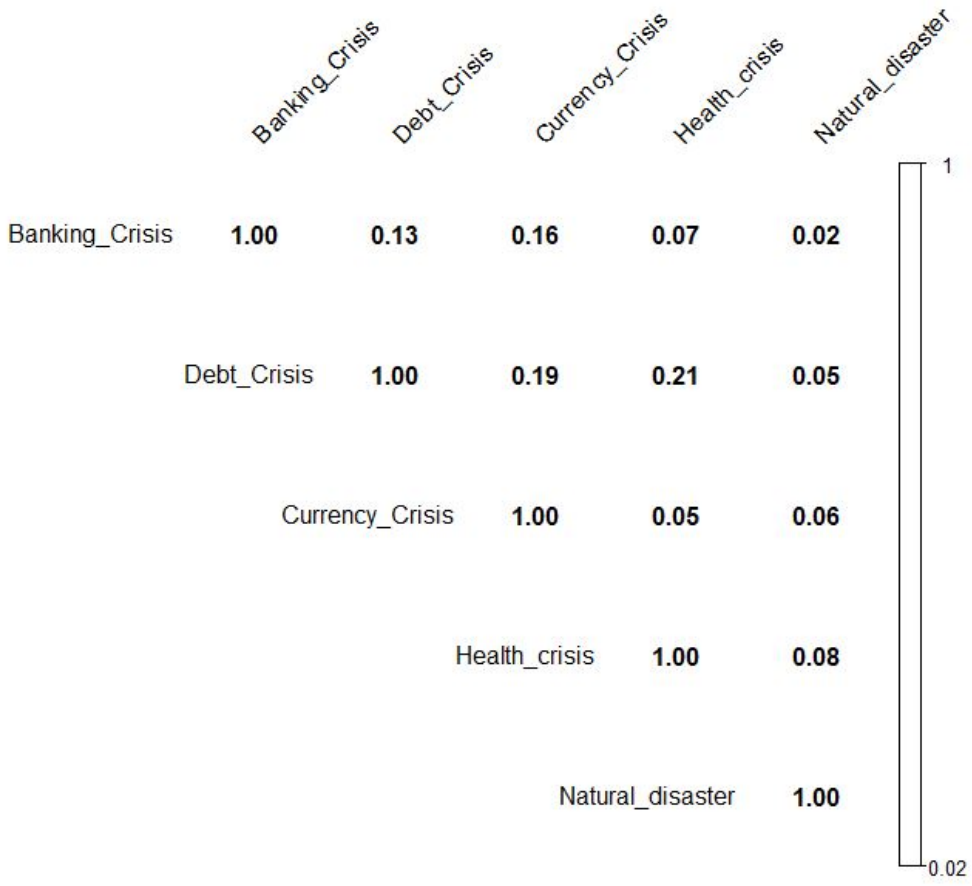
However, towards the late 1990s, we observe a very slight increase in the proportion of women in power, which starts to rise but still remains below 25%. Although modest, this progression coincides with the emergence of several women in key positions on the international stage. This slow improvement marks a break in the near-total dominance of men but remains insufficient to effect significant global change.

The figure 2.3, covering the period from 2000 to 2015, shows a more contrasting dynamic. At the beginning of the 2000s, there is a temporary peak in the proportion of women heads of government. The dashed line shows a notable rise, reaching around 25% in 2003. This phenomenon can be explained by specific events where women were placed in leadership positions temporarily, often in response to political or economic crises. This transitory phenomenon, often referred to as the "glass cliff," reflects the tendency to appoint women to leadership roles in times of crisis, only to replace them once stability is restored. This also explains the sharp drop in the percentage of women after 2004, where the curve falls back down.

For the remainder of the period (2005-2015), women's underrepresentation persists, with a low proportion oscillating between 5% and 10%. This demonstrates that, despite some notable breakthroughs in the early 2000s, women have not yet succeeded in maintaining a significant presence in the highest political offices. The male curve remains stable at very high levels (above 75%), confirming the continued male dominance in this field.

This division into two sub-periods allowed us to ensure a sufficient number of observations to rigorously analyze these trends. It also provides an opportunity to better understand the distinct dynamics characterizing the two periods. While the 1985-2000 period is marked by the near absence of women in leadership roles, the 2000-2015 period shows some, though temporary, attempts to break through the glass ceiling.

Figure 2.4: Crisis Correlogram for 1985-2015 period



2.6.1 Crisis Correlogram

The correlations between different types of crises over the entire period ((1985-2015), figure2.4) and its two sub-periods (1985-2000 and 2000-2015, see the appendix) reveal interesting dynamics in the interactions between crises. Starting with the overall period (1985-2015), we observe that most correlations are relatively weak, with values close to zero for certain interactions, such as those between coups and banking crises or between riots and currency crises. This indicates that, during this period, these crises tended to evolve relatively independently of one another.

However, some correlations stand out. One of the most notable is the correlation between debt crises and currency crises (0.19). This relationship suggests that debt crises are often associated with currency crises. This can be explained by the fact that currency depreciation, often linked to a currency crisis, increases the burden of external debt, making repayment more difficult and potentially triggering a debt crisis. Similarly, the 0.16 correlation between banking crises and currency crises suggests that instability in the banking sector may sometimes contribute to exchange rate volatility, or vice versa.

When we focus on the first sub-period (1985-2000, see the appendix), interesting changes emerge. The correlation between debt crises and currency crises rises to 0.40, indicating a strengthening of the relationship between these two types of crises during this period. This can be explained by the series of major financial crises in the late 1990s, notably the 1997 Asian financial crisis and the 1998 Russian financial crisis, where debt crises were often preceded or accompanied by currency crises. The correlation between banking crises and debt crises (0.21) also becomes more pronounced, indicating an increasing tendency for banking crises to precede or exacerbate debt crises.

This sub-period also shows a significant correlation between health crises and debt crises (0.45). This could be explained by the destabilizing effects of health crises on public finances. For example, epidemics can generate substantial public spending to strengthen health systems, which could worsen already fragile debt situations, especially in developing countries.

In the second sub-period (2000-2015, see the appendix), the trends observed during the first sub-period persist, with similar correlations between certain crises. For example, the correlation between debt crises and currency crises remains at 0.40, showing continuity in the relationship between these two phenomena over the past decades.

Finally, crises related to natural disasters appear to have few significant interactions with other types of crises over the three periods. The correlations between natural disasters

and other crises remain relatively weak, with values close to zero. This may be due to the random nature of natural disasters, which are less directly influenced by economic or political dynamics.

In summary, these correlations reveal complex dynamics between different crises over time. Certain crises, such as debt crises and currency crises, have recurrent and strong interactions, reflecting well-established economic mechanisms. Others, such as health crises and banking crises, show correlations that vary depending on the periods, reflecting political and economic contexts specific to each era

2.7 Econometrics analysis

2.7.1 Logit models

In order to determine the factors that favored women's accession to the highest state/governing positions during the period under consideration, we chose to use a logit model. Among econometric models designed to analyze qualitative variables, the logit model stands out for its suitability to our problem. It guarantees that the predicted probabilities are confined within the interval [0, 1], thus ensuring that the results are consistent with a probabilistic interpretation. In addition, this model enables us to examine the influence of explanatory variables on the probability of occurrence of the target modality (here, being a woman in power). It also offers valuable flexibility by taking into account both continuous and categorical explanatory variables, while producing easily interpretable results (Hosmer, Taber **and** Lemeshow 1991) .

Table 2.9: Logit models

Dependent variable: Gender (ref, Male)			
	1985-2015	1985-2000	2000-2015
(Intercept)	0.041	14.002***	3.245
	(628.232)	(2.684)	(617.656)
Age	0.049***	0.049*	0.073***
	(0.012)	(0.022)	(0.017)
Education/Graduate	13.842	0.37	13.431
	(628.230)	(0.5334)	(617.651)
Education/Military	-2.367	-20.049	-1.317
	(1066.931)	(4668.459)	(1171.989)
Education/Primary	17.256	2.730**	0.909
	(628.230)	(0.867)	(2252.984)
Education/Secondary	15.622	-1.056.	14.809
	(628.230)	(0.615)	(617.652)
Education/Undergraduate	13.617	0.370	12.302
	(628.230)	(0.533)	(617.652)
Degree in Politics or Economics/Yes	-3.478***	-19.398	-3.361***
	(0.472)	(1152.868)	(0.523)
Studied Prestigious University/Yes	-0.655*	0.732	-0.67*
	(0.298)	(0.474)	(0.315)
Worked in Major Money Center Bank/Yes	7.397***	-1.615	8.958***
	(0.646)	(8005.185)	(0.761)

Table 2.9

Dependent variable: Gender (ref, Male)			
	1985-2015	1985-2000	2000-2015
Worked at IMF/Yes	-17.002	1.571	-16.595
	(1005.011)	(10231.199)	(1269.633)
Worked at World Bank/Yes	4.268***	-17.002	4.064*
	(1.172)	(11402.860)	(1.592)
Worked at UN/Yes	-2.018**	-19.246	-2.328**
	(0.770)	(4025.020)	(0.787)
Family Class/Middle	2.280***	2.090**	2.607***
	(0.307)	(0.733)	(0.384)
Family Class/Rich	0.774*	2.042**	1.178**
	(0.349)	(0.663)	(0.453)
Debt Crisis/Yes	0.673**	1.289*	1.364***
	(0.246)	(0.554)	(0.323)
Health Crisis/Yes	0.525*	2.116**	0.755**
	(0.222)	(0.746)	(0.260)
Natural Disaster/Yes	0.375+	0.721+	0.485
	(0.200)	(0.382)	(0.238)
Liberty Association Index	18.557***	18.083***	20.647***
	(1.766)	(2.918)	(2.231)
Num. Obs.	3105	676	2621
AIC	860.0	309.0	627.9
BIC	974.7	390.3	739.5

Table 2.9

Dependent variable: Gender (ref, Male)			
	1985-2015	1985-2000	2000-2015
Log Likelihood	-410.985	-136.503	-294.951
F Statistic	18.390	4.409	14.988
RMSE	0.18	0.24	0.16

Notes: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Glass ceiling

Analysis of the three models covering the periods 1985-2015, 1985-2000, and 2000-2015(table 2.9) yields results that indicate a suspected glass ceiling in women's access to head-of-state positions. The glass ceiling, as conceptualized by Morrison, White **and** Van Velsor (1987), refers to those invisible barriers that prevent women from climbing the professional ladder at a certain level, even when they have the requisite qualifications and skills. Our results provide empirical evidence confirming the persistence of this phenomenon within global political governance. Indeed:

In all three models, age is systematically associated with a positive and significant coefficient ($p < 0.001$ for the overall period, and $p < 0.05$ for the sub-periods). This suggests that it take more time for women to reach positions of power than men. This difference could be explained by the fact that women need to accumulate more experience before they are perceived as legitimate to occupy positions of power. In other words, women seem to have to demonstrate stronger qualifications over a longer period of time to overcome the structural and cultural obstacles that hinder their progression. Eagly **and** Karau (2002) have clearly shown in their work that women are often confronted with gender biases in the evaluation of their competence, and that their progression up the professional hierarchy is often delayed by these prejudices. This phenomenon is particularly marked in the political sphere, where the perception of leadership qualities is often biased in favor of men, who are perceived as being more capable of leading, especially in times of crisis. Women, on the other hand, have to accumulate more experience and overcome these biased perceptions to make their way into top positions. During the period 1985-2000, women who rise to head-of-state positions are generally older than their male counterparts, a phenomenon that persists in the period 2000-2015. However, we can observe a slight magnitude of this effect

in the 2000-2015 model, which could indicate that women begin to rise to power slightly earlier in their careers over time. This change can be attributed to institutional reforms and the rise of policies to promote gender equality, although these advances remain incomplete.

The results relating to level of education shed interesting light on how the glass ceiling operates in political systems. At first glance, levels of formal education (such as undergraduate, secondary or even military degrees) have no significant influence on the likelihood of a head of state being male or female. This might suggest that formal education is not a major discriminating factor in access to political leadership positions. However, this finding is misleading. In fact, a more detailed analysis reveals that the academic origin of elites is a key factor in the perpetuation of gender inequalities.

One of the most significant results concerns having studied at a prestigious university. The coefficient for this variable is negative and significant over the overall period 1985-2015 ($p < 0.05$) and 2000-2015 ($p < 0.05$), showing that female heads of state are less likely to have attended these elite institutions. This result highlights another mechanism of the glass ceiling: women, while sometimes reaching leadership positions, are often excluded from elite educational networks that favor the promotion of men into the highest spheres of political power. This exclusion from elite academic circuits can be seen as a glass ceiling mechanism, as it prevents women from accessing the same resources as their male counterparts, despite having equivalent qualifications.

Another interesting aspect is the evolution of this dynamic over time. During the period 1985-2000, the effect of attending a prestigious university is not significant, but it becomes strongly negative and significant after 2000. This could indicate that, as power structures have become more globalized and political elites more professionalized, participation in elite networks has become increasingly important for access to the highest political offices. So, even though more women have risen to leadership positions over time, they remain excluded from these prestigious networks, which continue to favor the advancement of men.

In addition to education, professional experience is another area where there is a suspicion of a glass ceiling among heads of state. The results show that, although some female heads of state have prestigious career paths, such as experience in central banks or international institutions, they are generally under-represented in sectors that have historically been dominated by men.

One of the most revealing results is the impact of experience in a major central bank or financial institution. In the periods 1985-2015 and 2000-2015, female heads of state are more likely to have such experience (positive and significant coefficients, $p < 0.001$). This could

suggest that women need to accumulate more experience in sectors deemed difficult and technically complex, such as finance, to be able to overcome the glass ceiling obstacles. On the other hand, this variable is not significant for the period 1985-2000, perhaps indicating that, in the early decades of our study, women had not yet succeeded in penetrating these male-dominated sectors, or had hardly risen to power at all.

This dynamic is part of what Kanter (1977) has called "tokenism" or the "visibility effect". When women are under-represented in sectors such as finance or central banking, they have to prove their competence more rigorously than their male counterparts to gain access to positions of power. As a result, women who reach head-of-state positions often have more difficult and demanding career paths, reflecting another facet of the glass ceiling: the need for women to outperform in order to reach the same levels of responsibility as men.

The role of social class in access to heads of state is another manifestation of the glass ceiling. The results show that female heads of state are more likely to belong to the middle class than to the wealthy or very wealthy classes. Indeed, the coefficients for the middle class and wealthy class variables are positive and significant in the overall period and both sub-periods. These results indicate that social class plays a crucial role in women's access to positions of power. Middle-class women appear to enjoy greater upward mobility than wealthy-class women, although both groups have higher probabilities than men of their own class of accessing positions of power.

Glass cliff

The glass cliff refers to a situation where women are more likely to be appointed to leadership positions in times of turbulence or crisis, when the risks of failure are high. However, it is essential not to jump to conclusions at this stage of the analysis, as the results will need to be confirmed by subsequent analyses. Here, we will examine the results of the logit model, which will indicate whether women have a higher probability of election in times of crisis, which may indicate a suspected glass cliff.

Debt crises seem to play a particularly important role in women's access to head-of-state positions. For the period 1985-2015, the coefficient is positive and significant 0.673, $p=0.004$, and it becomes even higher for 2000-2015 with a coefficient of 1.364, $p<0.001$. This shows that women are more often elected in times of debt crisis, which may reflect the perception that they represent a break with traditional male leaders, particularly when the latter are perceived as responsible for the crisis.

Health crises provide another example of a context in which women seem more likely to rise to power. The coefficient is positive and significant for all periods, with 0.525, $p=0.036$ for 1985-2000 and 0.755, $p=0.003$ for 2000-2015. This result shows that women are more

likely to become heads of state in times of health crisis, perhaps due to stereotypes that they are perceived as more empathetic or adept at managing humanitarian crises. However, as with debt crises, these results do not yet allow us to conclude that there is a glass cliff, as we lack information on the length of their mandates and their potential replacement after the management of these crises.

Natural disasters reveal similar results. The coefficient for 2000-2015 is positive and not strongly significant, showing that women are more likely to rise to power during these crises. As with health crises, this may reflect a perception that women are better able to manage acute crisis situations. However, the question remains as to whether these women continue to hold positions of power after the crisis has been managed, or whether they are replaced by men once the situation has stabilized.

2.7.2 Survival analysis: Women vs Men

In this second stage of the analysis, we have used Kaplan-Meier survival curves to examine in more detail the length of tenure of heads of state as a function of gender. The results obtained from logit models have already shown that women are more likely to come to power in times of crisis, but the question remains as to whether these women stay in power as long as their male counterparts or whether their tenure is shorter, thus reinforcing the glass cliff hypothesis.

Kaplan-Meier curves are a statistical tool frequently used to analyze the time elapsed before the occurrence of a given event - in this case, the length of terms of office of heads of state. By plotting these curves, we can visualize the differences in "survival" (or length of time in power) between men and women, and test whether women have shorter mandates, which would confirm the idea that they are chosen in contexts of crisis, but are quickly replaced once the situation has stabilized.

For the period 1985-2000(see figure 2.5 below), the survival curves for men and women are virtually identical. At the start of the period, both curves show a survival probability very close to 1, meaning that the majority of heads of state, whether male or female, remain in office for several years. Over time, the curves evolve differently, with gradual declines for men reflecting the end of their mandates, and an absolute decline for women indicating the abrupt end of their survival. However, the p-value =0.78 indicates that this difference is not statistically significant (log-rank test).

However, the situation changes most noticeably for the period 2000-2015(see figure 2.6 below). From the very first years of the period, the survival curves for men and women

remain close, showing that, initially, women are just as likely to remain in power as men. However, after around 5 to 7 years in office, a gap begins to develop between the two curves. The men's curve descends gradually, but more evenly and more gently, while the women's curve shows a steeper fall. In particular, after around 10 years, the women's curve descends more rapidly, suggesting that a higher proportion of women are leaving their positions at this point. This divergence becomes even more striking after 15 years, when almost all women have left their positions, while a significant proportion of men still remain. The p-value of 0.014 confirms that this difference is statistically significant, showing that women are indeed more likely than men to have their terms of office cut short during this period.

This temporal evolution of the curves between the two periods shows a growing dynamic of the glass cliff. Whereas in the years prior to 2000, the length of women's mandates did not differ significantly from those of men, the post-2000 period reveals a pattern where women, although elevated to power in times of crisis, see their mandates shorten once these crises are resolved. This phenomenon could indicate that women are perceived as transitional figures, able to manage difficult situations, but less able to embody long-term political stability, making them more vulnerable to being replaced once the turbulence has passed.

Thus, these results reinforce the glass cliff hypothesis for the period 2000-2015, where women are not only more likely to be elected during crises, but also see their stay in power more limited than their male counterparts.

Figure 2.5: Kaplan-Meier's curve : 1985-2000

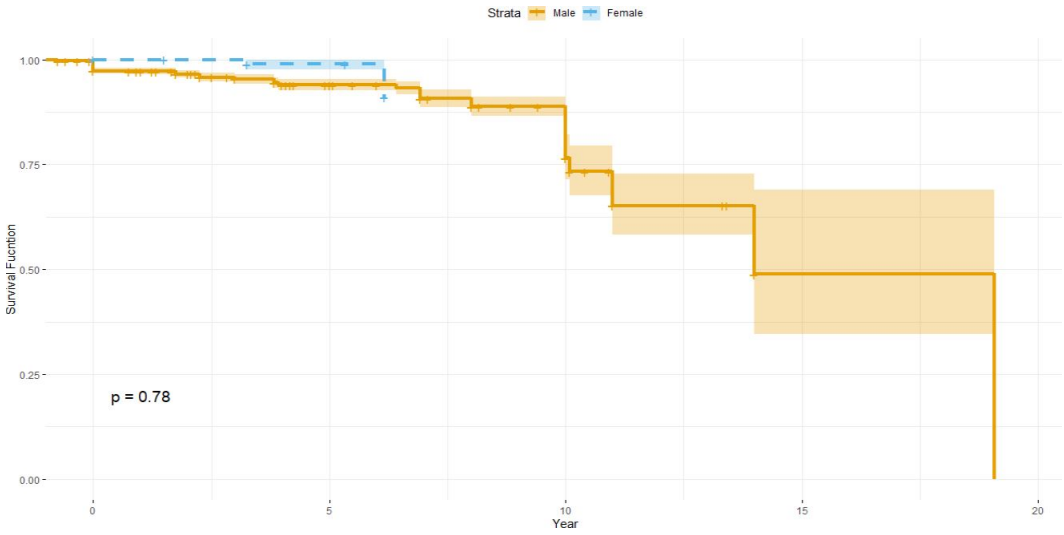
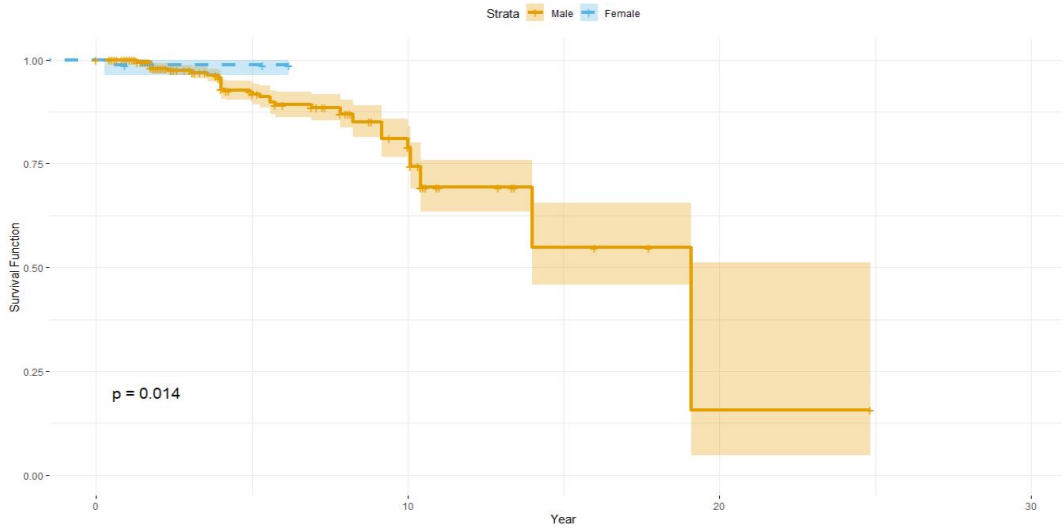


Figure 2.6: Kaplan-Meier's curve : 2000-2015



2.7.3 Diff-in-Diff

The Difference-in-Difference (Diff-in-Diff) method is an econometric approach used to estimate the causal effect of an event (or treatment) by comparing two groups: a treatment group and a control group. It allows us to neutralize pre-existing trends and focus on the impact of the treatment itself. This method is particularly valuable in contexts where randomized experiments are impossible. Bertrand, Duflo **and** Mullainathan (2004) demonstrated how the method can correct biases in panel regressions. Diff-in-Diff remains a central tool in current empirical research.

In our case, we want to use this method to analyze whether crises disrupt the traditional

dynamics of male power domination. The treatment group is made up of women elected in times of crisis, while the control group comprises women elected in times of stability. The aim is to determine whether the length of women's mandates in crisis periods differs from that of women in normal periods, which would reinforce the glass cliff hypothesis.

The fundamental assumption of the parallel trend is that, in the absence of a crisis, men and women would have continued to follow their usual trajectories in power, with a considerable gap between the dominance of men and the weaker representation of women. Historically, the strong preponderance of men in power is already proven in earlier stages. This gap seems to be the norm in world diplomacy, a stable equilibrium in which men overwhelmingly occupy the positions of heads of state and government. In the absence of a crisis, this trend would persist and continue to maintain a gender gap in terms of access to and retention of power. However, the onset of a crisis can upset this usual balance: it could offer women exceptional opportunities to take up leadership positions. In such periods of instability, the usual gap narrows, and women's presence becomes more pronounced, as voters turn to them as temporary solutions to difficult situations. the following table presents the results in detail.

NB: In this part of the econometric analysis, the reference modality for the Gender variable is Female.

From the table 2.10 , for the debt crisis, the results for the overall period show a significant effect on the length of women's mandates. The intercept (3,377, p-value < 2.2e-16) indicates that the average term of office in the absence of the crisis is around 3.38 years. The coefficient for gender (1,841, p-value < 2.2e-16) reveals that men had, on average, mandates 1.84 years longer than women during this period. This result is in line with the parallel trend hypothesis where men dominate the political scene in normal periods. However, in times of debt crisis, the coefficient of the crisis variable (0.743, p-value = 1.9746e-06) shows that the length of mandates lengthens for all leaders. The Diff-in-Diff coefficient (2.771, p-value = 4.6847e-09) indicates that the lengthening of mandates is particularly marked for women. This result supports the hypothesis that debt crises offer women a unique opportunity to extend their tenure, illustrating the glass cliff. Although women are initially less favored than men, crises disrupt this order, enabling women to stay in power longer.

For the health crisis, the results also show significant dynamics. The intercept (3.175, p-value < 2.2e-16) indicates that the average term of office in the absence of a crisis is slightly lower than that observed for the debt crisis. The coefficient for gender (1.404, p-value = 4.1251e-07) again shows that men enjoy a longer term of office than women in

Table 2.10: Diff-in-Diff results

	1985-2000		2000-2015		1985-2015	
Variable	Estimate	p-value	Estimate	p-value	Estimate	p-value
Debt crisis						
Intercept	6.496	<2e-16	2.812	<2e-16	3.377	<2e-16
Gender(ref:Female)	-1.449	0.0017	2.648	<2e-16	1.841	<2e-16
Crisis Period	-0.735	0.0148	0.489	0.0022	0.743	1.9746e-06
Diff-in-Diff	1.086	0.3058	3.320	5.48e-13	2.771	4.6847e-09
Health crisis						
Intercept	6.243	<2e-16	2.374	<2e-16	3.175	<2e-16
Gender(ref:Female)	-1.233	0.0046	2.533	<2e-16	1.404	4.1251e-07
Crisis Period	0.908	0.0362	1.823	<2e-16	1.241	<2e-16
Diff-in-Diff	0.196	0.8912	1.894	1.7987e-07	0.919	0.0198
Natural disaster						
Intercept	6.464	<2e-16	3.914	<2e-16	3.914	<2e-16
Gender(Ref:Female)	-1.764	0.0004	0.682	0.0198	0.682	0.0198
Crisis Period	-0.869	0.0126	-0.861	<0.001	-0.861	<0.001
Diff-in-Diff	2.126	0.0194	1.172	0.0027	1.172	0.0027

normal times. However, the coefficient for the crisis variable (1.241, p-value < 2.2e-16) shows that tenure increases significantly during health crises. The Diff-in-Diff coefficient (0.919, p-value = 0.0198) shows that this lengthening of mandates is also more pronounced for women. Although this effect is less pronounced than for the debt crisis, it nevertheless remains significant, reinforcing the idea that women are perceived as better able to manage health crises, enabling them to stay in power longer in turbulent times.

Finally, for natural disasters, the results are somewhat more significant. The intercept (3.914, p-value 2.2e-16) is slightly higher than for other crises. Firstly, this indicates a longer term of office in the absence of natural disasters, and secondly, the glass cliff effect is more evident in the case of natural disasters than debt or health crises.The coefficient for gender (0.682, p-value = 0.0198) shows that men once again have longer terms of office than women in normal times. However, the crisis variable (-0.861, p-value < 0.001) shows that natural disasters tend to shorten terms of office for both sexes. Nevertheless, the Diff-in-Diff coefficient (1.172, p-value = 0.0027) shows that, despite this general reduction in

mandates, women see their mandates significantly extended in times of natural disasters compared to men. This is an interesting result, as it shows that even in a context where mandates are generally shorter in times of crisis, women manage to take advantage of these circumstances to extend their time in power.

Analysis of the sub-periods provides a better understanding of the dynamics observed in the overall period. For the period 1985-2000, the results show that, although women had longer mandates than men in times of crisis, the differences were not always statistically significant. For example, for the debt crisis, the Diff-in-Diff coefficient (1.086, p-value = 0.3058) shows a tendency for women's mandates to lengthen in times of crisis, but this effect is not significant, suggesting that the crises did not have a very marked differentiated impact at that time.

In contrast, for the period 2000-2015, the results are much more pronounced, with significant effects observed for all three types of crisis. For the debt crisis, the Diff-in-Diff coefficient (3.320, p-value < 5.48e-13) shows a significant lengthening of women's mandates, confirming the glass cliff hypothesis. For the health crisis, the Diff-in-Diff coefficient (1.894, p-value = 1.7987e-07) shows a similar result, although less pronounced than for the debt crisis. Finally, for natural disasters, although the duration of mandates is shorter overall, women continue to benefit from longer mandates than men (Diff-in-Diff = 1.172, p-value = 0.0027).

In conclusion, the results of the analysis over the overall period (1985-2015) and the sub-periods reveal a complex dynamic that is consistent with the glass cliff hypothesis. In normal periods, men dominate the political scene, with longer mandates than women. However, in times of crisis, particularly the debt and health crises, women manage to extend their mandates significantly, suggesting that they are perceived as effective solutions for managing these crises. However, this advantage remains conditional on the crisis, as once the turbulent period is over, women see their mandates cut short, and the traditional male-dominated order re-establishes itself.

2.8 Conclusion

The results of this study reveal several pertinent dynamics regarding women's access to the highest political offices. The glass ceiling phenomenon seems to persist, as evidenced by data showing that women accessing head of state positions are often older than their male counterparts. This suggests that women have to overcome more obstacles throughout their careers to reach these positions. This observation is consistent with the idea that women

need to accumulate more experience to overcome institutional and cultural barriers. However, these trends vary from country to country and political context to political context, which suggests that these results should not be generalized.

Furthermore, results on access to elite academic networks show that women are less likely than men to have attended prestigious institutions. This could indicate that these networks play a key role in promoting men to the highest positions, while women often have to follow more indirect trajectories. The accentuation of this dynamic after 2000 may be linked to the increased professionalization of political elites in certain contexts, although other factors may also explain these results.

This study provided an in-depth examination of gender dynamics in the accession to power and tenure of heads of state, particularly in crisis contexts. By mobilizing data covering the period 1950-2015 and applying rigorous econometric techniques such as the logit model, Kaplan-Meier survival curves and Diff-in-Diff models, we tested three fundamental hypotheses derived from glass ceiling and glass cliff theories.

The first hypothesis, according to which crises increase the probability of a woman being elected head of state, was confirmed by the results of our logit model. By analyzing periods of crisis, whether debt crises, health crises or natural disasters, it became clear that women are more likely to come to power in these turbulent times. This finding is consistent with the concept of the glass cliff, which postulates that women are more frequently called upon to lead in times of crisis, due to perceptions that they are better able to manage complex situations requiring qualities such as empathy or collaboration. In particular, the results for the health crisis and the debt crisis show significantly positive gender coefficients, indicating that the electorate is more inclined to choose women to deal with periods of disruption.

The second hypothesis concerned the length of women's mandates after a crisis, postulating that, although elected in times of crisis, women hold shorter mandates than their male counterparts once the situation has stabilized. Kaplan-Meier survival curves were used to test this hypothesis. For the period 1985-2000, the results show no significant difference between men's and women's terms of office, suggesting that crises have not led to significant disparities in terms of longevity in power. However, for the period 2000-2015, the results are more revealing: the survival curves show a significantly shorter term of office for women, with a p-value of 0.014, confirming that, although women are more often elected in times of crisis, they are rapidly replaced by men once the crisis is over. This result validates the idea that women are perceived as temporary solutions in turbulent times, but their hold on power remains fragile once conditions stabilize.

The third hypothesis, concerning the differential effects of crises on the length of men's and women's mandates, was examined using Diff-in-Diff models for three types of crisis: the debt crisis, the health crisis and natural disasters. The results for the overall period (1985-2015) show that crises, particularly debt crises, significantly prolong women's mandates compared to men's, as indicated by the positive and significant Diff-in-Diff coefficients. However, this dynamic varies from sub-period to sub-period. For the period 1985-2000, the effects of crises are less marked and often insignificant, whereas for the period 2000-2015, the lengthening of women's mandates in times of crisis becomes more visible and significant, particularly for health crises and natural disasters. This suggests that women, although less present in normal times, manage to take advantage of periods of crisis to extend their mandates, even if they remain more vulnerable to being replaced once the crisis is over.

In short, our results clearly show that women are more often called to power in times of crisis, thus validating the glass cliff hypothesis. However, these same women see the duration of their mandate compromised once the crisis has been resolved, reinforcing the idea that they are perceived as transitory solutions. The differences between the sub-periods also underline the importance of historical context in these gender dynamics. Women continue to face significant structural challenges, both in terms of accessing and retaining power, particularly in periods of post-crisis stability when the traditional order of male dominance tends to reassert itself. These findings call for further reflection on the persistent barriers women face in the exercise of power, as well as on the mechanisms that could be put in place to ensure more equitable and sustainable access to leadership positions.

2.9 Appendix

Test	Value
X-squared	0.45119
df (degrees of freedom)	1
p-value	0.5018

Figure 2.7: Crisis Correlogram: 1985-2000

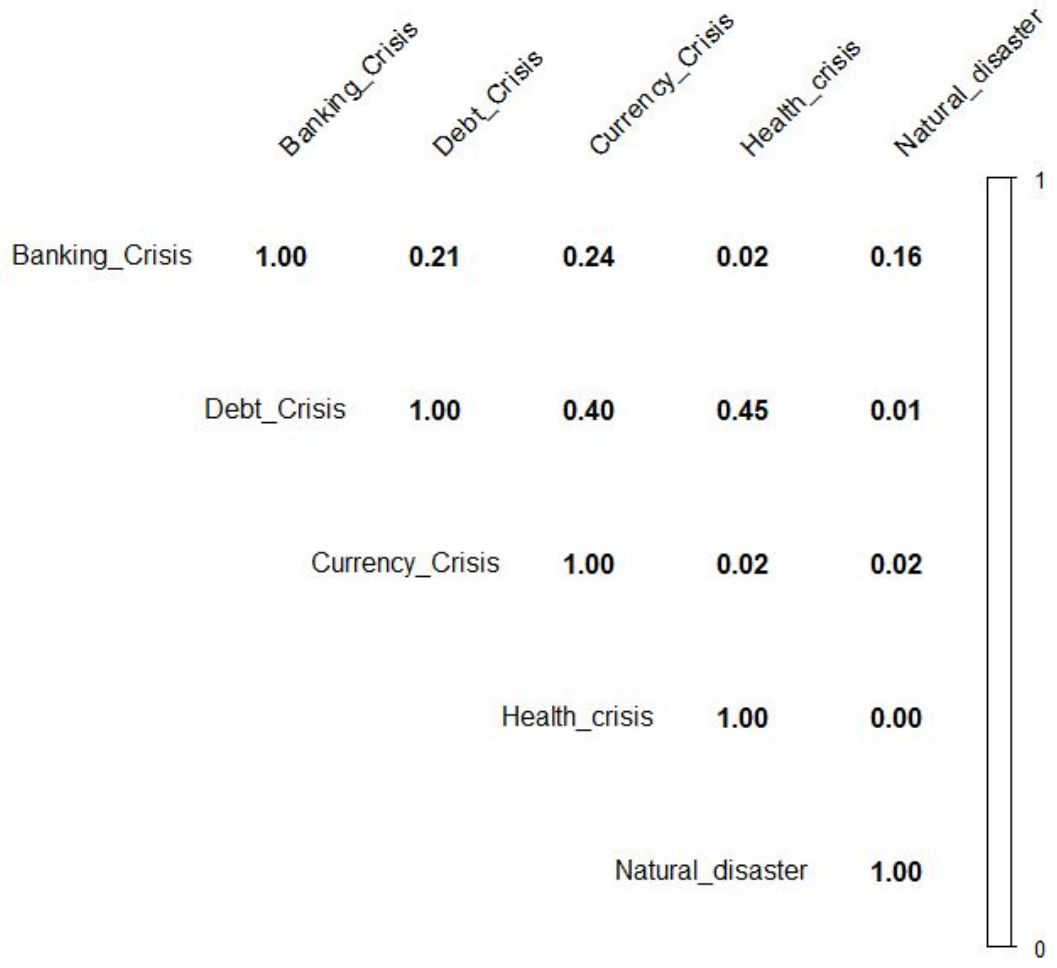
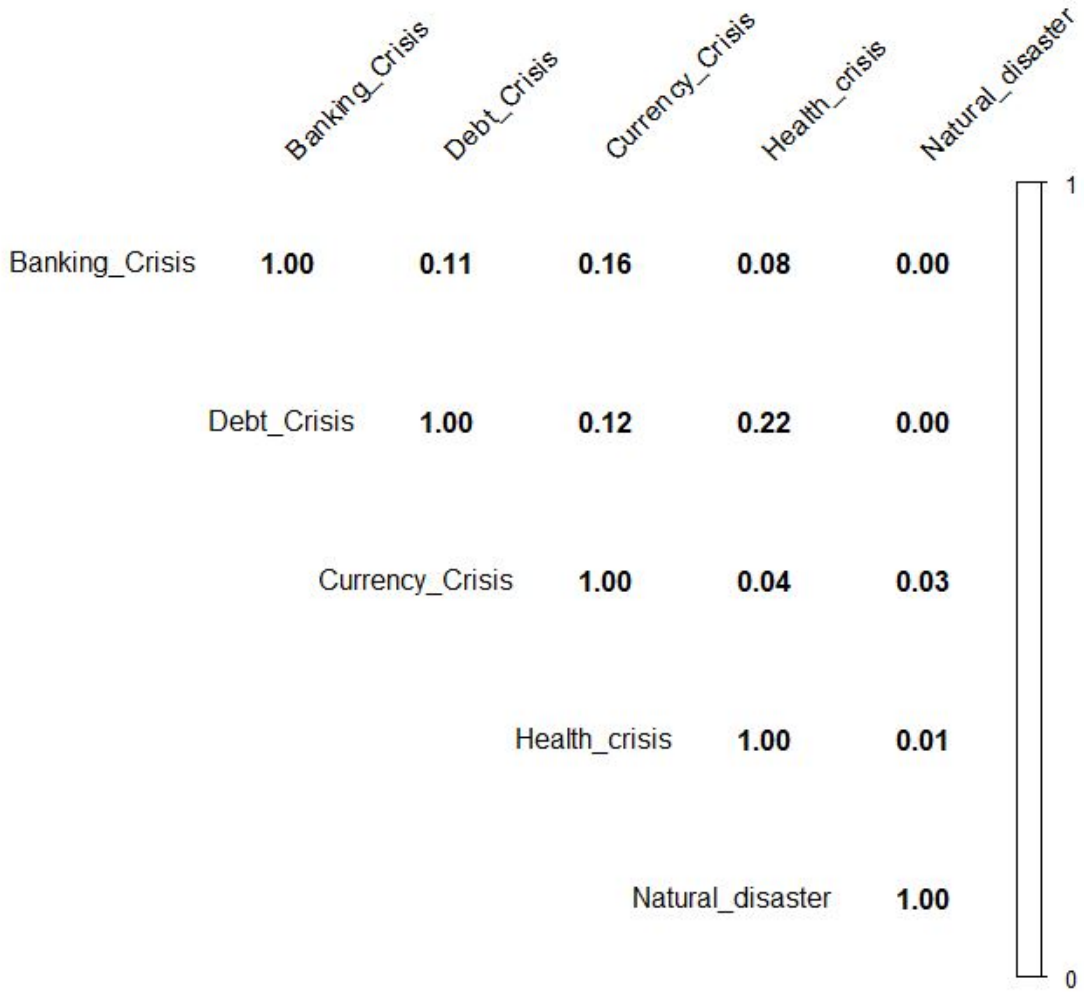


Figure 2.8: Crisis Correlogram: 2000-2015



Chapter 3

Are Tainted Elections Inflationary? Evidence from Haiti: 2004-2018

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Abstract

Vote buying is a widespread practice in many countries and has a significant impact on consumer behaviour during elections. However, its influence on inflation remains a very little-discussed topic. This study focuses on the case of Haiti (2004-2018), where vote buying is very common and elections are fiercely contested, with prevalent fraudulent practices. To analyze the impact of Legislative and Presidential elections on inflation, we combine a time series analysis and a local projections approach, using a comprehensive database covering the overall consumer price index and all its product categories. The results show that the, most fraudulent, recent elections resulted in a significant increase in inflation, comparable in size to the effects of natural disasters and other economic shocks that occurred during the same period. Thus, even if the purchase of votes can temporarily improve the situation of the poorest (for a few days or weeks), it contributes fast to an inflationary deterioration of their situation.

Keywords: Vote buying, Electoral cycle, Time series analysis, Local projection.

Classement *JEL :D72, E31, O10*

3.1 Introduction

While a normal process in mature democracies, elections are often harmful in Haiti, even fuelling debates on the relevance of appointing political leaders instead of organizing elections, aiming to avoid the pre- and post-electoral crises they generate (Étienne 2019) . In Haiti, presidential, legislative, and municipal elections have often been marked by disturbances, social tensions, violence, and other events that hinder commercial activities and impede the economic progress of the country.[1] Elections are also periods of notable price increases.

Are the determinants of inflation the electoral process itself, the related hoarding of products (in a country used to fraudulence and violence around elections)? Are they the consequences of a government-engineered political business cycle, or of the disruptions in the supply of goods caused by the strikes and protests?

Here, we address these questions for Haiti, but the analysis is of obvious relevance for many countries where elections are tainted and marred by violence. If the case of Haiti is of particular interest, given the prevalence of vote-buying (Justesen **and** Manzetti 2023) ; (Woller, Justesen **and** Hariri 2023) , distributing money or gifts in exchange for votes is a common practice in many poor countries, often revealed by increases in the money supply (Aidt **andothers** 2020) . In turn, this can impact prices during electoral periods.

In this context, it is crucial to determine whether the increase in prices during electoral periods can be attributed to the factors stemming from the organization of elections or to other socio-economic factors, or to a combination of both. To address this question, we conduct a time-series analysis of price trends in Haiti using the comprehensive Consumer Price Index survey data produced by the Haitian Institute of Statistics and Informatics Institut Haïtien de Statistique et d'Informatique (IHSI), for the period 2004-2017. Our results show that inflation during electoral periods in Haiti increases significantly more than during non-electoral periods, for three to eight months. Specifically, the 2015-2017 electoral cycle had a major impact on price evolution during that period. This increase is particularly visible in the case of local food products and restaurant items. Clothing articles are the other type of product most affected by the inflationary effect of elections.

However, it is worth noting that the factors mentioned above may not be exclusively linked to elections. Other events such as economic crises, natural disasters, or political

[1] As evidenced by a New York Times article in January 2016: "Haiti postponed the second round of the presidential election due to escalating violence." (https://www.nytimes.com/2016/01/23/world/americas/haiti-postpones-presidential-runoff-vote.html)

upheavals have also played a role in price fluctuations.

For example, the Haitian government's decision in April 2015, during the electoral campaign, to ban the transportation and sale of 23 Dominican products on Haitian territory is considered to have triggered significant price increases. This seems a reasonable conclusion, given Haiti's dependence on the Dominican Republic (imports from the Dominican part of the island representing 15% of total imports). Conversely, and probably more surprisingly, the 2010 earthquake was not noticed by Haitians to have a significant impact on price evolution in the country. Separating the different causes of inflation is thus a complex issue.

Therefore, to disentangle the effects of these events from the impact of electoral periods and their associated maneuvers (intimidation, protests, and, generally, vote-buying), we conducted an analysis using the local projections method of (Jordà 2005) to compare the relative effects of elections with control variables such as natural disasters and political or economic shocks likely to affect prices. The results indicate that elections have an effect on inflation comparable to natural disasters and other major shocks. Moreover, this effect diminishes considerably over time, suggesting that elections in Haiti represent a genuine, specific, shock on inflation.

These results position Haiti as an interesting case study to understand electoral cycles and their economic consequences in developing countries. In other words, our results shed light on the particular dynamics between political events and inflation. By exploring the nuances of electoral cycles in Haiti, we can better understand the complex interaction between democratic processes and economic stability, which can inform policies aimed at fostering resilience and economic stability during electoral periods.

The literature review for this paper can only be short. This is because Carribean economies in general, and Haiti in particular, have not been much studied - the lack of data being the main reason cited as a justification. However, these economies have lessons to deliver, as they are examples of countries where democratic processes exist, but may be used to benefit an oligarchy, and not the general population (Rahman, Anbarci **and** Ulubaşoğlu 2022) for example, speak of "storm autocracies" about island countries). Haiti in particular has been defined as a "phantom state", as the political elite and the criminal groups converge to run the country (Niño **and** González 2022) . Elections in Haiti have been violent, fraudulent, and the anecdotal evidence points to a large degree of vote buying. Otherwise, the paper also deals with the literature on vote-buying, which is now relatively large. In particular, the cost of political campaigns has been well-studied (Bekkouche, Cagé **and** Dewitte 2022) ; (François, Visser **and** Wilner 2022) , and the consequences of

vote-buying on consumption around elections is now an established fact (Aidt **andothers** 2020) . Providing food or cash to voters is only one way to rig an election (Cheeseman **and** Klaas 2018), but it is a prevalent one in weak democracies, with violence and fraud (Collier **and** Vicente 2012). However, the impact of elections, through the use of vote-buying, on inflation is an untouched topic. This paper thus contributes to the literature by analyzing how elections in a fragile state impact the dynamics of prices.

The paper is organized as follows: the following section presents the electoral context of Haiti and puts it in historical perspective. The next section details the methodology used to capture the relation between elections and inflation. Then, we present the data. Section 4 presents the results and their interpretations, and Section 5 concludes.

3.2 Electoral Context

The Republic of Haiti has been a sovereign and autonomous nation since January 1, 1804. The country has experienced various types of political regimes before adopting a democratic system. The history of elections in Haiti is complex and marked by periods of political instability. The first elections in Haiti took place in 1806 when General Henri Christophe was elected president. However, the first democratic elections occurred only in 1946, following the end of President François Duvalier's dictatorship.

In 1957, Duvalier won the presidential elections but quickly established a brutal dictatorship and banned political parties. After his death in 1971, his son Jean-Claude Duvalier took power and continued the dictatorship until 1986 when popular protests forced him to leave. Since then, the country has experienced several electoral cycles, often tainted by violence and electoral fraud. In 1990, Jean-Bertrand Aristide was elected president but was overthrown by a military coup in 1991. He returned to power in 1994 but was again ousted in 2004.

Our analysis thus begins in 2004. Since then, the country has organized several elections, often contested and marred by violence and electoral fraud. The presidential and legislative elections of 2006 in Haiti were held after the fall of President Jean-Bertrand Aristide in February 2004, following violent protests. The electoral campaign lasted four months for the first round and two months for the second round (from October 2005 to February 2006 and from February 2006 to April 2006). The campaign was marked by active participation of candidates and their supporters, as well as violent clashes between different political factions. Candidates organized public gatherings and televised debates to promote their programs and convince voters to support them.

The 2009 elections in Haiti were general elections to elect a new president, two-thirds of the Senate, and all members of the Chamber of Deputies. They were organized by the Provisional Electoral Council Provisional Electoral Council (CEP) with the support of the United Nations Stabilization Mission in Haiti United Nations Stabilization Mission in Haiti (MINUSTAH) and the international community. The electoral campaign for the 2009 senatorial elections in Haiti was tense and marked by accusations of bias and favoritism toward certain candidates by the Provisional Electoral Council (CEP). It was characterized by bouts of violence, intimidation, and threats against certain candidates and their supporters.

The 2010 presidential elections were delayed by the devastating earthquake that struck the country that year. The Haitian general elections of 2010-2011 took place on November 28, 2010 (first round) and March 20, 2011 (second round). The elections included presidential, legislative, and senatorial contests. The electoral process was marked by delays, accusations of fraud, and violence. The electoral campaign was tense, with more than 50 candidates vying for the presidency. The electoral process was complicated by disagreements on how the elections should be organized, as well as logistical and financial issues.

The Haitian general elections of 2015-2016 were held for the first round on August 9, 2015, and for the second round on October 25, 2015, to elect 119 deputies to the Chamber and 20 of the 30 Senate seats. These elections were canceled due to massive fraud. An additional second round took place on November 20, 2016, for six senatorial seats and 24 deputy seats. These elections were also marked by numerous delays, accusations of fraud, and violent protests. The electoral campaign was highly animated, with over 50 candidates running for the presidency. Again, the electoral process was complicated by disagreements on how the elections should be organized, as well as logistical and financial issues.

The elections finally took place in October 2015 but were marred by accusations of fraud and manipulation. The results were contested by several candidates, leading to protests and violence in the streets of the capital, Port-au-Prince, and other cities in the country.

The report of the Electoral Observation Mission of the Organization of American States,Organization of American States (OAS) (2017) provides a view on the electoral context. It for example states that, during the pre-election phase: "The violence and fear that it would spread on election day, as well as the improper use of public funds in favor of one party, marked this stage in the process." On election day, the observers note that 16 candidates from 10 parties have "resorted to violence or attempted to derail the process" and that 17 political parties "had committed acts of violence."

In January 2016, an agreement was reached among major candidates to organize new presidential elections, which took place in November 2016. Candidate Jovenel Moïse won the election and became president of Haiti in February 2017. The electoral campaign was marked by high citizen participation, numerous candidates, and increasing political and social tensions in the country. In 2016, Jovenel Moïse was elected president, but his tenure was tainted by allegations of corruption and mismanagement. In 2020, protests erupted to demand his resignation, but he refused to step down and was assassinated in July 2021. Since then, the country has been plunged into a political crisis, and the holding of elections is uncertain.

During his mandate, legislative, local, and municipal elections took place, to elect members of the National Assembly, mayors, and municipal councilors. Legislative elections were held in October 2016, while municipal and local elections took place in January 2017. These elections were organized by the Senate, and then by the newly installed government, after several years of delays, postponements, and electoral disputes.

3.3 Data and Methodology

3.3.1 Data sources and definitions

The data used in this study are derived from the Consumer Price Index (CPI) survey conducted by the Haitian Institute of Statistics and Informatics (IHSI) for the period from August 2004 to June 2018. The data are collected on a monthly basis and encompass various product categories, including food, dining, clothing, and the communications sector. The IHSI's CPI monitors the price changes of diverse products, making a distinction between local and imported products. This differentiation is crucial as the prices of imported products may be more volatile due to fluctuations in international markets and exchange rates. The CPI survey covers a wide range of common consumer goods such as food, beverages, clothing, rent, fuel, and healthcare services. Prices for these products are collected nationwide using standardized methodology to ensure data consistency and comparability.

In summary, the IHSI CPI survey database provides a reliable and detailed source of information on trends in the prices of local and imported products in Haiti.

In addition to the IHSI CPI survey data, we include control variables such as the cholera outbreak in Haiti in 2010, the drought experienced by the country in 2015, the 2008 storm Fay, the ban on 23 Dominican products in Haiti, and the exchange rate evolution.

These variables are considered because they can trigger fluctuations in the prices of local and imported products, and provide alternative reasons for price changes. For instance, the drought as well as the storm Fay may have impacted local production, potentially influencing the prices of local products. The 2015 ban on Dominican products in Haiti may have affected prices, given that these products are generally cheaper than the local ones. Finally, exchange rate variations can influence the prices of imported products due to fluctuations in production costs. Table 3.1 provides the details on the construction of these variables.

Table 3.1: Control Variables

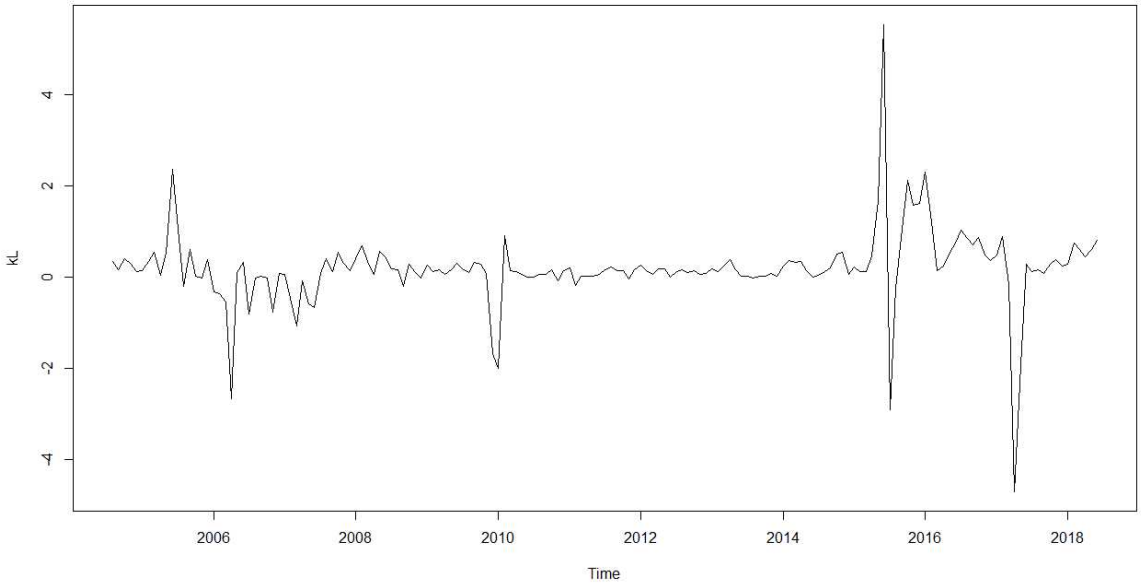
Variables	**Type/Modalities**	**Definition**
Earthquake	Yes = 1, No = 0	Binary variable that takes the value 1 between one and three months after the 2010 earthquake and 0 otherwise. The earthquake occurred in January 2010.
Drought	Yes = 1, No = 0	Binary variable that takes the value 1 between one and three months after the 2015 drought and 0 otherwise. The drought occurred between April and July 2015.
Cholera	No = 0 Weak = 1, Medium = 2, Strong = 3	Ordinal variable that takes into account the extent of the cholera outbreak in the country. Cholera broke out in October 2010 and was eradicated at the end of 2018.
Exchange rate		Monthly variation in the exchange rate.

Variables	Type/Modalities	Definition
Boycott	Yes = 1, No = 0	Binary variable that takes the value 1 during the interval between the enactment and the abolition of the Haitian government's decision to ban the transportation and sale of 23 Dominican products in Haiti in 2015, and 0 otherwise. This ban took place between September 2015 and September 2016.

Table 3.2: Table 2 : Descriptive Statistics

Variables	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	Observations
Local Products							
Food & non-alcoholic beverages	-0.5280	0.0330	0.1320	0.1425	0.2310	0.9240	167
Alcohol & Tobacco	-0.0255	0.0014	0.0028	0.0043	0.0066	0.0355	167
Clothes	-0.0031	0.0000	0.0003	0.0009	0.0008	0.0203	167
Communication	-0.0280	0.0000	0.0000	0.0002	0.0000	0.0280	145
Recreation	-0.1044	0.0000	0.0007	0.0062	0.0038	0.1406	167
Electricity-Gas	-0.0894	0.0000	0.0044	0.0189	0.0178	0.5542	167
Catering	-0.0093	0.0004	0.0014	0.0019	0.0029	0.0147	167
Transportation	-0.0210	0.0000	0.0007	0.0019	0.0022	0.0330	167
Housing Maintenance	-0.0174	0.0000	0.0000	0.0020	0.0008	0.0473	167
CPI	-1.105	0.0812	0.2600	0.2603	0.3900	1.430	167
Imported Products							
Food & non-alcoholic beverages	-0.6510	0.0000	0.0310	0.0564	0.0930	0.7130	167
Clothes	0.0000	0.0000	0.0010	0.0017	0.0030	0.0080	167
Communication	-0.0030	0.0000	0.0029	0.0161	0.0087	0.2695	145
Recreation	0.0014	0.0000	0.0002	0.0010	0.0010	0.0080	167
Electricity-Gas	-0.0150	0.0000	0.0001	0.0005	0.0007	0.0126	167
Transportation	-0.0632	0.0000	0.0002	0.0009	0.0014	0.0442	167
Housing Maintenance	-0.0002	0.0000	0.0000	0.0000	0.0000	0.0005	167
CPI	-0.0001	0.0415	0.1108	0.1340	0.2380	1.0631	167

Figure 3.1: Evolution of the Exchange rate (USD vs. Gourdes)



3.3.2 Descriptive Statistics

Table 3.2 shows the characteristics of the different monthly price series. It can be seen that average inflation is much higher for local food products than for imported products. In fact, mean and median inflation for all local products is about twice as high as for imported products. The distribution also reveals that the maximum values are also generally much higher for local products than for imported ones.

As can be seen in Figure 1, the exchange rate in Haiti is typically subject to important fluctuations. However, during the 2015-2016 period, a notable upward trend in the exchange rate was observed, surpassing variations noted in preceding periods. This marked increase in the exchange rate during the 2015-2016 period has had a significant impact on the Haitian economy. It notably affected the cost of imports, consequently influencing the prices of imported goods in the local market. As a result, consumers faced an increase in the prices of these products, leading to a deterioration in their purchasing power and to inflationary pressures.

3.3.3 Methodological steps

In the initial phase of our investigation, a comprehensive descriptive statistical analysis was undertaken on the various product series of prices. The different categories cover locally and internationally sourced food items, non-alcoholic beverages, alcohol and tobacco, garments, communication services, recreational products, electricity and gas, local dining services, local and imported transportation, household maintenance articles, as well as the total Consumer Price Index (CPI) for both local and imported goods and services.

Then, an examination of the time series of prices was conducted. The overarching objective was to comprehend the temporal dynamics of price fluctuations and their responsiveness to electoral cycles. Key stages in this analytical process encompassed de-seasonalization and time series analysis techniques, notably AutoRegressive Integrated Moving Average (ARIMA) models, to encapsulate the dynamics of price series. This modeling endeavor facilitated the identification of trends and cyclical patterns influencing the series.[2]

Ultimately, the Jorda local projections method was applied to estimate the causal impact of elections on inflation within the Haitian context. This allows us to (i) analyze the length of the effect of one type of shock (an election, say, or a cholera outbreak) methodological and (ii) to compare the relative importance of each type of shock on the dynamics of inflation.

After performing an analysis to detect and correct anomalies in the series, we run estimates for each product category. The first difference of each "CPI" (total or component) variable is considered as the dependent variable, and independent variables were constructed to take account of elections and other events during the period under review. Hence, the estimated equation writes as follows:

$\Delta(CPI)_t = \Delta(CPI)_{t-1} + \Delta(CPI)_{t-2} + Election_{2006}$ + $Election_{2009}$ + $Election_{2010}$ + $Election_{2011}$ + $Election_{2015}$ + $Election_{2016}$ + $Election_{2017}$ + Earthquake + Cholera + Drought + Cyclone(Fay) +Boycott [+ Exchange rate] + ε_t

where the time index signals the monthly nature of the series. The square brackets signify that the exchange rate variable is included only for the estimates run for the imported products series. This is done given the Haitian economy's dependence on international trade, and the potential sensitivity of the exchange rate to political events. [3]

[2]For space limitations, we do not display the series diagnostics, we refer the reader to an appendix that we keep available upon request.

[3]We have also included a month fixed effect, to account for other seasonal factors that could have remained after the de-seasonalization process. As could be expected, the results were not substantially modified, and

3.4 Results

For space reasons, we do not present all the results and proceed with the analysis in two steps. First, we analyze the results for each series and look at the significance of electoral variables. Second, as it appears that the result for the last electoral sequence are strikingly different from the others, we focus on this sequence, detailing it further. Third, we use local projections to compare the effects of elections and the other potential determinants of inflation, in terms of impact size and length.

3.4.1 Inflation and the electoral cycle

In Table 3.3, we present the results, decomposihe CPI in its main components, the CPI for local products and the one for the imported products. If the lagged value of each CPÏ is significant and important, as could be expected of such series, some elections are also impacting significantly the evolution of prices in Haiti. The most significant ones are the Legislative elections of 2015 and 2016. As we have explained above, these elections were fiercely contested, and it is all the more probable that vote buying was prevalent during this period. This result calls for a deeper exploration, which we implement hereafter.

The control variables that appear as significant are the presence of cholera (but only under its weak form of prevalence), and the boycott of Dominican products that was implemented in 2015. The former result, for cholera, can be explained by the fact that, when and in the zones where cholera is prevalent (what we code here as "medium" and "strong" degrees of prevalence), transactions are reduced, and the inflationary impact is not significant, whereas when cholera is weakly present, households increase their precautionary purchases, with a related impact on prices. The latter result is particularly interesting, as the boycott of Dominican products was obviously a political gesture, disguised as a sanction against "unfair competition" from the neighbour country. It is thus another type of maneuver aimed at manipulating the voters' intentions. However, as it is occurring during the last electoral phase we cover (the electoral cycle starting in 2015 and ending in 2017), it is concurrent to the elections, and the separate impact of each type of variable will have to be compared.

For the sake of saving space, we do not display the results for all the sub-components of the price index. Their analysis however reveals the following patterns: [4] the coefficients

most of the fixed effects turn out as non significant.

[4] We do not display the series diagnostics, and refer the reader to an appendix that we keep available upon request.

are significant for the the sub-indexes for food and non-alcoholic beverages (up to twice the period-average inflation for these products), as well as for catering and clothes (imported or local ones).

The natural explanation for these results is that the elections are often accompanied by violence, demonstrations and other disruptions that affect the daily lives of inhabitants and can influence the availability of certain products as well as the smooth functioning of markets. As a result, resellers can anticipate a period of political uncertainty and artificially raise prices to maximize their profits. Consumers may also anticipate such a period of political uncertainty by stocking up in advance, leading to an increase in demand and, consequently, price rises. The results for clothes and textile products can be explained by the high demand for jerseys, banners and other election campaign items featuring photos and slogans of candidates and political parties, given the large number of candidates (around 7,000) in the running.

Another possible explanation is vote-buying in certain regions, the poorest Haitian households use their temporary surplus income to buy new clothes. Finally, for what concerns catering, the observation is consistent with the fact that election campaigns generate increased demand for catering goods and services, as candidates organize rallies and meetings during which food is distributed for free to participants.

Table 3.3: Elections and Consumer Price Index (Global)

Variables	**CPI (Local products)**	**CPI (Imported products)**
$\Delta CPI(t-1)$	-0.0123	-0.0203*
	(0.0065)	(0.0094)
$\Delta CPI(t-2)$	0.3152***	0.4106***
	(0.0804)	(0.0777)
Legislative & Presidential 2006	0.5025*	0.3880*
	(0.2183)	(0.1798)
Legislative & Presidential 2010	-0.0990	-0.0645
	(0.1459)	(0.1267)
Legislative & Presidential 2011	0.1008	0.0429
	(0.1449)	(0.1259)
Legislative & Presidential 2015	0.4534***	0.1786
	(0.1232)	(0.1012)
Legislative & Presidential 2016	0.3642*	0.1833
	(0.1628)	(0.1323)
Legislative 2009	-0.0676	0.0140
	(0.1143)	(0.0991)
Legislative 2017	-0.1636	-0.1089
	(0.1773)	(0.1553)
Earthquake	0.1322	0.0817
	(0.1436)	(0.1256)
Cholera (Weak, ref. = Null)	0.6355**	0.4524**
	(0.2127)	(0.1567)
Cholera (Strong)	0.1238	0.1135
	(0.0874)	(0.0743)
Cholera (Medium)	0.1240	0.1192
	(0.1038)	(0.0837)
Drought	0.1141	0.0309
	(0.1707)	(0.1673)
Cyclone (Fay)	0.1540	0.2211
	(0.1485)	(0.1338)
Boycott (of Dominican products)	0.3057***	0.1423
	(0.1034)	(0.0841)
Exchange rate		0.0126
		(0.0224)
Observations	167	167

Significance levels : *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

3.4.2 Decomposing the 2015-2017 electoral cycle

The above-reported econometric analysis reveals a significant impact of the Legislative elections of 2015 and 2016 on the local and imported prices in Haiti. As these elections were included in a period of contested, even cancelled, elections which induced an electoral cycle that lasted almost 2 years, we consider now a further decomposition of this cycle. This is done to determine which type of election (legislative and/or presidential), and which round when there has been two rounds, had the greatest influence on the variation in prices of the products mentioned above.

In Table 3.4, we display the results for the different price series that are impacted significantly by the electoral process, dissecting the electoral sequence of 2015-2017. As explained above, this sequence has been marred by violence, rigging, and has conducted to the repeat of some elections. Hence, in 2015, there has been Legislative elections (in August for the first round, and October for the second) and Presidential ones (in October). The last one has been canceled, due to large irregularities, and another Presidential election takes place in November 2016. As some House members election had been cancelled, some Legislative elections also take place in November 2016, with a second taking place in January 2017. Compared to the baseline equation presented above, we thus add to the equation a dummy variable for each of these elections, to disentangle their relative effects on inflation.

As can be seen, for what concerns the global CPI (both for imported and local products), the first round of the Legislative election of 2015, as well the synchronized Presidential and Legislative elections for 2016, have a significant (and positive) impact, although at the 10 percent level. However, the impact is much more stronger, and much more significant, for local food products, recreational activities, clothes (both local and imported) and catering.

This may be due to the campaigning activity related to the election. The printing of jerseys, banners and other important items for candidates during election campaigns remains a possible explanation for this result. And it could be considered as normal, except for the strength of the impact: for clothes, for example, the coefficient reveals an unweighted effect close to 2 percent per month, far larger than the average rate of increase over the entire period, as can be seen in Table 2. This large impact, associated with the large coefficient for food and catering strongly hints of vote-buying during this period. More specifically, the first round of the 2015 parliamentary elections led to a 46% rise in food and non-alcoholic beverage prices, one month before the elections. This means that these products experienced a pre-election legislative inflationary effect in 2015 thrice the average inflation rate for these products observed during this period (14.25%, table 3.1).

Interestingly, we also reveal the evolution of the impact over the electoral sequence: one month before the elections, prices of food-related products start to rise. They continue to rise in the month of the election, but by a higher proportion than the increase previously recorded. One month after the election, prices continue to rise, but by less than in the previous two periods. Assuming that elections represent a shock to price stability, these results reveal the efforts of candidates and parties to lure voters; thus, the shock to prices diminishes with time, the further away the election, the less significant, or even negligible, it becomes. This is consistent with the pattern for catering services: there is an increase in prices one month before the first round of parliamentary elections, and the month of the election as well. The effect is less significant in the month of the election, showing that catering is offered more before the election than during.

Moreover, as the effect we observe for recreational activities and clothes is larger for the imports than for the locally produced goods and services, this electoral sequence also reveals an impoverishing effect of election-induced manipulations. Again, if it may seem logical for these products to increase, due to the numerous meetings, rallies and advertising spots organized by candidates and their supporters, political parties and event organizers, the fact that the imported series increase more than the local does not improve the situation of the Haitian people.

The 2016 legislative and presidential elections also generated an electoral inflationary jump on food and non-alcoholic beverages. Indeed, in the month of these elections in 2016, (unweighted) prices for these products rose by almost 49%, much more than the average inflation for these products during the period.

Table 3.4: Decomposing the 2015-2017 electoral cycle

Variables	CPI (Local)	CPI (Imported)	FOOD (Local)	FOOD (Imported)
Intercept	0.6045***	0.0492***	0.0932***	0.5673***
	(0.1236)	(0.0145)	(0.0195)	(0.0684)
Trend	0.0052***	0.0006*	-0.0130	0.2477***
	(0.0013)	(0.0003)	(0.0081)	(0.0820)
CPI (t-1)	-0.0117.	-0.0197*	0.3349***	0.4155***
	(0.0065)	(0.0094)	(0.0828)	(0.0791)
CPI (t-2)	0.4810*	0.2994*	0.5673***	0.0297
	(0.2203)	(0.1246)	(0.0684)	(0.0530)
Legislative & Presidential 2006	0.4810*	0.3890*	0.2994*	0.0297
	(0.2203)	(0.1822)	(0.1246)	(0.0530)
Legislative & Presidential 2010	-0.0936	-0.0624	-0.0668	0.0126
	(0.1468)	(0.1287)	(0.0894)	(0.0606)

Variables	CPI (Local)	CPI (Imported)	FOOD (Local)	FOOD (Imported)
Legislative 2015_round1(-1)	0.5714*	0.3000	0.4592***	0.0239
	(0.2388)	(0.2233)	(0.1452)	(0.1063)
Legislative 2017	0.1583	-0.1157	-0.0614	-0.0760
	(0.1784)	(0.1575)	(0.1082)	(0.0743)
Boycott (Dominican products)	0.2955**	0.1311	0.1779*	-0.0117
	(0.1044)	(0.0859)	(0.0685)	(0.0415)
Exchange rate		0.0238		0.0175
		(0.0254)		(0.0121)
Observations	167	167	167	167

3.5 Local Projections

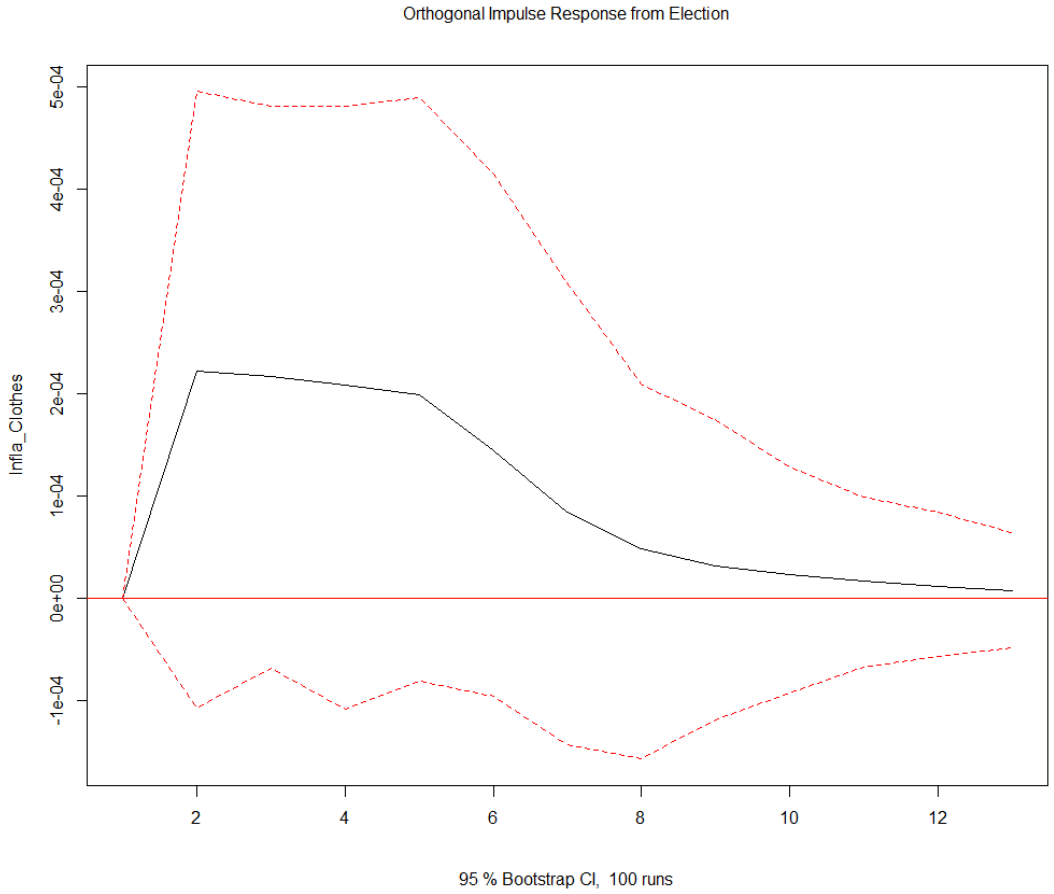
Finally, to compare the relative effects of elections and natural disasters, we implement a local projection approach. This method is used to estimate impulse responses in macroeconomic models (Jordà 2005), to assess the effects of a shock on a variable of interest, without constraining the shape of the impulse response functions, and therefore, being less sensitive to mis-specification than VAR models (Jordà **and** Taylor 2016).

However, it has to be acknowledged that our sample is small, implying that our estimates have to be taken with a pinch of salt, as they may suffer from a small sample bias (as exposed by Kilian **and** Kim (2011)), Bruns **and** Lütkepohl (2022) or Herbst **and** Johannsen (2024)). In such a context, local projections nevertheless return a vector of point estimates closer to the correct ones, but with larger confidence bands (Brugnolini 2018). Moreover, if the small sample bias is especially damaging for long-run estimates (Lindberg, Bue **and** Sen 2022), our focus is on the short-run dynamics imposed on prices by concurrent events.

In Figure 3.2, we thus provide a view of how elections compare to the boycott of Dominican products and to the drought Haiti suffered from in 2015 (being the worst the country has known). Again, for the sake of space, and because the approach can only be illustrative in our small sample context, we only show the case of the (local) clothes series. The price of clothes has been shown above to be one of the most impacted by elections, and is illustrative of the pattern we observe in Haitian prices.

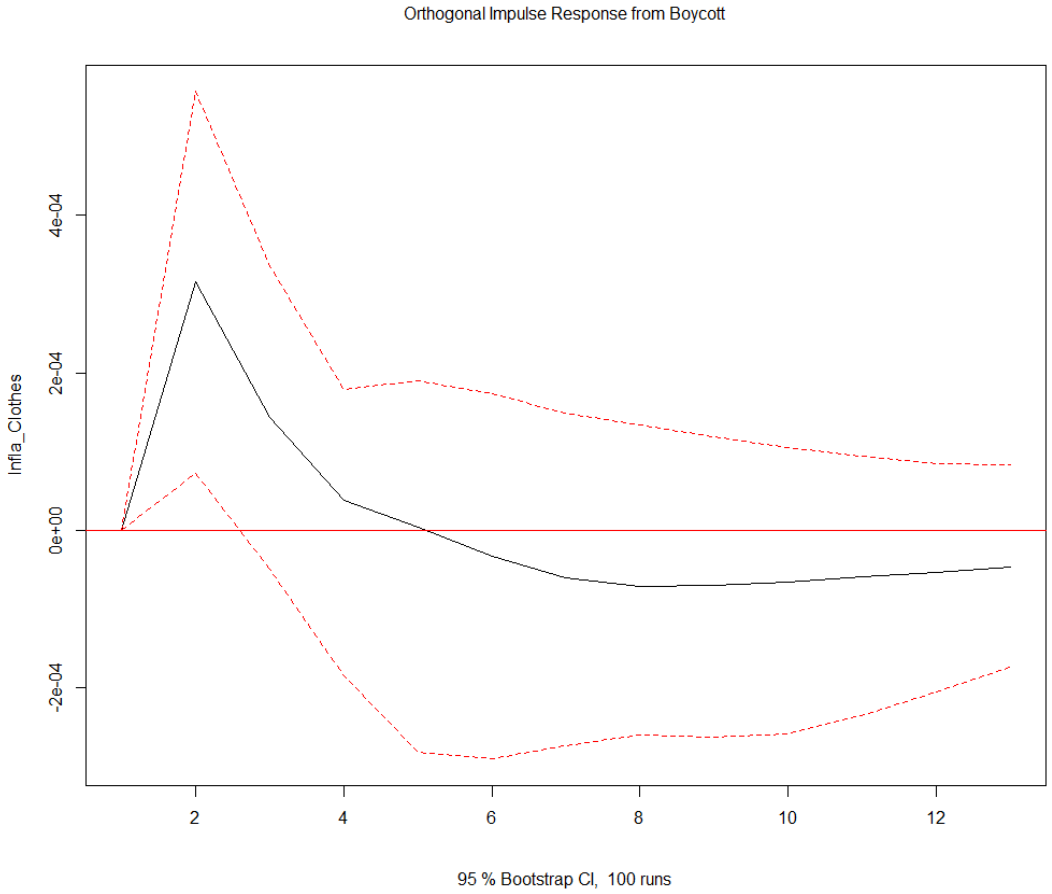
As can be deducted from Figure 3.2, 3.3 and 3.4, elections have an impact on the price of clothes that last in a significant way for three months, with a peak value estimated at 0.0002,

Figure 3.2: Response of clothes inflation to election



and a return to the trend after eight months. By comparison, the boycott of Dominican products has an impact estimated at 0.0003, superior thus to the electoral impact, but lasting for much less longer (the peak is reached after one month, with a return to trend after five months only - probably due to the importance of smuggling along the border that the boycott has only reinforced). The drought has a much larger impact, as the peak is reached at a value equal to 0.0010 (or five times the elections' impact), with a return to trend obtained after eight months too.

Figure 3.3: Response of clothes inflation to the boycott of Dominican products

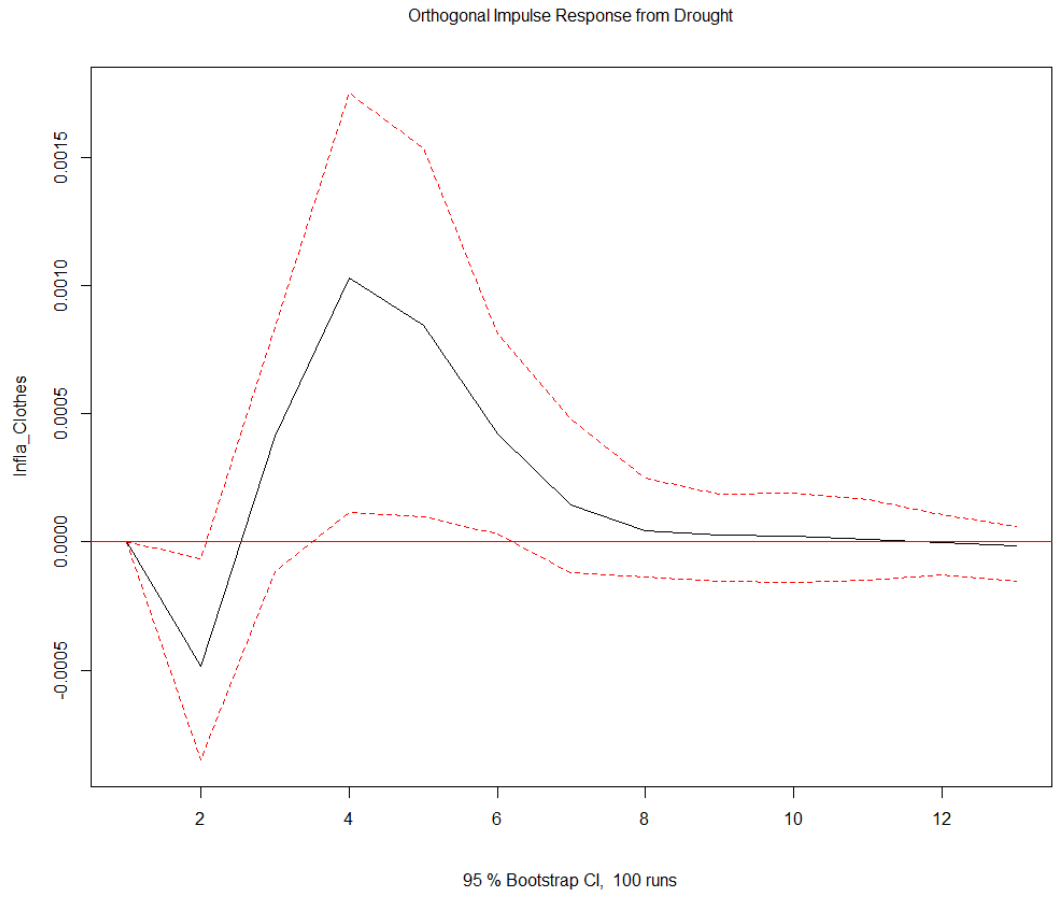


3.6 Conclusion

Electoral campaigns matter. Spending by candidates can influence voters (Bekkouche et al., 2022). But, in small, even tiny, economies, spending by candidates can also have an exorbitant impact on already fragile structures. Our results show that an electoral cycle can even be compared to events such as a drought or a boycott on inflation, for the size of its impact on the evolution of prices.

This paper exhibits the inflationary role of elections in weak democracies, when campaigns are used by candidates to lure voters by offering them food, or cash, for votes. The Haitian case provides a case study of the role tainted elections play in damaging small and already fragile economies : campaigns in which a lot of candidates compete in spending funds for non-essential products (such as textiles used as posters for the parties or candidates) de facto divert resources no longer available for more valuable projects.

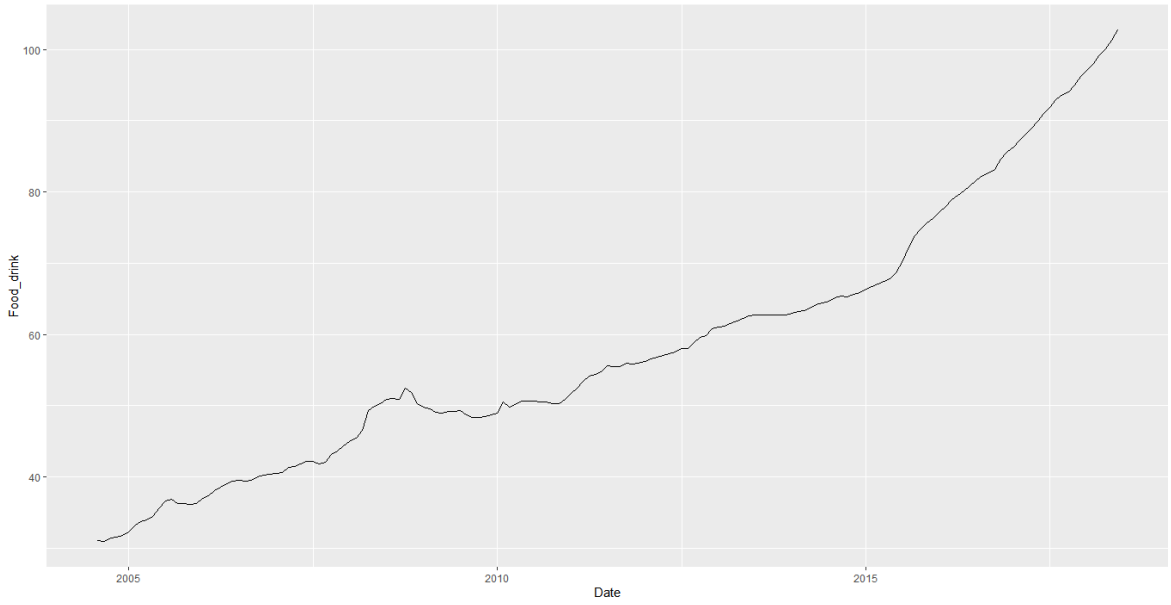
Figure 3.4: Response of clothes inflation to drought



Although they may help the poorest by providing them cash, free food, and clothes in the short-run, our results show that, in the end, unrestrained spending by candidates has an impact on prices, thus impoverishing the whole population, and destabilizing an already stumbling economy.

A lesson from our results is a call for a cap on spending by candidates, to reduce the general impact of vote-buying on the economy. More precisely, the results reveal a need to regulate electoral expenses of candidates and their political parties, and call for a better control of expenses by the candidates and their supporting parties. Although caps are not necessarily a panacea (François, Visser **and** Wilner 2022), they are probably a first good step forward in weak societies for democracy to fulfill its promises. In some ways, thus,n the analysis of the Haitian case provides support to the theory-based recommendations of Nupia **and** Eslava (2022).

Figure 3.5: Serial graph before seasonal adjustment



3.7 Appendix

Local Products series

Table 3.5: Serie 1 : Food & Non alcoholic beverages

Diagnostic	Value
Min.	-0.5280
Max.	0.9240
Median	0.1320
Standard deviation	0.1425

Stationarity Test

The series is stationary in difference, with no constants or trends. The data generation process is an AR (1).

Figure 3.6

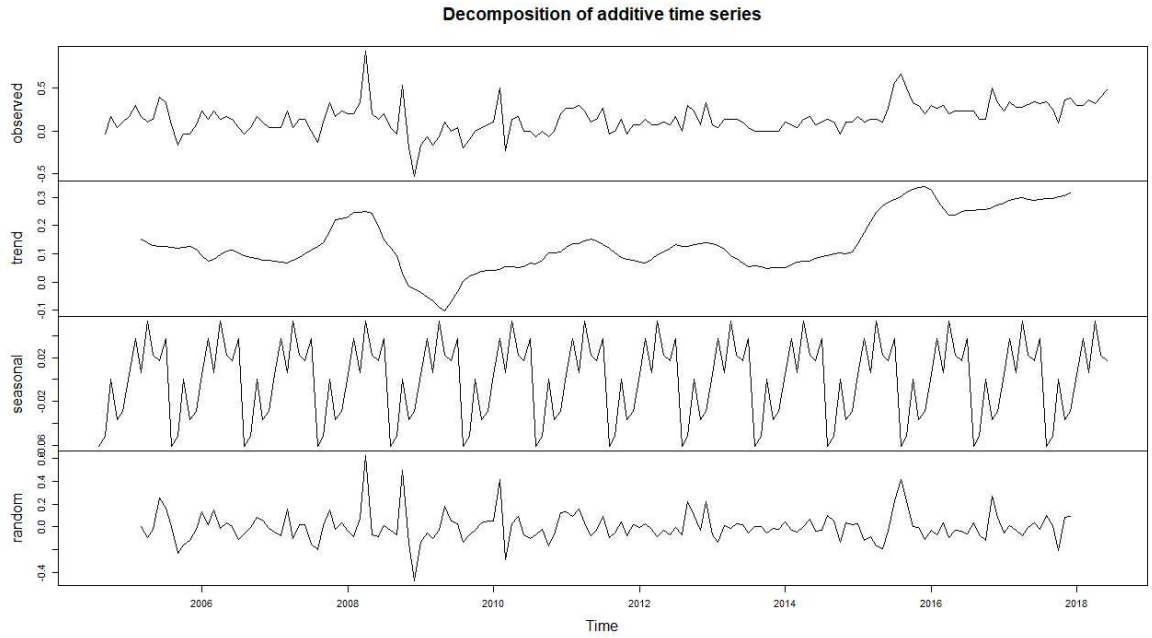


Table 3.6: **Regression Results**

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
z.lag.1	0.0027693	0.0007141	3.878	0.000154	***
z.diff.lag1	0.4331272	0.0795770	5.443	1.95e-07	***
z.diff.lag2	0.1120429	0.0858300	1.305	0.193641	
z.diff.lag3	0.0430541	0.0799293	0.539	0.590880	

Table 3.7: First Regression Results

Variable	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Food)	-0.01443	0.00818	-1.764	0.079845	.
L(\Delta Food)	0.24108	0.07977	3.022	0.002957	**
ElectionLP_2006	0.73933	0.25742	2.872	0.004678	**
ElectionLP_2010	-0.07071	0.08980	-0.787	0.432258	
ElectionLP_2011	0.08800	0.08906	0.988	0.324705	
ElectionLP_2015	0.33870	0.07896	4.290	3.21e-05	***

Variable	Estimate	Std. Error	t value	Pr(>|t|)	Significance
ElectionLP_2016	0.29575	0.10285	2.876	0.004627	**
ElectionL_L2009	-0.04578	0.06940	-0.660	0.510466	
ElectionL_L2017	-0.06567	0.10867	-0.604	0.546591	
Earthquake	0.07000	0.08655	0.809	0.419948	
Cholera (Weak)	-0.33045	0.11401	-2.898	0.004321	**
Cholera (Strong)	-0.32914	0.09600	-3.428	0.000787	***
Cholera (Medium)	-0.42050	0.14766	-2.848	0.005029	**
Drought	0.11461	0.10444	1.097	0.274267	
Cyclone (Fay)	0.03183	0.08807	0.361	0.718270	
Boycott (Dominican products)	0.18661	0.06856	2.722	0.007273	**

Table 3.8: Second Regression Results

Variable	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Food)	-0.01293	0.008191	-1.579	0.11649	
L(Food)	0.247715	0.082030	3.020	0.00300	**
ElectionLP_2006	0.299439	0.124416	2.407	0.01738	*
ElectionLP_2010	-0.06687	0.089494	-0.747	0.45614	
ElectionLP_2011	0.088803	0.088730	1.001	0.31861	
Election_L2015_round1(-1)	0.459206	0.145220	3.162	0.00192	**
Election_L2015_round1	0.491892	0.150371	3.271	0.00134	**
Election_L2015_round1(+1)	0.310906	0.153598	2.024	0.04483	*
Election_LP2015	0.193183	0.150604	1.283	0.20168	
Election_LP2015_round1(+1)	0.205325	0.148549	1.382	0.16908	
Election_LP2016_round1(-1)	0.129699	0.152866	0.848	0.39762	
Election_LP2016	0.489557	0.153283	3.194	0.00173	**
Election_LP2016_round1(+1)	0.235300	0.159096	1.479	0.14136	
Election_L2009	-0.04836	0.069144	-0.700	0.48538	

Variable	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Election_L2017	-0.06148	0.108238	-0.568	0.57089	
Earthquake	0.066070	0.086217	0.766	0.44476	
Cholera (weak)	0.393549	0.148049	2.658	0.00876	**
Cholera (Strong)	0.082930	0.052750	1.572	0.11815	
Cholera (Medium)	0.080843	0.066419	1.217	0.22556	
Drought	0.112436	0.104008	1.081	0.28152	
Cyclone (Fay)	0.026703	0.087774	0.304	0.76140	
Boycott (Dominican products)	0.177948	0.068591	2.594	0.01047	*

Table 3.9: Serie 2: Alcool & Tabac - Diagnostics

Statistic	Value
Min.	-0.025560
Max.	0.035500
Median	0.002840
Standard deviation	0.004346

Figure 3.7: Serial graph before seasonal adjustment

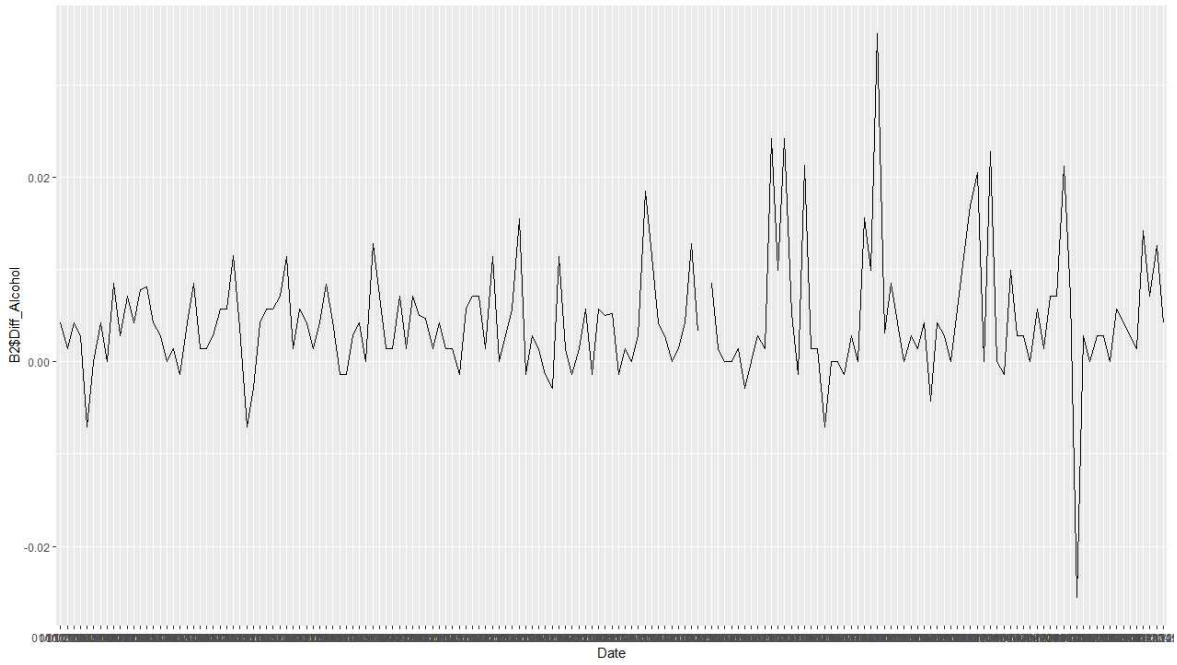
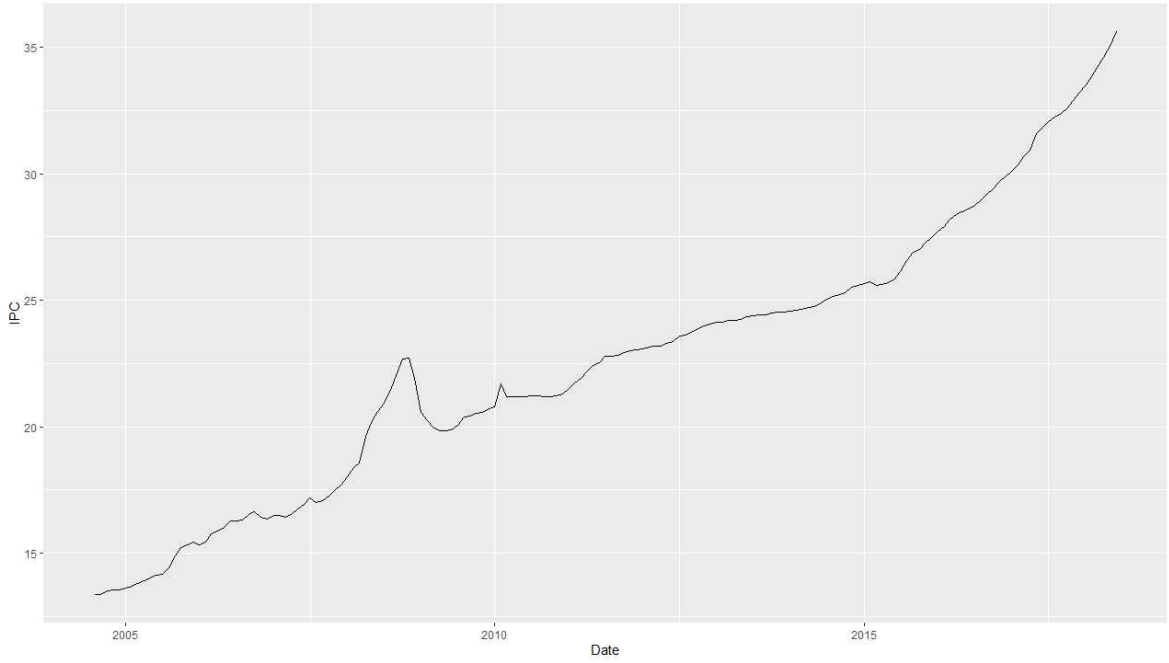


Figure 3.8



Stationarity Test

Table 3.10: Regression Results for Serie 3

Variables	**Estimation**	**Std. Error**	**t value**	**Pr(>|t|)**	**Significance**
z.lag.1	0.002342	0.000668	3.506	0.00059	***
z.diff.lag1	0.326451	0.078274	4.171	4.98e-05	***
z.diff.lag2	0.019564	0.082748	0.236	0.81340	
z.diff.lag3	0.176643	0.078606	2.247	0.02600	*

The series is stationary in difference with no constants and no trend. The data generation process is an AR (1)

First regression :

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
L(Alcohol)	6.400e-03	1.279e-02	0.501	0.61742	
L(Alcohol)	2.295e-01	8.633e-02	2.659	0.00871	**
Election_LP2006	-5.100e-03	1.009e-02	-0.505	0.61404	
ElectionLP_2010	-2.289e-05	3.613e-03	-0.006	0.99495	
ElectionLP_2011	5.468e-03	3.620e-03	1.510	0.13310	
ElectionLP_2015	2.394e-03	3.074e-03	0.779	0.43720	
ElectionLP_2016	5.719e-03	4.771e-03	1.199	0.23249	
ElectionL_L2009	2.339e-03	2.725e-03	0.859	0.39199	
Elect2017	2.563e-03	4.404e-03	0.582	0.56140	
Earthquake	5.347e-03	3.482e-03	1.536	0.12676	
Cholera (Weak)	-1.361e-04	7.756e-03	-0.018	0.98602	
Cholera(Strong)	-5.513e-04	2.515e-03	-0.219	0.82678	
Cholera(Medium)	9.012e-04	3.320e-03	0.271	0.78644	
Drought	-5.343e-03	4.401e-03	-1.214	0.22660	
Cyclone(Fay)	2.577e-04	3.447e-03	0.075	0.94052	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Boycott (Dominican products)	4.165e-03	2.891e-03	1.441	0.15177	

Table 3.12: **Second Regression Results for Alcool & Tobacco**

Variables	**Estimate**	**Std. Error**	**t value**	**Pr(>|t|)**	**Significance**
L(Alcool)	6.185e-03	1.304e-02	0.474	0.63596	
L(Δ Alcool)	2.410e-01	9.064e-02	2.659	0.00873	**
ElectionLP_2006	-4.949e-03	1.028e-02	-0.481	0.63106	
ElectionLP_2010	2.907e-06	3.660e-03	0.001	0.99937	
ElectionLP_2011	5.400e-03	3.671e-03	1.471	0.14349	
Election_L2015_round1(-1)	2.189e-04	6.091e-03	0.036	0.97138	
Election_L2015_round1	4.504e-03	6.045e-03	0.745	0.45746	
Election_L2015_round1(+1)	3.073e-03	6.054e-03	0.508	0.61252	
Election_LP2015	4.432e-03	6.081e-03	0.729	0.46737	
Election_LP2015_round1(+1)	-2.409e-04	6.116e-03	-0.039	0.96863	
Election_LP2016_round1(-1)	3.019e-03	6.881e-03	0.439	0.66156	
Election_LP2016	1.166e-02	6.730e-03	1.732	0.08543	.
Election_LP2016_round1(+1)	1.980e-03	6.870e-03	0.288	0.77363	
Election_L2009	2.377e-03	2.762e-03	0.861	0.39086	
Election_L2017	2.515e-03	4.463e-03	0.563	0.57402	
Earthquake	5.348e-03	3.528e-03	1.516	0.13175	
Cholera (weak)	-5.840e-05	7.900e-03	-0.007	0.99411	
Cholera (Strong)	-5.183e-04	2.558e-03	-0.203	0.83975	
Cholera (Medium)	9.256e-04	3.379e-03	0.274	0.78453	
Drought	-5.273e-03	4.463e-03	-1.182	0.23934	
Cyclone (Fay)	3.158e-04	3.494e-03	0.090	0.92812	
Boycott (Dominican products)	4.165e-03	2.935e-03	1.419	0.15801	

Figure 3.9: Serial graph before seasonal adjustment

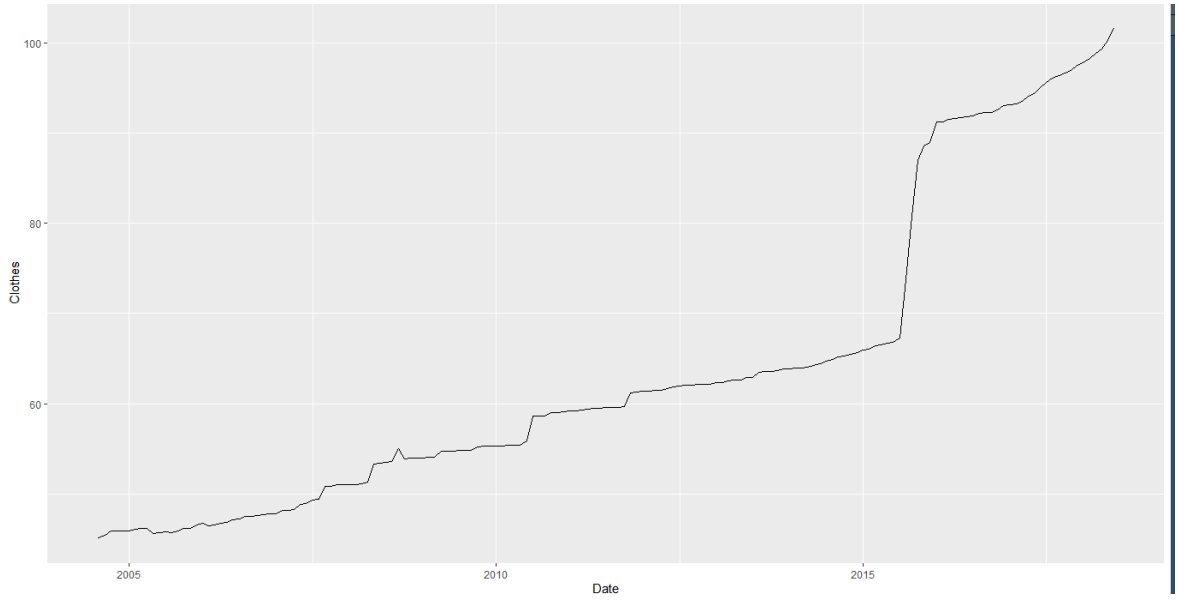


Table 3.13: Serie 3: Clothes - Diagnostics

Statistic	**Value**
Min.	-0.025560
Max.	0.035500
Median	0.002840
Standard deviation	0.004346

Figure 3.10

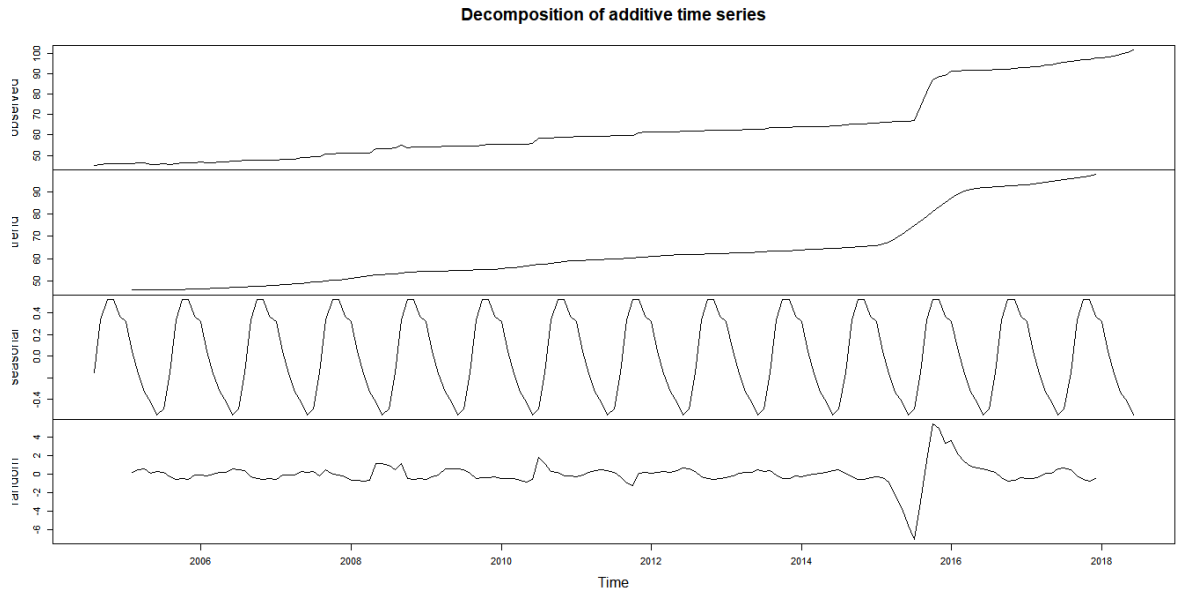


Table 3.14: Stationarity Test Results

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
z.lag.1	0.002692	0.001259	2.139	0.0342	*
z.diff.lag1	0.652242	0.085274	7.649	3.23e-12	***
z.diff.lag2	-0.023562	0.101768	-0.232	0.8172	
z.diff.lag3	-0.083118	0.085676	-0.970	0.3337	

The Series is stationary in difference with no constant and no trend. The data generation process is an AR (1)

Table 3.15: First Regression Results for Clothes

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Clothes)	-2.079e-02	1.976e-02	-1.052	0.2943	
L(Δ Clothes)	2.031e-01	8.258e-02	2.459	0.0151	*
ElectionLP_2006	3.495e-03	2.852e-03	1.226	0.2223	
ElectionLP_2010	-3.300e-05	1.143e-03	-0.029	0.9770	

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
ElectionLP_2011	-2.616e-04	1.141e-03	-0.229	0.8190	
ElectionLP_2015	1.057e-02	1.251e-03	8.449	2.54e-14	***
ElectionLP_2016	1.996e-03	1.975e-03	1.011	0.3137	
ElectionL_L2009	1.124e-04	8.997e-04	0.125	0.9007	
ElectionL_L2017	-1.333e-03	1.394e-03	-0.956	0.3405	
Earthquake	-8.141e-05	1.140e-03	-0.071	0.9432	
Cholera (Weak)	3.574e-03	2.694e-03	1.327	0.1867	
Cholera (Strong)	4.924e-04	7.885e-04	0.624	0.5333	
Cholera (Medium)	7.233e-04	9.173e-04	0.789	0.4316	
Drought	1.443e-04	1.357e-03	0.106	0.9155	
Cyclone (Fay)	7.934e-05	1.120e-03	0.071	0.9436	
Boycott (Dominican products)	2.041e-03	1.659e-03	1.230	0.2205	

Table 3.16: Second Regression Results for Clothes

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Clothes)	0.0138753	0.0136065	1.020	0.3096	
L(Δ Clothes)	-0.0795981	0.0839953	-0.948	0.3449	
ElectionLP_2006	-0.0017795	0.0019298	-0.922	0.3580	
ElectionLP_2010	0.0001617	0.0007460	0.217	0.8287	
ElectionLP_2011	-0.0001584	0.0007445	-0.213	0.8318	
Election_L2015_round1(-1)	0.0008819	0.0012283	0.718	0.4740	
Election_L2015_round1	0.0183541	0.0012310	14.910	2.00e-16	***
Election_L2015_round1(+1)	0.0209275	0.0019457	10.756	2.00e-16	***
Election_LP2015	0.0184413	0.0020622	8.943	1.85e-15	***
Election_LP2015_round1(+1)	0.0046671	0.0019815	2.355	0.0199	*
Election_LP2016_round1(-1)	-0.0016232	0.0016570	-0.980	0.3290	
Election_LP2016	-0.0006622	0.0016610	-0.399	0.6907	

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Election_LP2016_round1(+1)	-0.0003070	0.0016581	-0.185	0.8534	
Election_L2009	-0.0003964	0.0005893	-0.673	0.5023	
Election_L2017	-0.0011413	0.0009112	-1.253	0.2124	
Earthquake	-0.0007655	0.0007466	-1.025	0.3070	
Cholera (weak)	-0.0009125	0.0018572	-0.491	0.6239	
Cholera (Strong)	-0.0006596	0.0005320	-1.240	0.2170	
Cholera (Medium)	-0.0007400	0.0006237	-1.187	0.2374	
Drought	-0.0001135	0.0008855	-0.128	0.8982	
Cyclone (Fay)	-0.0004055	0.0007321	-0.554	0.5806	
Boycott (Dominican products)	-0.0003756	0.0011416	-0.329	0.7427	

Table 3.17: Serie 4: Communication - Diagnostics

Statistic	Value
Min.	-0.0280000
Max.	0.0280000
Median	0.0000000
Standard deviation	0.0002653

Table 3.18: Stationarity Test Results

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
z.lag.1	0.002692	0.001259	2.139	0.0342	*
z.diff.lag1	0.652242	0.085274	7.649	3.23e-12	***
z.diff.lag2	-0.023562	0.101768	-0.232	0.8172	
z.diff.lag3	-0.083118	0.085676	-0.970	0.3337	

The Series is stationary in difference with no constant and no trend. The data generation process is an AR (1)

Figure 3.11: Serial graph before seasonal adjustment

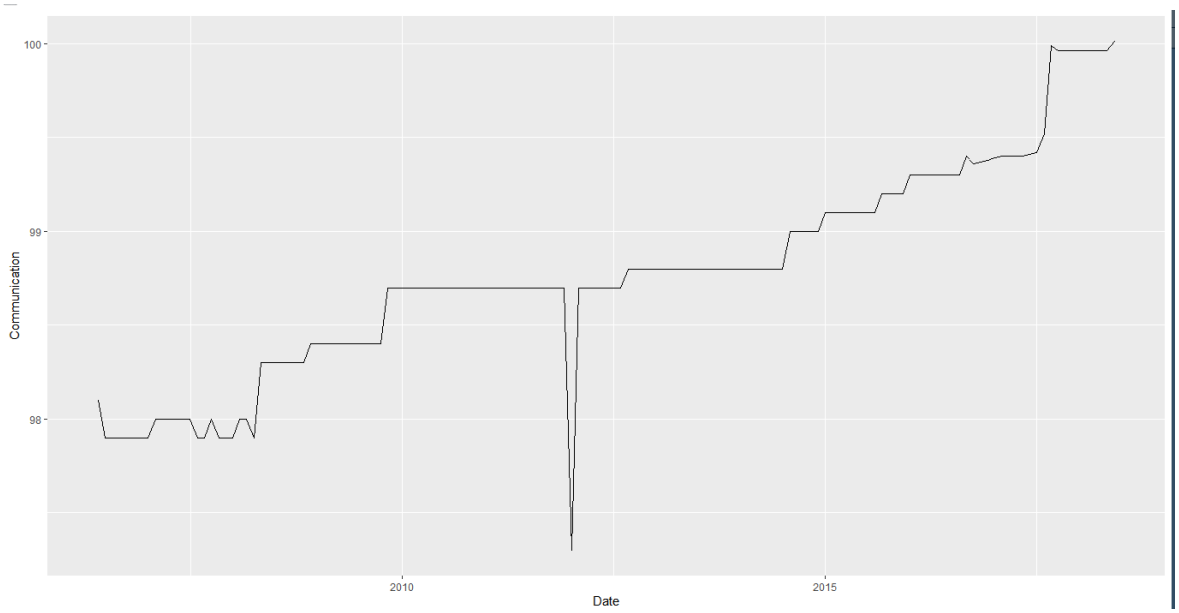


Figure 3.12

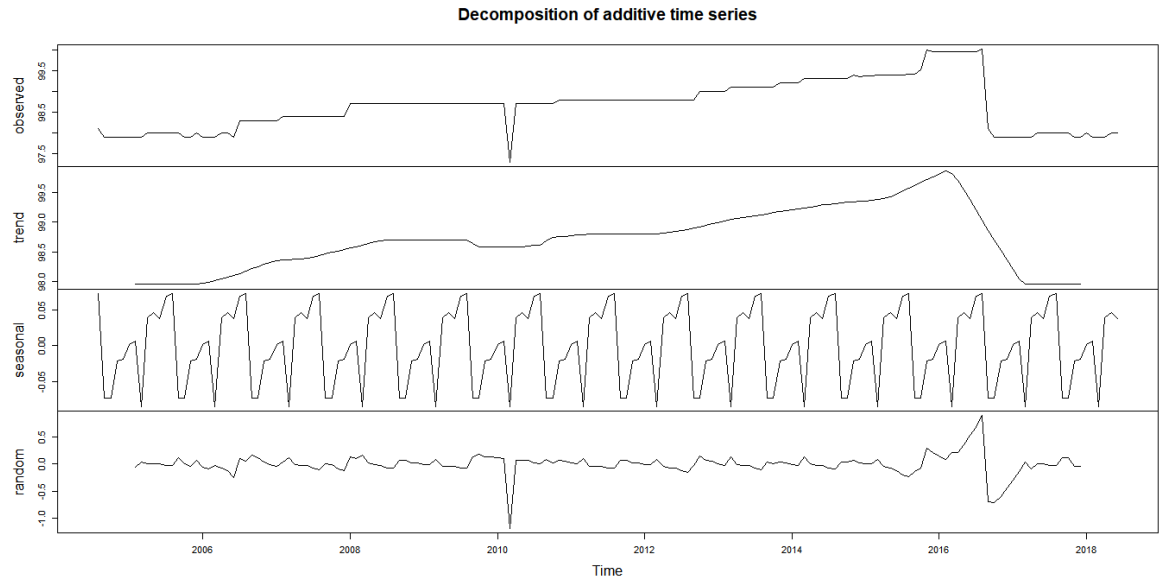


Table 3.19: First Regression Results for Communication

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Comm)	-1.899e-01	6.853e-02	-2.771	0.00643	**
L(Δ Comm)	-3.416e-01	8.498e-02	-4.020	9.92e-05	***
Elect20100	3.734e-01	1.346e-01	2.775	0.00635	**
ElectionLP_2010	3.735e-01	1.346e-01	2.774	0.00638	**
ElectionLP_2011	7.117e-05	2.026e-03	0.035	0.97203	
ElectionLP_2015	1.283e-03	1.634e-03	0.785	0.43389	
ElectionLP_2016	1.671e-03	2.108e-03	0.793	0.42942	
ElectionL_L2009	3.027e-04	1.588e-03	0.191	0.84915	
ElectionL_L2017	-2.034e-03	2.501e-03	-0.813	0.41762	
Earthquake	1.442e-03	2.092e-03	0.689	0.49190	
Cholera (Weak)	6.346e-03	2.313e-03	2.743	0.00697	**
Cholera (Strong)	1.371e-03	1.096e-03	1.251	0.21324	
Cholera (Medium)	2.367e-03	1.242e-03	1.905	0.05899	.
Cyclone (Fay)	-7.714e-05	1.972e-03	-0.039	0.96886	
Drought	5.942e-04	2.423e-03	0.245	0.80665	
Boycott (Dominican products)	1.746e-03	1.334e-03	1.309	0.19291	

Table 3.20: Second Regression Results for Communication

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Comm)	-1.898e-01	7.018e-02	-2.704	0.007839	**
L(Δ Comm)	-3.421e-01	8.712e-02	-3.927	0.000144	***
Elect20100	3.732e-01	1.378e-01	2.708	0.007752	**
ElectionLP_2010	3.732e-01	1.379e-01	2.707	0.007780	**
ElectionLP_2011	7.098e-05	2.073e-03	0.034	0.972743	
Election_L2015_round1(-1)	5.935e-04	3.432e-03	0.173	0.863010	
Election_L2015_round1	5.935e-04	3.432e-03	0.173	0.863010	

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Election_L2015_round1(+1)	2.593e-03	3.432e-03	0.756	0.451334	
Election_LP2015	1.657e-03	3.442e-03	0.481	0.631045	
Election_LP2015_round1(+1)	9.730e-04	3.449e-03	0.282	0.778320	
Election_LP2016_round1(-1)	1.616e-03	3.486e-03	0.464	0.643701	
Election_LP2016	1.507e-03	3.494e-03	0.431	0.667070	
Election_LP2016_round1(+1)	1.887e-03	3.488e-03	0.541	0.589567	
Election_L2009	3.019e-04	1.625e-03	0.186	0.852924	
Election_L2017	-2.033e-03	2.559e-03	-0.794	0.428541	
Earthquake	1.441e-03	2.141e-03	0.673	0.502379	
Cholera (weak)	6.342e-03	2.369e-03	2.677	0.008453	**
Cholera (Strong)	1.370e-03	1.122e-03	1.221	0.224499	
Cholera (Medium)	2.365e-03	1.272e-03	1.860	0.065369	.
Drought	5.935e-04	2.479e-03	0.239	0.811227	
Cyclone (Fay)	-7.761e-05	2.019e-03	-0.038	0.969396	
Boycott (Dominican products)	1.745e-03	1.365e-03	1.278	0.203662	

The Series is stationary in difference, with no constant or trend. The data generation process is an AR (1)

Table 3.21: **Serie 5: Recreation - Diagnostics**

Statistic	Value
Min.	-0.1044900
Max.	0.1406100
Median	0.0007095
Standard deviation	0.0062277

Figure 3.13: Serial graph before seasonal adjustment

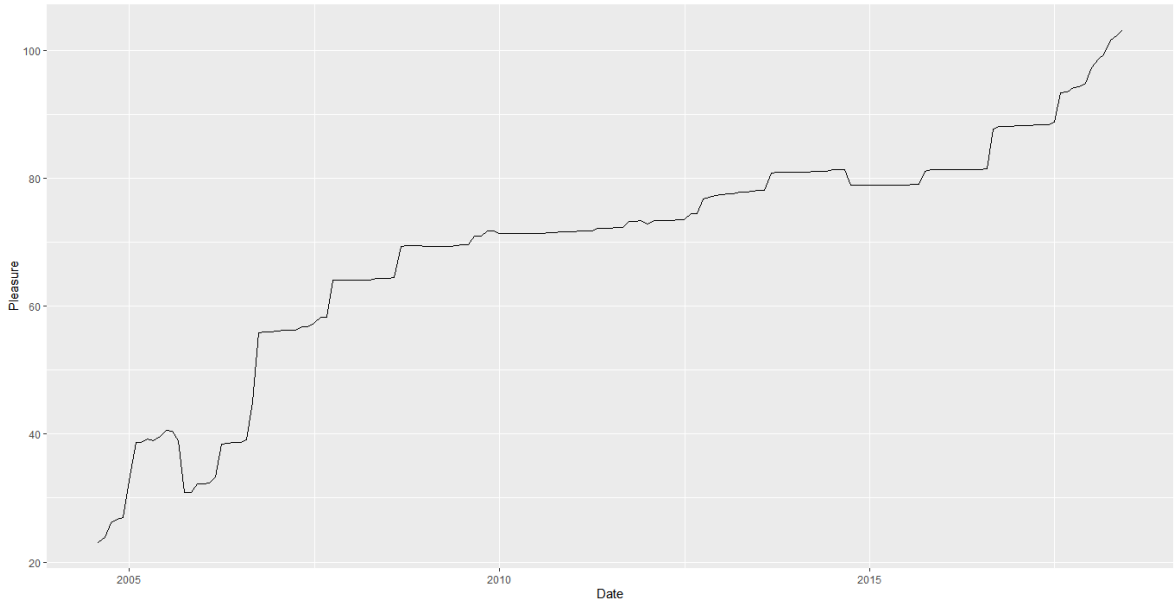


Figure 3.14

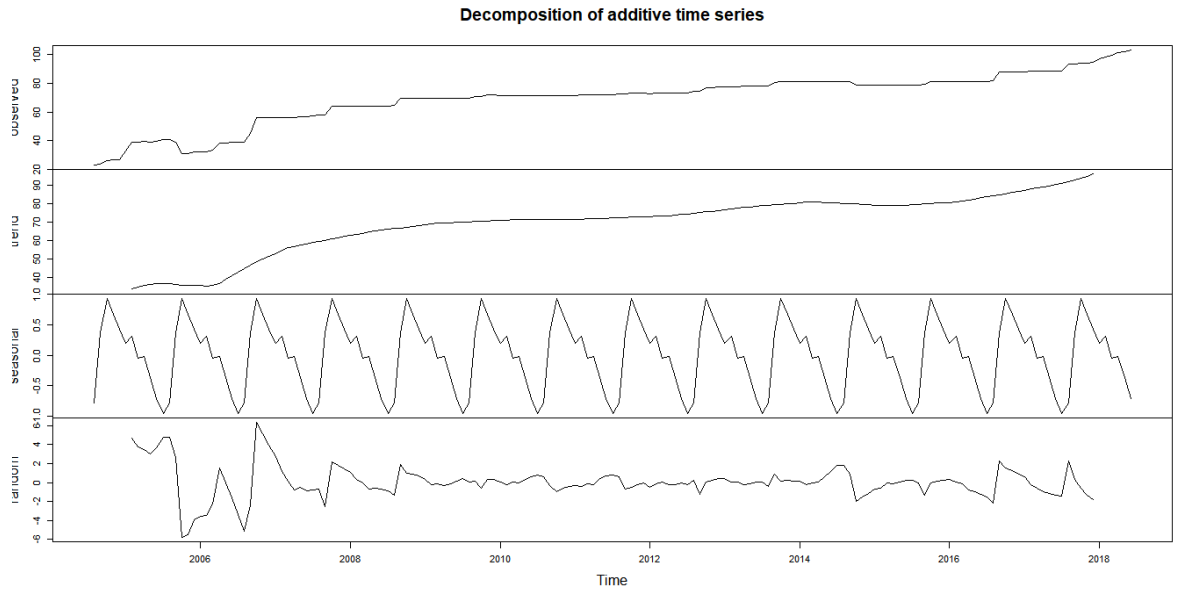


Table 3.22: Stationarity Test Results

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	2.770584	0.855807	3.237	0.00147	**
z.lag.1	-0.052590	0.019392	-2.712	0.00744	**
tt	0.015179	0.006901	2.200	0.02930	*
z.diff.lag1	0.256147	0.078081	3.281	0.00128	**
z.diff.lag2	-0.069752	0.080022	-0.872	0.38472	
z.diff.lag3	0.008625	0.078361	0.110	0.91250	

Serie is stationary in difference with the constant and the trend. The data generation process is an AR (1)

Table 3.23: First Regression Results for Recreation

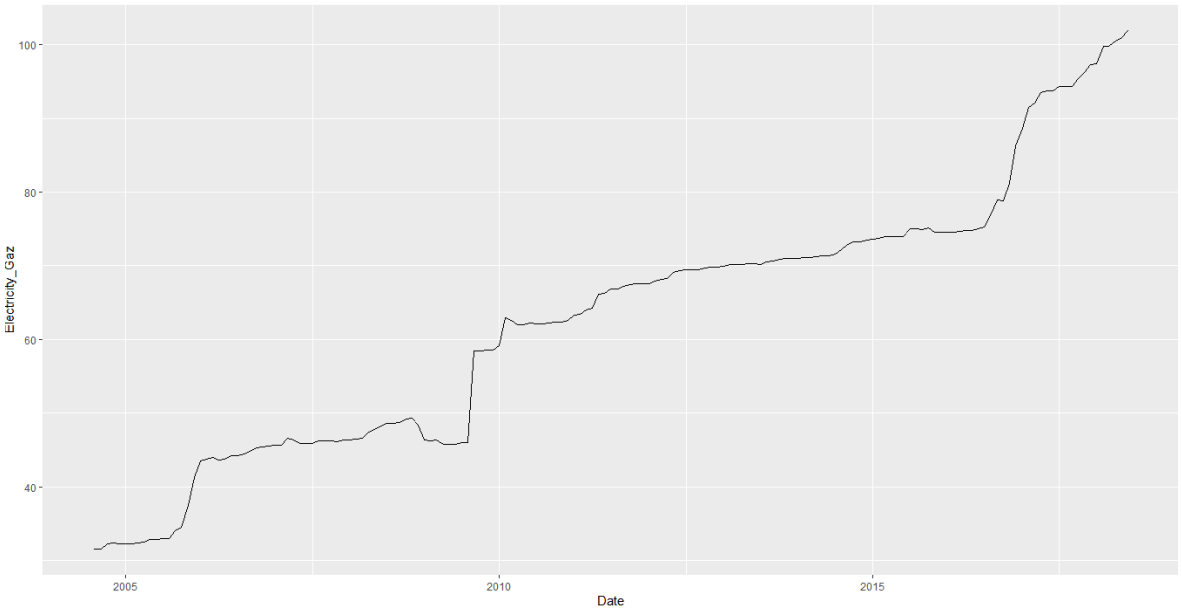
Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	0.0493461	0.0143422	3.441	0.000756	***
Trend	0.0006561	0.0003017	2.175	0.031251	*
L(Recreation)	-0.09660	0.0334815	-2.885	0.004500	**
L(Δ Recreation)	0.2421928	0.0809787	2.991	0.003263	**
ElectionLP_2006	-0.00351	0.0119793	-0.294	0.769379	
ElectionLP_2010	0.0049464	0.0134774	0.367	0.714134	
ElectionLP_2011	0.0026966	0.0132015	0.204	0.838427	
ElectionLP_2015	-0.00802	0.0116729	-0.688	0.492725	
ElectionLP_2016	-0.01658	0.0147697	-1.123	0.263181	
ElectionL_L2009	-0.00030	0.0101981	-0.030	0.976392	
ElectionL_L2017	-0.00937	0.0157787	-0.594	0.553391	
Earthquake	-0.00456	0.0130920	-0.349	0.727776	
Cholera (Weak)	-0.02793	0.0236221	-1.183	0.238867	
Cholera (Strong)	-0.01489	0.0108982	-1.367	0.173835	
Cholera (Medium)	-0.02546	0.0153311	-1.661	0.098800	.

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Cyclone (Fay)	0.017360	0.0127292	1.364	0.174714	
Drought	-0.01117	0.0160492	-0.696	0.487475	
Boycott (Dominican products)	-0.00715	0.0104998	-0.681	0.496708	

Table 3.24: Second Regression Results for Recreation

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	0.0492038	0.0145780	3.375	0.000953	***
Trend	0.0006585	0.0003070	2.145	0.033679	*
L(Recreation)	-0.09670	0.0340578	-2.839	0.005189	**
L(Δ Recreation)	0.2555957	0.0851593	3.001	0.003180	**
ElectionLP_2006	-0.00348	0.0121730	-0.286	0.775056	
ElectionLP_2010	0.0050067	0.0136968	0.366	0.715256	
ElectionLP_2011	0.0027589	0.0134157	0.206	0.837366	
Election_L2015_round1(-1)	-0.012185	0.0222938	-0.547	0.585538	
Election_L2015_round1	-0.011553	0.0223689	-0.517	0.606311	
Election_L2015_round1(+1)	-0.012417	0.0224437	-0.553	0.580964	
Election_LP2015	0.0115591	0.0225154	0.513	0.608485	
Election_LP2015_round1(+1)	-0.016089	0.0226076	-0.712	0.477846	
Election_LP2016_round1(-1)	-0.026625	0.0240419	-1.107	0.269979	
Election_LP2016	-0.012522	0.0227115	-0.551	0.582252	
Election_LP2016_round1(+1)	-0.011928	0.0227714	-0.524	0.601230	
Election_L2009	-0.000214	0.0103634	-0.021	0.983497	
Election_L2017	-0.009213	0.0160351	-0.575	0.566470	
Earthquake	-0.004473	0.0133034	-0.336	0.737169	
Cholera (weak)	-0.028213	0.0240412	-1.174	0.242549	
Cholera (Strong)	-0.014921	0.0110826	-1.346	0.180343	
Cholera (Medium)	-0.025516	0.0155937	-1.636	0.104002	

Figure 3.15: Serial graph before seasonal adjustment



Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Drought	-0.011197	0.0163096	-0.687	0.493494	
Cyclone (Fay)	0.0171722	0.0129369	1.327	0.186529	
Boycott (Dominican products)	-0.007210	0.0106766	-0.675	0.500546	

Table 3.25: Serie 6: Gaz_Electricity - Diagnostics

Statistic	Value
Min.	-0.08940
Max.	0.55428
Median	0.00447
Standard deviation	0.01895

Figure 3.16

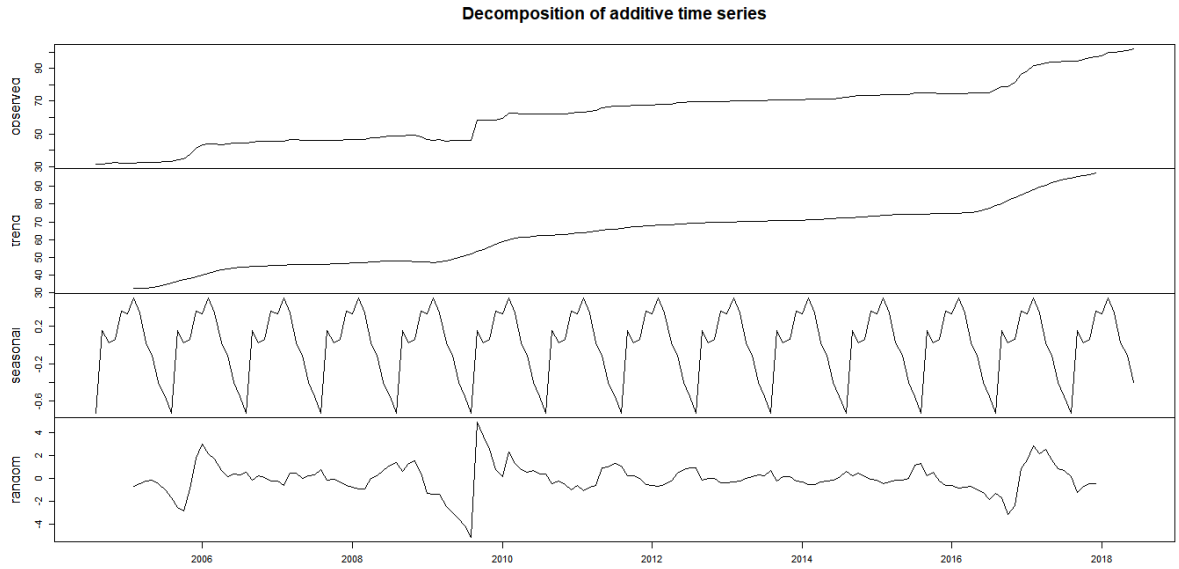


Table 3.26: Stationarity Test Results

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	1.691078	0.785009	2.154	0.0327	*
z.lag.1	-0.046470	0.023751	-1.957	0.0522	.
tt	0.017886	0.008668	2.064	0.0407	*
z.diff.lag1	0.166460	0.079712	2.088	0.0384	*
z.diff.lag2	0.103923	0.080787	1.286	0.2002	
z.diff.lag3	0.053442	0.080915	0.660	0.5099	

The series is stationary in terms of the constant and the trend. The data generation process is an AR (1).

Table 3.27: First Regression Results for Gaz_Electricity

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	2.723e-01	6.357e-02	4.284	3.30e-05	***
Trend	3.333e-03	8.303e-04	4.014	9.48e-05	***
L(Gaz)	-1.862e-01	4.478e-02	-4.157	5.46e-05	***

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Δ Gaz)	9.525e-02	8.084e-02	1.178	0.24059	
ElectionLP_2006	4.020e-02	2.908e-02	1.383	0.16888	
ElectionLP_2010	-1.402e-03	3.243e-02	-0.043	0.96559	
ElectionLP_2011	1.418e-03	3.228e-02	0.044	0.96502	
ElectionLP_2015	-3.532e-02	2.697e-02	-1.310	0.19239	
ElectionLP_2016	5.857e-02	3.462e-02	1.692	0.09282	.
ElectionL_L2009	-8.457e-02	2.926e-02	-2.890	0.00443	**
ElectionL_L2017	3.528e-02	4.208e-02	0.838	0.40316	
Earthquake	4.923e-02	3.356e-02	1.467	0.14451	
Cholera (Weak)	1.995e-02	4.209e-02	0.474	0.63631	
Cholera (Strong)	-1.765e-05	2.205e-02	-0.001	0.99936	
Cholera (Medium)	-5.703e-02	2.895e-02	-1.970	0.05069	.
Cyclone (Fay)	-2.639e-02	3.138e-02	-0.841	0.40182	
Drought	-3.532e-02	3.889e-02	-0.908	0.36528	
Boycott (Dominican products)	-4.431e-02	2.450e-02	-1.808	0.07264	.

Table 3.28: Second Regression Results for Gaz_Electricity

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	0.2811532	0.0623254	4.511	1.35e-05	***
Trend	0.0034383	0.0008140	4.224	4.28e-05	***
L(Gaz)	-0.192395	0.0439058	-4.382	2.28e-05	***
L(Δ Gaz)	0.0906612	0.0799031	1.135	0.25845	
ElectionLP_2006	0.0416941	0.0284850	1.464	0.14550	
ElectionLP_2010	-0.001358	0.0317551	-0.043	0.96595	
ElectionLP_2011	0.0014595	0.0315998	0.046	0.96323	
Election_L2015_round1(-1)	0.0077710	0.0525871	0.148	0.88273	
Election_L2015_round1	-0.039835	0.0525733	-0.758	0.44989	

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Election_L2015_round1(+1)	-0.043285	0.0525615	-0.824	0.41160	
Election_LP2015	-0.033768	0.0527293	-0.640	0.52294	
Election_LP2015_round1(+1)	-0.072462	0.0528248	-1.372	0.17232	
Election_LP2016_round1(-1)	-0.059461	0.0538892	-1.103	0.27173	
Election_LP2016	0.0523454	0.0536694	0.975	0.33107	
Election_LP2016_round1(+1)	0.1802126	0.0537527	3.353	0.00103	**
Election_L2009	-0.086698	0.0286634	-3.025	0.00296	**
Election_L2017	0.0344639	0.0412143	0.836	0.40445	
Earthquake	0.0507012	0.0328658	1.543	0.12515	
Cholera (weak)	0.0212418	0.0412218	0.515	0.60715	
Cholera (Strong)	0.0005193	0.0215945	0.024	0.98085	
Cholera (Medium)	-0.058066	0.0283524	-2.048	0.04241	*
Drought	-0.036241	0.0380811	-0.952	0.34288	
Cyclone (Fay)	-0.026917	0.0307273	-0.876	0.38252	
Boycott (Dominican products)	-0.046049	0.0240017	-1.919	0.05706	.

Table 3.29: Serie 7: Catering - Diagnostics

Statistic	Value
Min.	-0.009310
Max.	0.014700
Median	0.001470
Standard deviation	0.001906

Figure 3.17: Serial graph before seasonal adjustment

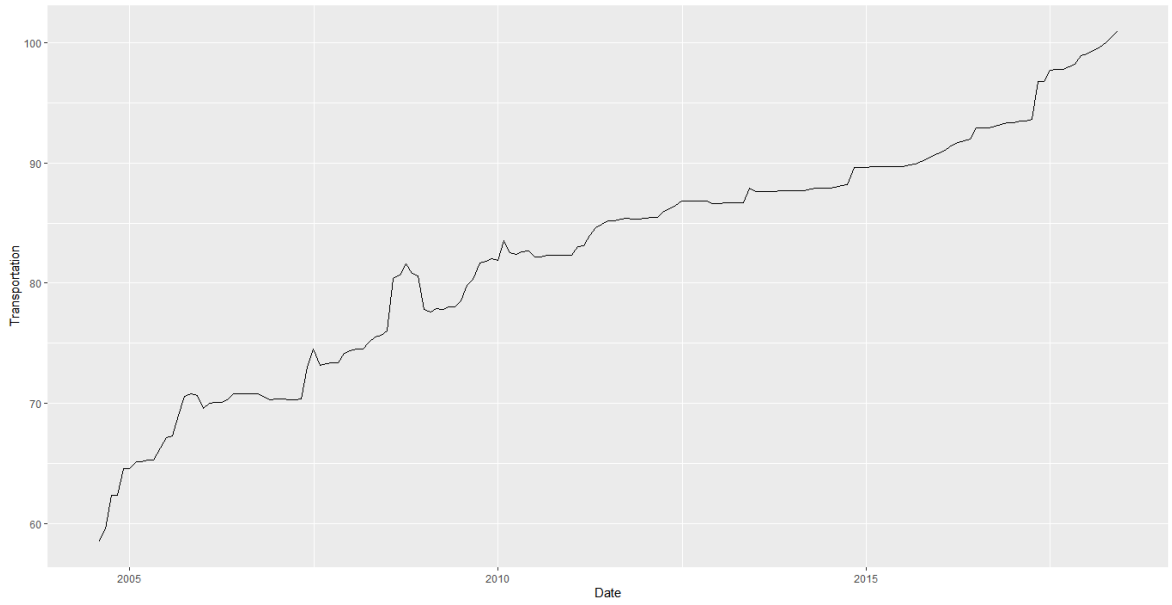


Figure 3.18

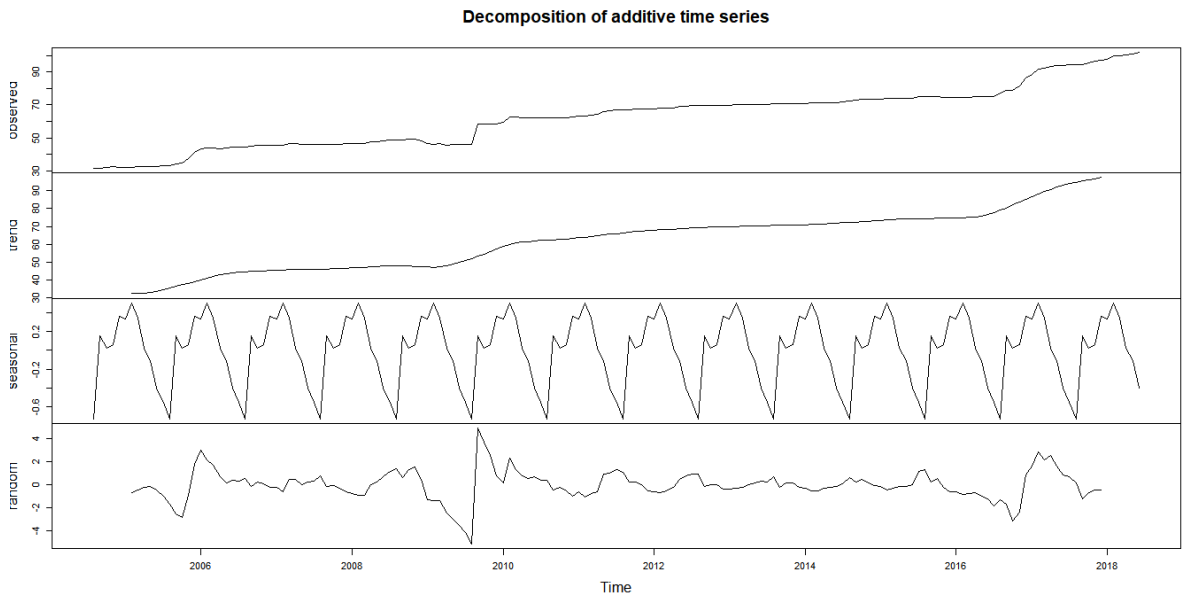


Table 3.30: Stationarity Test Results for Catering

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
z.lag.1	0.0029807	0.0007834	3.805	0.000202	***
z.diff.lag1	0.4087100	0.0797864	5.123	8.63e-07	***
z.diff.lag2	0.0681115	0.0859353	0.793	0.429198	
z.diff.lag3	0.0376622	0.0804498	0.468	0.640322	

The Series is stationary in difference with no constant and no trend. The data generation process is an AR (1).

Table 3.31: First Regression Results for Catering

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Catering)	-1.217e-02	8.865e-03	-1.373	0.17198	
L(Catering)	3.250e-01	8.051e-02	4.037	8.65e-05	***
ElectionLP_2006	5.018e-03	2.284e-03	2.197	0.02955	*
ElectionLP_2010	-4.551e-04	1.464e-03	-0.311	0.75643	
ElectionLP_2011	1.231e-03	1.463e-03	0.841	0.40175	
ElectionLP_2015	3.591e-03	1.226e-03	2.929	0.00394	**
ElectionLP_2016	1.159e-03	1.616e-03	0.717	0.47443	
ElectionL_L2009	-8.756e-04	1.130e-03	-0.775	0.43943	
ElectionL_L2017	-1.762e-03	1.755e-03	-1.004	0.31701	
Earthquake	1.594e-03	1.422e-03	1.121	0.26408	
Cholera (Weak)	4.205e-03	2.091e-03	2.012	0.04608	*
Cholera (Strong)	1.244e-03	9.001e-04	1.382	0.16897	
Cholera (Medium)	1.141e-03	1.119e-03	1.020	0.30917	
Drought	1.318e-03	1.701e-03	0.775	0.43986	
Cyclone (Fay)	-6.668e-05	1.472e-03	-0.045	0.96392	
Boycott (Dominican products)	2.521e-03	1.071e-03	2.353	0.01991	*

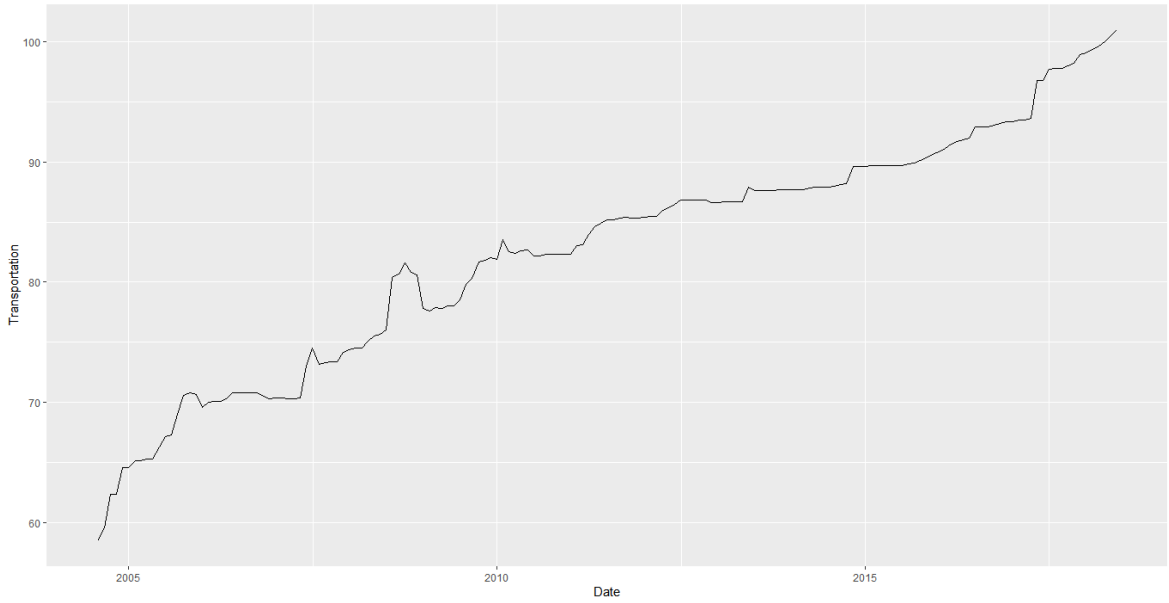
Table 3.32: Second Regression Results for Catering

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
L(Catering)	-0.0108306	0.0089370	-1.212	0.2276	
L(Catering)	0.3304427	0.0824232	4.009	9.81e-05	***
ElectionLP_2006	0.0047095	0.0023014	2.046	0.0426	*
ElectionLP_2010	-0.0004014	0.0014720	-0.273	0.7855	
Elect2011	0.0012364	0.0014715	0.840	0.4022	
Election_L2015_round1(-1)	0.0059066	0.0023768	2.485	0.0141	*
Election_L2015_round1	0.0055089	0.0024349	2.263	0.0252	*
Election_L2015_round1(+1)	0.0033153	0.0024638	1.346	0.1806	
Election_LP2015	0.0006020	0.0024384	0.247	0.8054	
Election_LP2015_round1(+1)	0.0022572	0.0024071	0.938	0.3500	
Election_LP2016_round1(-1)	0.0025060	0.0024933	1.005	0.3166	
Election_LP2016	-0.0006601	0.0025058	-0.263	0.7926	
Election_LP2016_round1(+1)	0.0012597	0.0024985	0.504	0.6149	
Election_L2009	-0.0009120	0.0011355	-0.803	0.4232	
Election_L2017	-0.0017222	0.0017644	-0.976	0.3307	
Earthquake	0.0015319	0.0014297	1.071	0.2858	
Cholera (weak)	0.0038976	0.0021074	1.849	0.0665	.
Cholera (Strong)	0.0011399	0.0009062	1.258	0.2105	
Cholera (Medium)	0.0009932	0.0011268	0.881	0.3795	
Drought	0.0012879	0.0017093	0.753	0.4524	
Cyclone (Fay)	-0.0001530	0.0014806	-0.103	0.9179	
Boycott (Dominican products)	0.0024154	0.0010784	2.240	0.0267	*

Table 3.33: Serie 8: Transportation - Diagnostics

Statistic	Value
Min.	-0.021000

Figure 3.19: Serial graph before seasonal adjustment



Statistic	Value
Max.	0.033000
Median	0.000750
Standard deviation	0.001917

Table 3.34: Stationarity Test Results for Transportation

Variable	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	1.691078	0.785009	2.154	0.0327	*
z.lag.1	-0.046470	0.023751	-1.957	0.0522	.
tt	0.017886	0.008668	2.064	0.0407	*
z.diff.lag1	0.166460	0.079712	2.088	0.0384	*
z.diff.lag2	0.103923	0.080787	1.286	0.2002	
z.diff.lag3	0.053442	0.080915	0.660	0.5099	

The series is stationary in terms of the constant and the trend. The data generation process is an AR (1).

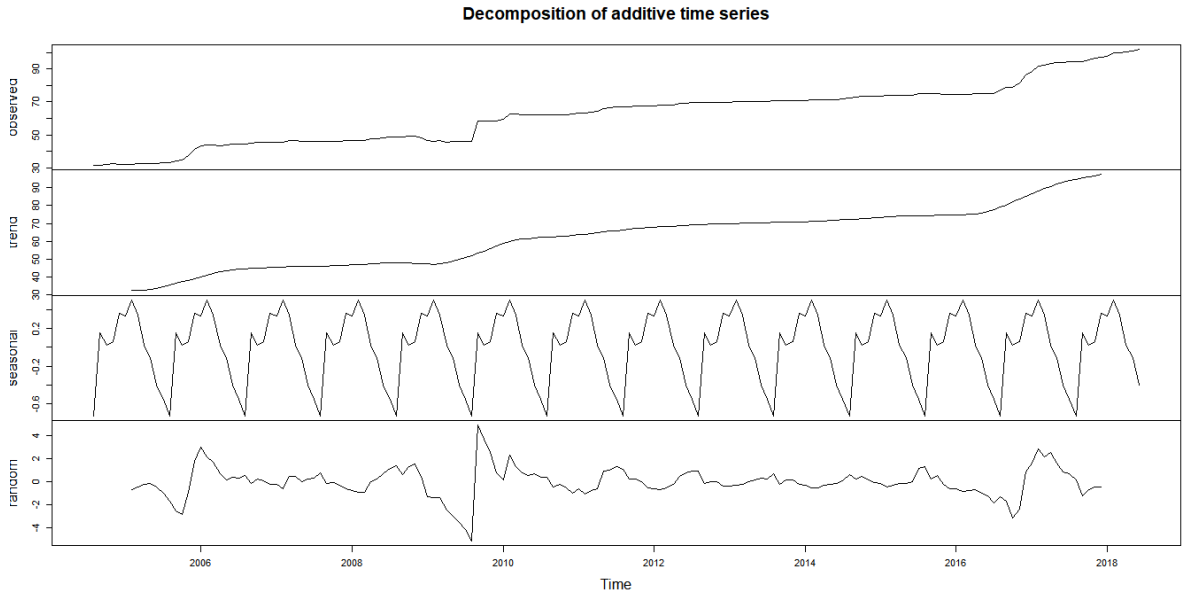


Figure 3.20: Enter Caption

Table 3.35: First Regression Results for Transportation

Variables	**Estimate**	**Std. Error**	**t value**	**Pr(>|t|)**	**Significance**
(Intercept)	1.168e-01	2.254e-02	5.183	7.09e-07	***
Trend	4.156e-04	9.992e-05	4.159	5.41e-05	***
L(Transp)	-2.364e-01	4.750e-02	-4.976	1.79e-06	***
L($\Delta Transp$)	4.207e-02	8.061e-02	0.522	0.6026	
Elect.20061	-1.743e-03	2.707e-03	-0.644	0.5207	
ElectionLP_2010	-4.749e-04	3.100e-03	-0.153	0.8785	
ElectionLP_2011	2.926e-03	3.069e-03	0.953	0.3420	
ElectionLP_2015	-4.147e-03	2.685e-03	-1.545	0.1246	
ElectionLP_2016	-4.165e-03	3.401e-03	-1.225	0.2227	
ElectionL_L2009	-1.579e-03	2.415e-03	-0.654	0.5144	
ElectionL_L2017	-6.558e-03	3.782e-03	-1.734	0.0850	.
Earthquake	2.588e-03	3.118e-03	0.830	0.4079	
Cholera (Weak)	-6.841e-03	5.001e-03	-1.368	0.1735	
Cholera(Strong)	-2.061e-03	2.194e-03	-0.939	0.3491	
Cholera(Medium)	-8.241e-03	3.446e-03	-2.391	0.0181	*

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Drought	-3.815e-03	3.728e-03	-1.023	0.3079	
Cyclone(Fay)	5.793e-03	3.436e-03	1.686	0.0939	.
Boycott (Dominican products)	-3.227e-03	2.316e-03	-1.393	0.1656	

Table 3.36: Second Regression Results for Transportation

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	0.1168016	0.0230329	5.071	1.22e-06	***
Trend	0.0004154	0.0001021	4.067	7.88e-05	***
L(Transp)	-0.23628	0.0485376	-4.868	2.98e-06	***
L($\Delta Transp$)	0.0420826	0.0823455	0.511	0.6101	
ElectionLP_2006	-0.00174	0.0027641	-0.631	0.5292	
ElectionLP_2010	-0.00047	0.0031648	-0.150	0.8808	
ElectionLP_2011	0.002925	0.0031334	0.934	0.3521	
Election_L2015_round1(-1)	-0.00443	0.0052466	-0.846	0.3992	
Election_L2015_round1	-0.00410	0.0052679	-0.779	0.4375	
Election_L2015_round1(+1)	-0.00437	0.0052853	-0.827	0.4095	
Election_LP2015	-0.00386	0.0053018	-0.728	0.4678	
Election_LP2015_round1(+1)	-0.00395	0.0053136	-0.744	0.4582	
Election_LP2016_round1(-1)	-0.00379	0.0053716	-0.707	0.4808	
Election_LP2016	-0.00397	0.0053914	-0.738	0.4617	
Election_LP2016_round1(+1)	-0.00471	0.0054068	-0.871	0.3851	
Election_L2009	-0.00157	0.0024661	-0.640	0.5233	
Election_L2017	-0.00655	0.0038611	-1.698	0.0916	.
Earthquake	0.0025871	0.0031830	0.813	0.4177	
Cholera(weak)	-0.00683	0.0051112	-1.337	0.1833	
Cholera(Strong)	-0.00205	0.0022411	-0.919	0.3597	
Cholera(Medium)	-0.00823	0.0035218	-2.339	0.0208	*

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Drougth	-0.00381	0.003806	-1.002	0.3181	
Cyclone(Fay)	0.0057908	0.0035080	1.651	0.1010	
Boycott(Dominican products)	-0.00322	0.0023661	-1.363	0.1750	

Table 3.37: Serie 9 : Housing_Maintenance

Statistique	Valeur
Min.	-0.017430
Max.	0.047310
Median	0.000000
Standard deviation	0.002034

Figure 3.21: Serial graph before seasonal adjustment

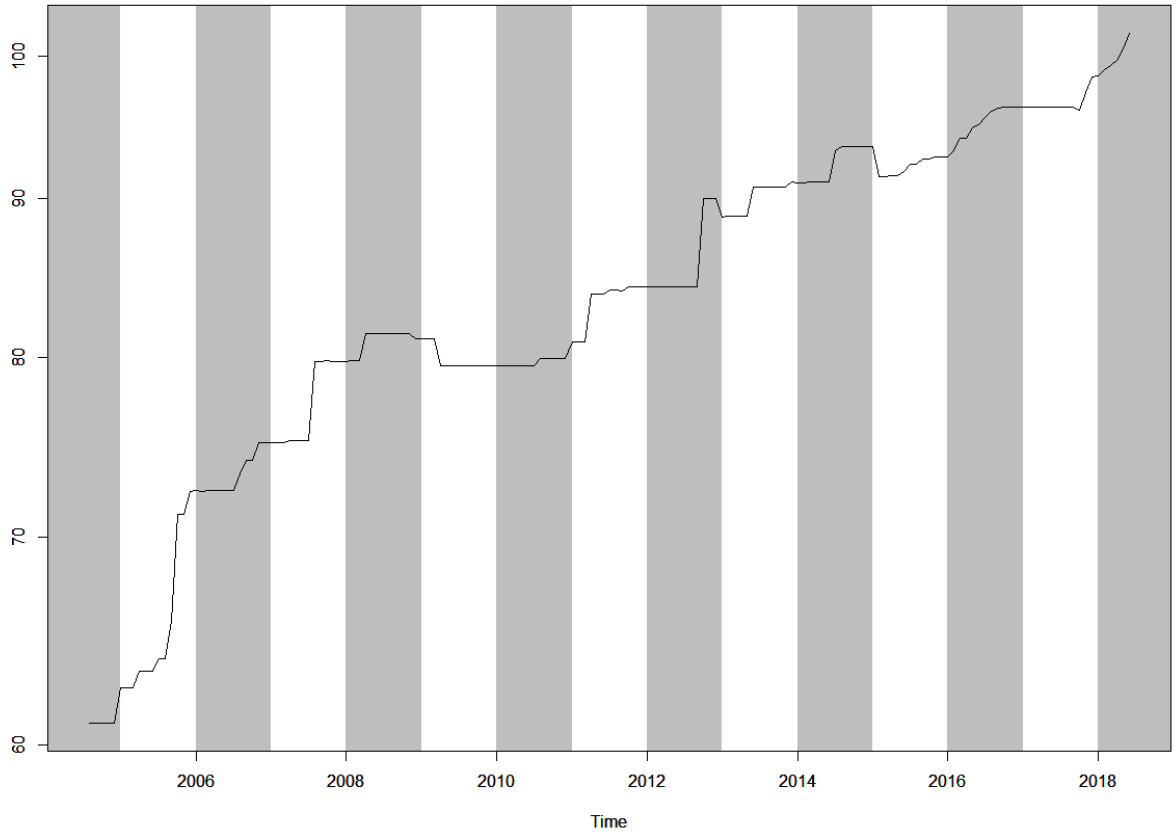


Figure 3.22

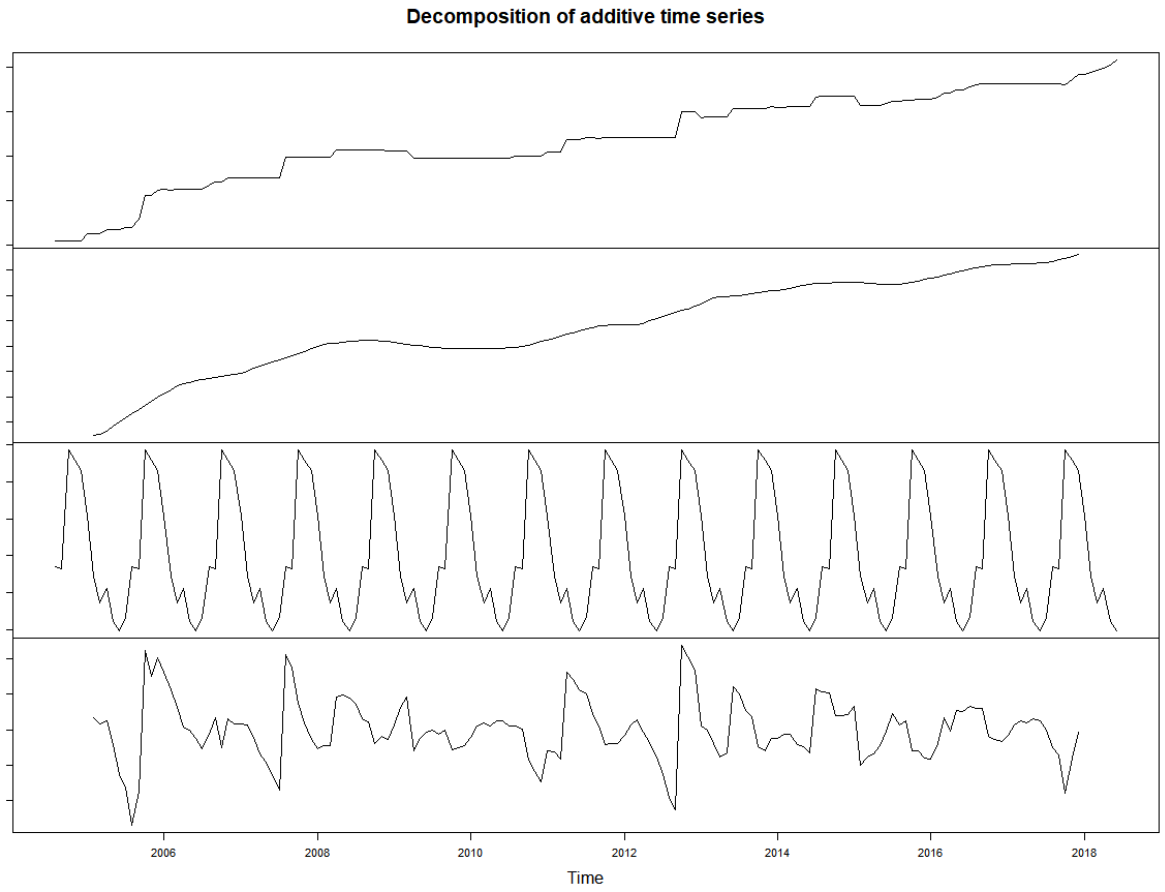

Decomposition of additive time series
2006
2008
2010
2012
2014
2016
2018
Time

Table 3.38: Stationarity Test for Housing_Maintenance

Variable	Estimation	Std.Error	t value	Pr(> |t|)	Significance
(Intercept)	6.261444	1.807636	3.464	0.000686	***
z.lag.1	-0.087796	0.026781	-3.278	0.001286	**
tt	0.015891	0.005429	2.927	0.003928	**
z.diff.lag1	0.060188	0.077858	0.773	0.440654	
z.diff.lag2	0.035486	0.078117	0.454	0.650259	
z.diff.lag3	0.006936	0.078175	0.089	0.929409	

Table 3.39: First Regression for Housing_Maintenance

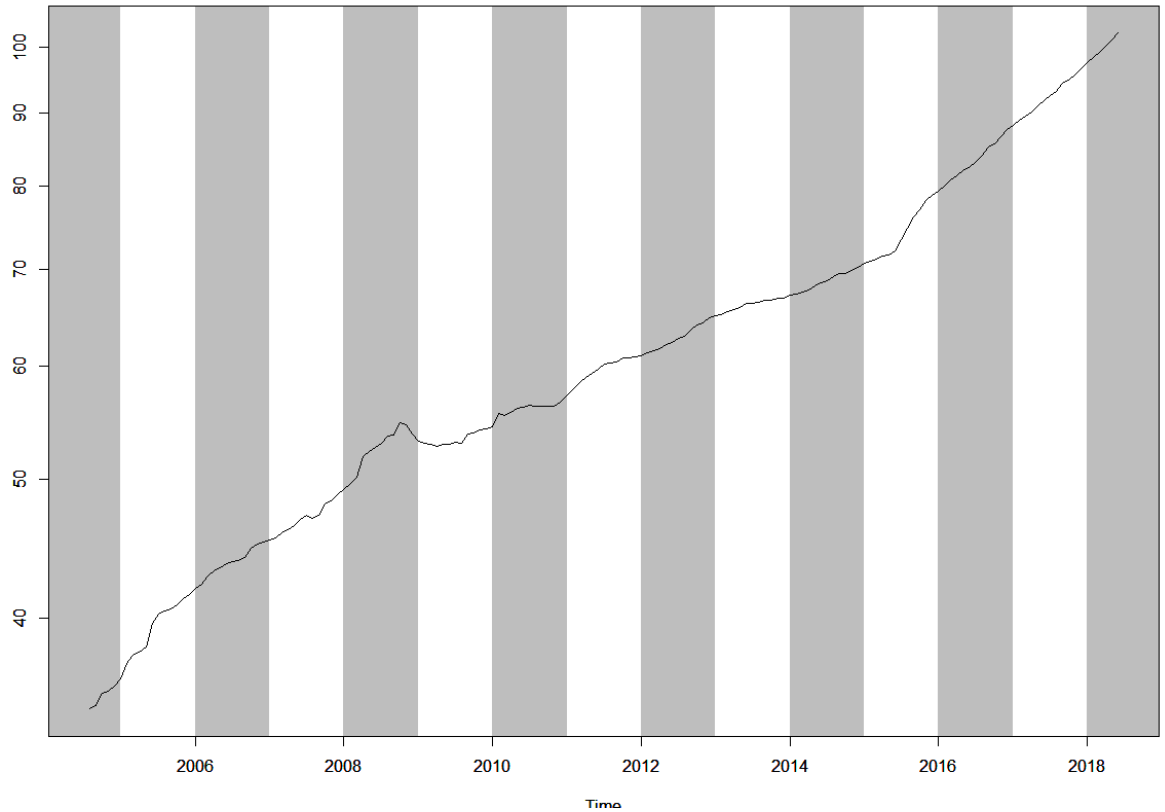
Variable	Estimate	Std.Error	t value	Pr(> |t|)	Significance
(Intercept)	3.806e-02	1.741e-02	2.187	0.0303	*
Trend	8.286e-05	8.850e-05	0.936	0.3507	
L(Hous)	-6.196e-02	3.270e-02	-1.895	0.0601	.
L($\Delta Hous$)	2.896e-02	8.351e-02	0.347	0.7292	
ElectionLP_2006	-2.289e-03	3.850e-03	-0.594	0.5532	
ElectionLP_2010	-3.891e-03	4.474e-03	-0.870	0.3859	
ElectionLP_2011	4.235e-03	4.442e-03	0.954	0.3419	
ElectionLP_2015	2.360e-04	3.746e-03	0.063	0.9498	
ElectionLP_2016	-4.305e-04	4.707e-03	-0.091	0.9273	
ElectionL_L2009	-4.232e-03	3.486e-03	-1.214	0.2267	
ElectionL_L2017	-2.621e-03	5.397e-03	-0.486	0.6280	
Earthquake	-2.811e-03	4.562e-03	-0.616	0.5388	
Cholera (Weak)	1.584e-03	6.570e-03	0.241	0.8098	
Cholera(Strong)	6.231e-04	3.339e-03	0.187	0.8522	
Cholera(Medium)	-3.148e-04	4.094e-03	-0.077	0.9388	
Drought	-2.699e-04	5.380e-03	-0.050	0.9601	
Cyclone(Fay)	-4.249e-04	4.372e-03	-0.097	0.9227	

Variable	Estimate	Std.Error	t value	Pr(> |t|)	Significance
Boycott (Dominican products)	1.668e-03	3.141e-03	0.531	0.5962	

Table 3.40: Second Regression for Housing_Maintenance

Variables	Estimate	Std.Error	t value	Pr(> |t|)	Significance
(Intercept)	3.806e-02	1.776e-02	2.143	0.0338	*
Trend	8.312e-05	9.031e-05	0.920	0.3590	
L(Hous)	-6.198e-02	3.337e-02	-1.858	0.0653	.
L($\Delta Hous$)	2.960e-02	8.526e-02	0.347	0.7290	
ElectionLP_2006	-2.284e-03	3.928e-03	-0.582	0.5618	
ElectionLP_2010	-3.886e-03	4.565e-03	-0.851	0.3961	
ElectionLP_2011	4.238e-03	4.531e-03	0.935	0.3513	
Election_L2015_round1(-1)	2.599e-03	7.554e-03	0.344	0.7313	
Election_L2015_round1	-1.426e-03	7.560e-03	-0.189	0.8507	
Election_L2015_round1(+1)	1.104e-03	7.554e-03	0.146	0.8840	
Election_LP2015	-1.388e-03	7.571e-03	-0.183	0.8548	
Election_LP2015_round1(+1)	2.623e-04	7.576e-03	0.035	0.9724	
Election_LP2016_round1(-1)	-1.771e-04	7.638e-03	-0.023	0.9815	
Election_LP2016	-5.324e-04	7.649e-03	-0.070	0.9446	
Election_LP2016_round1(+1)	-6.057e-04	7.668e-03	-0.079	0.9372	
Election_L2009	-4.233e-03	3.556e-03	-1.190	0.2359	
Election_L2017	-2.618e-03	5.507e-03	-0.475	0.6353	
Earthquake	-2.817e-03	4.655e-03	-0.605	0.5461	
Cholera(weak)	1.555e-03	6.705e-03	0.232	0.8169	
Cholera(Strong)	6.098e-04	3.407e-03	0.179	0.8582	
Cholera(Medium)	-3.317e-04	4.178e-03	-0.079	0.9368	
Drougth	-2.738e-04	5.489e-03	-0.050	0.9603	
Cyclone(Fay)	-4.260e-04	4.461e-03	-0.096	0.9240	

Figure 3.23: Serial graph before seasonal adjustment

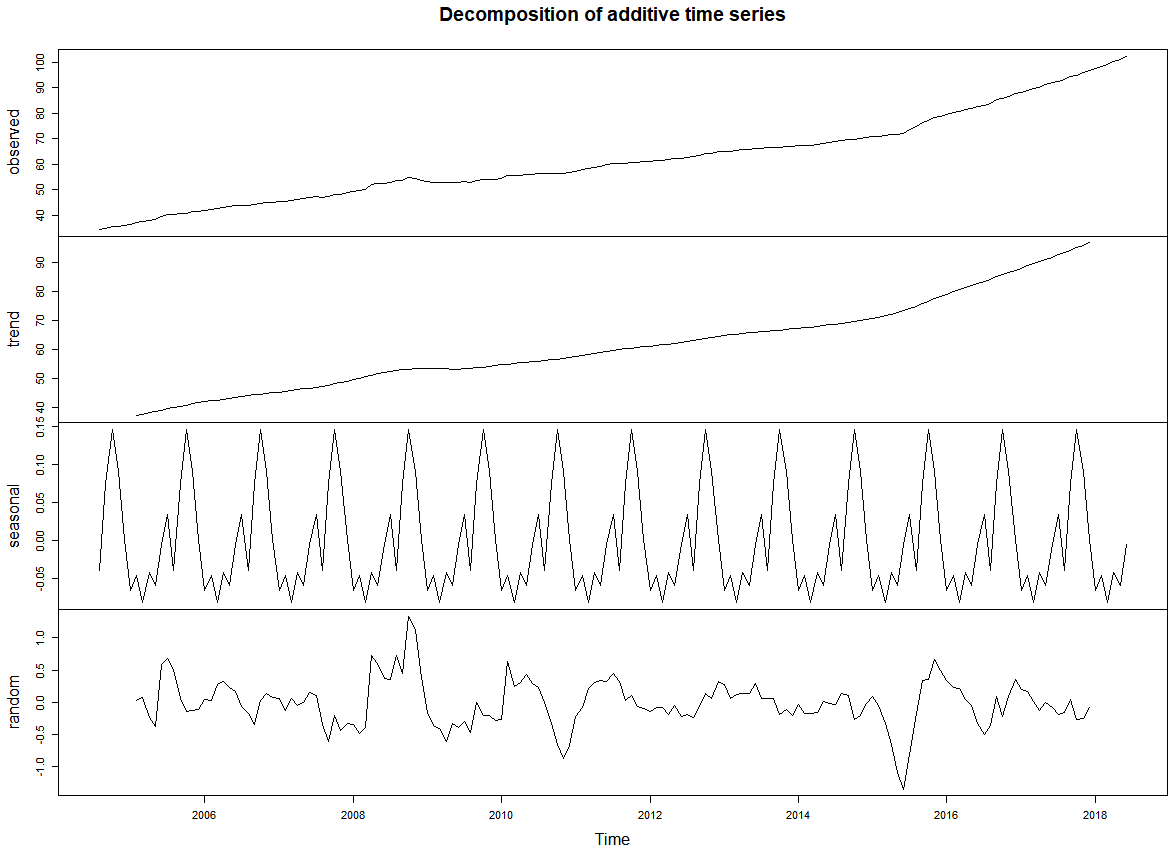


Variables	Estimate	Std.Error	t value	Pr(> |t|)	Significance
Boycott(Dominican products)	1.660e-03	3.205e-03	0.518	0.6052	

Serie 10 : Consumer Price Index (CPI)

Statistic	Value
Min.	-1.10500
Max.	1.43000
Median	0.26000
Standard deviation	0.26039

Figure 3.24


Decomposition of additive time series
observed
trend
seasonal
random
Time
2006
2008
2010
2012
2014
2016
2018

Stationarity Test

	Estimation	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	-0.088854	0.098666	-0.901	0.3692	
z.lag.1	0.004378	0.001766	2.480	0.0142	*
z.diff.lag1	0.325139	0.079352	4.097	6.66e-05	***
z.diff.lag2	0.116525	0.082161	1.418	0.1581	
z.diff.lag3	0.120326	0.079143	1.520	0.1304	

The Serie is stationary in difference, with no constant or trend. The DPI is an AR (1).

First regression

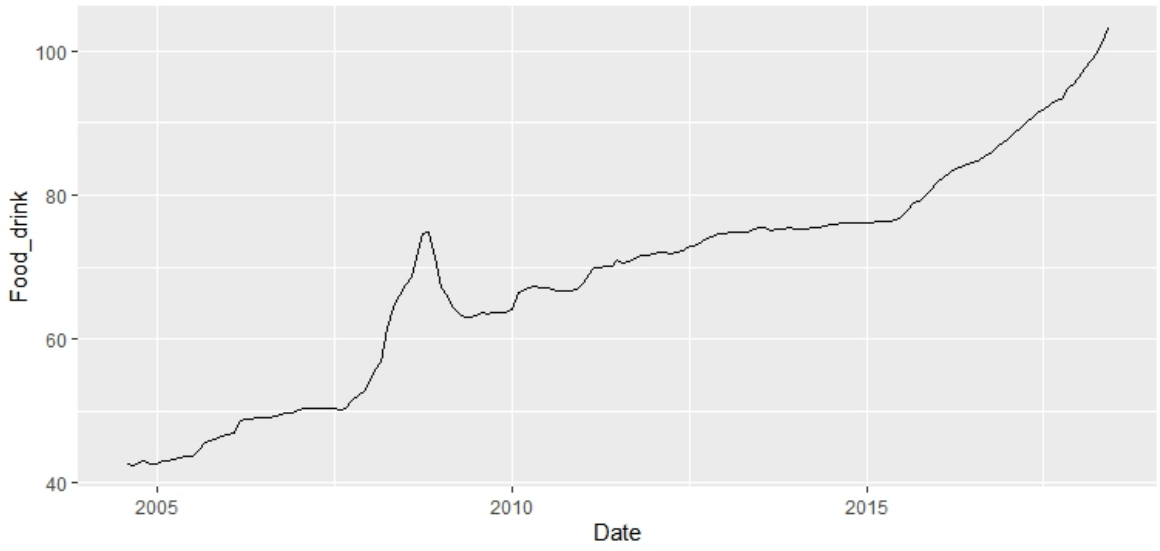
Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
L(IPC)	-0.01238	0.006499	-1.906	0.058647	.
L(ΔIPC)	0.31522	0.080486	3.916	0.000137	***
ElectionLP_2006	0.502548	0.218370	2.301	0.022767	*
ElectionLP_2010	-0.09901	0.145912	-0.679	0.498460	
ElectionLP_2011	0.100826	0.144897	0.696	0.487619	
ElectionLP_2015	0.453422	0.123226	3.680	0.000326	***
ElectionLP_2016	0.364205	0.162815	2.237	0.026786	*
ElectionL_L2009	-0.06764	0.114310	-0.592	0.554913	
ElectionL_L2017	-0.16360	0.177304	-0.923	0.357640	
Earthquake	0.132260	0.143614	0.921	0.358577	
Cholera (Weak)	0.635557	0.212774	2.987	0.003298	**
Cholera(Strong)	0.123866	0.087434	1.417	0.158679	
Cholera(Medium)	0.124023	0.103872	1.194	0.234389	
Drought	0.114131	0.170723	0.669	0.504846	
Cyclone(Fay)	0.154058	0.148583	1.037	0.301499	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Boycott (Dominican products)	0.305759	0.103468	2.955	0.003638	**

Second regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
L(IPC)	-0.01178	0.00656	-1.796	0.07470	.
L(ΔIPC)	0.33493	0.08285	4.043	8.63e-05	***
ElectionLP_2006	0.48109	0.22039	2.183	0.03068	*
ElectionLP_2010	-0.09364	0.14688	-0.638	0.52479	
ElectionLP_2011	0.09832	0.14582	0.674	0.50124	
Election_L2015_round1(-1)	0.57141	0.23883	2.392	0.01804	*
Election_L2015_round1	0.62244	0.24411	2.550	0.01184	*
Election_L2015_round1(+1)	0.43785	0.24870	1.761	0.08047	.
Election_LP2015	0.16558	0.24678	0.671	0.50334	
Election_LP2015_round1(+1)	0.40979	0.24247	1.690	0.09322	.
Election_LP2016_round1(-1)	0.12013	0.25344	0.474	0.63623	
Election_LP2016	0.57958	0.24898	2.328	0.02134	*
Election_LP2016_round1(+1)	0.34838	0.25423	1.370	0.17275	
Election_L2009	-0.06382	0.11512	-0.554	0.58019	
Election_L2017	-0.15833	0.17845	-0.887	0.37643	
Earthquake	0.12690	0.14456	0.878	0.38154	
Cholera(weak)	0.61024	0.21502	2.838	0.00520	**
Cholera(Strong)	0.11798	0.08812	1.339	0.18277	
Cholera(Medium)	0.11679	0.10472	1.115	0.26665	
Drougth	0.11235	0.17178	0.654	0.51414	
Cyclone(Fay)	0.14181	0.14982	0.947	0.34548	
Boycott(Dominican products)	0.29556	0.10441	2.831	0.00532	**

Figure 3.25: Serial graph before seasonal adjustment

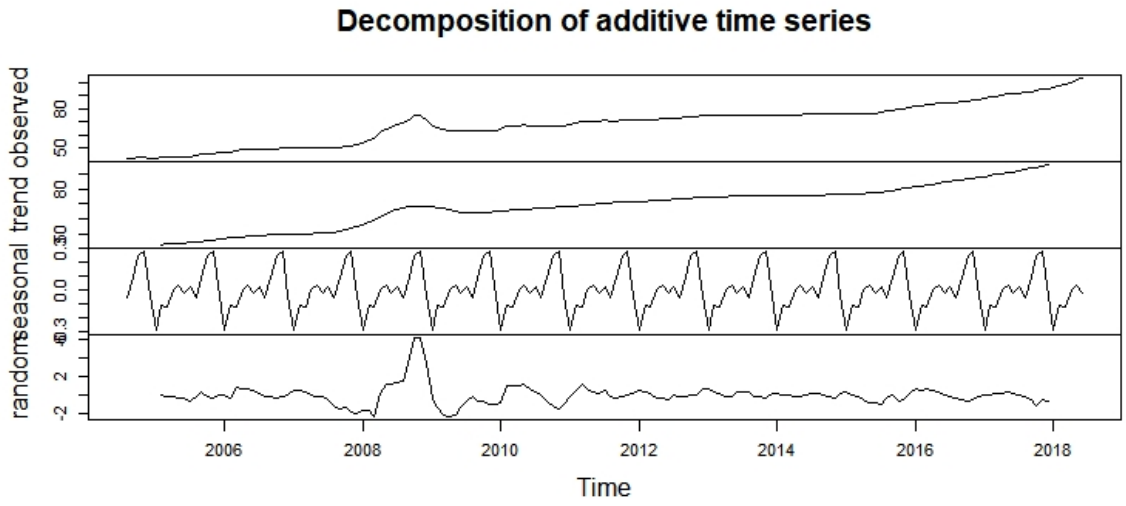


Imported products

Serie 1: Food & non-alcoholic beverages

Statistic	Value
Min.	0.65100
Max.	0.71300
Median	0.03100
Standard deviation	0.05647

Figure 3.26



Stationarity Test

Variables	Estimation	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	1.387447	0.608168	2.281	0.0239	*
z.lag.1()	-0.030362	0.013852	-2.192	0.0299	*
tt (Trend)	0.009752	0.004220	2.311	0.0222	*
z.diff.lag1	0.712755	0.078645	9.063	4.84e-16	***
z.diff.lag2	-0.098718	0.096423	-1.024	0.3075	
z.diff.lag3	0.068581	0.081275	0.844	0.4001	

The Series is stationary in terms of the constant and the trend. The data generation process of the Series is an AR (1)

First regression.

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	0.606482	0.122196	4.963	1.91e-06	***
Trend	0.005242	0.001299	4.035	8.76e-05	***
L(Food)	-0.093343	0.019354	-4.823	3.52e-06	***

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
L(Δ Food)	0.561996	0.067469	8.330	5.40e-14	***
Election_LP2006	0.024955	0.052067	0.479	0.632450	
Election_LP2010	0.011730	0.059978	0.196	0.845215	
Election_LP2011	0.019960	0.060336	0.331	0.741253	
Election_LP2015	-0.010101	0.050209	-0.201	0.840837	
Election_LP2016	0.018775	0.062093	0.302	0.762798	
Election_L2009	0.003462	0.048244	0.072	0.942891	
Election_L2017	-0.073074	0.073395	-0.996	0.321078	
Earthquake	0.053646	0.060399	0.888	0.375899	
Cholera (Weak)	-0.013457	0.080209	-0.168	0.866997	
Cholera (Strong)	-0.026510	0.041644	-0.637	0.525394	
Cholera (Medium)	-0.119960	0.058357	-2.056	0.041599	*
Drought	-0.098905	0.082218	-1.203	0.230938	
Cyclone (Fay)	0.275378	0.071796	3.836	0.000186	***
Boycott (Dominican products)	-0.007361	0.040735	-0.181	0.856857	
Exchange rate	0.013210	0.010762	1.227	0.221613	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	0.604575	0.123653	4.889	2.74e-06	***
Trend	0.005267	0.001316	4.004	0.000101	***
L(Food)	0.567339	0.068472	8.286	8.56e-14	***
L(Δ Food)	-0.09329	0.019587	-4.763	4.71e-06	***
Election_LP2006	0.029742	0.053041	0.561	0.575872	
Election_LP2010	0.012617	0.060681	0.208	0.835593	
Election_LP2011	0.020331	0.061053	0.333	0.739632	
Election_L2015_round1(-1)	0.023961	0.106385	0.225	0.822131	
Election_L2015_round1	0.053269	0.100633	0.529	0.597411	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Election_L2015_round1(+1)	-0.01274	0.101548	-0.125	0.900318	
Election_LP2015	-0.14646	0.103752	-1.412	0.160252	
Election_LP2015_round1(+1)	0.024083	0.102141	0.236	0.813951	
Election_LP2016_round1(-1)	-0.00467	0.101337	-0.046	0.963277	
Election_LP2016	0.050337	0.101050	0.498	0.619168	
Election_LP2016_round1(+1)	0.001611	0.101191	0.016	0.987322	
Election_L2009	0.003372	0.048824	0.069	0.945039	
Election_L2017	-0.07600	0.074363	-1.022	0.308491	
Earthquake	0.050837	0.061174	0.831	0.407375	
Cholera (Weak)	-0.01650	0.081235	-0.203	0.839274	
Cholera (Strong)	-0.02813	0.042194	-0.667	0.506019	
Cholera (Medium)	-0.12236	0.059161	-2.068	0.040444	*
Drought	-0.11407	0.085397	-1.336	0.183786	
Cyclone (Fay)	0.273192	0.072662	3.760	0.000249	***
Boycott (Dominican products)	-0.01174	0.041539	-0.283	0.777801	
Exchange rate	0.017541	0.012160	1.443	0.151385	

Table 3.49: Clothes

Statistic	Value
Min.	0.000000
Max.	0.007000
Median	0.001000
Standard deviation	0.001299

Figure 3.27: Serial graph before seasonal adjustment

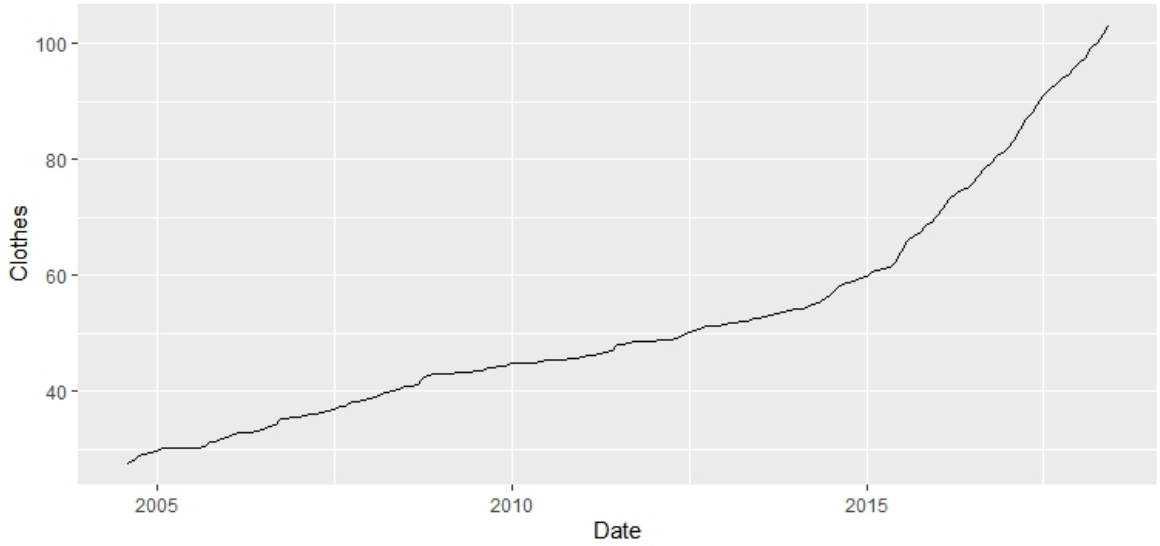


Figure 3.28

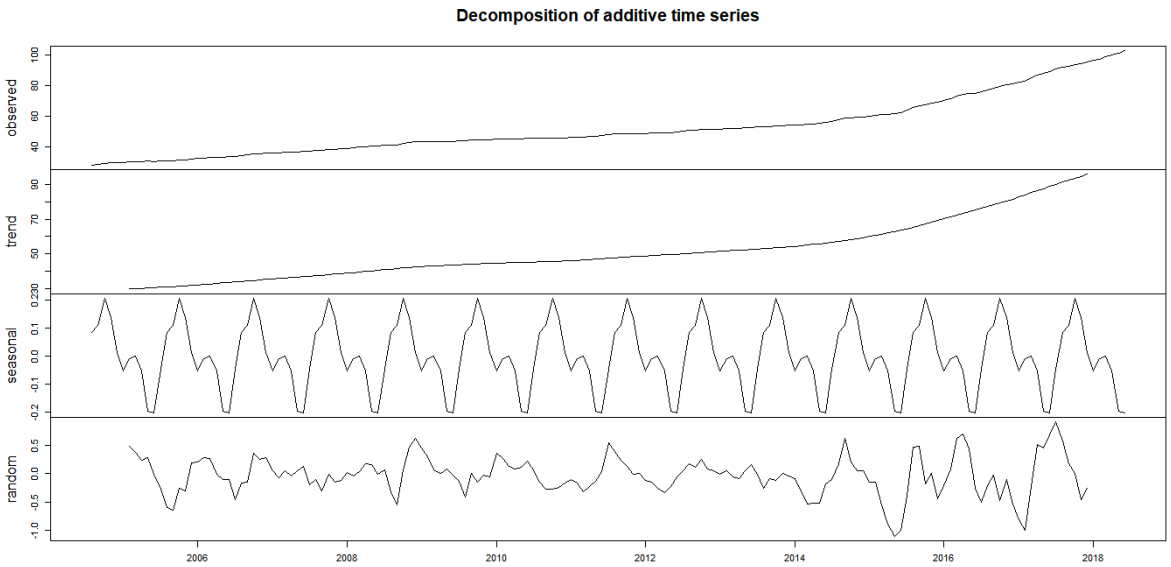


Table 3.50: Stationarity Test

Variables	Estimation	Std. Error	t value	Pr(> |t|)	Significance
(Intercept)	-0.352138	0.118924	-2.961	0.003542	**
z.lag.1	0.014399	0.004860	2.963	0.003520	**
Tt (trend)	-0.001650	0.001527	-1.081	0.281474	
z.diff.lag1	0.302269	0.080995	3.732	0.000265	***
z.diff.lag2	0.143110	0.083509	1.714	0.088555	.
z.diff.lag3	-0.017445	0.082092	-0.213	0.831987	

Table 3.51: Stationarity Test

Variables	Estimation	Std. Error	t value	Pr(> |t|)	Significance
(Intercept)	-0.264295	0.086858	-3.043	0.00275	**
z.lag.1	0.009707	0.002185	4.444	1.66e-05	***
z.diff.lag1	0.313687	0.080346	3.904	0.00014	***
z.diff.lag2	0.154265	0.082912	1.861	0.06466	.
z.diff.lag3	0.001107	0.080319	0.014	0.98902	

The Series is stationary at a constant level without a trend. The data generation process is an AR (1).

First regression

Table 3.52: First Regression

Variables	Estimate	Std. Error	t value	Pr(> |t|)	Significance
(Intercept)	0.0018175	0.0008777	2.071	0.040143	*
L(Clothes)	-0.00663	0.0060323	-1.100	0.273010	
L(Δ Clothes)	0.0620321	0.0815687	0.760	0.448180	
Election_LP2006	-0.00025	0.0006236	-0.416	0.678262	

Variables	Estimate	Std. Error	t value	Pr($>\|t\|$)	Significance
Election_LP2010	-0.00067	0.0007227	-0.932	0.352644	
Election_LP2011	-0.00036	0.0007202	-0.512	0.609138	
Election_LP2015	0.0035735	0.0006643	5.379	2.88e-07	***
Election_LP2016	0.0025216	0.0009423	2.676	0.008295	**
Election_L2009	-0.00047	0.0005667	-0.834	0.405808	
Election_L2017	-0.00132	0.0009329	-1.415	0.159054	
Earthquake	-0.00062	0.0007146	-0.877	0.381710	
Cholera(Weak)	0.0050800	0.0013940	3.644	0.000371	***
Cholera(Strong)	0.0003548	0.0004082	0.869	0.386085	
Cholera(Medium)	0.0008778	0.0005069	1.732	0.085402	.
Drought	0.0019642	0.0009687	2.028	0.044405	*
Cyclone(Fay)	0.0011782	0.0006971	1.690	0.093109	.
Boycott(Dominican products)	0.0029229	0.0006416	4.556	1.09e-05	***
Exchange rate	-0.00018	0.0001306	-1.429	0.154999	

Table 3.53: Second Regression

Variables	Estimate	Std. Error	t value	Pr($>\|t\|$)	Significance
(Intercept)	1.658e-03	8.598e-04	1.928	0.055880	.
L(Clothes)	-5.817e-03	5.903e-03	-0.986	0.326063	
L(Δ Clothes)	9.723e-02	8.443e-02	1.152	0.251427	
Election_LP2006	-1.380e-04	6.126e-04	-0.225	0.822029	
Election_LP2010	-6.364e-04	7.057e-04	-0.902	0.368701	
Election_LP2011	-3.302e-04	7.032e-04	-0.470	0.639412	
Election_L2015_round1(-1)	4.472e-03	1.246e-03	3.589	0.000457	***
Election_L2015_round1	5.393e-03	1.235e-03	4.365	2.44e-05	***
Election_L2015_round1(+1)	2.423e-03	1.290e-03	1.879	0.062376	.

Variables	Estimate	Std. Error	t value	Pr(> |t|)	Significance
Election_LP2015	8.086e-04	1.247e-03	0.648	0.517777	
Election_LP2015_round1(+1)	3.978e-03	1.206e-03	3.299	0.001230	**
Election_LP2016_round1(-1)	1.890e-03	1.318e-03	1.434	0.153741	
Election_LP2016	4.076e-03	1.288e-03	3.164	0.001908	**
Election_LP2016_round1(+1)	9.040e-04	1.332e-03	0.678	0.498567	
Election_L2009	-4.710e-04	5.538e-04	-0.850	0.396505	
Election_L2017	-1.304e-03	9.120e-04	-1.430	0.155061	
Earthquake	-6.812e-04	6.981e-04	-0.976	0.330811	
Cholera(Weak)	4.792e-03	1.367e-03	3.504	0.000614	***
Cholera(Strong)	3.113e-04	3.990e-04	0.780	0.436603	
Cholera(Medium)	7.952e-04	4.962e-04	1.603	0.111256	
Drought	1.524e-03	9.744e-04	1.564	0.120034	
Cyclone(Fay)	1.152e-03	6.805e-04	1.692	0.092813	.
Boycott(Dominican products)	2.687e-03	6.374e-04	4.215	4.43e-05	***
Exchange rate	-6.622e-05	1.434e-04	-0.462	0.644877	

Table 3.54: Summary Statistics for Communication Series

Statistic	Value
Min	-0.00293
Max	0.26956
Median	0.00293
Standard Deviation	0.01615

Figure 3.29: Serial graph before seasonal adjustment

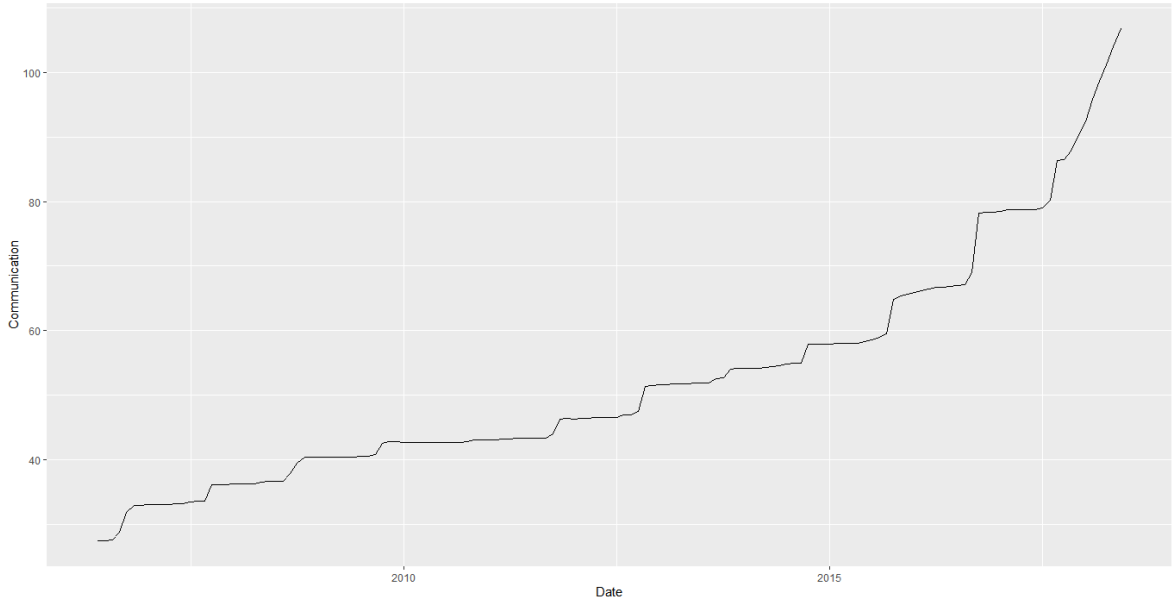


Figure 3.30

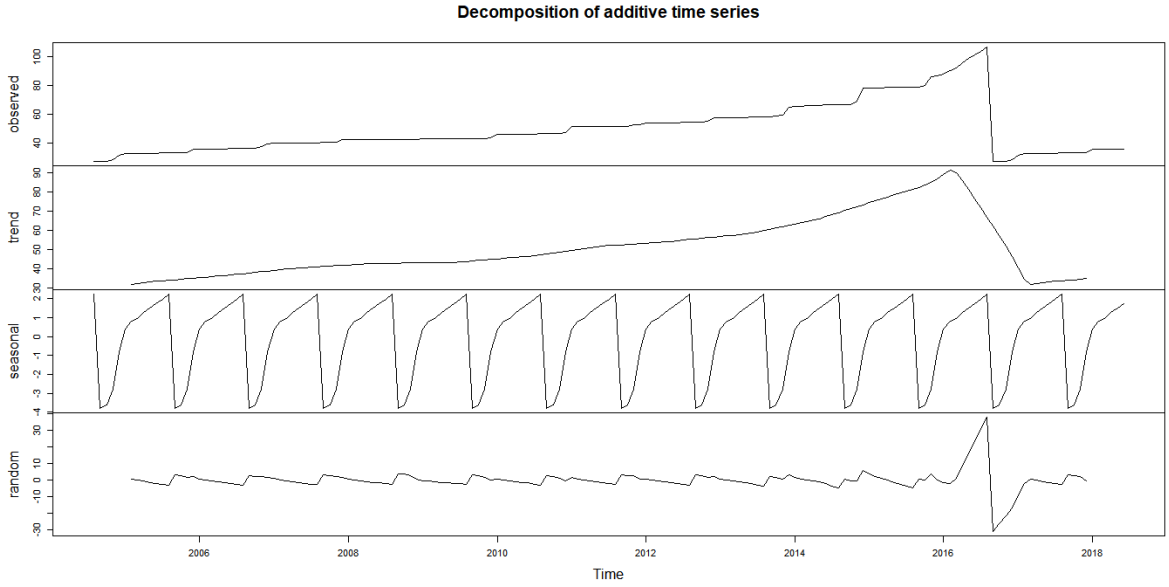


Table 3.55: Stationarity Test Results for Communication Series

Variables	Estimation	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	-1.377712	0.557062	-2.473	0.0146	*
z.lag.1	0.051514	0.020889	2.466	0.0149	*
tt (Trend)	-0.010261	0.007604	-1.349	0.1795	
z.diff.lag1	0.098029	0.091935	1.066	0.2882	
z.diff.lag2	-0.085273	0.091269	-0.934	0.3518	
z.diff.lag3	-0.050381	0.091604	-0.550	0.5832	

The model is stationary with a constant but no trend. The data generation process follows an AR(0).

Table 3.56: First Regression Results for Communication Series

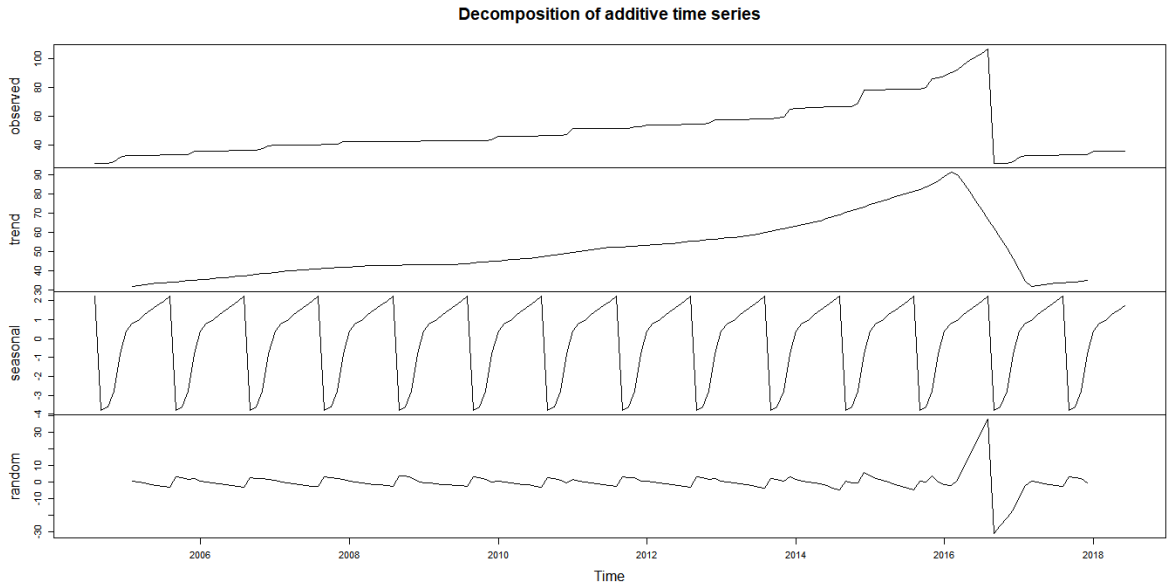
Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	0.0174142	0.0270137	0.645	0.520331	
L(Comm)	-0.00020	0.0007304	-0.285	0.776473	
L($\Delta Comm$)	-0.00215	0.0027530	-0.782	0.435755	
Election_LP2010	-0.00823	0.0200761	-0.410	0.682389	
Election_LP2011	-0.00968	0.0200632	-0.483	0.630160	
Election_LP2015	0.0364851	0.0163029	2.238	0.026981	*
Election_LP2016	0.0916582	0.0247777	3.699	0.000322	***
Election_L2009	-0.01072	0.0157065	-0.683	0.495995	
Election_L2017	-0.06255	0.0255591	-2.448	0.015762	*
Earthquake	-0.01381	0.0200165	-0.690	0.491293	
Cholera(Weak)	0.0569395	0.0373855	1.523	0.130255	
Cholera(Strong)	0.0028720	0.0108693	0.264	0.792036	
Cholera(Medium)	-0.00112	0.0150961	-0.075	0.940579	
Drought	-0.04865	0.027404	-1.775	0.078240	.

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Cyclone(Fay)	0.0277607	0.0194709	1.426	0.156412	
Boycott(Dominican products)	-0.00375	0.0148928	-0.252	0.801492	
Exchange rate	0.0131552	0.0040405	3.256	0.001452	**

Table 3.57: Second Regression Results for Communication Series

Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	-0.01183	0.019908	-0.595	0.5533	
L(Comm)	0.019430	0.018263	1.064	0.2895	
L($\Delta Comm$)	-0.00576	0.015334	-0.376	0.7078	
Election_LP2011	-0.00780	0.015322	-0.509	0.6114	
Election_L2015_round1(-1)	0.02512	0.027694	0.907	0.3661	
Election_L2015_round1	0.005798	0.025361	0.229	0.8196	
Election_L2015_round1(+1)	-0.00213	0.025404	-0.084	0.9333	
Election_LP2015	0.129261	0.026036	4.965	2.26e-06	***
Election_LP2015_round1(+1)	-0.00693	0.025990	-0.267	0.7902	
Election_LP2016_round1(-1)	0.248539	0.026315	9.445	3.18e-16	***
Election_LP2016	-0.02022	0.028157	-0.718	0.4739	
Election_LP2016_round1(+1)	-0.01916	0.028222	-0.679	0.4983	
Election_L2009	-0.01202	0.011918	-1.009	0.3149	
Election_L2017	-0.04861	0.019520	-2.490	0.0141	*
Earthquake	-0.01576	0.015179	-1.038	0.3011	
Cholera(Weak)	0.014419	0.028237	0.511	0.6105	
Cholera(Strong)	-0.00356	0.008221	-0.434	0.6652	
Cholera(Medium)	-0.01361	0.011159	-1.220	0.2248	
Drought	-0.03468	0.021526	-1.611	0.1097	
Cyclone(Fay)	0.025814	0.014830	1.741	0.0843	.

Figure 3.31: Serial graph before seasonal adjustment



Variables	Estimate	Std. Error	t value	Pr(>|t|)	Significance
Boycott(Dominican products)	-0.00957	0.011130	-0.861	0.3911	
Exchange rate	0.008310	0.003502	2.373	0.0192	*

Table 3.58: Recreation Series Statistics

Statistic	Value
Min.	-0.001380
Max.	0.008050
Median	0.000230
Standard deviation	0.001040

Figure 3.32

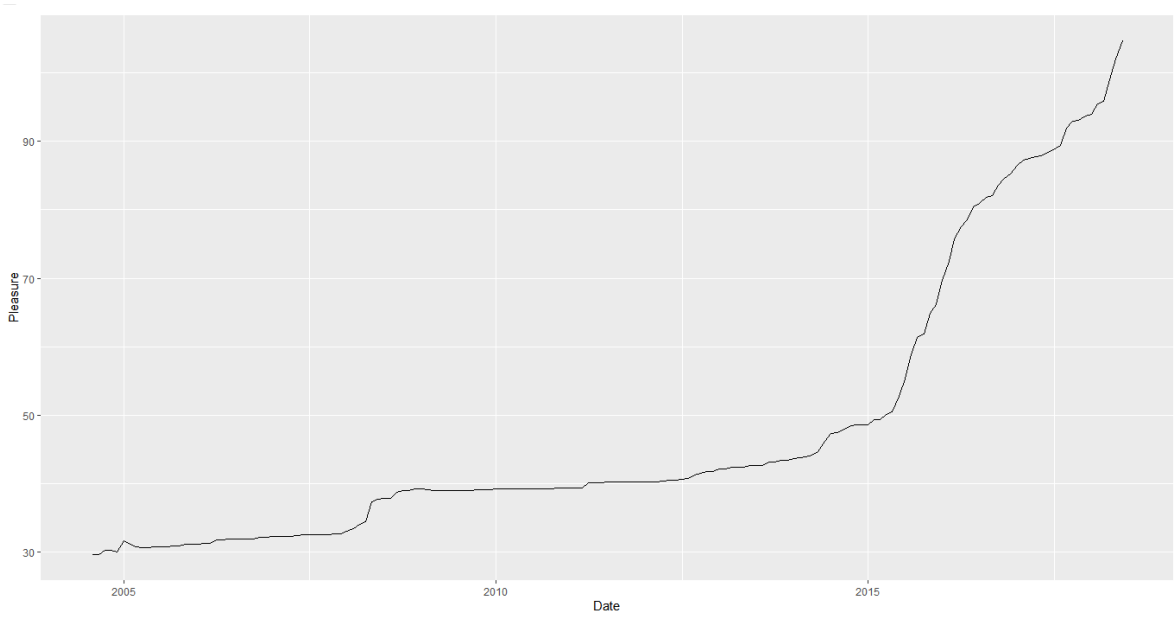


Table 3.59: Stationarity Test Results

	Estimation	Std. Error	t value	Pr(>|t|)	
(Intercept)	-0.185687	0.136746	-1.358	0.176	
z.lag.1	0.003600	0.004884	0.737	0.462	
tt(Trend)	0.002157	0.001906	1.132	0.259	
z.diff.lag1	0.343634	0.080213	4.284	3.19e-05	***
z.diff.lag2	0.325154	0.081069	4.011	9.34e-05	***
z.diff.lag3	-0.009368	0.082819	-0.113	0.910	
Model 2					
(Intercept)	-0.211725	0.134918	-1.569	0.1186	
z.lag.1	0.007921	0.003049	2.598	0.0103	*
z.diff.lag1	0.347714	0.080203	4.335	2.58e-05	***
z.diff.lag2	0.326234	0.081136	4.021	8.96e-05	***
z.diff.lag3	-0.008878	0.082891	-0.107	0.9148	
Model 3					

	Estimation	Std. Error	t value	Pr(>|t|)	
z.lag.1	0.003560	0.001261	2.824	0.00535	**
z.diff.lag1	0.368141	0.079503	4.631	7.54e-06	***
z.diff.lag2	0.343694	0.080738	4.257	3.53e-05	***
z.diff.lag3	0.006470	0.082690	0.078	0.93773	

The Series is stationary in level, with no constant or trend. The data generation process is an AR (2).

Table 3.60: First Regression Results for Recreation Series

Variables	Estimate	Std. Error	t value	Pr(>|t|)	
L(Recreation)	-1.392e-02	1.537e-02	-0.906	0.36666	
L(Δ Recreation)	2.068e-01	8.379e-02	2.468	0.01473	*
L^2(Δ Recreation)	1.909e-01	8.954e-02	2.132	0.03469	*
Election_LP2006	1.515e-03	1.303e-03	1.163	0.24687	
Election_LP2010	-5.291e-05	8.293e-04	-0.064	0.94922	
Election_LP2011	4.482e-04	8.295e-04	0.540	0.58976	
Election_LP2015	3.508e-03	9.049e-04	3.876	0.00016	***
Election_LP2016	2.344e-03	1.567e-03	1.496	0.13674	
Election_L2009	-1.983e-05	6.560e-04	-0.030	0.97592	
Election_L2017	-6.574e-04	1.039e-03	-0.633	0.52793	
Earthquake	-1.131e-04	8.194e-04	-0.138	0.89042	
Cholera (Weak)	3.402e-03	2.066e-03	1.647	0.10174	
Cholera (Strong)	1.213e-04	4.133e-04	0.294	0.76947	
Cholera (Medium)	5.979e-04	4.890e-04	1.223	0.22343	
Drought	1.634e-03	1.122e-03	1.457	0.14726	
Cyclone (Fay)	5.072e-04	8.109e-04	0.626	0.53262	
Boycott (Dominican products)	2.536e-03	1.169e-03	2.169	0.03170	*

Variables	Estimate	Std. Error	t value	Pr(>|t|)	
Exchange rate	1.858e-04	1.527e-04	1.216	0.22594	

Table 3.61: Second Regression Results for Recreation Series

Variables	Estimate	Std. Error	t value	Pr(>|t|)	
L(Recreation)	-8.780e-03	1.422e-02	-0.618	0.537911	
L(Δ Recreation)	2.425e-01	8.240e-02	2.943	0.003816	**
L^2(Δ Recreation)	2.792e-01	8.548e-02	3.266	0.001375	**
Election_LP2006	1.304e-03	1.195e-03	1.091	0.277194	
Election_LP2010	-3.730e-06	7.569e-04	-0.005	0.996075	
Election_LP2011	5.228e-04	7.572e-04	0.691	0.491021	
Election_L2015_round1(-1)	5.453e-03	1.414e-03	3.858	0.000175	***
Election_L2015_round1	5.202e-03	1.381e-03	3.766	0.000244	***
Election_L2015_round1(+1)	1.966e-03	1.464e-03	1.343	0.181575	
Election_LP2015	-3.521e-03	1.500e-03	-2.348	0.020292	*
Election_LP2015_round1(+1)	4.706e-03	1.420e-03	3.313	0.001176	**
Election_LP2016_round1(-1)	2.847e-03	1.736e-03	1.640	0.103218	
Election_LP2016	1.583e-03	1.777e-03	0.891	0.374374	
Election_LP2016_round1(+1)	4.722e-04	1.782e-03	0.265	0.791409	
Election_L2009	-4.144e-05	5.998e-04	-0.069	0.945022	
Election_L2017	-7.302e-04	9.488e-04	-0.770	0.442816	
Earhtquake	-2.118e-04	7.492e-04	-0.283	0.777870	
Cholera(Weak)	2.538e-03	1.908e-03	1.330	0.185598	
Cholera(Strong)	4.887e-05	3.789e-04	0.129	0.897580	
Cholera(Medium)	4.143e-04	4.507e-04	0.919	0.359620	
Drought	8.723e-04	1.051e-03	0.830	0.407971	
Cyclone(Fay)	4.011e-04	7.404e-04	0.542	0.588859	

Variables	Estimate	Std. Error	t value	Pr(>|t|)	
Boycott(Dominican products)	1.558e-03	1.091e-03	1.428	0.155398	
Exchange rate	3.741e-04	1.534e-04	2.438	0.016018	*

Table 3.62: Serie 5: Transportation

Statistic	Value
Min.	-0.0632880
Max.	0.0442430
Median	0.0002930
Standard deviation	0.0009602

Figure 3.33: Serial graph before seasonal adjustment

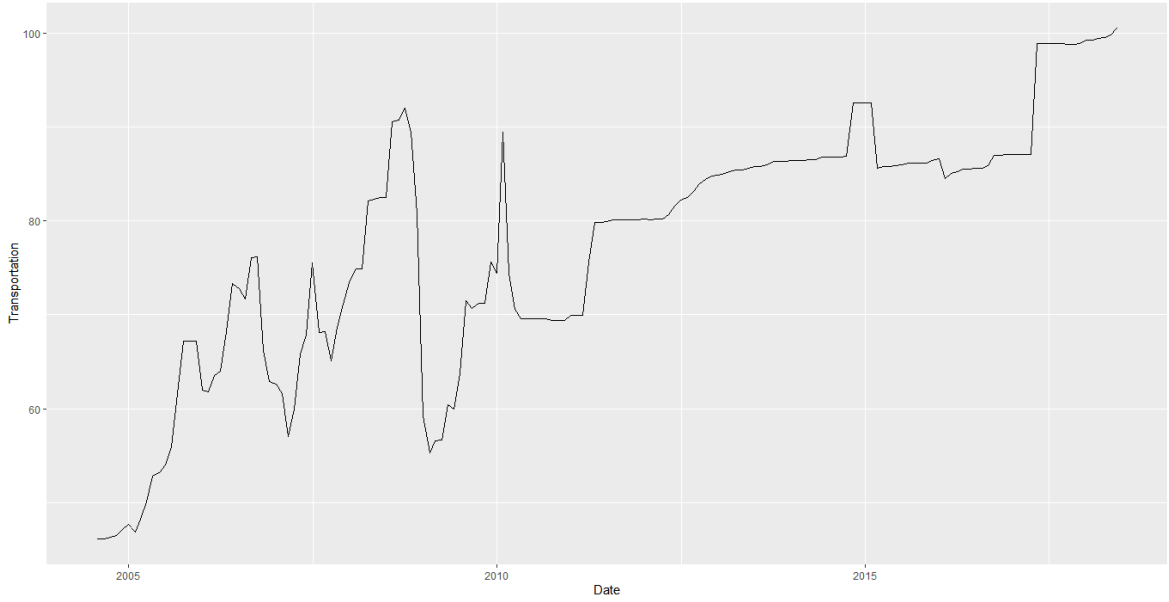


Figure 3.34

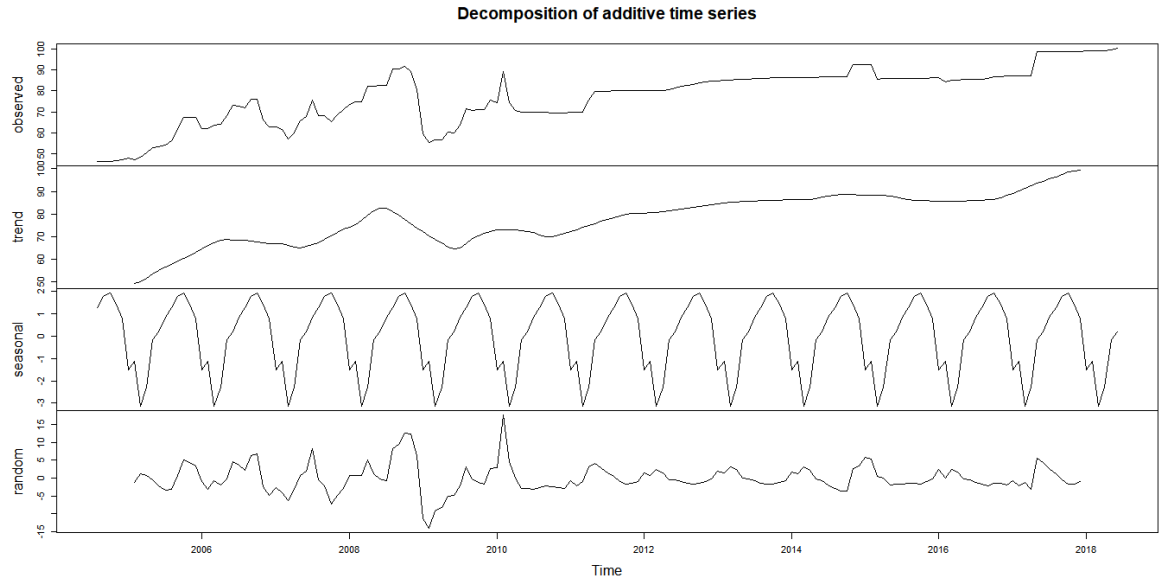


Table 3.63: Stationarity Test

Variables	Estimation	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	11.64554	2.58447	4.506	1.28e-05	***
z.lag.1	-0.19356	0.04377	-4.422	1.81e-05	***
tt	0.04316	0.01163	3.711	0.000286	***
z.diff.lag1	0.17666	0.07672	2.303	0.022614	*
z.diff.lag2	0.15266	0.07794	1.959	0.051918	.
z.diff.lag3	0.01154	0.07883	0.146	0.883838	

The Serie is stationary in terms of the constant and the trend. The data generation process is an AR (1).

First regression

Table 3.64: First regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	4.129e-02	9.118e-03	4.528	1.23e-05	***
Trend	1.700e-04	8.516e-05	1.997	0.0477	*
L(Transp)	-2.395e-01	5.611e-02	-4.268	3.53e-05	***
L(Δ Transp)	1.906e-01	8.157e-02	2.337	0.0208	*
Election_LP2006	-1.602e-03	5.544e-03	-0.289	0.7729	
Election_LP2010	-6.123e-03	6.370e-03	-0.961	0.3380	
Election_LP2011	-8.438e-04	6.364e-03	-0.133	0.8947	
Election_LP2015	-3.733e-03	5.197e-03	-0.718	0.4738	
Election_LP2016	-5.006e-03	6.804e-03	-0.736	0.4630	
Election_L2009	-5.791e-03	5.586e-03	-1.037	0.3015	
Election_L2017	-7.506e-03	7.733e-03	-0.971	0.3334	
Earthquake	-6.741e-04	6.333e-03	-0.106	0.9154	
Cholera(Weak)	1.587e-03	8.448e-03	0.188	0.8512	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Cholera(Strong)	4.844e-04	4.379e-03	0.111	0.9121	
Cholera(Medium)	1.476e-04	5.584e-03	0.026	0.9789	
Drought	-4.008e-03	8.553e-03	-0.469	0.6400	
Cyclone(Fay)	1.111e-02	6.817e-03	1.630	0.1053	
Boycott(Dominican products)	-5.646e-03	4.549e-03	-1.241	0.2165	
Exchange rate	1.883e-04	1.130e-03	0.167	0.8679	

Second regression

Table 3.65: Second regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	4.131e-02	9.315e-03	4.435	1.84e-05	***
Trend	1.711e-04	8.726e-05	1.960	0.0519	.
L(Transp)	-2.399e-01	5.738e-02	-4.180	5.11e-05	***
L(Δ Transp)	1.911e-01	8.334e-02	2.293	0.0233	*
Election_LP2006	-1.510e-03	5.706e-03	-0.265	0.7917	
Election_LP2010	-6.115e-03	6.504e-03	-0.940	0.3487	
Election_LP2011	-8.308e-04	6.498e-03	-0.128	0.8985	
Election_L2015_round1(-1)	-2.615e-03	1.126e-02	-0.232	0.8167	
Election_L2015_round1	-3.117e-03	1.064e-02	-0.293	0.7699	
Election_L2015_round1(+1)	-4.123e-03	1.073e-02	-0.384	0.7014	
Election_LP2015	-4.464e-03	1.101e-02	-0.405	0.6857	
Election_LP2015_round1(+1)	-4.492e-03	1.087e-02	-0.413	0.6800	
Election_LP2016_round1(-1)	-3.345e-03	1.097e-02	-0.305	0.7608	
Election_LP2016	-6.317e-03	1.093e-02	-0.578	0.5642	
Election_LP2016_round1(+1)	-5.544e-03	1.092e-02	-0.508	0.6123	
Election_L2009	-5.829e-03	5.710e-03	-1.021	0.3091	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Election_L2017	-7.564e-03	7.911e-03	-0.956	0.3406	
Earthquake	-7.141e-04	6.472e-03	-0.110	0.9123	
Cholera(Weak)	1.508e-03	8.641e-03	0.175	0.8617	
Cholera(Strong)	4.404e-04	4.481e-03	0.098	0.9218	
Cholera(Medium)	8.245e-05	5.718e-03	0.014	0.9885	
Drought	-4.274e-03	8.986e-03	-0.476	0.6351	
Cyclone(Fay)	1.112e-02	6.961e-03	1.597	0.1124	
Boycott(Dominican products)	-5.729e-03	4.689e-03	-1.222	0.2238	
Exchange rate	2.610e-04	1.292e-03	0.202	0.8402	

Table 3.66: Gas_Electricity

Statistic	Value
Min.	-0.0150800
Max.	0.0126100
Median	0.0001300
Standard deviation	0.0005004

Figure 3.35: Serial graph before seasonal adjustment

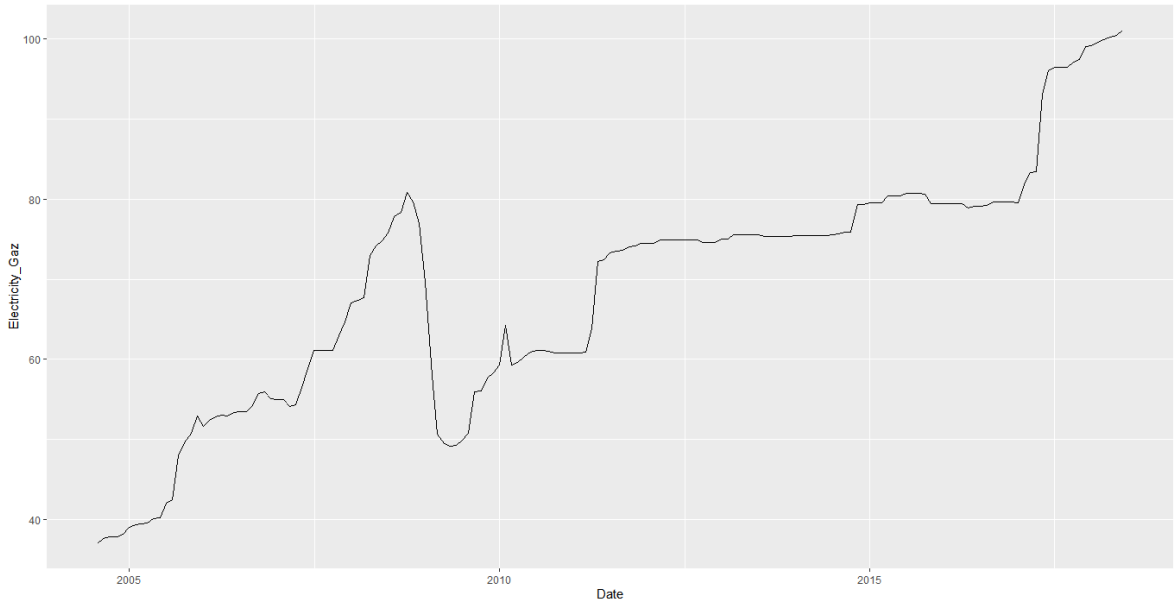
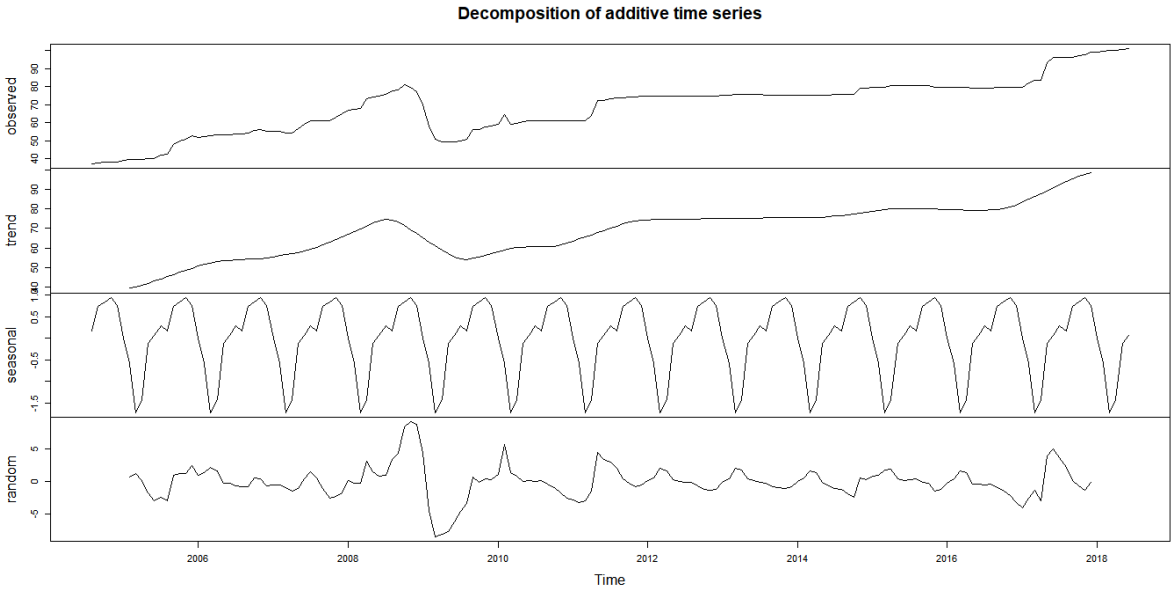


Figure 3.36



Stationarity Test

Variables	Estimation	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	3.736591	1.036509	3.605	0.000419	***
z.lag.1	-0.077835	0.021989	-3.540	0.000527	***
tt	0.021357	0.006706	3.185	0.001747	**
z.diff.lag1	0.392166	0.076802	5.106	9.41e-07	***
z.diff.lag2	0.132817	0.082840	1.603	0.110878	
z.diff.lag3	0.064562	0.079623	0.811	0.418682	

Variables	Estimation	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	3.736591	1.036509	3.605	0.000419	***
z.lag.1	-0.077835	0.021989	-3.540	0.000527	***
tt	0.021357	0.006706	3.185	0.001747	**
z.diff.lag1	0.392166	0.076802	5.106	9.41e-07	***
z.diff.lag2	0.132817	0.082840	1.603	0.110878	
z.diff.lag3	0.064562	0.079623	0.811	0.418682	

The series is stationary in terms of the constant and the trend. The data generation process is an AR (1).

First regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	6.853e-03	1.657e-03	4.135	5.95e-05	***
Trend	3.449e-05	1.943e-05	1.776	0.077868	.
L(Gaz)	-1.069e-01	2.799e-02	-3.821	0.000196	***
L(ΔGaz)	3.774e-01	7.915e-02	4.769	4.44e-06	***
Election_LP2006	-4.330e-04	1.259e-03	-0.344	0.731447	
Election_LP2010	-1.572e-03	1.465e-03	-1.073	0.284842	
Election_LP2011	-3.962e-04	1.467e-03	-0.270	0.787490	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Election_LP2015	-4.722e-04	1.156e-03	-0.409	0.683443	
Election_LP2016	-8.779e-04	1.517e-03	-0.579	0.563601	
Election_L2009	-1.827e-03	1.312e-03	-1.393	0.165845	
Election_L2017	-1.281e-03	1.819e-03	-0.704	0.482465	
Earthquake	-7.539e-04	1.467e-03	-0.514	0.608026	
Cholera(Weak)	1.763e-03	1.867e-03	0.944	0.346582	
Cholera(Strong)	5.233e-04	9.770e-04	0.536	0.593025	
Cholera(Medium)	-6.890e-05	1.282e-03	-0.054	0.957214	
Drought	-2.608e-04	1.935e-03	-0.135	0.892982	
Cyclone(Fay)	2.329e-03	1.535e-03	1.517	0.131460	
Boycott(Dominican products)	-5.325e-04	9.889e-04	-0.538	0.591059	
Exchange rate	-1.896e-05	2.602e-04	-0.073	0.942004	

Second regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	6.900e-03	1.693e-03	4.075	7.66e-05	***
Trend	3.547e-05	1.993e-05	1.780	0.077298	.
L(Gaz)	-1.081e-01	2.867e-02	-3.772	0.000238	***
L(ΔGaz)	3.772e-01	8.072e-02	4.673	6.89e-06	***
Election_LP2006	-3.654e-04	1.295e-03	-0.282	0.778242	
Election_LP2010	-1.575e-03	1.494e-03	-1.054	0.293532	
Election_LP2011	-3.958e-04	1.496e-03	-0.265	0.791713	
Election_L2015_round1(-1)	3.310e-04	2.565e-03	0.129	0.897502	
Election_L2015_round1	-2.920e-04	2.412e-03	-0.121	0.903818	
Election_L2015_round1(+1)	-2.249e-04	2.431e-03	-0.093	0.926417	
Election_LP2015	-4.279e-04	2.494e-03	-0.172	0.864001	
Election_LP2015_round1(+1)	-1.839e-03	2.461e-03	-0.747	0.456116	

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
Election_LP2016_round1(-1)	-1.031e-03	2.475e-03	-0.416	0.677701	
Election_LP2016	-8.570e-04	2.468e-03	-0.347	0.728935	
Election_LP2016_round1(+1)	-8.878e-04	2.470e-03	-0.359	0.719795	
Election_L2009	-1.861e-03	1.340e-03	-1.389	0.167006	
Election_L2017	-1.340e-03	1.860e-03	-0.720	0.472715	
Earhtquake	-7.938e-04	1.498e-03	-0.530	0.597113	
Cholera(Weak)	1.714e-03	1.907e-03	0.899	0.370216	
Cholera(Strong)	4.947e-04	9.983e-04	0.496	0.620967	
Cholera(Medium)	-1.201e-04	1.312e-03	-0.092	0.927219	
Drought	-4.531e-04	2.032e-03	-0.223	0.823854	
Cyclone(Fay)	2.352e-03	1.566e-03	1.501	0.135516	
Boycott(Dominican products)	-5.936e-04	1.019e-03	-0.582	0.561210	
Exchange rate	3.482e-05	2.981e-04	0.117	0.907169	

Serie 7: Housing_Maintenance

Metric	Value
Min.	-2.10e-04
Max.	5.70e-04
Median	0.00e+00
Standard deviation	2.45e-05

Serial graph before seasonal adjustment

Figure 3.37: Serial graph before seasonal adjustment

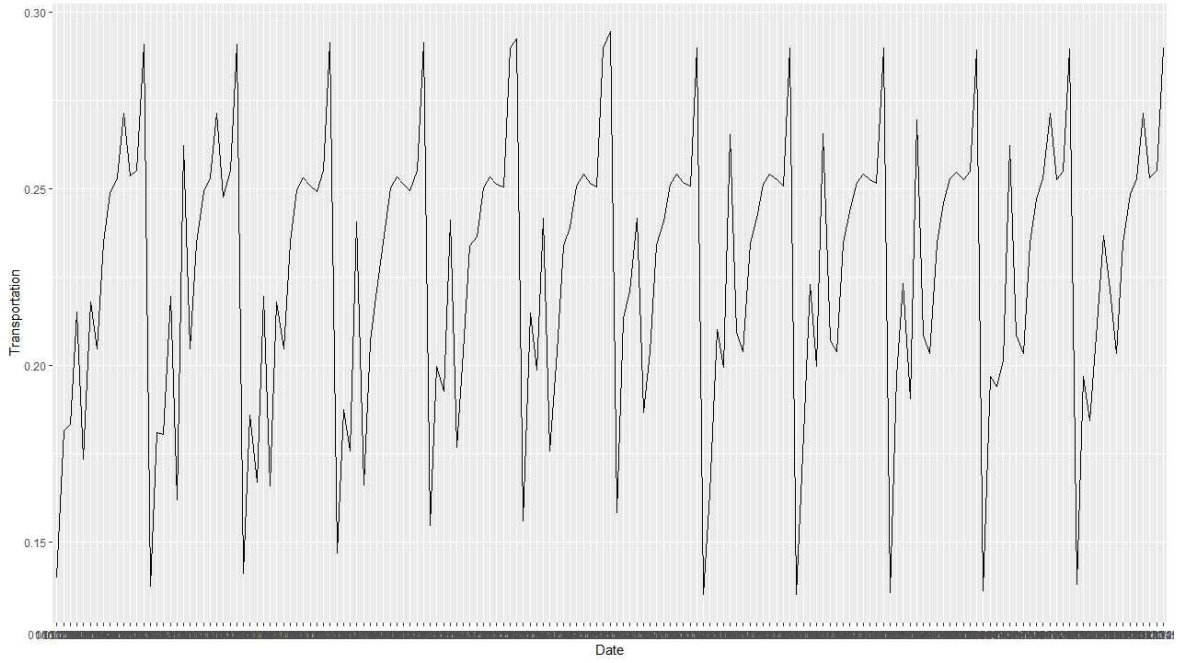
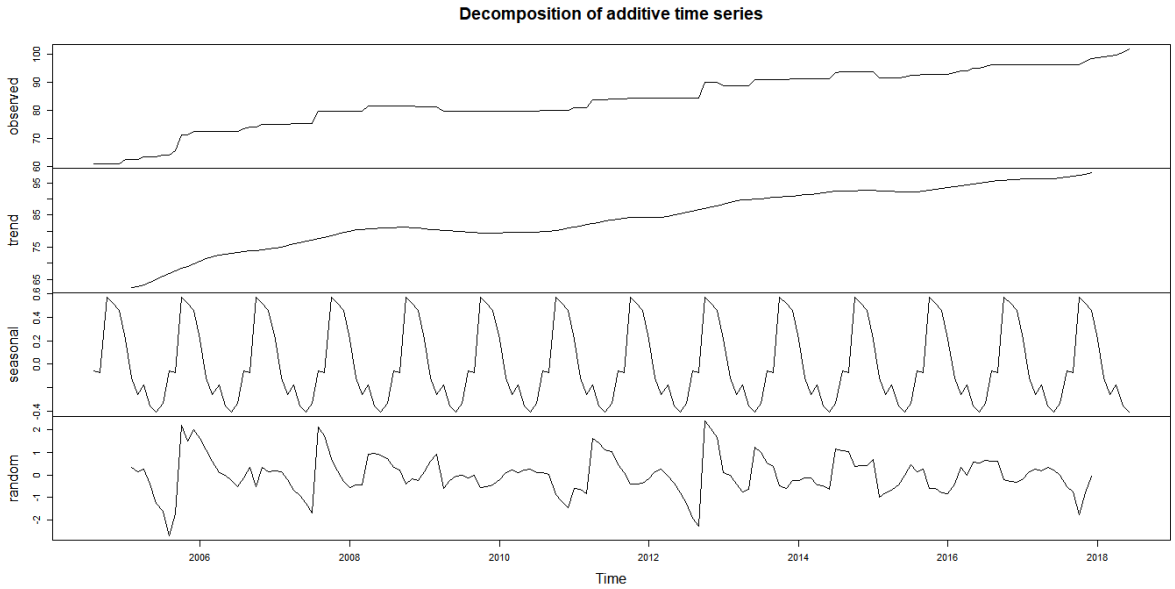


Figure 3.38: Serial graph before seasonal adjustment



Stationarity Test

The Series is stationary in terms of the constant and the trend. The data generation process is an AR (0).

Variables	Estimation	Std.Error	t value	Pr(>|t|)	Signifiance
(Intercept)	6.257e-04	1.807e-04	3.463	0.000688	***
z.lag.1	-8.773e-02	2.677e-02	-3.278	0.001289	**
tt	1.587e-06	5.423e-07	2.927	0.003936	**
z.diff.lag1	6.050e-02	7.786e-02	0.777	0.438261	
z.diff.lag2	3.565e-02	7.812e-02	0.456	0.648748	
z.diff.lag3	6.773e-03	7.818e-02	0.087	0.931066	

First Regression

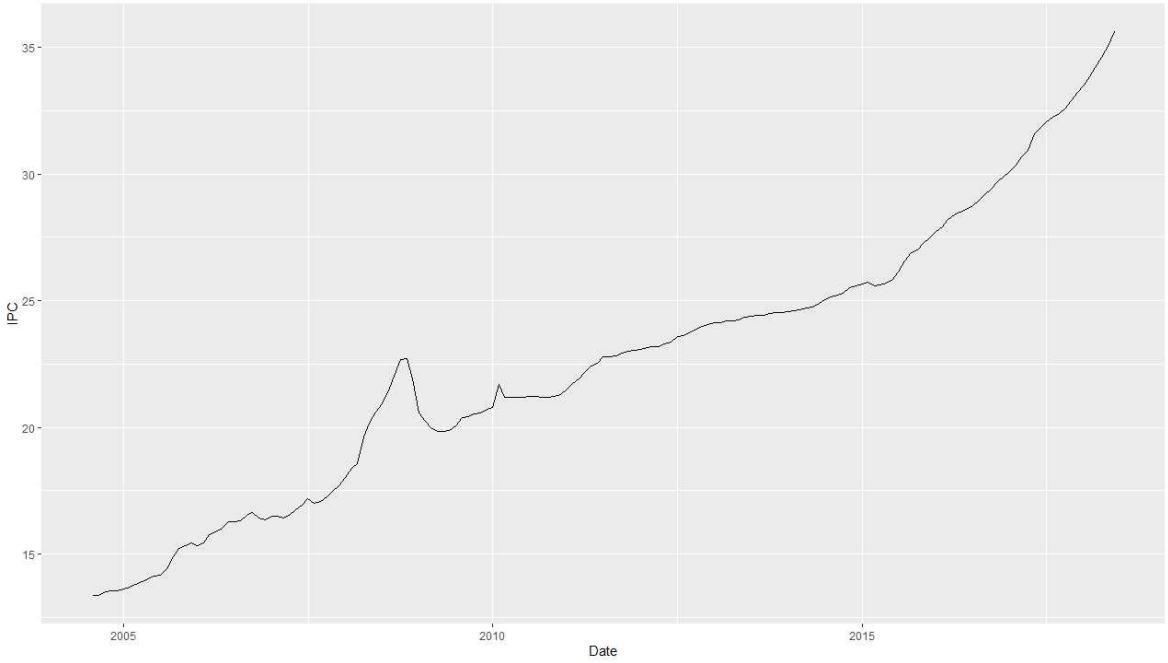
Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	4.090e-04	2.026e-04	2.019	0.0453	*
Trend	8.899e-07	1.030e-06	0.864	0.3891	
L(Hous)	-5.484e-06	3.150e-06	-1.741	0.0838	.
Election_LP2006	-2.341e-05	4.737e-05	-0.494	0.6218	
Election_LP2010	-4.631e-05	5.370e-05	-0.862	0.3899	
Election_LP2011	5.268e-05	5.350e-05	0.985	0.3264	
Election_LP2015	4.075e-06	4.478e-05	0.091	0.9276	
Election_LP2016	-7.917e-06	5.663e-05	-0.140	0.8890	
Election_L2009	-5.368e-05	4.181e-05	-1.284	0.2011	
Election_L2017	-3.543e-05	6.531e-05	-0.542	0.5883	
Earthquake	-3.481e-05	5.504e-05	-0.632	0.5281	
Cholera(Weak)	1.784e-05	7.745e-05	0.230	0.8182	
Cholera(Strong)	7.597e-06	3.944e-05	0.193	0.8475	
Cholera(Medium)	-7.058e-06	4.884e-05	-0.145	0.8853	
Drought	-1.290e-05	7.259e-05	-0.178	0.8592	

Cyclone(Fay)	-8.194e-06	5.246e-05	-0.156	0.8761	
Boycott(Dominican products)	1.923e-05	3.792e-05	0.507	0.6128	
Exchange rate	3.221e-06	9.587e-06	0.336	0.7374	

First Regression

Variables	Estimate	Std.Error	t value	Pr(>|t|)	Significance
(Intercept)	4.059e-04	2.066e-04	1.965	0.0514	.
Trend	8.953e-07	1.051e-06	0.852	0.3956	
L(Hous)	-5.448e-02	3.213e-02	-1.696	0.0921	.
Election_LP2006	-2.061e-05	4.861e-05	-0.424	0.6721	
Election_LP2010	-4.596e-05	5.476e-05	-0.839	0.4027	
Election_LP2011	5.329e-05	5.456e-05	0.977	0.3303	
Election_L2015_round1(-1)	5.100e-05	9.663e-05	0.528	0.5985	
Election_L2015_round1	-1.242e-05	9.074e-05	-0.137	0.8913	
Election_L2015_round1(+1)	9.339e-06	9.134e-05	0.102	0.9187	
Election_LP2015	-2.611e-05	9.341e-05	-0.280	0.7802	
Election_LP2015_round1(+1)	-3.873e-06	9.240e-05	-0.042	0.9666	
Election_LP2016_round1(-1)	-1.005e-05	9.209e-05	-0.109	0.9133	
Election_LP2016	-8.802e-06	9.203e-05	-0.096	0.9239	
Election_LP2016_round1(+1)	-8.927e-06	9.220e-05	-0.097	0.9230	
Election_L2009	-5.426e-05	4.264e-05	-1.272	0.2053	
Election_L2017	-3.735e-05	6.669e-05	-0.560	0.5763	
Earhtquake	-3.597e-05	5.617e-05	-0.640	0.5230	
Cholera(Weak)	1.680e-05	7.901e-05	0.213	0.8320	
Cholera(Strong)	6.818e-06	4.025e-05	0.169	0.8657	
Cholera(Medium)	-8.361e-06	4.988e-05	-0.168	0.8671	
Drought	-2.163e-05	7.596e-05	-0.285	0.7762	
Cyclone(Fay)	-8.499e-06	5.349e-05	-0.159	0.8740	

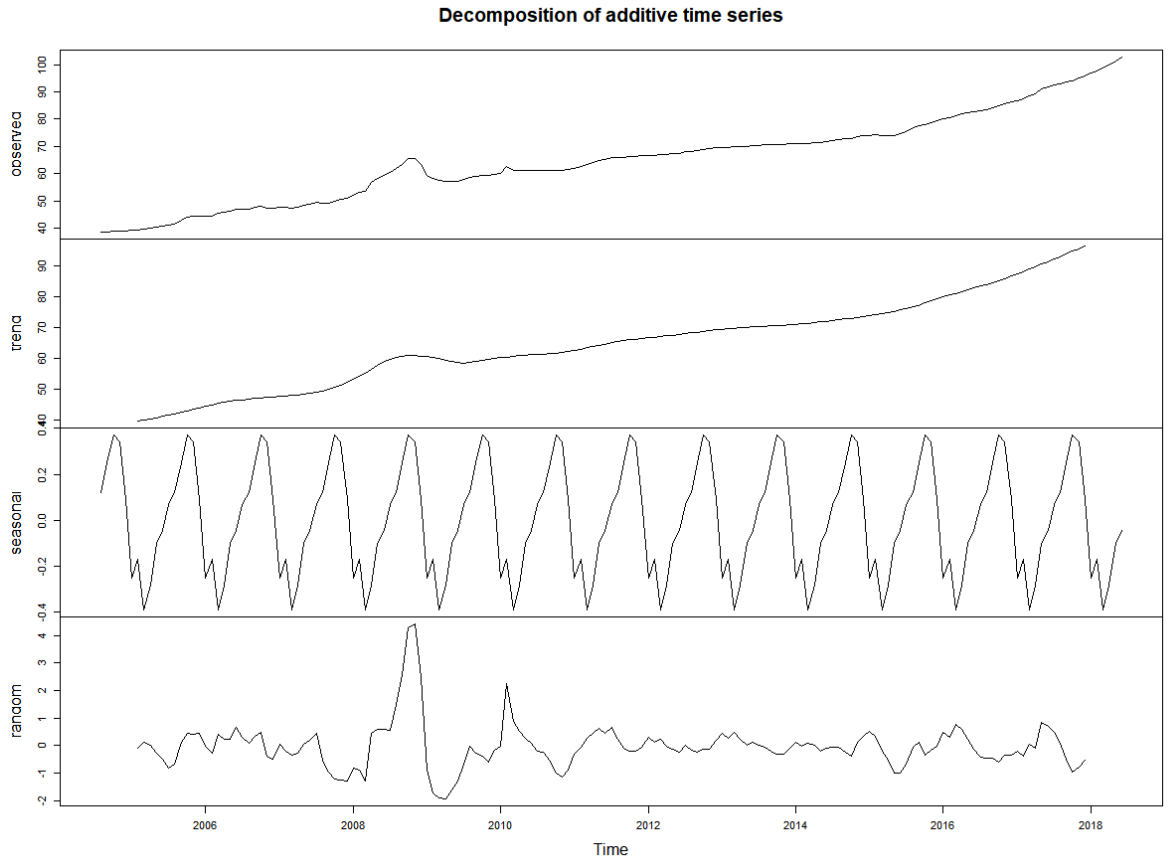
Figure 3.39: Serial graph before seasonal adjustment



Boycott(Dominican products)	1.708e-05	3.890e-05	0.439	0.6612	
Exchange rate	5.739e-06	1.093e-05	0.525	0.6005	

Statistique	**Valeur**
Min.	-1.32633
Max.	1.06314
Median	0.11082
Standard deviation	0.13403

Figure 3.40: Serial graph before seasonal adjustment



Stationarity Test

Variables	Estimation	Std. Error	t value	Pr(> |t|)
z.lag.1	0.0030839	0.0008682	3.552	0.000503 ***
z.diff.lag1	0.4678733	0.0796089	5.877	2.38e-08 ***
z.diff.lag2	0.0981312	0.0874433	1.122	0.263458
z.diff.lag3	-0.0679635	0.0800833	-0.849	0.397346

The Series is stationary in level, with no constant or trend. The data generation process is an AR (1).

First regression Regression Results

Variables	Estimate	Std. Error	t value	Pr(> |t|)	Significance
L(IPC)	-0.02035	0.009457	-2.153	0.03298	*
L(Δ IPC)	0.410657	0.077749	5.282	4.52e-07	***
Election_LP2006	0.388003	0.179883	2.157	0.03263	*
Election_LP2010	-0.06459	0.126609	-0.510	0.61071	
Election_LP2011	0.042981	0.125960	0.341	0.73342	
Election_LP2015	0.178683	0.101195	1.766	0.07952	.
Election_LP2016	0.183303	0.132302	1.385	0.16800	
Election_L2009	0.014047	0.099187	0.142	0.88757	
Election_L2017	-0.10892	0.155380	-0.701	0.48442	
Earthquake	0.081701	0.125696	0.650	0.51672	
Cholera (Weak)	0.452407	0.156775	2.886	0.00449	**
Cholera (Strong)	0.113579	0.074352	1.528	0.12876	
Cholera (Medium)	0.119249	0.083762	1.424	0.15666	
Drought	0.030938	0.167369	0.185	0.85360	
Cyclone (Fay)	0.221180	0.133785	1.653	0.10041	
Boycott (Dominican products)	0.142350	0.084114	1.692	0.09270	.
Exchange rate	0.012644	0.022468	0.563	0.57445	

Second Regression Results

Variables	Estimate	Std. Error	t value	Pr(> |t|)	Significance
L(IPC)	-0.01975	0.009598	-2.058	0.04142	*
L(Δ IPC)	0.415555	0.079168	5.249	5.5e-07	***
Elect20060	0.401990	0.169948	2.365	0.01937	*
Election_LP2006	0.389030	0.182273	2.134	0.03455	*
Election_LP2010	-0.06247	0.128268	-0.487	0.62696	
Election_LP2011	0.045135	0.127622	0.354	0.72412	
Election_L2015_round1(-1)	0.300002	0.223363	1.343	0.18139	
Election_L2015_round1	0.320561	0.210523	1.523	0.13007	
Election_L2015_round1(+1)	0.109539	0.213078	0.514	0.60800	
Election_LP2015	-0.05629	0.216705	-0.260	0.79540	
Election_LP2015_round1(+1)	0.201623	0.213114	0.946	0.34573	
Election_LP2016_round1(-1)	0.147751	0.214740	0.688	0.49255	
Election_LP2016	0.256317	0.214315	1.196	0.23371	
Election_LP2016_round1(+1)	0.121353	0.215344	0.564	0.57397	
Election_L2009	0.012715	0.100516	0.126	0.89952	
Election_L2017	-0.11575	0.157578	-0.735	0.46381	
Earthquake	0.075641	0.127458	0.593	0.55382	
Cholera(Weak)	0.444355	0.158982	2.795	0.00591	**
Cholera(Strong)	0.109750	0.075408	1.455	0.14778	
Cholera(Medium)	0.113944	0.085013	1.340	0.18230	
Drought	-0.00809	0.174039	-0.047	0.96298	
Cyclone(Fay)	0.216264	0.135612	1.595	0.11301	
Boycott(Dominican products)	0.131124	0.085877	1.527	0.12903	
Exchange rate	0.023881	0.025424	0.939	0.34918	

Chapter 4

Discipline me if you can! Monetary Regimes and Monetary Political Cycles in the United Kingdom (1870-1997)

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Abstract *This paper explores the relationship between monetary regimes and monetary political cycles (MPCs) in the United Kingdom from 1870 to 1997. By analyzing the growth of the monetary aggregate M0 over different periods, we investigate how political events, such as elections and party control, influenced monetary policy. Our analysis discloses that political variables tend to exert significant effects, primarily during the Gold Standard period, challenging the established consensus in the literature about the properties of this regime. In contrast, these effects are less pronounced during other periods, such as the Inter-War and Kingston regimes. However, during the Bretton Woods period, there is evidence of opportunistic behavior by the Conservative party, particularly in the case of snap elections. Our findings contribute to the broader understanding of the interaction between political forces and monetary policy regimes and institutions across different historical monetary regimes.*

Keywords : Exchange rate regimes, Central Bank Independence, Cliometrics, Political Monetary Cycles, Elections, Political Economy.

JEL Codes: E52, E58, F33, P35.

4.1 Introduction

It is often presumed that, in the late 19th and early 20th centuries, the UK's adherence to the Gold Standard (1870 to 1914) fundamentally shaped its monetary policy framework, severely limiting the government's discretion in monetary interventions. As (Bordo **and** Kydland 1997) argue, the Gold Standard acted as a self-imposed rule that constrained politically motivated manipulations of monetary policy.[1] These authors reflect a general consensus, and there is thus a general presumption that the monetary discipline delivered by the Gold Standard forbade monetary political cyles to emerge.[2]

Then, the breakdown of the Gold Standard following World War I and the economic turbulence of the interwar period (1918-1939) opened up new avenues for political influence over monetary policy. During this era, marked by high unemployment and economic instability, (Middleton 2010) identifies increased political interference in monetary decisions, suggesting a greater willingness to use this lever for short-term political gains. The approach to monetary policy during this period was more reactive, although (Janeway 1995) highlights that fiscal dominance still prevailed over direct monetary interventions. According to the consensus, MPCs would thus be present in this period, but still dominated by fiscal policy cycles.

The post-World War II period and the lead-up to the independence of the Bank of England in 1997 again marked significant changes in the UK's monetary landscape. In particular, as the central bank gained greater autonomy, the scope for politically motivated monetary cycles diminished considerably. (Hayo **and** Hefeker 2002) show that the independence granted to the Bank of England significantly reduced the influence of electoral politics on monetary decisions, aligning with broader trends in developed democracies where transparency and institutional constraints curtailed such cycles (Alt **and** Lassen 2006) . During this period, the empirical evidence on the UK's monetary political cycles shows a clear distinction between the pre- and post-1997 periods. Prior to the Bank of England's independence, the manipulation of interest rates and monetary policy for political purposes was more pronounced, as noted by Clark **and** Hallerberg

[1] This did not precluded governments of the time to use fiscal policy to influence economic conditions. Kindleberger (1984), for example, discusses the role of electoral motivations in shaping fiscal policy during this period.

[2] The concept of monetary political cycles suggests that governments or central banks may manipulate monetary policy tools, such as interest rates or the money supply, to create favorable economic conditions before elections, thereby enhancing their electoral prospects. This phenomenon, rooted in theories of political business cycles as developed by Nordhaus (1975) and Rogoff and Sibert (1988), posits that policymakers have incentives to stimulate the economy in the short term to influence voter behavior, even at the risk of long-term economic costs.

(2000a). In contrast, the period after 1997 saw a marked decline in such practices. Among others, Wright (2012) finds no significant electoral impact on monetary policy decisions, underscoring the effectiveness of the institutional safeguard of central bank independence.

All in all, then, the common narrative of the presence of MPCs in the UK over the hundred years that led up to the granting of central bank independence to the Bank of England (BoE) is of a pendulum swing. The first period would be characterized by the constraints of the Gold Standard era, then the constraints of the exchange rate regime would be relaxed, up to the liberalization and eventual independence of the central bank.

The contribution of this article is to question this compelling narrative of how economic institutions and political incentives shape policy outcomes, by using detailed data from the BoE, and by reconsidering the relation between elections and MPCs in the UK over the period that goes from 1870 to 1997. We thus aim to trace the existence and transformation of MPCs in the UK over this period, examining how foreign exchange and monetary regimes, institutional developments, economic conditions, and political motivations interacted to influence monetary policy over more than a century. The rich data available over a long period for the UK offers a chance to revisit the presence and significance of MPCs in the United Kingdom's history.

Our results, based on very granular data retracing the evolution of monetary aggregates over the course of a century on a monthly basis tend to contradict the established narrative. We show that elections have an influence on the evolution of monetary aggregates, and that the Gold Standard was not at all immune to MPCs, all the opposite. We trace the presence of MPCs over this period to the possibility for a government to call for advanced elections. These snap elections are shown to have an influence on the evolution of monetary aggregates, contradicting the fact that the Gold Standard acted as a strong disciplining device for economic policies. Taking the the Kingston agreement period as a reference, the Inter-War period also sees MPCs, while the Bretton-Woods period seems to be less prone to such political influence. Hence, according to our results, the fixed exchange rate regime of the Bretton-Woods period has been a better disciplining device than the Gold Standard.

We first review the literature over the presence of PMCs in the UK's history, then describe the data we use. The next section presents the results of our investigation, before the conclusion.

4.2 Literature review

Monetary political cycles (MPCs) refer to the phenomenon where incumbent governments or political actors influence central bank decisions — specifically monetary policy — in the run-up to elections to improve electoral outcomes. Unlike political business cycles, which focus on fiscal policy, MPCs emphasize how elections may shape interest rates, money supply, and inflation through central bank interventions. The case of the United Kingdom, with its evolving relationship between the government and the Bank of England, has been extensively studied in the economics literature. This review surveys key contributions to the understanding of MPCs in the UK during the 19th and 20th centuries. As the existence and significance of monetary political cycles in the UK have been the subject of an important literature, and of sometimes fierce academic debates, our review is certainly non-exhaustive, for space reasons, and also because it would impossible to cite every contribution over such a long period.

It nevertheless has to be noted that, if the study of monetary and political cycles in the UK during the 19th century and up to 1945 is indeed an area of historical economic research, the literature on this period is less extensive compared to the post-war era. Yet, some contributions explore the presence of MPCs in those earlier times.

The foundational models for studying MPCs were initially developed in the broader context of political business cycles. Notably, the works of (Nordhaus 1975) and (Hibbs 1977) laid the groundwork for examining how political actors manipulate macroeconomic variables to enhance electoral outcomes. Subsequent studies, including (Rogoff 1985), suggest that incumbents may exert influence over central banks to create favorable short-term economic conditions, especially in environments where the central bank lacks full independence.

Barro **and** Gordon (1983) dynamic inconsistency model provides a critical theoretical underpinning for the study of MPCs by showing how governments with electoral incentives might prioritize short-term economic gains (e.g., lower unemployment through expansionary monetary policy) at the cost of long-term inflation. This model is particularly

relevant to the UK, where political pressures on the Bank of England fluctuated with the changing institutional framework over the 19th and 20th centuries.

During the Gold Standard, the constraints imposed by the exchange rate regime were sufficiently strong to reign in politicians' incentives to manipulate monetary aggregates. This is at least the view conveyed by (Bordo **and** Kydland 1997), or (Eichengreen 1996), although Middleton (2010) identifies some scope for political influences on the definition of macroeconomic policies. Janeway (1995) proposes a more detailed view of the intricacies between the government and officials of the Bank of England during his period, with the crisis of 1931 as a episode during which the BoE tries to regain some independence.

Bernhard, Broz **and** Clark (2002) examined the relationship between UK elections and monetary policy outcomes from 1950 to 1997. They found evidence of systematic changes in interest rates prior to elections, consistent with the existence of MPCs. Specifically, they show that incumbent governments pressured the Bank of England to adopt expansionary monetary policies to stimulate short-term growth, which subsequently led to post-election inflation. Their findings align with the theoretical predictions of opportunistic MPC models.

Chang, Chen **and** Wang (2020) also focus on the pre-1997 period, during which the Bank of England did not enjoy operational independence. Their study analyzes monetary aggregates such as M0 and M4, as well as short-term interest rates, and finds significant distortions in these variables around election periods. They argue that political actors, particularly under Conservative governments, sought to influence monetary policy to secure electoral advantages. However, they note that these effects weakened over time as the Bank of England gained more autonomy, particularly after the Lawson reforms in the 1980s.

Drazen **and** Eslava (2010) provide a comparative analysis between developed and developing economies, with a focus on how institutional frameworks mediate MPCs. For the UK, their study underscores that while MPCs were more prominent before the Bank of England's independence in 1997, political actors could still signal intentions to influence monetary policy even in a highly developed institutional context. Their findings also highlight the importance of central bank credibility in moderating the impact of electoral

pressures on monetary policy.

(Leblang 2002) explores monetary policy in democracies, with a specific focus on the UK. His research shows that before 1997, the UK exhibited clear signs of politically motivated monetary expansions, particularly in the run-up to elections. However, he also finds that the effectiveness of such policies diminishes as voters become increasingly aware of the inflationary consequences, thereby reducing the electoral benefits of MPCs. This finding supports the rational expectations hypothesis, where voters anticipate post-election inflation and adjust their behavior accordingly.

A significant strand of literature focuses on how the institutional evolution of the Bank of England has affected the presence of MPCs. Goodhart (1997) analyzes the gradual move towards central bank independence in the UK, highlighting the 1970s and 1980s as critical periods where the government had substantial control over monetary policy. Goodhart's work demonstrates that during this period, political manipulation of monetary policy was particularly acute in response to electoral cycles. However, his later work (Goodhart, 1997) notes that the independence granted to the Bank of England in 1997 by the Labour government marked a turning point, effectively curbing the potential for MPCs by insulating monetary policy from short-term political pressures.

Alesina **and** Summers (1993) provide cross-country evidence on the relationship between central bank independence and inflation, *with specific attention to the UK case*. Their findings support the idea that higher levels of central bank independence reduce the occurrence of politically induced inflation cycles. In the UK, they argue that before the Bank of England gained operational independence, electoral pressures consistently resulted in expansionary monetary policies followed by inflationary corrections. After 1997, however, these pressures largely disappeared, aligning the UK with other developed countries with independent central banks.

Keefer **and** Stasavage (2003) studied the political economy of central bank independence, *focusing* on the UK's transition to greater independence. Their work suggests that while the Bank of England was still subject to government control, electoral cycles played a significant role in shaping monetary policy decisions. However, they also

show that once independence was granted, the political manipulation of monetary policy effectively ended, with inflation targeting replacing politically motivated interest rate adjustments.

While the majority of the literature supports the existence of MPCs in the UK prior to the 1997 Bank of England independence, the fact that the UK is often considered as an element of a panel of countries reduces the possibility to single out the presence of MPCs in this country. Nevertheless, for example, Clark **and** Hallerberg (2000b) study tends to show that the UK would fit in the type of countries for which they reveal the presence of political influence on the design of monetary policy decisions.

Moreover, Bernhard **and** Leblang (2006) note that while there is strong evidence of MPCs before the 1997 reform, the increasingly globalized financial markets of the late 20th century may have limited the UK government's ability to manipulate monetary policy for electoral gain. In an open economy with highly integrated financial markets, the effects of politically motivated monetary expansions can be mitigated by capital flows and investor reactions, reducing the overall efficacy of such policies.

The economics literature on monetary political cycles in the UK suggests a clear pattern of electoral manipulation of monetary policy prior to the Bank of England's operational independence in 1997. Empirical studies consistently find evidence of politically motivated monetary expansions in the run-up to elections, with post-election corrections often resulting in inflationary pressures. However, the granting of independence to the Bank of England significantly curtailed the influence of electoral politics on monetary policy, aligning the UK with other advanced economies where central banks operate independently of short-term political incentives. Despite some ongoing debates, the overall consensus supports the view that MPCs were a notable feature of the UK's pre-1997 economic landscape, for the post-WWII period.

4.3 Data description

The data underpinning this study comes from the Bank of England's historical macroeconomic and financial collection ("A Millennium of Macroeconomic Data for the UK", in its version 3.1). This compilation encompasses a diversity of economic and financial statistics, covering a time span of up to seven centuries for England and three centuries for the UK as a whole. Hills et al. (2010)have built and shown the relevance of this dataset to study the UK's economic history. One of the qualities of the data is that some series are available at the monthly frequency, which we have used here to allow a perfect fit between the economic data and the electoral agenda.

In addition, our dataset includes variables relating to electoral deadlines, party configurations and monetary regimes. This integration aims to contextualize our analysis by taking into account the political and institutional dimensions likely to have shaped British economic evolution.

Our dependent variable is the growth rate of the money supply, an essential measure that captures the quantitative evolution of the quantity of money in circulation in an economy over a given period. A first reason is that the money supply growth rate is a key indicator of a country's monetary policy, influenced by the strategic decisions of monetary authorities, such as the central bank, in terms of monetary creation and regulation. It is thus a direct measure of the intervention of monetary authorities to influence economic activity and achieve crucial macroeconomic objectives such as price stability, full employment and sustainable economic growth. As Rogoff (1985) have pointed out, among others, election periods can induce adjustments in these policies to meet short-term political imperatives, potentially influencing this variable.

Second, the growth rate of the money supply is closely linked to key economic and financial variables, including inflation, economic growth, interest rates and investment (see, Jung (2024)). Its variations can therefore have a significant impact on the economy as a whole, directly affecting levels of consumption, investment and overall economic activity.

Finally, in the specific context of our study of the impact of elections on monetary

policy, the growth rate of the money supply is of particular importance. If MPCs are present, elections can influence the decisions of monetary authorities, notably by favoring expansionary monetary policies to stimulate economic growth and improve the sense of well-being among voters. Analysis of this variable during election periods can therefore reveal patterns of political influence on monetary variables. Moreover, we focus on M0 as the monetary aggregate as it is for this one that variations are the most susceptible to be noticed by voters before an election (as larger aggregates can also be influenced by many factors, beyond the scope of the government or the BoE's influence).?

Table 4.1 lists the variables used in the empirical analyses, and their properties. We will take into account the evolution of the economy (through the unemployment rate, the variation in the Sterling Pound exchange rate), but also the international context (the two World Wars, and the Falklands war). Most importantly with regard to our objective, we consider the parties in power over the period, and their relative dominance in the Parliament, through the share of seats they have won in the most recent election. Moreover, in the country's specific context, we also control for the fact that an election is a regular one or if its date has been voluntarily advanced by the ruling party or coalition in power.

The hypotheses leading to the inclusion of these variables are, first, that a party largely dominating the Parliament should less try to influence the economy, as its popularity (reflected by the share of seats, itself a function of the number of votes obtained in the election) and, second, that the decision to declare a snap election is a show of weakness, and should thus be accompanied by policies directly oriented at influencing the voters' decisions.

Table 4.2 shows the descriptive statistics concerning the control variables. Under the Bretton Woods system, population growth averages 3.59%, with a slight depreciation of the exchange rate to -0.16%, a slight increase in the unemployment rate of 1.24% and an average interest rate of 2.62%. This regime shows stable population growth, controlled exchange rate depreciation and relatively high interest rates, which could indicate efforts to stabilize the economy after World War II.

The Gold Standard has an average population growth of 5.24%, the highest among the

regimes, and a very slight depreciation in the exchange rate at -0.0239%. The change in the unemployment rate is 1.46% and the interest rate is extremely low at 0.203%. The high population growth and low interest rates can be interpreted as a period of economic stability with a rapidly expanding population.

During the interwar period, population growth averaged 3.89%, with a near-stability of the exchange rate at -0.00355%. However, the unemployment rate is down significantly by -9.67% and the interest rate is negative at -1.62%. This period appears to be marked by a significant reduction in unemployment, which may reflect efforts to revive the economy in a context of depression and reconstruction after the First World War.

Finally, under the Kingston regime, average population growth is lowest at 1.79%, with a slight exchange rate depreciation to -0.0126%, a moderate increase in the unemployment rate of 0.568% and a negative interest rate of -1.77%. The low population growth rate and negative interest rates suggest a period of economic challenges, potentially linked to the transition to more flexible monetary systems and the economic volatility of the 1970s.

Money growth, 1870-1997

Table 4.3 displays the descriptive statistics for our dependent variable, the rate of growth of M0. As can be seen, the period of the Gold standard, marked by high volatility, shows high fluctuations with a relatively low average. This could indicate a rigid monetary policy, subject to the constraints of the Gold standard, where the money supply was directly linked to gold reserves.

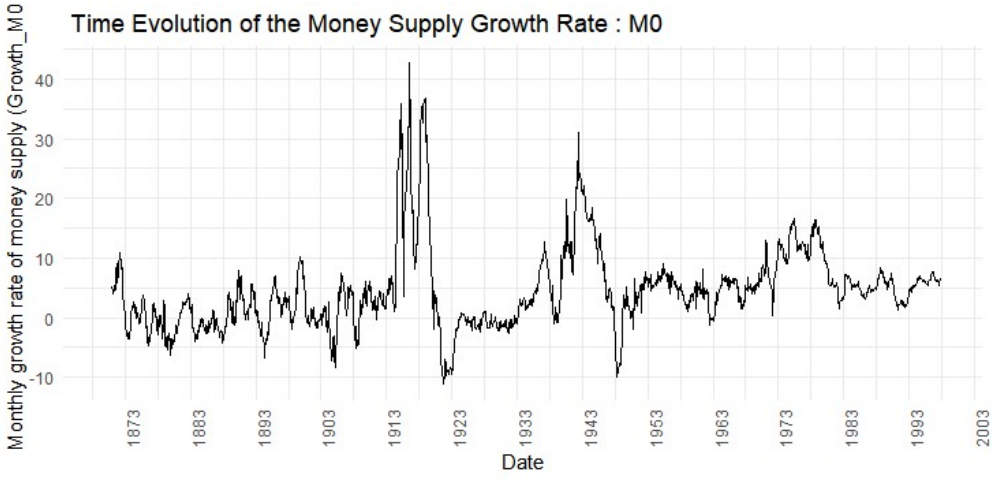
The period between the two world wars saw more stable, but still sustained growth in the money supply. Under the Bretton Woods regime, growth in the money supply was more moderate, with a reduction in the high values, compared to those observed during the Gold Standard period. The Kingston period, coming after the end of Bretton Woods, shows more regular and predictable growth in the money supply, with smaller minimum and maximum values, combined with a high median and mean.

Table 4.1: **Variables Description**

Variable Name	Type	Modalities
Interest Rate Variation	Quantitative	-
Exchange Rate	Quantitative	-
Unemployment Rate	Quantitative	-
Monetary Regime	Qualitative	Gold Standard, Inter-wars, Bretton-Woods, Kingston *(Gold Standard : Jan 1870 to sept 1931, ,Inter wars : Oct 1931 to Jul 1944, Bretton Woods : Aug 1944 to Dec 1975, Kingston : Jan 1976 to Dec 1997)*
Election	Qualitative	1 if Election in the month, 0 otherwise
Regular Election	Qualitative	1 if election takes place at normal date in the month, 0 otherwise
Advanced Election	Qualitative	1 if election takes place at advanced date in the month, 0 otherwise
Political Parties	Qualitative	Conservative, Conservative and Unionist Coalition, Liberal
Seats	Quantitative	Share of seats in Parliament
Conservative	Quantitative	1 =winner of the last election, 0 otherwise
First World War	Qualitative	0,1
Second World War	Qualitative	0,1
Falklands War	Qualitative	0,1
Announce Date Election	Qualitative	1 if the election took place in the same month as the announcement, 0 otherwise
M0 Growth	Quantitative	-
Exchange Rate Growth	Quantitative	-
Population Growth	Quantitative	-

Table 4.2: Descriptive Statistics: Control variables

Monetary Regime	**Population Growth**	**Exchange Rate**	**Unemployment Rate**	**Interest Rate**
Gold Standard	0.0529	-0.0148	1.5397	0.0027
Bretton Woods	0.0370	-0.1599	1.2361	0.0262
Inter-Wars	0.0398	-0.0036	-9.6734	-0.0162
Kingston	0.0171	-0.0126	0.5682	-0.0177



Source: Authors' computations.

Table 4.3: Descriptive Statistics - Growth of M0

	Global sample N = 1536	**Gold Standard** N = 741	**Inter wars** N = 154	**Bretton Woods** N = 377	**Kingston** N = 264
Min.	-11.12	-11.12	-1.97	-9.86	-1.26
1st Qu.	0.12	-1.48	2.05	3.46	4.72
Median	3.68	0.6	6.5	5.31	5.87
Mean	4.52	2.45	8.26	5.45	6.67
3rd Qu.	6.55	3.49	12.8	7.09	7.42
Max.	42.78	42.78	31.05	16.72	16.41

Source: Authors' computations.

Source: Bank of England, Millenium dataset.

Figure 4.1 proposes a view of the data, at the monthly granularity. The monthly growth of basic money supply in the UK from January 1870 to December 1997 has a visible degree of volatility in M0 growth. Pronounced peaks and troughs around the years 1914 and 1945 suggest intense demands on monetary policy, mainly in response to the need to finance war efforts during the two world wars. These extreme variations during the wars are probably due to massive borrowing, inflationary surges or exceptional measures such as

the suspension of currency convertibility. The inter-war period, on the other hand, reveals a recovery followed by renewed volatility, probably influenced by the Great Depression and subsequent efforts to stabilize the economy. The period from 1939 to 1945, similar to that of the First World War, shows significant fluctuations, reflecting economic mobilization for the war effort. Inspecting the plot for the data after 1945 reveals that, although volatility remains high, the extremes observed during the war periods have subsided, indicating a relative stabilization of monetary policies. The post-World War II phase, up to 1997, shows less extreme fluctuations, which may be attributable to the introduction of better-structured monetary regimes and the impact of the move towards the independence of the Bank of England, introduced in 1997.

The fluctuations observed in the growth of the money supply can be interpreted as manifestations of economic cycles, alternating between phases of expansion and recession. However, elections and alternating governments may induce adjustments in monetary policies.

Political parties in power and their dominance

Table 4.4: Political parties in power - by monetary regime

	Global sample	**Gold Standard**	**Inter wars**	**Bretton Woods**	**Kingston**
	N = 1536	**N = 741**	**N = 154**	**N = 377**	**N = 264**
Conservative	58%	41%	99%	58%	81%
Conservative and Unionist	12%	24%	0%	0%	0%
Coalition					
Labour	15%	3%	1%	42%	19%
Liberal	15%	32%	0%	0%	0%
Total	100%	100%	100%	100%	100%

Source: Authors' computations.

Table 4.4 reveals significant political dynamics under the different monetary regimes the UK has known. Under the Gold Standard, the Conservatives exercised a significant dominance with 41% of time in power, followed by the Liberals, at 32%. A notable feat is the presence of the coalition of the Conservatives and Liberal Unionists (24%), which exists

only during this period. The Gold Standard has also seen some presence of the Labour in power, though only for 3% of the months covered by the period. The inter-wars period was marked by the near-hegemony of the Conservatives, who were in power 99% of the time. With the advent of the Bretton Woods regime, a more balanced political dynamic emerged, with alternations between the Conservatives (holding power 58% of the months) and Labour, for 42% of the time. The Kingston period, following the end of the Bretton Woods regime, saw a return to Conservative dominance, with 81% of the time in power. Labour, with 19% of the time in power, continues to play a role, but much less so than during the Bretton Woods period.

Overall, the Conservatives have thus largely dominated the British political scene, occupying power 58% over the entire period studied. Labour and the Liberals were also present in power, 15% each, while the coalition of the Conservatives ans Liberal Unionists accounted for 12%. This dominance of power did not however necessarily meant that the Conservatives had the upper hand, as this in fact depends on the share of seats they have in Parliament.

Hence, in Table 4.5, we present this share of seats per party and monetary regime. As can be seen, under the Gold Standard, the Conservatives, when in power, hold an average of 57% of seats. This reflects a simple but relatively comfortable majority, allowing the party to govern effectively without necessarily needing to form coalitions. For the same regime, the Conservative and Unionists coalition also hold 57% of seats when in government, indicating a similarity in seat share when governing. Labour, when in power under the Gold Standard, holds an average of 44% of seats, thus far from an absolute majority. The Liberals, during the Gold Standard, hold 49% of seats when in power, which is close to an absolute majority but could yet indicate challenges in governing without external support.

Under the inter-war regime, the Conservatives hold 67% of seats when in power, representing a larger and more stable majority, while Labour holds still got 44% of the seats, indicating a situation similar to that of the Gold Standard regime, with a possible need for coalitions. This changed during the Bretton Woods period, as both the Conservatives and Labour held 54% of the seats when in power, suggesting a more even balance in the distribution of power between these parties. Finally, under the Kingston regime, the

Conservatives hold 56% of the seats when in power, while Labour holds 50%, indicating a simple majority for both parties.

The majority in Parliament could allow a government to advance elections when needed, or to respect the calendar if the majority is expected to be strong enough after the next election. It is thus not clear if advanced elections have to be chosen, and in which circumstances. We thus now examine how this feature of the so-called Westminster political regime was used over the period by each party.

Table 4.5: Political parties in power - by monetary regime

	Global sample N = 1536	**Gold Standard N = 741**	**Inter wars N = 154**	**Bretton Woods N = 377**	**Kingston N = 264**
Conservative	58%	41%	99%	58%	81%
Conservative and Unionist Coalition	12%	24%	0%	0%	0%
Labour	15%	3%	1%	42%	19%
Liberal	15%	32%	0%	0%	0%
Total	100%	100%	100%	100%	100%

Table 4.6: Election types and monetary regimes

Monetary Regime	**Advanced**	**Regular**
Gold Standard	73%	35%
Inter Wars	7%	5%
Bretton Woods	20%	35%
Kingston	0%	25%
Total	100%	100%

Source: Authors' computations.

Table 4.6 shows that the possibility of calling a snap election has been particularly used during the Gold Standard, as early elections during this period represent 73% of all advanced elections. The Bretton Woods regime is the second period during which early elections were used, representing 20% of the total. Under the Kingston regime, there were no early elections, and all elections were regular during this particular period.

Types of elections and electoral gains

Table 4.7: Seats obtained by the winning party per type of election

	Gold Standard	Inter wars	Bretton Woods	Kingston
Conservative	100%	100%	100%	100%
Advanced	33%	25%	6%	0%
Regular	67%	75%	94%	100%
Conservative and Unionist Coalition	100%	100%	100%	100%
Advanced	77%	0%	0%	0%
Regular	23%	0%	0%	0%
Labour	100%	100%	100%	100%
Advanced	100%	100%	45%	0%
Regular	0%	0%	55%	100%
Liberal	100%	100%	100%	100%
Advanced	50%	0%	0%	0%
Regular	50%	0%	0%	0%

Source: Authors' computations.

Under the Gold Standard, the Conservatives relied overwhelmingly on regular elections (67%), although they also made use of advanced elections (33%), as can be seen from Table 4.7. The Conservative-and Unionist coalition, meanwhile, also largely favored advanced elections (77%), showing an even more opportunistic strategic pattern to maintain their political dominance, turning often away from regular elections (23%). The Liberals, who were still a significant political force at the time, show an even split between advanced (50%) and regular (50%) elections, which may in turn indicate an attempt to maintain their relevance by adapting to political circumstances.

The interwar regime was characterized by the absolute predominance of the conservatives, who came to power mainly via regular elections (75%), but also, albeit to a lesser extent, via advanced elections (25%). Under the Bretton Woods regime, there was a reversal of this regularity, with the rise to power of Labour, which shared its access to power between advanced (45%) and regular (55%) elections. The Conservatives, while still in power, have all but abandoned advanced elections (only 6%) to only make use of regular elections (94%).

Finally, the Kingston regime is distinguished by the total absence of advanced elections for all parties. All parties come to power solely through regular elections. The observation of these statistics seems to deliver insights about some patterns in the selection of the date of elections. We now turn to analyze if such a pattern is indeed related to the evolution of the monetary aggregate M0.

4.4 Empirical analysis

To analyze the relationship between M0 growth and its determinants, we use standard time-series econometric techniques. As a first step, we have undertaken a detailed examination of the time series properties of the dataset. Given the length of the study period and the use of monthly frequency, the series are likely to exhibit several statistical features that need to be properly addressed for the analysis to be relevant. We thus start with unit root tests and stationarity checks, using the standard tests (all the results being displayed in the Appendix), to ensure that the variables are suitable for analysis, and to derive the correct regression for the observed series.

In Table 4.8, the results are presented for the regressions run over the full period under review (1870 to 1997), while in table 9, the sample is split, and the estimates are presented for each period (i.e., for a specific monetary regime). For each estimate, the adequate number of lags is included, according to the standard tests (see the Appendix).

The results for the full period show that there is a persistence in the growth rate of M0, and that interest rates are significant in explaining the developments in the

monetary aggregate, as one could have expected from a textbook model. Interestingly, however, the other determinants are not significant: neither the population growth, or the unemployment rate (as an indicator of activity that could influence the demand for money). The two World Wars are also associated with large increases in the growth rate of M0, as was expected, both from the literature and from the above analysis of our data. The variables indicating the different monetary regimes are barely significant, when they are, suggesting that the regimes by themselves are not determining the growth of M0. This result contrasts wth the literature, the difference coming from the fact that previous analysis have mostly focused on sub-periods while we encompass more than a century of data.

Table 4.8: Econometric Results

	Dependent variable:	
	Growth M0	
	(1)	(2)
Intercept	−95.168	−95.168
	(61.534)	(61.534)
Lagged M0 growth rate	0.441***	0.441***
	(0.037)	(0.037)
Lagged Δ(Interest rate, 1)	0.160	0.160
	(0.140)	(0.140)
Lagged Δ(Interest rate, 2)	0.389**	0.389**
	(0.165)	(0.165)
Lagged Δ^2(Interest rate, 1)	−0.260*	−0.260*
	(0.137)	(0.137)
Lagged Exchange growth rate, 1	0.006	0.006
	(0.038)	(0.038)
Lagged Exchange growth rate, 2	0.163	0.163
	(3.777)	(3.777)
Lagged Population growth rate	3.584	3.584
	(2.197)	(2.197)
Lagged Population growth rate, 2	0.235	0.235
	(0.249)	(0.249)
Lagged Unemployment rate growth, 1	0.005**	0.005**
	(0.002)	(0.002)
Lagged Unemployment rate growth, 2	0.006	0.006
	(0.005)	(0.005)
Lagged Δ(Unemployment growth rate, 1)	−0.001	−0.001
	(0.005)	(0.005)
Lagged Δ(Unemployment growth rate, 2)	0.002	0.002
	(0.004)	(0.004)
Lagged Δ(Unemployment growth rate, 3)	0.002	0.002
	(0.003)	(0.003)
Regular Election	0.777**	0.777**
	(0.342)	(0.342)
Lagged Advance election	0.107	0.107

Continued on next page

Table 4.8: (Continued)

	Dependent variable:	
	Growth M0	
	(1)	(2)
	(1.173)	(1.173)
Advance election	0.753	0.753
	(0.601)	(0.601)
Lead Advance election	1.493***	1.493***
	(0.500)	(0.500)
First World War	12.072***	12.072***
	(1.147)	(1.147)
Second World War	4.145***	4.145***
	(1.097)	(1.097)
Falklands War	−1.756	−1.756
	(1.494)	(1.494)
Gold Standard	111.586*	111.586*
	(63.038)	(63.038)
Bretton Woods	−0.852	−0.852
	(2.239)	(2.239)
Interwars	111.339*	111.339*
	(62.922)	(62.922)
Lagged Conservative	2.159	2.159
	(4.964)	(4.964)
Lagged Conservative Unionist, 1	−3.819	−3.819
	(6.282)	(6.282)
Lagged Liberal	23.931***	23.931***
	(6.885)	(6.885)
Lagged Seats	0.079	0.079
	(0.082)	(0.082)
Lagged Seats*Conservative	−0.056	−0.056
	(0.093)	(0.093)
Lagged Seats*Unionist	0.001	0.001
	(0.113)	(0.113)
Lagged Seats*Liberal	−0.444***	−0.444***
	(0.129)	(0.129)

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Table 4.8: (Continued)

	Dependent variable:	
	Growth M0	
	(1)	(2)
Lagged Advance election*Conservative	0.093	
	(1.410)	
Lagged Advance election*Unionist	0.0034	
	(1.420)	
Lagged Advance election*Liberal	1.180	
	(1.740)	
Observations	1,519	1,519
R^2	0.907	0.907
Adjusted R^2	0.895	0.895
Residual Std. Error (df = 1350)	2.229	2.229
F Statistic (df = 168; 1350)	78.143***	78.143***
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 4.9: Econometric Results by Monetary Regime

	Dependent variable: Growth M0			
Variable	**Gold Standard**	**Inter Wars**	**Bretton Woods**	**Kingston**
Intercept	10.3662	-3.1040	13.1700***	0.0503
	(5.4575)	(1.6890)	(0.5130)	(0.2527)
Lagged(growth rate M0)	0.4276***	-0.2663**	0.1109	
	(0.0566)	(0.0889)	(0.0650)	
Lagged(Δ(growth rate M0), 1)			0.1275	-0.0514
			(0.0649)	(0.0706)
Lagged(Δ(growth rate M0, 3)	0.3554***		0.2561***	
	(0.0576)		(0.0660)	
Lagged(interest rate,1)	0.2616	2.4180*	-0.0625	-0.0875
	(0.2423)	(0.9390)	(0.2900)	(0.0873)
Lagged(interest rate,2)	1.1849*	-1.5400	-0.2442	0.1427
	(0.5066)	(0.8734)	(0.2877)	(0.0939)
Lagged(Δ(Growth Interest rate), 1)	-0.9463*			-0.0817
	(0.4217)			(0.0823)
Lagged(Δ(Growth Interest rate, 2)	-0.7220*			
	(0.3097)			
Lagged(Δ(Growth Interest rate, 3)	-0.4638*			
	(0.2357)			
Lagged(Exchange rate growth,1)	0.1303	0.1061	-0.2240**	-0.0103
	(0.1139)	(0.0761)	(0.0779)	(0.0177)
Lagged(Exchange rate growth,2)	0.4463*	0.0981	-0.3028**	-0.0162
	(0.2148)	(0.0846)	(0.1149)	(0.0181)
Lagged(Δ(Growth rate exchange rate, 1)	0.4641*		0.2522**	
	(0.1865)		(0.1051)	
Lagged(Δ(Growth rate exchange rate, 2)	0.2815		0.2013*	
	(0.1524)		(0.0916)	
Lagged(Δ(Growth rate exchange rate, 3)	0.1842		0.1738	

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Table 4.9: (Continued)

	Dependent variable: Growth M0			
	Gold Standard	Inter Wars	Bretton Woods	Kingston
	(0.1167)		(0.0902)	
Lagged(Δ(Population growth rate, 1)	-4.6446	1.3400	52.16***	-16.4317
	(3.9390)	(21.0800)	(14.4800)	(24.2586)
Lagged(Δ(Population growth rate, 2)	-6.7046	-11.5000	24.6900	44.8923
	(3.9670)	(20.7800)	(14.4800)	(23.7718)
Lagged(Unemployment rate,1)	0.0041		0.00095	
	(0.0036)		(0.0048)	
Lagged(Unemployment rate,2)	0.0122		0.00213	
	(0.0064)		(0.0049)	
Lagged(Δ(Unemployment rate, 1)				-0.0067
				(0.0057)
Lagged(Δ(Unemployment rate, 2)	-0.0078	-0.0066		
	(0.0054)	(0.0112)		
Lagged(Δ(Unemployment rate, 3)	-0.0046			
	(0.0037)			
Lagged(Δ^2(Unemployment rate, 1)		-0.0075		0.0035
		(0.0184)		(0.0056)
Regular election	1.6988*	0.1762	0.1141	-0.1797
	(0.7508)	(1.6430)	(0.4232)	(0.2061)
Lagged(Advanced election)	1.4240		-0.7262	
	(1.7927)		(0.7844)	
Advanced election	1.1043		0.8210	
	(0.8363)		(0.7813)	
Leaded (Advanced election)	1.6743*		-0.8718	
	(0.6945)		(0.7728)	
Lagged(Conservative)	-19.4899*		-6.6760	3.1021
	(8.3740)		(5.3420)	(2.0162)
Lagged(Conservative Unionist)	-20.9939*			

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Table 4.9: (Continued)

	Dependent variable: Growth M0			
	Gold Standard	Inter Wars	Bretton Woods	Kingston
	(8.5701)			
Lagged(Advanced election*Conservative)	-1.0465		4.441*	-0.0591
	(1.6212)		(1.8760)	(0.0381)
Lagged(Advanced election*Unionist)	1.1114			
	(1.2268)			
Lagged(Seats,1)	-0.2409			
	(0.1315)			
Lagged(Seats,2)	-0.0456			
	(0.0657)			
Lagged($\Delta(Seats), 1$)		-0.0003	-0.0324	0.0115
		(0.2000)	(0.1048)	(0.0438)
Lagged($\Delta(Seats), 2$)		-0.0044	-0.0046	-0.0096
		(0.0643)	(0.1048)	(0.0431)
Lagged(Seats*Conservative)	0.3495*		0.0977	-0.0591
	(0.1545)		(0.1004)	(0.0381)
Lagged(Seats*Unionist)	0.3201*			
	(0.1529)			
First World War	10.6203***			
	(1.4919)			
Second World War		2.6590*	0.7938	
		(1.4060)	(1.4950)	
Falklands war				-0.1502
				(0.4427)
ESM				-0.4308
				(0.3136)
Monthly Fixed effects	No	No	No	No
Annual Fixed effects	Yes	Yes	Yes	Yes

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Table 4.9: (Continued)

	Dependent variable: Growth M0			
	Gold Standard	Inter Wars	Bretton Woods	Kingston
Observations	741	154	377	264
R^2	0.8956	0.1675	0.8853	0.1568
Adjusted R^2	0.8786	-0.0931	0.8614	-0.0380
Residual Std. Error	2.772 (df = 623)	1.999 (df = 115)	1.596 (df = 308)	0.6239 (df = 212)
F Statistic	52.89^{***} (df = 101; 623)	0.6427 (df = 36; 115)	37.14^{***} (df = 64; 308)	0.8048 (df = 49; 212)
Note:		*p<0.1; **p<0.05; ***p<0.01		

Importantly, given our objective, regular elections appear to be positively associated with the growth of M0, raising suspicions about the presence of MPCs in the United Kingdom over the period. This is reinforced by the coefficient attached to the dummy variable indicating if a snap election has been called: this coefficient is strongly significant, and positive, thus confirming the presence of MPCs.

Also important is the fact that, in reference with the periods when the Labour was governing the country, the Liberals are found to behave in a proactive way, as the coefficient attached to their presence in power is strongly significant and positive. This Liberal behavior is confirmed by the fact that the coefficient attached to the interaction between the variables indicating that the Liberals are in power and the fact that they have a large majority is significant and negative. Hence, everything happens as if, compared to the Labour in particular (our reference category in this empirical analysis), the Liberals were more likely to have engineered MPCs, but the less so when they had a majority in the Parliament. This reveals an opportunistic behavior. The fact that the Liberals were only in power during the Gold Standard makes this result even more striking, as it goes against the general presumption that this monetary regime precluded such behaviors, as we have seen above.

In the first regression of Table 4.8, we include an interaction between each party in power and the use of advanced elections. None of these comes out significantly, hence the second estimates presented drops these interactions from the model, without changing the results for the main variables.

Table 4.9 runs the same types of estimates for each sub-period (each period corresponding to one of the monetary regimes the UK has known between 1870 and 1997). Obviously, each regression is adjusted accordingly to the properties of the series, as their behaviour may not be similar under each sub-period (see the Appendix).

The relevance of this adjustment is made clear when comparing the different columns of Table 4.9. For example, while the time dependence of M0 is positive and significant during the Gold Standard, it is negative during the Inter-wars period. This certainly reveals the troubled times that this period covers, but it also indicates a return to normality after the

First World War (as testified in both Tables 4.8 and 4.9 by the very high coefficient attached to this period). The dependence to the third lag of M0 for the two periods of a fixed exchange rate (the Gold Standard and Bretton Woods) unveils their common characteristics, as well as the fact that M0 depends upon the variation of the exchange rate in the two regimes (although the degree of significance is quite low, and the time dependence differs across the two regimes). Note that the other control variables are not significant, whatever the regime considered.

Regarding the political variables, most are significant only during the Gold Standard period, which contradicts the consensus commonly upheld in the literature about the properties of this regime. In particular, regular elections receive a positive coefficient, significant at the 10 per cent level, as is the case for the advanced elections variables. This discloses the presence of MPCs in the UK during the Gold Standard. The fact that the coefficients attached to the presence of either the Conservatives and their coalition with the Unionists during this period exposes that Labour governments were more susceptible to influence the behaviour of M0 than the other parties. It is nevertheless true that this seems to hold less when each of the latter parties benefits from a majority in the Parliament, as exposed by the interaction between the variables "Seats" and the dummies defining each party's presence in power. Even though their significance is low, the model is quite demanding in the number of lags attached to the control variables (as requested by the statistical properties of the respective series). Hence, our results discloses an opportunistic behavior by these parties during the Gold Standard.

Interestingly, while no political variable is significant during the Kingston or Inter-War periods, the same is not true for the Bretton Woods period. The interaction between the Conservatives being in power and the occurrence of a snap election is slightly significant, again suggesting a form of opportunism by the party during this time.

4.5 Conclusion

In conclusion, this paper challenges the conventional wisdom surrounding the evolution of monetary political cycles (MPCs) in the UK from the late 19th century to the end of the

20th century.

Contrary to the prevailing narrative that the Gold Standard served as an effective constraint against MPCs, our analysis of detailed monthly data from the Bank of England reveals that electoral dynamics did, in fact, influence monetary policy during this period, including under the Gold Standard. The ability of governments to call snap elections appears to have played a significant role in shaping monetary aggregates, undermining the oft-presumed disciplinary power of the Gold Standard.

Moreover, our findings suggest that the Bretton Woods period offered more robust constraints on MPCs than the Gold Standard era. These results not only provide a more nuanced understanding of the interaction between economic institutions and political incentives but also invite a reconsideration of how fixed exchange rate regimes influence monetary policy.

Ultimately, this paper contributes to the broader debate on the role of political cycles in shaping economic policy and underscores the importance of institutional developments, such as the independence of the Bank of England, in mitigating politically motivated monetary interventions.

4.6 Appendix

Growth M0

Table 4.10: ADF Test for Money Supply Growth Rate with Trend Regression

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.0337	0.0834	0.404	0.686
z.lag.1	-0.0354	0.0065	-5.458	5.61e-08 ***
tt	0.000165	0.000098	1.684	0.092 .
z.diff.lag1	0.0254	0.0255	0.995	0.320
z.diff.lag2	0.0262	0.0255	1.026	0.305
z.diff.lag3	0.0758	0.0255	2.968	0.003 **
Test Statistic	**Critical Values**			
ADF Statistic	-5.458			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	9.9311			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	14.8962			

The Augmented Dickey-Fuller test for money supply growth rate gives a value of -5.458, below the critical values of -3.96, -3.41, and -3.12 for the 1%, 5%, and 10% confidence levels. This indicates that the series is stationary, thus rejecting the unit root hypothesis.

The lag variable (z.lag.1) has an estimate of -0.0354 with a standard error of 0.0065, a t-value of -5.458 and a p-value of 5.61e-08, significant at the 1% level. The trend term (tt) has an estimate of 0.0001654, a standard error of 0.0000982, a t-value of 1.684 and a p-value of 0.0924, significant at the 10% level. The other lag terms show varying significance: z.diff.lag3 is significant at 1% (p-value 0.00304), while z.diff.lag1 and z.diff.lag2 are not.

Population growth

Table 4.11: ADF Test for Population rate growth with Trend Regression

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.07613	0.01514	5.027	5.56e-07 ***
z.lag.1	-0.08824	0.01047	-8.425	< 2e-16 ***
tt	-4.195e-05	1.464e-05	-2.865	0.00423 **
z.diff.lag1	0.04378	0.02556	1.713	0.08691 .
z.diff.lag2	0.04378	0.02556	1.713	0.08691 .
z.diff.lag3	0.04407	0.02553	1.726	0.08452 .
Test Statistic	**Critical Values**			
ADF Statistic	-8.425			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	23.6656			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	35.4978			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The tau3 statistical test of -8.425, well below the critical values at 1 %, 5 %, and 10 %, allows us to reject the 'hypothesis non-stationarity with a high degree of certainty, confirming that the is stationary. The coefficient of the lagged term z.lag.1 is negative (-0.08824) and highly significant (p-value < 2e-16), indicating a negative impact on current growth. The trend term trend term (tt), also significant (p-value = 0.00423), is slightly negative (-0.00004195), suggesting a slight decline in growth over the growth over the period studied. The coefficients of the lagged difference terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) are not significant at the significant at 5%, but are significant at 10%, which could indicate residual autocorrelation in the series.

Interest rate growth

Table 4.12: ADF Test for First Difference of Interest Rate with Trend Regression

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.002291	0.02326	0.099	0.9215
z.lag.1	-0.8940	0.04241	-21.079	< 2e-16 ***
tt	2.201e-07	2.620e-05	0.008	0.9933
z.diff.lag1	0.2644	0.03659	7.226	7.81e-13 ***
z.diff.lag2	0.04546	0.03021	1.505	0.1325
z.diff.lag3	0.04949	0.02557	1.935	0.0531 .
Test Statistic	**Critical Values**			
ADF Statistic	-21.0794			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	148.1147			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	222.1719			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

the statistical test value is significantly below the critical values at all commonly used confidence levels (1%, 5%, 10%). This observation leads to a clear rejection of the null hypothesis of the presence of a unit root. In other words, the time series is stationary.

Furthermore, the estimated coefficients of the lag terms in the regression model show varying statistical significance. The coefficient associated with the z.lag.1 term is particularly significant (p-value <0.000), confirming the stationarity of the series. The first lag differentiation terms (z.diff.lag1) are also significant, suggesting that the dynamics of the series are well captured by this model.

Growth exchange rate

Table 4.13: ADF Test for Growth rate of exchange Rate with Trend Regression

Parameter	**Estimate**	**Std. Error**	**t-Value**	**p-Value**
Intercept	-0.01374	0.08505	-0.162	0.8717
z.lag.1	-0.6957	0.03812	-18.253	< 2e-16 ***
tt	-2.858e-05	0.000096	-0.298	0.7656
z.diff.lag1	0.06391	0.03475	1.839	0.0661 .
z.diff.lag2	0.02302	0.03023	0.762	0.4464
z.diff.lag3	0.01351	0.02552	0.529	0.5967
Test Statistic	**Critical Values**			
ADF Statistic	-18.2527			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	111.0538			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	166.5802			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The tau3 statistic of -18.2527, well below the critical values, allows us to reject the null hypothesis of non-stationarity, indicating that the exchange rate growth rate is stationary. Although the standard error of the residuals is relatively high (1.659), the R^2 of 0.3251 shows that the model explains around 32.5% of exchange rate variability, which is notably high for this type of analysis. The phi2 and phi3 values confirm the absence of significant trend terms, in line with the observed stationarity.

The coefficient of the lagged term z.lag.1 is strongly negative (-0.6957) and highly significant (p-value <0.0000), indicating a substantial negative effect of the previous level on the current variation. The trend term (tt) is insignificant (p-value = 0.7656), confirming the absence of a significant long-term trend. On the other hand, z.diff.lag1 is positive (0.06391) and significant at 10%, suggesting a positive effect of recent past variations on current variation. The terms z.diff.lag2 and z.diff.lag3 are not significant, suggesting a lesser importance of more distant deferred variations.

Unemployment rate

Table 4.14: ADF Test for Growth rate of unemployment with Trend Regression

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.1935	1.2792	0.151	0.8798
z.lag.1	-0.4861	0.0373	-13.045	< 2e-16 ***
tt	-0.0001	0.0014	-0.095	0.9242
z.diff.lag1	-0.3992	0.0367	-10.872	< 2e-16 ***
z.diff.lag2	-0.2123	0.0337	-6.307	3.72e-10 ***
z.diff.lag3	-0.0841	0.0255	-3.298	0.000995 ***
Test Statistic	**Critical Values**			
ADF Statistic	-13.0447			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	56.727			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	85.0904			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The augmented Dickey-Fuller test indicates that the unemployment growth rate series is stationary, with a 3 value of -13.0447, well below the critical values at 1%, 5%, and 10% (-3.96, -3.41, -3.12). This allows us to reject the null hypothesis of non-stationarity with high confidence. The values of 2 and 3, well above the critical thresholds, reinforce the idea that the series is stationary after differentiation.

The coefficient of the lagged term z.lag.1 is significantly negative (-0.4861), indicating a strong negative dependence between current and past values of the unemployment growth rate, suggesting a reversionary trend. The coefficient for the time trend (tt) is insignificant, confirming the absence of a marked linear trend over the period. The coefficients of the difference lags (z.diff.lag1, z.diff.lag2, z.diff.lag3) are all negative and significant, underlining a continuous correction of past variations. However, the residuals show notable extremes, suggesting the presence of anomalies or exceptional events that could influence the analysis.

Seats

Table 4.15: Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.326e+00	3.253e-01	4.075	4.84e-05 ***
z.lag.1	-2.430e-02	5.687e-03	-4.273	2.05e-05 ***
tt	3.228e-05	9.522e-05	0.339	0.735
z.diff.lag1	1.223e-02	2.561e-02	0.478	0.633
z.diff.lag2	1.223e-02	2.561e-02	0.478	0.633
z.diff.lag3	-3.444e-03	2.559e-02	-0.135	0.893
Test Statistic	**Critical Values**			
ADF Statistic	-4.2733			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	6.1141			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	9.168			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The tabulated values of the ADF test for serie's seat show that the ADF Statistic is -4.2733 , which is well below the critical values for significance levels of 1% (- 3.96), 5% (- 3.41), and 10% (- 3.12). This result indicates that we can reject the null hypothesis of non-stationarity with a high level of confidence, suggesting that the series is stationary. Furthermore, the values of 2 and 3 are 6.1141 and 9.168 respectively, both above the critical thresholds of 6.09 , 4.68 , and 4.03 for 2 , and 8.27, 6.25, and 5.34 for 3 . The conclusion of stationarity is strengthened by the high values that indicate that the critical value series are not showing any further signs of non-stationarity.

4.6.1 Gold Standard

M0 Growth

Table 4.16: ADF Test for Growth Rate of Money Supply

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.0081	0.1435	0.057	0.9549
z.lag.1	-0.0376	0.0094	-3.996	7.11e-05 ***
tt	0.0002	0.0003	0.649	0.5165
z.diff.lag1	0.1322	0.0370	3.575	0.0004 ***
z.diff.lag2	-0.0171	0.0372	-0.460	0.6454
z.diff.lag3	0.0790	0.0371	2.130	0.0335 *
Test Statistic	**Critical Values**			
ADF Statistic	-3.9957			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	5.3265			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	7.988			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The augmented Dickey-Fuller test for the money supply growth rate series under the Gold Standard indicates that the series is broadly stationary. The 3 statistic of -3.9957 is slightly below the critical value of 1% (-3.96), suggesting stationarity with some confidence, albeit very close to the critical threshold. At the 5% and 10% levels, stationarity is confirmed with greater certainty. The values of 2 (5.3265) and 3 (7.988) are both above the critical thresholds at 1%, 5%, and 10%, reinforcing the idea that the series shows no further signs of non-stationarity.

In terms of regression, the coefficient of the lagged term z.lag.1 is significantly negative (-0.0376, p-value = 7.11e-05), indicating a negative relationship between current and past values, suggesting a tendency to reversion after past variations. The constant term is insignificant, and the time trend coefficient is also insignificant, indicating the absence of a significant linear trend. The difference lag terms show varied effects: z.diff.lag1 and z.diff.lag3 are significant, while z.diff.lag2 is not, suggesting an uneven influence of past

variations on current variations. The regression residuals show a wide dispersion, with extreme values suggesting the presence of anomalies or exceptional events that could affect the interpretation of the series.

Growth population

Table 4.17: ADF Test for Growth Rate of Population

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.0098	0.0026	3.717	0.0002 ***
z.lag.1	-0.0995	0.0162	-6.157	1.23e-09 ***
tt	-0.0000122	0.0000053	-2.298	0.0219 *
z.diff.lag1	0.0496	0.0371	1.336	0.1819
z.diff.lag2	0.0496	0.0371	1.336	0.1819
z.diff.lag3	0.0496	0.0371	1.336	0.1819
Test Statistic	**Critical Values**			
ADF Statistic	-6.1574			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	12.6385			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	18.9576			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The augmented Dickey-Fuller test provides a 3 value of -6.1574, well below the critical values at the 1%, 5% and 10% significance levels, allowing the null hypothesis of non-stationarity to be rejected with high confidence. The values of 2 and 3, 12.6385 and 18.9576 respectively, are significantly above the critical thresholds, corroborating the stationarity of the series according to these criteria.

The coefficient of the lagged term z.lag.1 is negative (-0.0995) and significant, indicating a negative relationship between past and present growth rate values, suggesting a reversionary tendency towards the mean. The time trend, although significant at the 5% level, has a relatively weak impact, with a coefficient of -0.00001. In contrast, the coefficients of the lag terms for differences are not significant, suggesting an absence of effect of past variations on current changes. The residuals show moderate dispersion, with

a few extreme values, but remain well controlled overall, indicating that the model fits are appropriate. In conclusion, stationarity is confirmed under the Gold Standard regime, with reversion and fluctuation dynamics requiring further analysis.

Interest rate

Table 4.18: ADF Test for First Difference of Interest Rate

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.0075	0.0376	0.198	0.8428
z.lag.1	-1.1620	0.0683	-17.014	< 2e-16 ***
tt	-0.0000203	0.0000887	-0.228	0.8193
z.diff.lag1	0.4363	0.0564	7.735	3.49e-14 ***
z.diff.lag2	0.1600	0.0454	3.529	0.0004 **
z.diff.lag3	0.1146	0.0369	3.103	0.0020 **
Test Statistic	**Critical Values**			
ADF Statistic	-17.0138			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	96.4902			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	144.7354			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The analysis shows that the interest rate first difference series is stationary. The augmented Dickey-Fuller test reveals a 3 value of -17.0138, well below the critical values at 1%, 5% and 10%, allowing us to firmly reject the null hypothesis of non-stationarity. The statistics 2 and 3, with values of 96.4902 and 144.7354 respectively, far exceed the critical thresholds, also confirming stationarity according to these criteria.

In the regression, the intercept (0.0075) is insignificant (p-value = 0.843), indicating that it has no significant influence on the series. The z.lag.1 coefficient is strongly negative (-1.1620) and highly significant (p-value <0.001), suggesting a marked inverse relationship between lagged values and current variations, indicating a tendency to revert to the mean. The time trend term is not significant, showing that there is no notable time trend in the series. In contrast, the coefficients of the lag terms for differences are all significant, indicating that past differentiated variations have a significant impact on current variations. In short, stationarity is confirmed, with significant dynamics between past and present values.

Exchange rate

Table 4.19: ADF Test for Growth Rate of Exchange Rate

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	-0.0676	0.0759	-0.890	0.3739
z.lag.1	-0.9048	0.0583	-15.531	< 2e-16 ***
tt	0.0001598	0.0001791	0.892	0.3726
z.diff.lag1	0.1814	0.0520	3.486	0.0005 ***
z.diff.lag2	0.1395	0.0441	3.161	0.0016 **
z.diff.lag3	0.2059	0.0354	5.821	8.77e-09 ***
Test Statistic	**Critical Values**			
ADF Statistic	-15.5306			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	80.4064			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	120.6073			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

Analysis of the results shows that the exchange rate growth series is stationary. The test-statistic 3 of -15.5306 is well below the critical values at 1%, 5%, and 10%, confirming the rejection of the null hypothesis of non-stationarity. The statistics 2 (80.4064) and 3 (120.6073) are well above the critical thresholds, reinforcing this conclusion of stationarity.

Concerning regression, the intercept (-0.0676) is insignificant (p-value = 0.374), indicating that it has no significant impact on the series. The z.lag.1 coefficient (-0.9048) is strongly negative and significant (p-value < 0.001), suggesting a marked inverse relationship between past values and current variations, reflecting a tendency to revert to the mean. The time trend term is also insignificant, confirming the absence of a notable time trend in the series. In contrast, the coefficients of the lag terms for differences are all positive and significant, indicating that past variations have a substantial effect on current variations, underlining the important dynamics of the series influenced by past values.

Unemployment rate

Table 4.20: ADF Test for Growth Rate of Unemployment Rate

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	-0.9085	2.3964	-0.379	0.7047
z.lag.1	-0.5229	0.0552	-9.480	< 2e-16 ***
tt	0.0046	0.0057	0.821	0.4122
z.diff.lag1	-0.3367	0.0536	-6.281	5.81e-10 ***
z.diff.lag2	-0.1492	0.0489	-3.051	0.0024 **
z.diff.lag3	-0.0587	0.0372	-1.578	0.1150
Test Statistic	**Critical Values**			
ADF Statistic	-9.4797			
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)			
phi2	29.9747			
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)			
phi3	44.9444			
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)			

The test-statistic value 3 of -9.4797 is well below the critical values at 1%, 5% and 10%, allowing us to reject the null hypothesis of non-stationarity. The values of the statistics 2 (29.9747) and 3 (44.9444) are also above the critical thresholds, confirming the stationarity of the series.

Looking at the regression coefficients, the intercept (-0.9085) has no significant impact on the series (p-value = 0.705). The coefficient for z.lag.1 (-0.5229) is highly significant (p-value < 0.001), suggesting a marked inverse relationship between immediate lagged values and current variations in the unemployment growth rate, indicating a strong tendency towards reversion to the mean. The time trend term is not significant, indicating the absence of a significant influence of the time trend on the series. The coefficients of the lag terms for differences (z.diff.lag1 and z.diff.lag2) are significant and negative, showing dynamics influenced by past values, while the z.diff.lag3 term is not significant. In short, the stationarity of the series is confirmed, with significant dynamics marked by a significant inverse relationship with immediate past values.

4.6.2 Seats

Table 4.21: First Difference of Growth Rate of Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.507e+00	5.039e-01	2.991	0.00288 **
z.lag.1	-2.797e-02	9.053e-03	-3.089	0.00208 **
tt	-2.292e-05	3.226e-04	-0.071	0.94338
z.diff.lag1	1.437e-02	3.723e-02	0.386	0.69960
z.diff.lag2	1.437e-02	3.723e-02	0.386	0.69960
z.diff.lag3	-1.225e-02	3.713e-02	-0.330	0.74150

Test Statistic	Critical Values
ADF Statistic	-3.0893
	tau3: -3.96 (1%), -3.41 (5%), -3.12 (10%)
phi2	3.2277
	phi2: 6.09 (1%), 4.68 (5%), 4.03 (10%)
phi3	4.7998
	phi3: 8.27 (1%), 6.25 (5%), 5.34 (10%)

The results of the ADF test for the series show a test statistic of -3.0893 for the ADF, compared with critical values of -3.96 at 1%, -3.41 at 5%, and -3.12 at 10%. This statistic is above the critical threshold of 1% but below the critical thresholds of 5% and 10%, suggesting that we cannot reject the null hypothesis of non-stationarity at the 1% level, but that the series could be considered stationary at the 5% and 10% levels. The values of and are 3.2277 and 4.7998 respectively, which are below the critical thresholds for significance levels of 1% (6.09 and 8.27), 5% (4.68 and 6.25), and 10% (4.03 and 5.34). This indicates that the tests based on and do not show sufficient evidence to reject the non-stationarity hypothesis, reinforcing the idea that the series may not be stationary.

Concerning the coefficient estimates in the ADF test regression, the intercept is significant with a value of 1.507 and a p-value of 0.00288, indicating that it plays a substantial role in the model. The lag term z.lag.1 is also significant, with a coefficient of -0.02797 and a p-value of 0.00208, indicating a significant negative influence of the lagged value on the current series. In contrast, the other variables, including the time

trend (tt) and the additional lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3), are not significant, suggesting that their contribution is small or non-existent in explaining the dynamics of the series. The model's overall fit is limited, as shown by a very low adjusted R-squared (0.007) and an F-statistic with a p-value close to 0.073, indicating that the model explains only a small proportion of the variance and is close to the significance level

4.7 Inter wars.

Table 4.22: ADF Test for Growth Rate of the Money Supply

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	-0.1127	0.3376	-0.334	0.7390
z.lag.1	-0.0894	0.0374	-2.391	0.0181 *
tt	0.0127	0.0064	1.976	0.0500 .
z.diff.lag1	-0.1516	0.0844	-1.796	0.0746 .
z.diff.lag2	0.0359	0.0855	0.420	0.6756
z.diff.lag3	0.0825	0.0832	0.992	0.3228
Test Statistic	**Critical Values**			
ADF Statistic	-2.391			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	2.2279			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	2.8593			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

The augmented Dickey-Fuller test shows a test-statistic of -2.391, and the values of 2 (2.2279) and 3 (2.8593) are all above the critical thresholds at 1%, 5%, and 10% (3: -3.99, -3.43, -3.13). This suggests that we cannot reject the null hypothesis of unit root, indicating a possible long-term trend or dependency in the series.

First difference in the growth rate of money supply

The results of the ADF test for the first difference in the money supply growth rate show a statistical test of -5.7255, well below the critical value of -3.99 at the 1% significance level. This indicates that the null hypothesis of non-stationarity (presence of a unit root) can be rejected at this level. The critical values for the test are 6.22 for $\phi2$ and 8.43 for $\phi3$, while the calculated values are 10.7891 and 16.1815 respectively, further confirming the stationarity of the series after differentiation.

Analysis of the coefficients shows that the series lag term ($z.lag.1$) is significantly negative, with an extremely low p-value ($p < 2e-16$), indicating a strong relationship

Table 4.23: ADF Test for First Difference of the Growth Rate of the Money Supply

Parameter	Estimate	Std. Error	t-Value	p-Value
Intercept	0.1503	0.3234	0.465	0.643
z.lag.1	-1.0922	0.1908	-5.726	< 2e-16 ***
tt	-0.0001	0.0036	-0.028	0.977
z.diff.lag1	-0.1150	0.1648	-0.698	0.486
z.diff.lag2	-0.1233	0.1301	-0.948	0.345
z.diff.lag3	-0.0646	0.0833	-0.776	0.439
Test Statistic	**Critical Values**			
ADF Statistic	-5.7255			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	10.9287			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	16.3914			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

between the current series and its own past. The other lag terms ($z.diff.lag1$, $z.diff.lag2$, $z.diff.lag3$) are not significant, except for $z.diff.lag1$, but with relatively small effects. The adjusted R-squared of 0.6157 suggests that the model explains a substantial proportion of the variation in the first difference of the money supply growth rate.

Population growth

The results of the ADF test for the population growth rate series reveal a statistical value of -2.700, which is above the critical value of -3.43 at the 5% significance level. This indicates that we cannot reject the null hypothesis of non-stationarity, suggesting the presence of a unit root in the series. The critical values for $\phi2$ and $\phi3$ are 6.22 and 8.43 respectively, while the calculated values are 2.1314 and 3.1971. These results support the idea that the series may not be stationary.

Table 4.24: Regression Trend Test for Population Growth Rate

Parameter	Estimate	Std. Error	t Value	p Value
Intercept	0.003293	0.001885	1.747	0.08285 .
z.lag.1	-0.09603	0.03545	-2.709	0.00758 **
tt	0.00000607	0.00001547	0.392	0.69528
z.diff.lag1	0.04814	0.08285	0.581	0.56212
z.diff.lag2	0.04814	0.08285	0.581	0.56212
z.diff.lag3	0.04814	0.08285	0.581	0.56213
Test Statistic	**Critical Values**			
ADF Statistic	-2.7086			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	2.452			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	3.6745			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

Table 4.25: Regression Trend Test for First Difference of Population Growth Rate

Parameter	Estimate	Std. Error	t Value	p Value
Intercept	-0.0001892	0.001414	-0.134	0.894
z.lag.1	-0.9998	0.1659	-6.025	1.34e-08 ***
tt	0.000001696	0.00001577	0.108	0.915
z.diff.lag1	-0.0001317	0.1437	-0.001	0.999
z.diff.lag2	-0.00008766	0.1173	-0.001	0.999
z.diff.lag3	-0.0000438	0.08297	-0.001	1.000
Test Statistic	**Critical Values**			
ADF Statistic	-6.0254			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	12.1129			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	18.1652			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

First difference in the growth rate of population

The results of the ADF test for the population growth rate first difference series indicate a statistical value of -6, well below the critical values of -3.99, -3.43 and -3.13 for the 1%, 5%

and 10% significance levels respectively. This significant difference indicates that we can reject the null hypothesis of non-stationarity with a high level of confidence. Consequently, the differentiated population growth rate series is stationary, suggesting that differentiation has correctly eliminated the unit root problem present in the original series.

Interest rate

Table 4.26: Regression Trend Test for the First Difference of the Interest Rate

Parameter	Estimate	Std. Error	t Value	p Value
Intercept	-0.08219	0.03795	-2.166	0.0320 *
z.lag.1	-0.76246	0.12677	-6.014	1.42e-08 ***
tt	0.00078	0.00042	1.875	0.0629 .
z.diff.lag1	0.09930	0.11383	0.872	0.3845
z.diff.lag2	-0.06372	0.09044	-0.705	0.4822
z.diff.lag3	0.01844	0.07680	0.240	0.8106
Test Statistic Value	**Critical Values**			
ADF Statistic	-6.0144			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	12.1201			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	18.1628			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

The results of the ADF test for the interest rate series provide a statistic of -6.0144, below the critical values at 1%, 5%, and 10% (-3.99, -3.43, -3.13 respectively). This allows us to reject the null hypothesis of non-stationarity with 1% confidence, confirming that the series is stationary and stable over time.

The regression coefficients indicate that the lag term showing a strong influence of the lagged value on current values. In contrast, the other lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) are not significant at 5%, although z.diff.lag2 is marginally significant with a p-value of 0.0792.

Exchange rate

The results of the ADF test for the "exchange rate growth rate" series show a statistic of -6.107, below the critical values at 1%, 5%, and 10% (-3.99, -3.43, -3.13), allowing us to reject the null hypothesis of non-stationarity with high confidence. This confirms that the series is stationary.

Table 4.27: Regression Trend Test for the Growth Rate of the Exchange Rate

Parameter	Estimate	Std. Error	t Value	p Value
Intercept	0.6296	0.4185	1.505	0.1346
z.lag.1	-0.7192	0.1197	-6.007	1.47e-08 ***
tt	-0.0065	0.0047	-1.405	0.1622
z.diff.lag1	-0.0033	0.1011	-0.033	0.9738
z.diff.lag2	0.1578	0.0933	1.691	0.0929 .
z.diff.lag3	-0.0963	0.0750	-1.285	0.2010
Test Statistic Value	**Critical Values**			
ADF Statistic	-6.0068			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	12.1083			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	18.1353			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

The regression coefficients reveal that the lag term \(z.lag.1 \) is highly significant (p-value = \(8.97 \times 10^{-9}\)), suggesting a strong influence of the lagged value on current values. The other lag terms (\(z.diff.lag1 \), \(z.diff.lag2 \), \(z.diff.lag3 \)) are also significant with p-values of 0.0001, 0.0297, and 0.0180 respectively, indicating additional but less marked effects.

Unemployment rate Growth

Table 4.28: Regression Trend Test for the Growth Rate of Unemployment

Parameter	Estimate	Std. Error	t Value	p Value
Intercept	-2.9690	2.5257	-1.175	0.2417
z.lag.1	-0.2261	0.0779	-2.903	0.0043 **
tt	0.0108	0.0263	0.412	0.6808
z.diff.lag1	-0.4626	0.0990	-4.674	6.72e-06 ***
z.diff.lag2	-0.2177	0.0990	-2.199	0.0295 *
z.diff.lag3	-0.0120	0.0806	-0.149	0.8819
Test Statistic Value	**Critical Values**			
ADF Statistic	-2.9025			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	2.8278			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	4.2336			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

The ADF statistic is -2.9025, which is slightly above the critical values at 1%, 5%, and 10% (-3.99, -3.43, -3.13 respectively). This suggests that we cannot reject the null hypothesis of non-stationarity at the 1% level, but the series could be considered stationary at the 10% level, indicating some stationarity but not robustly at the higher significance level. Concerning the regression coefficients, the lag term z.lag.1 is significant with a p-value of 0.00428, indicating a significant negative influence of past values on current values. The difference lag terms z.diff.lag1 and z.diff.lag2 are also significant, with p-values of 6.72e-06 and 0.02946 respectively, showing a significant negative impact of past variations on current variations. On the other hand, the z.diff.lag3 and time trend (tt) terms are not significant, with p-values of 0.88190 and 0.68078 respectively. In summary, although the results show some stationarity of the series at the 10% level, the influence of lag terms is significant, and the model could benefit from re-evaluation to improve stationarity detection at the stricter level.

Table 4.29: First Difference of the Unemployment rate growth: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.398743	2.418417	-0.165	0.8693
z.lag.1	-2.142824	0.259185	-8.268	8.24e-14 ***
tt	0.006708	0.026976	0.249	0.8040
z.diff.lag1	0.510222	0.215806	2.364	0.0194 *
z.diff.lag2	0.161847	0.150588	1.075	0.2843
z.diff.lag3	0.058261	0.079611	0.732	0.4655
Test Statistic		**Critical Values**		
ADF Statistic		-8.2675		
		tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)		
phi2		22.8322		
		phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)		
phi3		34.2278		
		phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)		

First difference if the Unemployment rate Growth

The regression reveals an ADF test statistic of -8.2675, which is well below the critical values at 1%, 5%, and 10% (-3.99, -3.43, and -3.13, respectively). This indicates that we can reject the null hypothesis of non-stationarity at the 1% level, suggesting that the series is stationary.

The regression coefficients show that the lag term z.lag.1 is highly significant with a coefficient of -2.1428 and a p-value of 8.24e-14. This indicates a substantial negative influence of past values on current values, which is typical of mean-reverting dynamics. In contrast, the coefficient of the time trend term

tt is insignificant (p-value = 0.8040), meaning that there is no significant time trend in the data. The difference lag terms z.diff.lag1 is significant (p-value = 0.0194), indicating a positive effect on current variations, while z.diff.lag2 and z.diff.lag3 are not significant.

Seats

Table 4.30: Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	2.838982	1.886671	1.505	0.135
z.lag.1	-0.040039	0.024762	-1.617	0.108
tt	-0.003069	0.003429	-0.895	0.372
z.diff.lag1	0.012307	0.083692	0.147	0.883
z.diff.lag2	0.007511	0.031246	0.240	0.810
z.diff.lag3	0.007560	0.031246	0.242	0.809
Test Statistic	**Critical Values**			
ADF Statistic	-1.6169			
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)			
phi2	1.3571			
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)			
phi3	1.5368			
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)			

The results of the ADF test for the "Seats" series show that the test statistic is -1.6169, which is well above the critical thresholds for the 1%, 5%, and 10% significance levels (-3.99, -3.43, and -3.13, respectively). This indicates that we cannot reject the null hypothesis of non-stationarity at any of the significance levels, suggesting that the series may contain a unit root and not be stationary in level.

First difference growth rate of Seats

The results of the Augmented Dickey-Fuller (ADF) test for the series indicate a test statistic of -10.0677, well below the critical values of -3.99, -3.43 and -3.13 for the 1%, 5% and 10% significance levels, respectively. This result clearly suggests that the null hypothesis of non-stationarity can be rejected with high confidence, meaning that the series is stationary at the level. Furthermore, the values of the statistics and , 34.5273 and 51.5266 respectively, also exceed the critical thresholds at all levels of significance, supporting the conclusion that the series does not exhibit a unit root.

Table 4.31: First Difference of Growth Rate of Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.199815	0.186882	-1.069	0.287
z.lag.1	-0.998411	0.099170	-10.068	<2e-16 ***
tt	0.001412	0.002074	0.681	0.497
z.diff.lag1	-0.011420	0.055191	-0.207	0.836
z.diff.lag2	-0.007602	0.044785	-0.170	0.865
z.diff.lag3	-0.003793	0.031437	-0.121	0.904

Test Statistic	Critical Values
ADF Statistic	-10.0677
	tau3: -3.99 (1%), -3.43 (5%), -3.13 (10%)
phi2	34.5273
	phi2: 6.22 (1%), 4.75 (5%), 4.07 (10%)
phi3	51.5266
	phi3: 8.43 (1%), 6.49 (5%), 5.47 (10%)

Examining the coefficients of the regression model, we find that the lag term z.lag.1 is highly significant, with a coefficient of -0.9984 and a p-value of less than 2×10^{-1}. This indicates a pronounced tendency to revert to the mean. The intercept is -0.1998, but not statistically significant, with a p-value of 0.287. The other lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) are also not significant, showing p-values of 0.836, 0.865 and 0.904. The model explains around 48.78% of the total variance, which is reflected by a robust fitted R-squared, and the highly significant F-statistic reinforces the validity of the overall model. In summary, the tests and coefficients suggest that the series is stationary and that the model effectively captures the underlying dynamics.

4.7.1 Bretton woods.

Monetary growth rate

Table 4.32: Money Supply Growth Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.0276243	0.1416474	0.195	0.8455
z.lag.1	-0.0658573	0.0168352	-3.912	0.0001 ***
tt	0.0016521	0.0006637	2.489	0.0132 *
z.diff.lag1	-0.2179926	0.0512693	-4.252	2.69e-05 ***
z.diff.lag2	0.0881053	0.0525587	1.676	0.0945 .
z.diff.lag3	0.1443421	0.0510695	2.826	0.0050 **
Test Statistic	**Critical Values**			
ADF Statistic	-3.9119			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	5.5376			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	8.2903			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

The ADF test statistic for the " M0 Growth" series over the Bretton Woods period is -3.9119, which is close to the critical value at 5% (-3.42). This allows us to reject the null hypothesis of non-stationarity at the 5% level, but not at 1%, suggesting that the series could be stationary at the 5% significance level. The coefficient for the lag term z.lag.1z.lag.1z.lag.1 is significant with a very low p-value of 0.000109, indicating a significant negative relationship with the series. The trend term tttttt is also significant at the 5% level, suggesting a temporal trend in the data. Furthermore, the lag terms z.diff.lag1z.diff.lag1z.diff.lag1 and z.diff.lag3z.diff.lag3z.diff.lag3 are significant, showing that past values influence the current series, although z.diff.lag2z.diff.lag2 is only significant at 10%.

Table 4.33: Population Growth Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.001839	0.000934	1.970	0.0496 *
z.lag.1	-0.04273	0.01576	-2.712	0.0070 **
tt	-0.00000187	0.00000325	-0.575	0.5655
z.diff.lag1	0.02222	0.05238	0.424	0.6717
z.diff.lag2	0.02221	0.05238	0.424	0.6718
z.diff.lag3	0.02221	0.05238	0.424	0.6718
Test Statistic	**Critical Values**			
ADF Statistic	-2.7118			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	2.5615			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	3.7949			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

Population growth

The ADF test for the "Population growth" series gives a statistical value of -2.7118, which is above the critical value at 10% (-3.13). This means that the null hypothesis of the presence of a unit root (non-stationarity) cannot be rejected at the 10% threshold. In other words, the series is probably not stationary.

Analysis of the coefficients shows that the lag term z.lag.1z.lag.1z.lag.1 is statistically significant with a p-value of 0.00701, suggesting a certain dependence of past values on current values in the series. However, the time trend tttttt is not significant, indicating that there is no clear linear trend in the data.

First difference in the population growth rate

The ADF test for the "first difference in population growth rate" series gives a statistical value of -9.5998, well below the critical value of 1% (-3.98). This means that the null hypothesis of the presence of a unit root (non-stationarity) can be rejected at a high level of confidence. The series can therefore be considered stationary after differentiation.

Table 4.34: First Difference of Population Growth Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.0001924	0.0007163	0.269	0.788
z.lag.1	-1.004	0.1045	-9.600	<2e-16 ***
tt	-0.000001581	0.000003283	-0.481	0.630
z.diff.lag1	0.002684	0.09050	0.030	0.976
z.diff.lag2	0.001792	0.07386	0.024	0.981
z.diff.lag3	0.0008975	0.05220	0.017	0.986
Test Statistic	**Critical Values**			
ADF Statistic	-9.5998			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	30.7186			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	46.0779			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

Analysis of the coefficients shows that the lag term z.lag.1z.lag.1z.lag.1 is extremely significant with a p-value of less than 2e-16, indicating a strong dependence of current values on past values. However, the other tttttt terms, z.diff.lag1z.diff.lag1z.diff.lag1, z.diff.lag2z.diff.lag2z.diff.lag2, and z.diff.lag3z.diff.lag3z.diff.lag3 are not significant, suggesting that they have no major impact on the dynamics of the series after differentiation.

Interest_rate

Table 4.35: First Difference of Interest Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.0020285	0.0337013	-0.060	0.952
z.lag.1	-0.7003602	0.0818780	-8.554	3.28e-16 ***
tt	0.0001081	0.0001547	0.699	0.485
z.diff.lag1	0.0319837	0.0753530	0.424	0.671
z.diff.lag2	-0.0656762	0.0631194	-1.041	0.299
z.diff.lag3	0.0025656	0.0533248	0.048	0.962
Test Statistic	**Critical Values**			
ADF Statistic	-8.5537			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	24.3988			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	36.5932			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

The Augmented Dickey-Fuller (ADF) test applied to the "first difference in interest rate" series shows a test statistic of -8.5537, well below the critical values for all common significance levels (1%, 5%, and 10%). This result clearly indicates that the null hypothesis of non-stationarity can be rejected. In other words, the series is stationary after taking the first difference. Analysis of the coefficients shows that the lag term (z.lag.1z.lag.1z.lag.1) is significant, with an estimated coefficient of -0.7004 and an extremely low p-value (3.28e-16). This underlines the strong influence of past values on present values after differentiation. However, the other terms, including the time trend (tttttt) and the additional lag terms (z.diff.lag1z.diff.lag1z.diff.lag1,z.diff.lag2z.diff.lag2z.diff.lag2,and z.diff.lag3z.diff.lag3z.diff.lag3), are not significant, suggesting that they do not make a significant contribution to explaining the variation in the series.

Table 4.36: Growth Rate of Exchange Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	**Estimate**	**Std. Error**	**t-Statistic**	**p-Value**
Intercept	-0.09123	0.1239	-0.736	0.4620
z.lag.1	-0.6094	0.06669	-9.138	< 2e-16 ***
tt	-0.00004348	0.0005652	-0.077	0.9387
z.diff.lag1	0.2872	0.06483	4.430	1.24e-05 ***
z.diff.lag2	-0.1292	0.05421	-2.384	0.0176 *
z.diff.lag3	0.1214	0.05195	2.337	0.0200 *
Test Statistic		**Critical Values**		
ADF Statistic		-9.1379		
		tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)		
phi2		27.8402		
		phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)		
phi3		41.7565		
		phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)		

Exchange rate

The results of the ADF test for the exchange rate growth rate, without differentiation, show a statistic of -9.1379, well below the critical values at all levels (1%, 5%, 10%). This makes it possible to reject the null hypothesis of unit root, indicating that the series is stationary in level, without the need for differentiation.

Analysis of the coefficients reveals that the lag term z.lag.1 is highly significant, with a coefficient of -0.6094 and a p-value of less than 0.000 . This suggests a strong mean-reverting trend, showing that temporary shocks to exchange rate growth dissipate rapidly. The additional lag terms z.diff.lag2 and z.diff.lag3 are also significant but have a less marked impact, suggesting shorter-term dynamics.

Unemployment rate

Table 4.37: Growth Rate of Unemployment Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.3266	1.9344	0.686	0.4933
z.lag.1	-1.1798	0.1271	-9.283	< 2e-16 ***
tt	0.0010	0.0088	0.116	0.9079
z.diff.lag1	-0.0759	0.1086	-0.699	0.4850
z.diff.lag2	-0.1496	0.0835	-1.793	0.0738 .
z.diff.lag3	-0.0953	0.0520	-1.832	0.0677 .
Test Statistic	**Critical Values**			
ADF Statistic	-9.2825			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	28.7276			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	43.0843			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

The results of the ADF test for the growth rate of the unemployment rate reveal a test statistic of -9.2825, well below the critical values of -3.98, -3.42, and -3.13 for the 1%, 5%, and 10% levels respectively. This indicates that the series is stationary in level, suggesting that it returns to a stable mean over time.

The coefficient of the lag term z.lag.1 is highly significant, with a t-value of -9.283 and a p-value of less than 0.000, showing a strong tendency towards reversion to the mean. The lag terms z.diff.lag2 and z.diff.lag3 show moderate effects, with p-values close to 0.05, suggesting some additional dynamics in the series.

Seats

The results of the Augmented Dickey-Fuller (ADF) test for the series show a test statistic of -2.1885, which is above the critical values of -3.98, -3.42 and -3.13 for the 1%, 5% and 10% significance levels, respectively. This indicates that the null hypothesis of non-stationarity

Table 4.38: Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.3592188	0.6554111	2.074	0.0388 *
z.lag.1	-0.0244323	0.0111640	-2.188	0.0293 *
tt	-0.0004382	0.0004827	-0.908	0.3646
z.diff.lag1	0.0089513	0.0521298	0.172	0.8638
z.diff.lag2	0.0089262	0.0521281	0.171	0.8641
z.diff.lag3	0.0089012	0.0521265	0.171	0.8645
Test Statistic	**Critical Values**			
ADF Statistic	-2.1885			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	1.9205			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	2.4205			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

cannot be rejected at the usual significance level, suggesting that the series may contain a unit root and is not stationary. The values of the statistics (1.9205) and (2.4205) are also below the critical thresholds for significance levels, reinforcing this conclusion.

As regards the coefficients of the regression model, the lag term z.lag.1 is significant with a p-value of 0.0293, indicating a notable impact of the lagged value on the current series. The intercept is estimated at 1.3592 with a p-value of 0.0388, showing that it is also significant. However, the additional lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) have no significant effect, with p-values well above conventional thresholds. The adjusted R-squared is very low (-0.0004), suggesting that the model explains very little of the series variance. The F-statistic of 0.9695 with a p-value of 0.4363 shows that the overall model is not statistically significant. In sum, the tests indicate that the series is probably not stationary, and the model coefficients show only a limited effect, suggesting that improvements are needed to better understand the underlying dynamics of the series.

Table 4.39: First Difference of Growth Rate of Seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.06135	0.09182	-0.668	0.504
z.lag.1	-1.01000	0.10480	-9.641	<2e-16 ***
tt	0.00009477	0.0004196	0.226	0.821
z.diff.lag1	0.007803	0.09064	0.086	0.931
z.diff.lag2	0.005200	0.07392	0.070	0.944
z.diff.lag3	0.002602	0.05220	0.050	0.960
Test Statistic	**Critical Values**			
ADF Statistic	-9.6412			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	30.9842			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	46.4763			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

First difference of growth rate of seat

The results of the Augmented Dickey-Fuller (ADF) test for the series reveal a test statistic of -9.6412, well below the critical values of -3.98 (1%), -3.42 (5%) and -3.13 (10%). This clearly indicates that we can reject the null hypothesis of non-stationarity, suggesting that the series is stationary. Furthermore, the values of the statistics (30.9842) and (46.4763) are well above the critical thresholds, reinforcing the idea that the series follows a robust stationary trend.

As for the model coefficients, the lag term z.lag.1 stands out with an estimate of -1.010 and an extremely low p-value, showing a strong influence of past values on the current values of the series. On the other hand, the intercept (1.359) and lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) have no significant impact on the model, with p-values above 0.05. The model explains around 50% of the variance in the data, as evidenced by the adjusted R-squared of 0.4945, and the F-statistic of 73.787 with a highly significant p-value confirms the robustness of the model. In short, these results suggest a well-stationary series in which the lag term plays a predominant role in the observed dynamics.

4.7.2 Kingston

M0 Growth

Table 4.40: Growth Rate of Money Supply: Augmented Dickey-Fuller Test Regression Trend (Kingston Period)

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.2101	0.1608	1.307	0.1923
z.lag.1	-0.0281	0.0140	-2.011	0.0454 *
tt	-0.0003	0.0006	-0.497	0.6195
z.diff.lag1	0.0490	0.0625	0.785	0.4331
z.diff.lag2	0.0507	0.0625	0.811	0.4183
z.diff.lag3	0.0861	0.0626	1.375	0.1703
Test Statistic	**Critical Values**			
ADF Statistic	-2.0111			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	1.6391			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	2.3509			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

Analysis of the Augmented Dickey-Fuller (ADF) test results for the M0 Growth series over the Kingston period shows that the test statistic is -2.0111. This value is above the critical values at the 1%, 5%, and 10% confidence levels (-3.98, -3.42, and -3.13 respectively), suggesting that we cannot reject the null hypothesis of the presence of a unit root. This indicates that the series may be non-stationary in level.

First difference in M0 Growth

Examination of the results for the M0 Growth series after application of prime differentiation shows that the test statistic is -7.6852. This value is below the critical values at the 1%, 5% and 10% confidence levels (-3.98, -3.42 and -3.13 respectively), suggesting that we can reject the null hypothesis of the presence of a unit root. This indicates that the series, after first differentiation, is stationary in level.

Table 4.41: First Difference of the Growth Rate of Money Supply: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.0751	0.0784	-0.958	0.339
z.lag.1	-0.9001	0.1171	-7.685	3.33e-13 ***
tt	0.0004	0.0005	0.826	0.409
z.diff.lag1	-0.0611	0.1044	-0.585	0.559
z.diff.lag2	-0.0237	0.0871	-0.272	0.786
z.diff.lag3	0.0483	0.0627	0.770	0.442
Test Statistic		**Critical Values**		
ADF Statistic		-7.6852		
		tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)		
phi2		19.6939		
		phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)		
phi3		29.5408		
		phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)		

The coefficients of the regression model reveal that the lag term z.lag.1z.lag.1z.lag.1 is highly significant with a ttt value of -7.685 and a ppp value below 0.001, confirming the existence of a significant relationship in the series after differentiation. The other coefficients are not significant, indicating that they do not have a significant impact on the differentiated series in this model.

Population growth

Analysis of the results for the population growth rate series shows that the test statistic is -2.2401. This value is higher than the critical values at the 1%, 5%, and 10% confidence levels (-3.98, -3.42, and -3.13 respectively), indicating that we cannot reject the null hypothesis of the presence of a unit root at the 5% confidence level.

Table 4.42: Growth Rate of Population: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.0001831	0.0002299	0.796	0.4267
z.lag.1	-0.04219	0.01883	-2.240	0.0259 *
tt	0.00000486	0.00000294	1.655	0.0992 .
z.diff.lag1	0.01794	0.06295	0.285	0.7759
z.diff.lag2	0.01778	0.06294	0.282	0.7778
z.diff.lag3	0.01761	0.06292	0.280	0.7798
Test Statistic		**Critical Values**		
ADF Statistic		-2.2401		
		tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)		
phi2		2.0895		
		phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)		
phi3		2.6557		
		phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)		

Population growth

Table 4.43: First Difference of Growth Rate of Population: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.0002193	0.0002320	0.945	0.345
z.lag.1	-1.019	0.1264	-8.065	2.91e-14 ***
tt	-0.000000812	0.000001508	-0.538	0.591
z.diff.lag1	0.01426	0.1092	0.131	0.896
z.diff.lag2	0.00949	0.0899	0.107	0.915
z.diff.lag3	0.00475	0.06274	0.076	0.940
Test Statistic		**Critical Values**		
ADF Statistic		-8.0647		
		tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)		
phi2		21.68		
		phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)		
phi3		32.52		
		phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)		

The Augmented Dickey-Fuller test statistic for the population growth rate series after

first differentiation is -8.0647. Compared with the critical values for the 1%, 5% and 10% confidence levels, which are -3.98, -3.42 and -3.13 respectively, the value of the statistic is significantly lower. This indicates that we can reject the null hypothesis of a unit root.

The trend term (tt) has an estimate of -0.0000008 with a standard error of 0.0000015, a t-value of -0.538, and a p-value of 0.591, indicating that this term is not significant in the model. The difference lag terms (z.diff.lag1, z.diff.lag2, z.diff.lag3) are also not significant, with p-values of 0.896, 0.916, and 0.940 respectively.

Interest_rate

Table 4.44: First Difference of Interest Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.0276033	0.0670500	0.412	0.6809
z.lag.1	-0.6244142	0.0854343	-7.309	3.5e-12 ***
tt	-0.0002360	0.0004382	-0.539	0.5906
z.diff.lag1	0.1735261	0.0791981	2.191	0.0294 *
z.diff.lag2	-0.0623291	0.0679482	-0.917	0.3599
z.diff.lag3	-0.0100297	0.0622331	-0.161	0.8721
Test Statistic	**Critical Values**			
ADF Statistic	-7.3087			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	17.8262			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	26.7242			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

The Augmented Dickey-Fuller test statistic for the interest rate first difference series is -7.3087. Compared with the critical values for the 1%, 5% and 10% confidence levels, which are -3.98, -3.42 and -3.13 respectively, the value of the statistic is much lower. This indicates that we can reject the null hypothesis of a unit root.

The trend term (tt) has an estimate of -0.0002360 with a standard error of 0.0004382, a t-value of -0.539, and a p-value of 0.5906, indicating that this term is not significant in the

model. The difference lag term (z.diff.lag1) is significant with a p-value of 0.0294, while the difference lag terms (z.diff.lag2 and z.diff.lag3) are not significant, with p-values of 0.3599 and 0.8721 respectively.

Exchange rate

Table 4.45: Growth Rate of Exchange: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	-0.0273184	0.3126062	-0.087	0.930
z.lag.1	-0.7000527	0.0926582	-7.555	7.57e-13 ***
tt	0.0003147	0.0020414	0.154	0.878
z.diff.lag1	0.1326986	0.0859415	1.544	0.124
z.diff.lag2	-0.0820645	0.0714458	-1.149	0.252
z.diff.lag3	0.0565829	0.0625358	0.905	0.366

Test Statistic	Critical Values
ADF Statistic	-7.5552
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)
phi2	19.0584
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)
phi3	28.5741
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)

The Augmented Dickey-Fuller test statistic for the exchange rate growth series is -7.5552. Comparing this value with the critical values for the 1%, 5% and 10% confidence levels, which are -3.98, -3.42 and -3.13 respectively, it is clear that the value of the statistic is well below the critical values. This indicates that we can reject the null hypothesis of a unit root, confirming that the series is stationary after differentiation.

The trend term (tt) has an estimate of 0.0003147 with a standard error of 0.0020414, a t-value of 0.154 and a p-value of 0.878, indicating that this term is not significant. The difference lag terms (z.diff.lag1, z.diff.lag2, and z.diff.lag3) are not significant with p-values of 0.124, 0.252, and 0.366 respectively, suggesting that they do not have a significant influence on the model.

Unemployment rate

The Augmented Dickey-Fuller test for the exchange rate growth series yields a test value of -2.9382. Comparing this value with the critical values for the 1%, 5% and 10% confidence

Table 4.46: Growth Rate of Unemployment Rate: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.018007	0.984410	1.034	0.30206
z.lag.1	-0.138525	0.047145	-2.938	0.00360 **
tt	-0.007926	0.006462	-1.227	0.22110
z.diff.lag1	-0.598670	0.070742	-8.463	2.1e-15 ***
z.diff.lag2	-0.241419	0.076719	-3.147	0.00185 **
z.diff.lag3	-0.041322	0.063522	-0.651	0.51595
Test Statistic	**Critical Values**			
ADF Statistic	-2.9382			
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)			
phi2	2.9182			
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)			
phi3	4.3372			
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)			

levels, -3.98, -3.42 and -3.13 respectively, we find that the value of the test statistic is higher than the critical values at the 1%, 5% and 10% confidence levels. This means that we cannot reject the null hypothesis of a unit root for this series, indicating that the series is not stationary at the 5% significance level.

First difference in the growth of unemployment rate

The Augmented Dickey-Fuller test for the first-difference unemployment rate series gives a test value of -10.3086. Compared with the critical values for the 1%, 5% and 10% confidence levels, -3.98, -3.42 and -3.13 respectively, we find that the value of the test statistic is well below these critical values. This indicates that we reject the null hypothesis of unit root, which means that the series is stationary after first differentiation.

The difference lag term (z.diff.lag1) has an estimate of 0.458240 with a standard error of 0.177283, a t-value of 2.585 and a p-value of 0.0103, indicating that it is significant at the 5% level. In contrast, the other difference lag terms (z.diff.lag2 and z.diff.lag3) are not significant with p-values of 0.2808 and 0.6018 respectively.

Table 4.47: First Difference of rate growth unemployment: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	0.037145	0.940906	0.039	0.9685
z.lag.1	-2.162914	0.209817	-10.309	<2e-16 ***
tt	-0.001305	0.006147	-0.212	0.8320
z.diff.lag1	0.458240	0.177283	2.585	0.0103 *
z.diff.lag2	0.135673	0.125518	1.081	0.2808
z.diff.lag3	0.033159	0.063469	0.522	0.6018

Test Statistic	Critical Values
ADF Statistic	-10.3086
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)
phi2	35.4394
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)
phi3	53.1367
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)

Seats

Table 4.48: seats: Augmented Dickey-Fuller Test Regression Trend

Parameter	Estimate	Std. Error	t-Statistic	p-Value
Intercept	1.3807	0.7548	1.829	0.0685 .
z.lag.1	-0.0256	0.0143	-1.782	0.0760 .
tt	0.0006	0.0009	0.649	0.5168
z.diff.lag1	0.0095	0.0628	0.151	0.8802
z.diff.lag2	0.0094	0.0628	0.150	0.8807
z.diff.lag3	0.0094	0.0628	0.150	0.8811

Test Statistic	Critical Values
ADF Statistic	-1.7819
	tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)
phi2	1.3817
	phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)
phi3	1.5895
	phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)

The results of the trend regression test reveal that the test statistic for the series is -

1.7819, which is well above the critical thresholds of -3.98 (1%), -3.42 (5%), and -3.13 (10%). In other words, this value of the test statistic is insufficient to reject the null hypothesis of non-stationarity, suggesting that the series may contain a unit root. The statistics and also show values well above the critical thresholds, reinforcing this interpretation and indicating that the series does not appear to stabilize around a fixed short-term trend.

First difference of the growth rate of Seats

Table 4.49: Augmented Dickey-Fuller Test with Trend Regression

Parameter	**Estimate**	**Std. Error**	**t-Value**	**p-Value**
Intercept	0.0557	0.1294	0.430	0.667
z.lag.1	-1.0150	0.1262	-8.044	< 2.2e-16 ***
tt	0.000051	0.000844	0.060	0.952
z.diff.lag1	0.0114	0.1091	0.104	0.917
z.diff.lag2	0.0076	0.0890	0.085	0.932
z.diff.lag3	0.0038	0.0628	0.061	0.952
Test Statistic		**Critical Values**		
ADF Statistic		-8.0437		
		tau3: -3.98 (1%), -3.42 (5%), -3.13 (10%)		
phi2		21.5674		
		phi2: 6.15 (1%), 4.71 (5%), 4.05 (10%)		
phi3		32.3511		
		phi3: 8.34 (1%), 6.30 (5%), 5.36 (10%)		

The results of the trend regression test reveal a series of interesting statistics. The value of the test statistic for this series is -8.0437. Compared with the critical values, this statistic is well below the critical thresholds of -3.98 (1%), -3.42 (5%), and -3.13 (10%). This indicates strong evidence against the null hypothesis of the presence of a unit root, suggesting that the series may be stationary or stabilizing around a fixed trend.

Examining the coefficients of the model, the intercept is 0.0557 with a p-value of 0.667, showing that it has no significant effect on the variations of the series. On the other hand, the coefficient of z.lag.1 is -1.015 with a p-value of 3.33×10^{-1}, which is extremely significant. This indicates that past variations in the series have a substantial and negative

effect on current values. The other coefficients associated with t, z.diff.lag1, z.diff.lag2, and z.diff.lag3 have no notable significance with high p-values, suggesting that they do not have a significant impact on the series. The model has an adjusted R-squared of 0.4921, indicating that almost 50% of the variation in the data is explained by the model, and the F-statistic of 51.185 with a p-value less than 2.2×10^{-1} shows that the overall model is significant. In conclusion, the series appears well fitted by the model and the results suggest stationarity with a significant trend associated with the lag terms.

Conclusion générale

En conclusion, cette thèse a mis en évidence des dynamiques centrales dans l'économie politique, en révélant comment les cycles politico-économiques influencent les décisions économiques et comment les élites internationales et comment les élites sont choisies ou renouvelées.

Le premier chapitre se concentre sur les élites internationales, avec une étude spécifique sur les membres de l'administration du FMI. L'objectif de ce chapitre est de comprendre les facteurs qui influencent la durée des mandats des membres du conseil exécutif de cette institution, en analysant des éléments tels que le genre, l'affinité politique et les crises économiques. L'hypothèse centrale est que des facteurs externes, comme les crises économiques, ont un impact plus significatif sur la durée des mandats que des variables induites, telles que le niveau d'éducation, l'expérience professionnelle ou le genre. Nous avons utilisé un modèle de Cox pour évaluer les déterminants de la survie des membres du conseil exécutif du FMI, tout en testant plusieurs hypothèses liées à la crise, au genre et à l'affinité des votes aux Nations Unies. Les résultats montrent que, si les femmes ont moins de chances d'être nommées au sein de cette institution, les crises financières, en particulier les crises de la dette souveraine, modifient la durée des mandats des membres de l'administration du FMI, tandis que les crises bancaires tendent à prolonger leur mandat. Par ailleurs, les changements de régime politique dans les pays représentent également la durée des mandats. En revanche, les caractéristiques individuelles telles que l'âge, le niveau d'éducation ou l'expérience professionnelle ont un impact limité sur la durée des mandats. Ces résultats révèlent que la rotation des élites au sein d'organisations internationales comme le FMI est davantage influencée par des dynamiques externes que par des caractéristiques induites aux individus eux-mêmes. Ce chapitre apporte une

contribution importante à la littérature sur les institutions internationales, en mettant en lumière la vulnérabilité des élites technocratiques face aux contextes géopolitiques et économiques mondiaux.

Le deuxième chapitre poursuit l'analyse des élites, mais cette fois-ci dans le contexte politique national, avec un intérêt particulier pour l'accession des femmes aux postes de pouvoir en période de crise. En se fondant sur des théories telles que le « plafond de verre » et la « falaise de verre », ce chapitre analyse si les crises économiques, sanitaires ou naturelles augmentent la probabilité qu'une femme accède à un poste de chef d'État, et comment ces crises influencent la durée de son mandat une fois élue. Les résultats montrent que les crises augmentent effectivement la probabilité d'élection d'une femme à un poste de chef d'État, en particulier lors des crises de la dette et des crises sanitaires, confirmant ainsi l'hypothèse de la falaise de verre selon laquelle les femmes sont souvent appelées à diriger dans des périodes critiques. Toutefois, bien que les femmes soient plus susceptibles d'accéder au pouvoir en période de crise, leur mandat tend à être plus court une fois la situation stabilisée, ce qui reflète une perception des femmes comme des solutions temporaires aux situations de crise. Cette dynamique est particulièrement marquée dans les crises de la dette, où les femmes voient leurs mandats raccourcis de manière significative une fois la crise résolue. Ce chapitre, en mobilisant des données couvrant la période de 1950 à 2015 et en utilisant des modèles économétriques avancés tels que le modèle logit et les courbes de survie de Kaplan-Meier, confirme l'existence de barrières structurelles à l'accession des femmes au pouvoir dans les démocraties modernes. Il met également en évidence les défis que les femmes doivent surmonter pour se maintenir au pouvoir, en particulier dans un contexte de sortie de crise.

Le troisième chapitre s'intéresse aux cycles politico-économiques, en analysant le lien entre les élections et l'inflation en Haïti. Ce chapitre explore comment les élections, souvent marquées par des pratiques clientélistes et l'achat de votes, appartiennent à l'inflation dans un contexte de faiblesse institutionnelle. En utilisant des données sur l'indice des prix à la consommation (IPC) pour la période allant de 2004 à 2018, l'étude montre que les périodes électorales sont associées à une augmentation significative des prix, en particulier dans les catégories de produits alimentaires et de services locaux. Cette inflation semble être due

aux dépenses excessives des candidats lors des campagnes électorales, qui détournent des ressources économiques essentielles et aggravent l'instabilité économique du pays. Ces cycles inflationnistes sont le résultat direct de l'utilisation des fonds publics à des fins électorales, notamment pour acheter des votes à travers la distribution de biens matériels. Ce chapitre propose des recommandations pour réguler les dépenses électorales et réduire l'impact négatif de ces pratiques sur l'économie haïtienne, en s'appuyant sur des analyses économétriques rigoureuses telles que les projections locales de Jorda et les modèles ARIMA pour modéliser les dynamiques des séries temporelles. Il met en évidence le besoin de réformes pour améliorer la transparence et la régulation des dépenses politiques en Haïti.

Le quatrième et dernier chapitre examine les cycles monétaires et politiques au Royaume-Uni entre 1870 et 1997. À travers une analyse des régimes monétaires successifs, de l'étalon-or au système de Bretton Woods, ce chapitre explore comment les cycles électoraux influencent la croissance de la masse monétaire (M0). En utilisant des tests d'enracinement unitaire et des modèles économétriques adaptés aux propriétés des séries temporelles, cette étude démontre que les élections régulières et les élections anticipées sont associées à une augmentation significative de la croissance de M0, suggérant l'existence de cycles politiques monétaires. (CPM) au Royaume-Uni. Cette manipulation monétaire, visant à stimuler l'économie avant les élections, est particulièrement marquée sous les gouvernements libéraux, qui semblent adopter des comportements opportunistes, notamment lorsqu'ils bénéficient d'une majorité parlementaire réduite. Le chapitre révèle également que l'influence des élections sur la politique monétaire est plus prononcée sous certains régimes monétaires, comme l'étalon-or, mais tend à diminuer avec l'avènement du système de Bretton Woods et l'indépendance progressive de la Banque d'Angleterre. Cette étude contribue à la littérature sur les cycles politico-monétaires en montrant comment les régimes monétaires influencent la capacité des gouvernements à manipuler la politique monétaire à des fins électorales. Elle met en évidence le besoin de réformes institutionnelles pour renforcer l'indépendance des banques centrales et réduire l'influence des cycles électoraux sur les politiques économiques.

Cette thèse a permis de mettre en lumière des dynamiques essentielles dans le domaine de l'économie politique. Ces travaux contribuent de manière significative à la littérature

existante, mais, comme toute bonne recherche, ils suscitent de nouvelles questions et ouvrent la voie à d'autres investigations. Chaque réponse fournie entraîne inévitablement de nouveaux interrogations, et c'est précisément cette quête incessante de savoir qui rend la recherche si captivante. Plusieurs pistes de recherche découlent de ces travaux, offrant des perspectives fascinantes pour d'autres recherches.

Un axe de recherche captivant serait d'étudier les réseaux transnationaux d'élites, en particulier le phénomène de la "porte tournante" entre institutions publiques internationales et sphères gouvernementales. L'analyse des trajectoires de carrière de ces élites pourrait révéler des dynamiques peu explorées sur la stabilité politique et la gouvernance économique mondiale. Cela permettrait de cerner les implications de cette circulation d'élites pour la gouvernance des crises et des réformes économiques.

Cette piste de recherche peut enrichir considérablement la littérature existante et d'offrir des perspectives novatrices sur les dynamiques de pouvoir et d'économie dans un monde en constante évolution.

L'un des enseignements que je tire de ce travail est l'immense potentiel de ce champ de recherche pour répondre à des problématiques contemporaines, et cette curiosité ne cesse de croître. En tant que chercheur, ces thématiques m'ont inspirée à poursuivre des études sur des contextes similaires dans d'autres pays.

Fort de cette expérience, je souhaite désormais orienter mes recherches vers l'étude des cycles économiques et politiques en Afrique de l'Ouest, notamment au Mali. Avec des données déjà à ma disposition, je compte analyser le phénomène de l'achat de vote et ses répercussions sur les cycles inflationnistes dans ce contexte. Ce champ de recherche me passionne, car il est au cœur des enjeux économiques et politiques des démocraties émergentes. Mon engagement futur en tant que chercheur se concentrera sur ces problématiques, avec l'ambition de contribuer à une meilleure compréhension des dynamiques qui façonnent ces économies en mutation.

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