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Liste des abréviations

BIS/BRI	Bank for International Settlements
CIT	Corporate Income Tax
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
ECB/BCE	European Central Bank
EPU	Economic Policy Uncertainty
ETR	Effective Tax Rate
EU	European Union
G-SIB	Globaly-Systemically Important Banks
HKMA	Hong Kong Monetary Authority
HKSAR	Hong Kong Special Administrative Region
IMF	International Monetary Fund
IRS	Interest-Rate Swaps
LBS	Locational Banking Stastitics
LP	Local Projection
LPR	Loan Prime Rate
OFC	Offshore Financial Center
PBoC	People's Bank of China
PEPP	Pandemic Emergency Purchase Programme
PMI	Purchasing Manager's Index
RMB	RenMinBI
RRR	Regulatory Reserve Requirements
STR	Statutory Tax Rate
WB	World Bank

Introduction Générale

Cette thèse s'inscrit dans le champ général de la macroéconomie financière internationale et plus spécifiquement de l'économie bancaire et financière internationale. **Son objectif est d'analyser l'allocation des dettes et actifs bancaires en accordant une attention toute particulière à la politique monétaire.** Elle rassemble ainsi des contributions variées que cette introduction a pour objectif de présenter en synthétisant les principaux résultats. Les chapitres 1 et 2 s'insèrent dans le domaine de l'économie bancaire internationale et analysent l'allocation des encours bancaires sous deux angles différents : **le premier étudie la localisation stratégique des dettes bancaires internes à des fins d'évitement fiscal *(profit shifting)*; le second, l'allocation des actifs bancaires hongkongais en réponse aux chocs de politique monétaire chinoise. Le dernier chapitre propose de tester empiriquement le cadre théorique de la *forward guidance* appliqué aux politiques budgétaires françaises pendant la pandémie de COVID-19.** Bien que s'inscrivant dans un même champ, les axes de recherche de cette thèse sont suffisamment diversifiés pour justifier que cette introduction générale présente de manière distincte les concepts mobilisés, les contextes et les problématiques propres à ces différentes thématiques.

Fiscalité, dettes et *Offshore Financial Centers*

Avant d'introduire les questions relatives à la fiscalité des banques, il convient de préciser le sens que l'on donne à *l'évitement fiscal* et pourquoi nous utilisons ce terme, plutôt que ceux de "fraude" ou d'optimisation fiscale. Nous considérerons ici cette notion telle que définie ainsi :

> "L'ensemble des pratiques des entreprises multinationales, contraires à l'esprit des législations fiscales, visant à éluder l'impôt sur les sociétés. Certaines de ces pratiques sont légales, d'autres pas et peuvent donner lieu à des redressements ou à des poursuites. Leur ampleur est appréhendée ici par la distorsion de localisation de leurs profits au bénéfice des paradis fiscaux et des pays à faible taxation." (Vicard, 2019)

Cette définition fait consensus dans la littérature économique sur le phénomène car elle a notam-

ment l'avantage de ne pas trancher la question de la légalité de ces pratiques. Nous ne différencions donc volontairement pas entre activités légales et illégales, à la frontière souvent floue (Beer et al., 2018). D'un point de vue personnel nous considérons que, si cette question doit être traitée, c'est aux sciences juridiques et aux systèmes fiscaux de faire la distinction. Du point de vue de l'analyse économique du phénomène, la question de la légalité n'a que peu de pertinence, puisque nous nous concentrons sur des activités artificielles qui distordent la structure des positions et des flux financiers internationaux et induisent une perte fiscale pour les États; deux phénomènes qui sont la conséquence de l'évitement fiscal, qu'il soit légal ou non. Une des principales motivations de notre étude sur l'évitement fiscal des banques est le nombre relativement faible de recherches sur cet objet. Cette introduction revient donc en détail sur les raisons qui sont liées à cet état de la recherche, car elles expliquent aussi les difficultés à traiter ce sujet, dont un très grand nombre sont dues aux particularité des banques. La première spécificité est liée à la forme de la fiscalité bancaire que nous présentons ci-après. Dans un deuxième temps nous décrivons les réformes visant à limiter les stratégies d'évitement fiscal dont usent les banques. Nous présenterons enfin l'interaction entre les règles propres aux banques – la réglementation prudentielle, et leur imposition. Il existe un parallèle marquant entre l'impact qu'a eu la crise de 2007-2008 sur les problématiques liées à la réglementation prudentielle et à la fiscalité des entreprises financières et sur la façon dont elles ont été traitées dans le monde du *policy* et celui de la recherche. En effet, si dans les deux domaines la crise aurait pu mener à une remise en cause profonde (Scialom et al., 2018), il est désormais possible, près de 15 ans après, d'en tirer les enseignements, ce que nous proposons de réaliser à propos de la fiscalité bancaire.

La fiscalité bancaire et ses évolutions récentes

Dans le sillage de la crise, les pays membres du G20 ont commandé au FMI un rapport sur la taxation du secteur financier, selon les motivations suivantes : "how the financial sector could make a fair and substantial contribution toward paying for any burden associated with government interventions to repair the banking system." (Claessens et al., 2010)

Bank Levies : De ce rapport important est née la proposition de créer des *bank levies*, qui sont des impôts sur l'activité financière, propres aux banques, pour compenser le coût de la crise supporté par les finances publiques[1]. Il a ainsi été considéré que les banques qui bénéficient, entre autres, de la subvention implicite de l'Etat en termes de garantie de sauvegarde (en particulier pour les banques *too-big-to-fail*), devaient en partie en supporter le coût. De nombreux pays ont justifié ces taxes en mettant en avant qu'elles s'inscrivaient dans une perspective pigouvienne. En

[1] Voir l'annexe en ligne de Devereux et al. (2019) pour une liste complète des taxes bancaires mises en place après la crise.

effet, une taxation "à la Pigou" a pour but de faire internaliser aux acteurs économiques des coûts dont le marché ne reflète pas le prix de manière adéquate, ce qui est le cas des garanties publiques dont bénéficient les banques (garanties explicite sur les dépôts) qui correspondent à des subventions publiques à ce secteur. Ces taxes ont majoritairement consisté à imposer le passif des banques, à des taux assez faibles (de 0,018 % pour la Suède en 2009 et 2010 jusqu'à 0,539 % pour la France en 2014). Ces taxes n'ont été mises en place que de manière temporaire, généralement pendant une seule année, à l'exception de la France qui a maintenu la sienne entre 2011 et 2018, à des taux variables (Quignon, 2018).

Taxes sur les Transactions Financières : Par ailleurs, toujours à la suite de la crise de 2007-2008, le rapport du FMI de 2010 a évoqué la possibilité d'une taxation sur les transactions financières (TTF). Ces taxes, bien que ne ciblant pas spécifiquement les banques, les touchent particulièrement de par leur importante activité de marché. Ces propositions, "populaires mais controversées" (Capelle-Blancard, 2023), annoncées dès le début des années 2010 ont longuement animé le débat public en Europe. En septembre 2011, la Commission européenne a déposé un projet de directive visant à taxer toutes les transactions financières, sauf celles sur les marchés des changes. La proposition n'a pas recueilli l'unanimité de tous les États membres et onze d'entre eux ont demandé à ce que la procédure de coopération renforcée soit mise en œuvre. Parallèlement, des pays comme la France, l'Italie ou l'Espagne ont introduit leurs propres taxes (Hemmelgarn et al., 2016). La question n'est cependant pas propre aux États membres puisque de nombreuses places financières en-dehors de l'UE (Hong Kong, Suisse, Londres, etc.) appliquent des dispositifs, parfois anciens, proches des propositions faites par la Commission. Au Royaume-Uni, il existe depuis le 17e siècle des droits de timbre (*stamp duties*) sur les transferts de propriété qui exemptent toutefois les opérations d'achats et de cessions réalisées dans une même journée. Ces taxes sont assez impopulaires parmi les économistes, avec d'un côté un argument théorique en leur faveur (Stiglitz, 1989), qui considère que l'augmentation des coûts de transaction, s'il s'applique aux cessions de courte durée (intra-journalières), doit diminuer la prise de risque des investisseurs et la volatilité sur les marchés financiers, ce qui permettrait ainsi de rediriger du capital utilisé à des fins spéculatives vers le financement de l'activité économique réelle . D'autres (Song and Zhang, 2005), considèrent que la TTF réduirait le prix des actifs et augmenterait le coût du financement des entreprises, tout en diminuant la liquidité disponible sur les marchés, ce qui augmenterait la volatilité et pourrait distordre les mécanismes d'ajustement des prix. À ce jour, en France, bien que le cadre d'application soit restreint[2] et que son taux soit de 0,3 %, elle a rapporté des montants

[2]La TTF ne s'applique qu'aux titres émis par des sociétés dont le siège social est en France et dont la capitalisation boursière est supérieure à un milliard d'euros, soit une centaine d'entreprises. Source : CGI : Section XX : Taxe sur les transactions financières

importants, plus de 1,7 milliards d'euros en 2020[3].

Exonération de TVA: La principale déviation de la fiscalité bancaire par rapport au régime général ne provient toutefois pas de l'existence de taxes particulières mais de la décision prise par l'autorité fiscale qui, au regard de la nature de l'activité bancaire, les exempte de la taxe sur la valeur ajoutée (TVA). Cette exemption est généralisée à la plupart des pays, à l'exception des États-Unis (en raison de la forme particulière de leur imposition de la valeur ajoutée qui diffère de la plupart des TVA des autres pays développés). La TVA est un impôt assis sur la valeur ajoutée dont le poids économique doit reposer *in fine* sur les consommateurs finaux; les entreprises ne sont que des collecteurs de cet impôt et sont donc soulagées du poids de cette taxe par un droit à la déduction des sommes versées lors de l'achat des consommations intermédiaires. Le montant versé par chaque entreprise est donc égal à la TVA nette : il s'agit de la différence entre la TVA collectée sur le produit de ses ventes de biens et de services (TVA brute) et la TVA déductible sur ses achats (Quignon, 2018). Cependant, la mesure de la valeur ajoutée des services financiers est malaisée pour la comptabilité nationale. En simplifiant, on peut considérer que, pour la plupart des entreprises, la valeur ajoutée est la différence entre le chiffre d'affaires et le coût des consommations intermédiaires. Toutefois, pour les banques, les revenus proviennent pour partie de services vendus (frais de carte bancaire, frais de dossier, commissions etc.) et pour partie de leur marge d'intérêts sur les prêts. Or, en comptabilité nationale, les intérêts sont considérés comme des revenus de la propriété. Pour corriger cette anomalie, une réévaluation de la valeur ajoutée des banques est donc nécessaire :

> L'ajustement opéré en comptabilité nationale consiste alors à réallouer une fraction de cette marge d'intérêts sur les opérations réalisées par les banques avec leur clientèle, à leur production. Ainsi, la valeur ajoutée et l'excédent d'exploitation sont accrus. (Beaujour, 2012)

En raison de ces complexités méthodologiques, les banques ne sont donc pas sujettes à la TVA[4], une disposition dont l'incidence fiscale n'est cependant pas évidente à mesurer (Quignon, 2018). En effet, en France, le secteur doit tout de même s'acquitter de ce que l'on appelle les "rémanences de la TVA" qui correspondent aux montants de TVA payés pour leurs consommations intermédiaires qui ne sont pas sujettes à déduction. On peut noter que cette non-déductibilité fait aussi disparaître une opportunité de fraude fiscale. L'effet fiscal total de cette exemption est complexe à analyser,

[3] Déclaration du ministre des Comptes publics, 16 février 2021

[4] C'est le cas en France (Article 216 C, Code Général des Impôts), toutefois l'exonération ne s'applique pas à toutes les activités des banques, ce qui est facteur de complexité pour elles. "Les exemptions s'appliquent à l'octroi de crédit, la vente de garanties de crédit, les paiements, les retraits et les dépôts d'espèces, les achats et les ventes de titres et la gestion de fonds d'investissement spéciaux. Tous les services financiers ne sont pas exonérés : le conseil en investissement, la conservation et le recouvrement de créance, notamment, sont soumis à TVA." (Quignon, 2018)

mais on peut noter que ces rémanences correspondaient à 22 % de l'ensemble des impôts payés par les entreprises financières en France en 2010 (Bakhouche et al., 2012). Afin de compenser cette sous-imposition, la France a pris la décision - sans réel équivalent dans d'autres pays – d'ajouter un impôt proportionnel sur les salaires pour les secteurs exemptés de TVA (banques, assurances, hôpitaux, etc.). Des recettes totales de cette taxe exceptionnelle, les banques s'acquittaient de 16,2 % en 2011 (Bakhouche et al., 2012).

Réformes de la taxation et des règles limitant l'évitement fiscal

Depuis la crise financière de 2008-2009, le sujet de l'évitement fiscal des ménages et des entreprises a connu un regain d'intérêt. Ce mouvement s'est accéléré sous l'initiative du *Global Forum* – un regroupement de 125 pays sous l'égide de l'OCDE et du G20 – nommée le Cadre Inclusif sur l'érosion de la base d'imposition et le transfert de bénéfices (BEPS[5]) qui a pour but la mise en place de critères minimum communs afin de lutter efficacement contre ce phénomène. Le rapport de 2015[6], propose ainsi 15 "actions" ayant vocation à être adoptées dans de nombreux pays. L'une des actions principales est l'action n°4, qui a but de limiter l'érosion de la base d'imposition faisant intervenir les déductions d'intérêts et autres frais financiers. L'une des principales propositions de cette 'action' était de limiter la déductibilité des charges d'intérêt nettes à 30 % du bénéfice avant intérêts, impôts, dépréciations et amortissements (EBITDA) du contribuable. Les banques détiennent cependant des actifs et des passifs financiers au titre de leur activité commerciale principale, ce qui a pour conséquence qu'elles sont en général en position de prêteur net. Ceci conduit le rapport de conclure :

> "Comme dans la plupart des cas une banque ou une compagnie d'assurance aura des produits d'intérêts nets plutôt que des charges d'intérêts nettes, la règle [...] ne trouvera pas à s'appliquer." (OCDE, 2016)

L'Union Européenne a repris l'action n°4, au sein de son "Train de mesures contre l'évasion fiscale" de 2016, que les États membres devaient transposer dans leur droit national avant 2020. On retrouve au sein de cette directive la justification pour exclure les entreprises financières de cette limitation en raison de leurs spécificités[7] indiquant l'incapacité à élaborer une règle s'appliquant

[5]Le BEPS désigne les "stratégies de planification fiscale qui exploitent les failles et les différences entre les règles fiscales nationales et internationales en vue de transférer artificiellement des bénéfices dans des pays ou territoires où l'entreprise n'exerce guère d'activité réelle, mais où ils sont faiblement taxés, ce qui aboutit à une charge fiscale faible voire nulle pour l'entreprise". Source : OECD.

[6]Cadre Inclusif BEPS, OECD https://www.oecd.org/fr/fiscalite/beps/actions-beps.htm

[7]Récital 9, Directive (EU) 2016/1164 du Conseil du 12 juillet 2016 : "Bien qu'il soit généralement admis que [...] les institutions financières et les compagnies d'assurance devraient aussi être soumises à des limitations de la déductibilité des intérêts, il est également reconnu que ces deux secteurs présentent des caractéristiques particulières qui requièrent une approche plus adaptée à leurs besoins. Étant donné que les discussions dans ce domaine ne sont pas encore assez concluantes [...], il n'est pas encore possible de prévoir des règles spécifiques dans les secteurs de la finance et des assurances et les États membres devraient donc pouvoir les exclure du champ d'application des règles de limitation des intérêts."

aux entreprises financières.

Depuis 2015, les négociations ont continué au sein ce que l'on appelle désormais BEPS 2.0, à propos d'un taux d'imposition minimum mondial. Deux grandes réformes de l'impôt mondial ont été proposées à travers les Piliers 1 et 2. Le premier Pilier, le plus complexe techniquement, doit s'appliquer aux grandes multinationales (réalisant plus de 20 milliards d'euros de chiffre d'affaires et ayant une profitabilité supérieure à 10 %) et principalement celles dont l'activité est liée à l'économie numérique. Il a pour but de redistribuer une partie des profits réalisés par les multinationales concernées en offrant la possibilité aux juridictions où résident les utilisateurs de ces services de lever un impôt supplémentaire[8]. Cependant, sous la pression du Royaume-Uni, soucieux de défendre les intérêts de la City[9], un accord a été trouvé afin que ces règles ne s'appliquent pas aux banques :

> "The defining character of this sector is that it is subject to a unique form of regulation, in the form of capital adequacy requirements, that reflect the risks taken on and borne by the firm. It is this regulatory driver that generally helps to align the location of profits with the market. The scope of the exclusion derives from that requirement, meaning that Entities that are subject to risk-based capital measures (and only those) are excluded." Pillar One – Amount A: Regulated Financial Services Exclusion May 2022

Cette fois, l'argument mis en avant est lié au fait que les entités financières réglementées (assurances, institutions de crédit, de crédit immobilier et de dépôts, banques d'investissement, gestionnaires d'actifs et institutions mixtes) sont soumises à une forme de réglementation unique sur les fonds propres *(capital adequacy requirements)* et que c'est donc à cette réglementation prudentielle qu'est laissé le rôle complexe de faire coïncider la déclaration des profits dans une juridiction et l'activité réelle afférente.

Le deuxième pilier de la réforme BEPS 2.0 est à la fois plus simple dans son application et beaucoup plus ambitieux, en proposant une réforme majeure de l'imposition des entreprises par la mise en place d'un impôt mondial minimum de 15 %. Malgré les nombreux débats sur la pertinence d'un taux aussi faible, les retombées fiscales potentielles pour les pays sont larges, même dans la forme la plus restreinte de la réforme (Baraké et al., 2022). À ce jour, aucune exception n'a été négociée, ce qui veut dire que le Pilier 2 serait la première des grandes réformes post-crise de l'architecture fiscale globale à s'appliquer aux entreprises financières. Enfin, il faut noter qu'au sein de l'Union Européenne, depuis 2015, les banques ont été les premières entreprises (avec les

[8]Deloitte Pillar 1 and Pillar 2, July 2021

[9]Source : Financial Times, 1 juillet 2021 https://www.ft.com/content/f10b3e92-03e9-402b-9462-237f53b4d140

entreprises d'extraction minière) à devoir mettre en place un *reporting* pays-par-pays[10]. Cette mesure (présentée au sein de l'action n°11 du rapport BEPS de 2015), a pour but d'accroître la transparence financière des entreprises, en les forçant à publier certaines informations clefs dans leur rapports annuels, notamment la localisation de leur chiffre d'affaires et de leurs profits, dans une logique de résidence et non plus seulement de manière consolidée. Les négociations au sein du projet BEPS sont toujours en cours pour généraliser l'application de cette règle aux autres entreprises non-financières. Cependant, Dutt et al. (2019) en mobilisant la méthodologie des études d'évènements, ont montré que l'annonce et la mise en place de cette réforme pour les entreprises financières n'ont pas provoqué de réponse significative de la part des investisseurs, même pour les entreprises déclarant plus de profits dans les paradis fiscaux, ce qui indique que l'extension de cette règle de transparence à l'ensemble des multinationales n'aura peut-être pas l'effet de discipline attendu.

Interaction entre fiscalité et réglementation prudentielle

Il existe une tension entre la réglementation prudentielle et la fiscalité des institutions financières. Si elles sont toutes deux considérées comme "punitives" par les responsables bancaires, elles recouvrent des objectifs différents, tout en agissant en partie sur des aspects économiques communs, notamment en influençant la forme des bilans bancaires. La réglementation prudentielle est conçue pour, *ex ante*, soutenir la stabilité du système financier et réduire la probabilité de survenue des crises, mais aussi pour accroître *ex post* la résilience des institutions financières. De leur côté, les règles fiscales ont pour but principal de dégager un revenu financier pour l'État sans pour autant distordre la concurrence en faveur de certaines entreprises. A première vue, leurs objectifs semblent donc diverger, cependant si l'on se place dans perspective pigouvienne, on remarque qu'il est possible de faire correspondre les deux. Ainsi, l'autre objectif annoncé des *bank levies* évoquées plus tôt était justement d'augmenter le coût de l'endettement par la dette pour les banques (Devereux et al., 2019) et les inciter en conséquence à se financer par l'augmentation de leurs fonds propres, un argument qui a longtemps été défendu à des fins de stabilité financière (Admati and Hellwig, 2014). À l'inverse, l'un des arguments mis en avant pour mettre fin aux *bank levies* a justement été son potentiel impact négatif sur la stabilitié financière. En effet, comme pour les réglementations de Bâle, il a été considéré qu'une taxation trop importante du secteur financier pourrait entraîner une fragilisation des banques à travers deux effets. Le premier est qu'une pression fiscale accrue peut inciter les banques à augmenter leur prise de risque, le second est que si les institutions financières voient leur capacité à générer du profit réduite cela peut ensuite diminuer leur capacité

[10]L'article 89 de la directive sur les exigences de fonds propres — CRD IV exige des établissements de publier : a) la nature de leurs activités et leur localisation géographique b) leur chiffre d'affaires c) leur nombre de salariés d) leur résultat d'exploitation avant impôt e) les impôts payés sur le résultat f) les subventions publiques reçues.

à absorber les chocs, qu'ils soient idiosyncratiques ou systémiques.

Cependant, la principale interaction entre réglementation et imposition n'est pas liée aux effets de taxes supplémentaires concernant les banques, mais plutôt à une disposition ancienne du cadre général de l'impôt : la déductibilité fiscale des charges d'intérêt qui encourage le financement par la dette. Cette disposition fiscale, qui existe dans de nombreux pays, est au coeur de notre stratégie d'identification du premier chapitre et sera développée plus en détail au moment de la présentation de notre méthodologie; nous nous concentrerons ici sur son impact prudentiel, au-delà de son incidence fiscale. Le problème du 'biais pour l'endettement' (*debt bias*) est bien identifié pour les entreprises non-financières (Auerbach, 2002) mais il se pose de manière accrue pour les banques, alors même qu'elles sont contraintes sur leur ratio de levier d'endettement (De Mooij, 2012). Les banques sont en grande partie contraintes sur des bases pondérées par les risques, ce qui influence la structure optimale du bilan bancaire, à la fois au passif et à l'actif; ou si l'on raisonne en termes de ratio de solvabilité : au numérateur (fonds propres) et au dénominateur (actifs pondérés par les risques). Ainsi, le capital de seconde catégorie (*Tier 2 capital*) peut être composé d'éléments hybrides, notamment de dettes subordonnées. Ces instruments hybrides ont l'avantage d'ouvrir à la déduction de la base d'imposition la charge de leurs intérêts, ce qui incite les banques à maximiser la détention de ces instruments – jusqu'à la limite réglementaire établie (De Mooij and Keen, 2016). Par ailleurs, comme le montre Horváth (2020), cette déductibilité a pour effet d'inciter les banques à accroître leur endettement mais aussi de diminuer le niveau de risque de leurs actifs pondérés par les risques (*RWA - risk weighted assets*) afin de se conformer aux réglementations prudentielles.

Un autre exemple d'interaction est le traitement des provisions dynamiques particulières (Capelle-Blancard and Couppey-Soubeyran, 2012). Ces provisions qui s'appliquent à des pertes attendues ou prévisibles ont d'importantes propriétés contra-cycliques. Elles permettent aux banques de créer un coussin de sûreté en phase ascendante du cycle et d'ainsi diminuer la chute des bénéfices en cas de retournement. Ce dispositif existe dans de nombreux pays comme l'Espagne qui l'a rendu obligatoire dès juillet 2000 et il a été partiellement repris sous Bâle III. Le traitement fiscal de ces provisions est cependant extrêmement hétérogène entre les pays, même au sein de l'Union Européenne. Les banques sont indirectement incitées à sous-provisionner ces pertes futures, car les provisions ne font pas l'objet de déductions fiscales dédiées et harmonisées (Basel Committee on Banking Supervision, 2021).

Faisant le bilan d'un manque de littérature en *public finance* sur la taxation des entreprises financières, Michael Keen, alors directeur des divisions politique fiscale et coordination fiscale au FMI, pose la question suivante : "Si notre problème est que les banques ont tendance à détenir moins de capital que ce qui est socialement optimal, pourquoi ne pas alors leur donner une incitation

fiscale à en détenir plus ?" (Keen, 2011). Il résume ainsi la prépondérance qui a été donnée dans la philosophie prudentielle à la *règle* qui agit sur les quantités, plutôt qu'aux incitations par les prix et les taux d'intérêt et il avance deux raisons afin d'expliquer cet état de fait. La première est, pour lui, une forme de dépendance au sentier. En effet, les moyens humains et techniques déployés pour la négociation, mise en place et contrôle de l'application de ces règles sont si conséquents qu'un revirement ou même un infléchissement significatif en faveur de la fiscalité est difficilement envisageable et n'est peut-être même pas souhaitable. Il est frappant de constater, non sans une certaine ironie, que c'est en partie la complexité de la réglementation prudentielle qui lui a permis de "gagner" sur la fiscalité bancaire; fait d'autant plus marquant quand on sait à quel point cette dernière est complexe. Comme nous l'avons vu précédemment, c'est d'ailleurs cet argument de la complexité des règles prudentielles qui est mis en avant par le lobby bancaire pour éviter l'application de certaines règles de limitation de l'évitement fiscal. Enfin, la seconde raison avancée par Keen est liée à la possibilité de négociations internationales. Il note qu'il est plus probable d'arriver à un large accord sur les questions prudentielles plutôt que sur un impôt global du secteur financier. Près de 12 ans plus tard, et malgré le temps long qu'à nécessité la mise en oeuvre des accords de Bâle III (publication en novembre 2010 par le Comité pour une date limite d'application annoncée en janvier 2023[11]), il semble qu'il faille lui donner raison, les accords du G20/OCDE sur la taxation minimale à un taux de 15 % ne devant pas s'appliquer avant 2024.

OFC et l'allocation globale du capital

Ce rappel succinct de l'architecture fiscale du secteur bancaire, de ses récentes évolutions et de son interdépendance avec la réglementation prudentielle motive notre étude mais il appelle à une autre question : quelle est l'incidence de la fiscalité sur l'allocation globale du capital bancaire et, surtout, quels sont les territoires qui en bénéficient le plus ? Pour cela il convient dans un second temps de définir et de présenter ce que l'on entend par *Offshore Financial Center* (OFC), terme utilisé dans les deux premiers chapitres. Il existe en effet une multitude de listes de ces territoires "gris" de la mondialisation (Delatte et al., 2022), chaque pays développant sa propre liste de pays non-coopératifs, auxquelles s'ajoutent les listes de diverses institutions internationales (FMI, Banque Mondiale, OECD, BRI[12]). Par ailleurs, il faut aussi noter que diverses listes ont été établies par la recherche académique; nous en utiliserons quatre, les deux premières (Hines Jr, 2010, Johannesen and Zucman, 2014) sont plus générales, alors que celles de Kintzler et al. (2020) et d'Aliprandi et al. (2021) ont spécifiquement été créées sur la base de données bancaires. Cette multitude de listes et de taxonomies différentes est le reflet des nombreuses définitions existantes. La définition

[11] BIS press release 27 March 2020

[12] La Banque des Règlements Internationaux a discontinué sa liste d'OFC, d'une grande qualité et se fondant sur des travaux de recherche, en juillet 2023.

la plus simple consiste à dire que les OFC sont des territoires qui, par la combinaison de taux de taxation très faibles et de diverses caractéristiques de leur fiscalité (facilité d'implantation, possibilité d'accords secrets avec les autorités fiscales, etc.), ont pour but d'attirer les investisseurs étrangers (Dharmapala and Hines Jr, 2009). C'est cette définition que nous adopterons dans une perspective de simplicité théorique; ainsi, certains pays comme la Hongrie correspondent à cette définition sans être des paradis fiscaux à proprement parler mais ces cas sont marginaux et n'empêchent pas d'utiliser une définition volontairement aussi large que possible.

A l'intérieur de cet agrégat de pays que l'on définit comme OFC, on peut différencier au moins deux sous-catégories, avec d'un coté les OFC 'avec-économie' et ceux 'sans-économie'. Dans la première catégorie on considérera les pays suivants : Suisse, Irlande, Hong Kong, Pays-Bas, Panama, Île Maurice, Chypre, etc. Ce sont des territoires qui bénéficient grandement de la compétition fiscale mais dont l'économie n'est pas exclusivement dédiée à l'évitement fiscal, bien qu'en général le secteur financier (banques et assurances, fonds de pension, cabinets de conseil et d'audit, etc.) y représente une large part. C'est le développement de ce secteur financier important qui peut permettre de soutenir des économies diversifiées, surtout au regard de la deuxième catégorie de pays. Les OFC 'sans-économie' sont en général des territoires de plus petite taille, avec une population restreinte (moins d'un million d'habitants) et dont l'économie est très largement dominée par le secteur financier : Bermudes, Îles Caïmans, Jersey et Guernsey, Macao, etc. Cependant leur poids dans l'architecture financière mondiale n'est pas forcément moins important que celui des OFC 'avec-économie'. Ainsi les îles Caïmans, avec une population de 65 500 habitants en 2023 et un PIB de 4,6 milliards de dollars (2021)[13], sont le premier partenaire bancaire (en termes d'actif et de passif bancaire transfrontaliers)[14] des Etats-Unis, devant le Royaume-Uni, la France ou l'Allemagne.

Les raisons de l'existence de ces territoires sont multiples mais nous mettrons en avant ici deux thèses importantes et complémentaires, bien que provenant de disciplines différentes. La première, développée par Vanessa Ogle (Ogle, 2017, 2020), historienne de la décolonisation, instiste sur le rôle du retrait des puissances occidentales, pendant l'après-guerre, de territoires ayant relativement peu de ressources propres et de puissance politique mais souhaitant l'indépendance politique et juridique. Ce reflux des administrations coloniales a souvent créé un relatif vide juridique qui a été un terreau fertile au développement d'activités "grises", liées par exemple au statut de port-franc (trafics) ou de territoires nouvellement autonomes (banques internationales agissant hors des juridictions internationales, etc.). Nombreux sont les territoires concernés mais des pays comme le Liban ou bien des villes comme Tanger sont des exemples de ce type de développement. Par

[13]Source : World Factbook, CIA

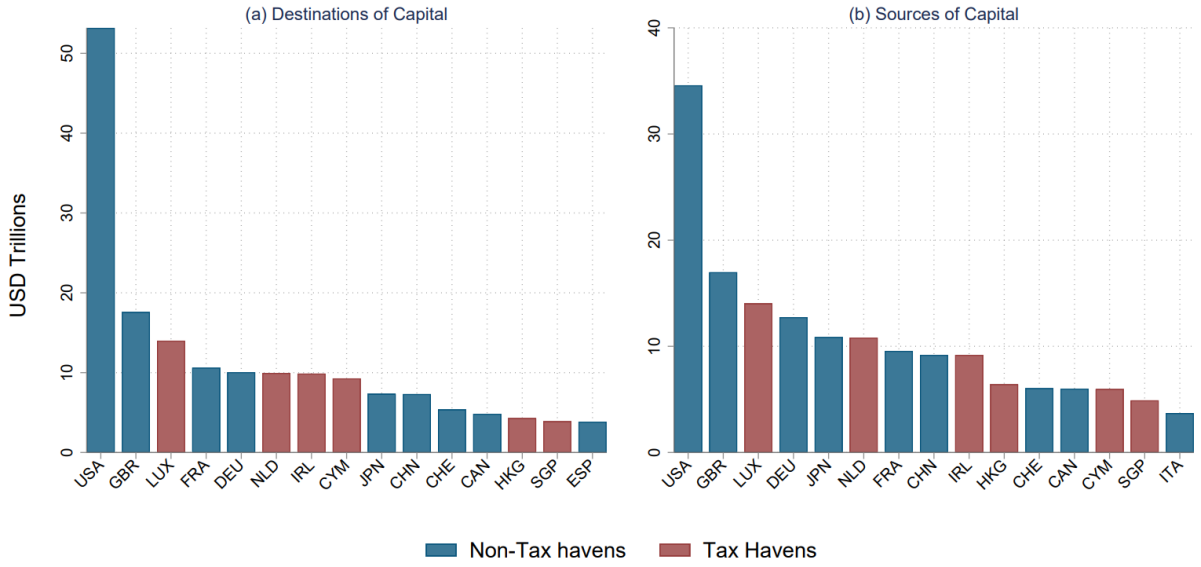
[14]Ici compris comme actifs et passifs bancaires ayant des contreparties bancaires. Source : Locational Banking Statistics (LBS), Bank for International Setlements (BIS)

ailleurs, si les personnes (administrateurs, forces militaires, etc.) ont quitté les colonies entre 1950 et 1970 pour la métropole, il n'en est pas de même des capitaux et des actifs des anciens colons. En effet, si l'on observe une liquidation rapide des actifs dans de nombreuses colonies, on remarque que ces fonds ont ensuite souvent été rapidement ré-investis au sein de cet "archipel du capitalisme"; vers des paradis fiscaux naissant, considérés comme sûrs. La seconde explication est due à Godrey Baldacchino qui met en avant que les théories traditionnelles du développement ne peuvent pas s'appliquer aux "micro-États" (Baldacchino, 1993). En effet, en raison des nombreux désavantages qu'ils accumulent (faible population, sensibilité aux catastrophes naturelles, marchés intérieurs réduits, impossibilité de développer des marchés de capitaux, faible influence géopolitique, etc.), ces pays ne peuvent pas jouer sur un pied d'égalité avec les autres grands pays sans courir le risque d'être mécaniquement condamnés à être les perdants de la mondialisation. Il défend donc l'idée qu'il faut s'extraire d'une vision "parasitique" de ces États et voir leur développement en tant que paradis fiscaux comme une stratégie rationnelle. Ces nations décolonisées ont renforcé leur intégration avec les pays du centre (finance, tourisme et commerce maritime) et vivent de la rente conférée par leurs stratégies agressives de développement.

Tous les micro-États ne deviennent toutefois pas des paradis fiscaux; Dharmapala and Hines Jr (2009) ont mis en avant de manière convaincante que la stabilité politique et la qualité de la gouvernance étaient des conditions nécessaires à l'établissement de pays comme OFC. Par ailleurs, si jusqu'à présent nous avons mis en avant leur fiscalité attrayante, il est probable que les faibles taux d'imposition qu'ils proposent ne suffisent pas à épuiser à eux seuls les raisons qui expliquent leur proéminence dans la finance internationale. En effet, si ces questions dépassent le cadre de cette thèse, il faut aussi noter que les OFC proposent également un large éventail de services (facilité d'installation, possibilité d'utiliser des prêtes-noms, etc.) aux ménages et entreprises qui sont utilisés à des fins variées (corruption, blanchiment d'argent, etc.), qui dépassent la simple compétition fiscale.

La littérature en *public finance* a désormais bien documenté quel était l'impact de l'évitement fiscal sur la géographie des flux des entreprises non-financières. Tørsløv et al. (2023) montrent en effet qu'en 2015, 36 % des profits réalisés à l'étranger par des multinationales étaient déclarés dans des OFC. En parallèle, à la suite de l'article fondateur de Lane and Milesi-Ferretti (2011), la littérature en macroéconomie internationale a pu documenter la distorsion qu'ils créent dans les positions transfrontalières (Figure 1). Ainsi, Delatte et al. (2022) montrent qu'entre 40 % et 50 % des Investissements Directs à l'Étranger et des investissements de portefeuille internationaux ont pour origine ou pour destination un OFC. A travers un travail complexe de réallocation systématique de ces positions dans une perspective de nationalité – que l'on peut considérer comme une réallocation au détenteur final – Coppola et al. (2021) et Florez-Orrego et al. (2023) du *Global*

Figure 1: Le rôle des OFC dans l'allocation globale du capital



Note : Ce graphique montre la valeur totale (en dollars, en 2015) des actifs et passifs (en excluant l'or) transfrontaliers, d'après la base de données de Lane and Milesi-Ferretti (2011) "External Wealth of Nations". Source : (Florez-Orrego et al., 2023)

Capital Allocation Project ont été capables de mesurer les positions précises de chaque pays. Ils montrent notamment que les pays avancés (États-Unis, Royaume-Uni, Canada, etc.) se servent très largement des OFC comme des "conduits" pour leurs investissements vers les BRICS et en particulier pour la Chine, dont la principale porte d'entrée est Hong Kong.

Hong Kong et la politique monétaire chinoise

Cette question des déterminants de l'allocation globale du capital bancaire est au coeur de notre deuxième chapitre, qui étudie l'effet de la politique monétaire sur les investissements bancaires transfrontaliers. Nous proposons une application du concept du Cycle Financier Global (*Global Financial Cycle*) de Rey (2013) à la Chine et à Hong Kong, cas particulier de centre financier. La théorie du 'cycle global' met en avant l'idée que la politique monétaire étasunienne se transmet aux autres pays, quelle que soit leur position au sein du triangle de Mundell-Fleming, redéfinissant ainsi les politiques monétaires internationales non plus comme un trilemme (autonomie monétaire, libre mobilité des capitaux et taux de change fixe) mais comme un dilemme. La politique monétaire du pays hégémonique, les États-Unis, en influençant le cycle mondial, réduit l'autonomie monétaire des autres pays, conduisant ceux qui veulent maintenir leur indépendance monétaire à se tourner vers l'outil du contrôle des capitaux. Le choix de Hong Kong et sa relation avec la Chine est motivé par une multitude de raisons. La première est leur position respective sur le triangle d'incompatibilité dont on peut retenir deux faits saillants : la Chine opère un contrôle des capitaux unique pour un pays de sa taille (Chen and Qian, 2016), tout en intervenant largement sur son marché des changes; à l'inverse, Hong Kong est un petit pays ouvert qui jouit d'une libre circulation des capitaux et

dont la monnaie est ancrée au dollar américain. Comment donc comprendre l'intégration bancaire entre les deux pays (chacun étant le premier partenaire de l'autre), quand la Chine impose un contrôle des capitaux et Hong Kong non ?

Depuis 1983, Hong Kong opère une caisse d'émission contre le dollar américain. Ce phénomène est assez courant pour les OFC[15] et il est lié à la fois à la petite taille de leurs économies qui les rend sensibles à des fluctuations importantes, et à leur volonté d'attirer les capitaux du pays auquel ils adossent leur monnaie. La caisse d'émission de Hong Kong a été d'une remarquable stabilité depuis son instauration et est l'une des sources de sa réussite financière (Cabrillac et al., 2022), puisque historiquement elle a contribué à son développement en ouvrant le territoire aux capitaux étrangers, et surtout américains. Hong Kong est un ancien comptoir britannique, voisin du comptoir portugais de Macao, et a connu une forte croissance économique dans l'immédiate après guerre qui s'est accentuée dans les années 1990, en partie grâce à l'impulsion de la croissance chinoise. La rétrocession en 1997 du territoire par le Royaume-Uni à la Chine a été un facteur de déstabilisation économique important à court terme mais la place de Hong-Kong comme centre financier global majeur s'est consolidée sur au cours des années 2000 pour devenir le principal centre d'Asie de l'Est. S'il est souvent comparé avec Singapour, qui est l'OFC majeur de la région de l'Asie du Sud-Est, il se démarque grâce à son atout principal qui est sa proximité économique avec la Chine. Après la rétrocession, Hong Kong a *de facto* joué un rôle de zone économique spéciale *avancée*, car n'étant pas soumis aux mêmes réglementations que le reste du territoire chinois. La combinaison d'une loi favorable au développement de l'activité financière (la *common law* britannique[16]), d'une fiscalité avantageuse, d'une main d'oeuvre qualifiée et largement anglophone ainsi qu'un accès privilégié aux marchés financiers chinois (des changes et de titres) ont permis à Hong Kong d'accéder à son statut actuel de fenêtre financière de la Chine. Ce statut avantageux d'un point de vue économique a pour contrepartie l'influence politique grandissante qu'exerce le Parti communiste chinois sur le territoire autrefois autonome.

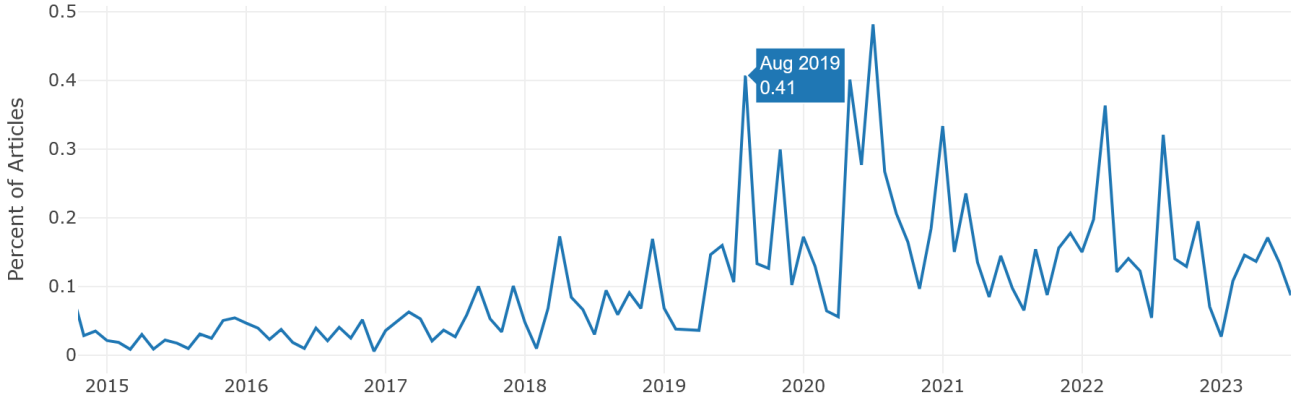
Les manifestations de l'automne 2014 et de l'été 2019 en faveur de la défense de la démocratie et des libertés fondamentales ont eu de profondes répercussions politiques dont les retombées économiques sont difficiles à pleinement appréhender. S'il est clair que les manifestations de 2019 ont accru la perception du risque géopolitique (Figure 2), il est difficile, de par la concordance des crises, de discerner le poids seul de cet évènement sur l'économie hongkongaise qui se confond avec les répercussions du COVID-19 et du ralentissement de l'économie chinoise. Le renforcement de la

[15] Notons par exemple le dollar des îles Caïmans adossé au dollar US, tout comme l'est celui des Caraïbes de l'Est, la livre de Gibraltar adossée à la livre sterling etc. Cette question des fondements de l'ancrage des monnaies des OFC (à distinguer des autres micro-États par leur poids financier) à celles d'autres grandes nations est une question qui a été peu traitée et est une extension possible à nos travaux.

[16] La loi hongkongaise (tout du moins jusqu'en 2020) était fondée sur une Constitution établie en 1997, où le rôle de la jurisprudence est prépondérant et où les juges peuvent faire référence à des jugements rendus dans des pays du Commonwealth afin de motiver leurs décisions.

prise en main du territoire par le Parti communiste chinois peut s'apparenter à une opportunité économique pour Hong Kong si l'intégration politique forcée continue de profiter aux échanges commerciaux et financiers. Il n'est cependant pas exclu, au regard des investissements récents pour développer l'activité financière dans ces régions, que le pouvoir exécutif chinois ne préfère pas se concentrer sur le développement des zones économiques de l'hinterland, comme Shenzhen et Guangdong (Canton).

Figure 2: Risque géopolitique à Hong Kong

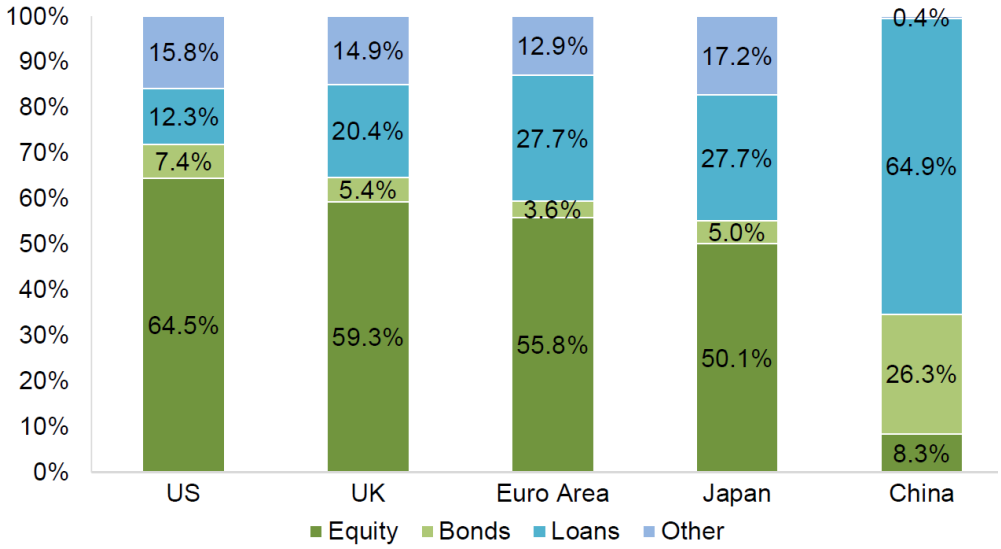


Note : Ce graphique montre la valeur de l'indice de risque géopolitique de Caldara and Iacoviello (2022) pour Hong Hong, construit à partir de la fréquence d'appartion de certains mots-clefs dans les quotidiens régionaux et internationaux. Données extraites du site www.matteoiacoviello.com/gpr.htm le 2 septembre, 2023.

La seconde raison de cette étude est justement liée au contrôle des capitaux. En effet, à l'inverse de Hong Kong qui est un petit pays ouvert avec une liberté totale de circulation des flux de capitaux, la Chine applique une politique de contrôle des capitaux unique au monde, ce qui explique la faible part des IDE dans le financement des entreprises chinoises (Figure 3). À travers de nombreuses politiques de développement, depuis 1978, la Chine s'est très progressivement ouverte aux capitaux étrangers, tout en maintenant un fort contrôle sur la nature des investissements, leurs montants (quotas) et l'accès aux actifs libellés en renminbi (yuan). L'une des clefs de ce développement a été l'établissement de zones économiques spéciales (Shanghai, Shenzhen, etc.), pensées comme des portes d'entrée pour les capitaux étrangers. À travers ces diverses politiques de développement, la Chine est désormais le deuxième marché obligataire au monde, derrière les États-Unis et devant le Japon[17]. L'autre particularité du financement des entreprises chinoises est le rôle prépondérant des prêts bancaires, bien plus que dans les pays avancés (Figure 3 et Schipke et al. (2019)). Cette caractéristique chinoise montre ainsi l'importance d'étudier sous quelle forme les capitaux étrangers entrent en Chine. En concentrant notre analyse sur les actifs bancaires (majoritairement constitués de prêts bancaires), nous sommes donc en mesure d'étudier la première source de financement des entreprises chinoises.

[17]Source : Global Bond Market Outstanding, SIFMA Capital Markets Fact Book, rapport de 2023.

Figure 3: Le financement des entreprises non-financières



Note : Ce graphique montre la part que représente la part de chaque type de financement pour les entreprises non-financières. Other = IDE, billets de trésorie, crédits commerciaux, erreurs et omissions. Source : OECD, Federal Reserve, ECB, Bank of Japan, National Bureau of Statistics of China, SIFMA Capital Markets Fact Book, rapport de 2023.

Notre deuxième chapitre se propose en conséquence de documenter l'évolution des encours internationaux entre la Chine et Hong Kong, témoins de leur intégration bancaire. À travers une variété de variables de politique monétaire, nous évaluons l'impact des chocs monétaires chinois sur les prêts transfrontaliers hongkongais. Nos résultats indiquent qu'une grande partie de la baisse du niveau d'encours, observée dès 2015, peut être attribuée à la politique monétaire accommodante de la Banque Populaire de Chine et à sa conséquence directe : la réduction de l'écart entre les taux chinois et ceux des pays avancés. Nous expliquons cette évolution par un comportement de recherche de rendement de la part des banques internationales résidant à Hong Kong. Par ailleurs, en accord avec la littérature récente sur la transmission de la politique monétaire chinoise, nous montrons que cette dernière opère désormais pleinement dans une logique de taux d'intérêt de marché et non plus à travers des instruments purement quantitatifs (quotas, contrôle du crédit et quantité de réserves obligatoires), qui étaient sa marque de fabrique dans les années 1990 et le début des années 2000. Enfin, par souci d'exhaustivité, nous comparons ces résultats à la transmission de la politique monétaire de l'*hégémon*, les États-Unis. Ces derniers indiquent que l'effet de la politique monétaire chinoise sur les actifs bancaires internationaux hongkongais est plus fort que celui de la politique de la Fed.

Annonces budgétaires et *forward guidance*

La politique monétaire est, d'une manière indirecte, l'inspiration du troisième chapitre, à travers l'idée désormais communément admise de la nécessité de la communication de l'action des banques

centrales. Cette communication doit généralement s'articuler autour d'un mandat et d'engagements forts concernant leurs actions, aussi bien en termes d'amplitude que d'horizon. Cette contrainte à la communication est renforcée en période de crise, car elle est nécessaire afin de réduire l'incertitude. Ainsi, dès le début de la crise financière causée par la pandémie du COVID-19, au mois de mars 2020, les banques centrales des pays avancés ont très largement opéré des politiques de soutien au système financier et de guidage des anticipations. Dans le cadre européen, la banque centrale européenne (BCE) a lancé le 18 mars 2020 le *Pandemic emergency purchase programme* (PEPP) en complément de l'APP (*Asset purchase programme*). Ce nouveau programme taillé pour la crise avait pour but de limiter les écarts de taux d'intérêts souverains entre les pays de la zone euro. En réduisant directement le coût auquel les États de la zone euro se sont endettés, la BCE a oeuvré en faveur du financement des politiques de relance des pays membres. En outre, comme depuis la crise financière de 2007-2008 – et surtout la crise des dettes souveraines – la communication de crise a été au coeur de son action. L'une des raisons d'être du PEPP a d'ailleurs été de pouvoir communiquer sur des objectifs différents, ce qui justifie la mise en place d'un outil supplémentaire pour la pandémie, plutôt que de seulement étendre les programmes pré-existants (Blot et al., 2021). Autrefois considérées comme faisant partie des politique non-conventionelles, la *forward guidance* fait désormais partie des outils standards des banques centrales qui sont contraintes à communiquer leurs actions, et les commenter[18].

Si l'on regarde la communication autour de l'action du pouvoir budgétaire, on remarque que dans les premiers temps de la crise, ce sont d'abord les chefs d'États des grandes économies de la zone (Allemagne et France, Italie et Espagne dans une moindre mesure) qui ont très largement pris la parole sur la réponse à apporter[19]. Cette communication désordonnée n'est que le reflet de politiques de relance qui ont d'abord été menées de manière indépendante par les États membres. En effet, si les pays européens ont tous mis en place des politiques de soutien de leurs économies, chacun a individuellement décidé de la nature (chômage partiel, soutien aux entreprises, transferts aux ménages, etc.), de l'intensité – parfois contrainte par l'espace budgétaire disponible aux États – et de la temporalité de ces politiques. Ce n'est que plusieurs semaines après le début de la crise qu'un véritable projet de plan de relance européen a vu le jour. Parmi les différentes initiatives, on peut noter l'instrument européen de soutien temporaire à l'atténuation des risques de chômage en situation d'urgence (SURE - *Support to mitigate Unemployment Risks in an Emergency*), lancé le 2 avril 2020 et surtout le plan de relance *Next Generation EU*, proposé le 18 mai 2020 par A. Merkel et E. Macron, et accepté le 21 juillet 2020. D'un montant de 750 milliards d'euros, ce

[18] Après sa déclaration du 12 mars 2020 à propos du rôle de la BCE "not here to close spreads", C. Lagarde est revenue dessus le 19 mars dans un éditorial au Financial Times https://www.ft.com/content/281d600c-69f8-11ea-a6ac-9122541af204

[19] Dès le 13 et 16 mars pour E. Macron, et le 18 mars pour A. Merkel.

projet qui vise à investir dans la recherche, la transition énergétique, le numérique, etc., a fait face à l'opposition des États "frugaux" et n'a été ratifié qu'en mai 2021, soit plus de 14 mois après le début de la crise. La principale limite à la coordination de la communication dans le cadre européen tient avant toute chose aux désaccords des dirigeants politiques, qui concernent à la fois la direction et l'ampleur des réponses à apporter. La comparaison entre le temps long nécessaire à l'action coordonnée des États et la rapidité de la réaction de la banque centrale, montre les limites de l'arrangement institutionnel de la politique économique de la zone euro. De plus, à la difficile coordination de la réponse fiscale s'ajoute la non moins délicate coordination des politiques monétaires et fiscales au sein du *policy mix* européen. Lors de son adresse aux Français du 12 mars 2020, E. Macron déclare ainsi : "Nous devons aussi porter une réponse européenne. La Banque centrale a déjà, aujourd'hui, fait part de ses premières décisions. Seront-elles suffisantes ? Je ne le crois pas."

La crise du COVID-19 a cependant montré l'importance de la communication des décideurs politiques pendant la crise. La communication autour d'un "quoi qu'il en coûte", mobilisé dans un très grand nombre de pays (IMF, 2021), s'articule autour de deux engagements majeurs :

- L'ampleur : le soutien sera aussi fort que nécessaire, et ce sans prise en compte du coût financier immédiat pour l'État.
- L'horizon : le soutien durera aussi longtemps que la crise, ou bien aussi longtemps que les effets économiques de la crise se feront sentir.

Cette communication est pour nous, la transposition au cadre budgétaire de l'idée de la *forward guidance* qui a été développée dans la perspective de la politique monétaire. Dans ce contexte, nous nous proposons d'appliquer cette idée au cadre français et de mesurer l'effet des annonces du président Emmanuel Macron pendant la crise du COVID sur les marchés financiers français. En distinguant l'effet des communiqués ou des fuites dans la presse à propos de futures annonces et les effets propres aux annonces elles-mêmes, nous montrons comment chacune impacte i) le marché des actions français et ii) l'écart de taux souverains entre la France et l'Allemagne. Nous montrons aussi que les adresses et l'annonce de ces adresses ont des effets mixtes sur la volatilité de nos deux indicateurs. Nos résultats suggèrent que la communication des décideurs de la politique budgétaire a un effet globalement positif et peut aider à rassurer les marchés financiers, tout en favorisant des politiques fortes de soutien fiscal en période d'incertitude.

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Chapter 1

Why Do Banks Have So Many Assets in Tax Havens?

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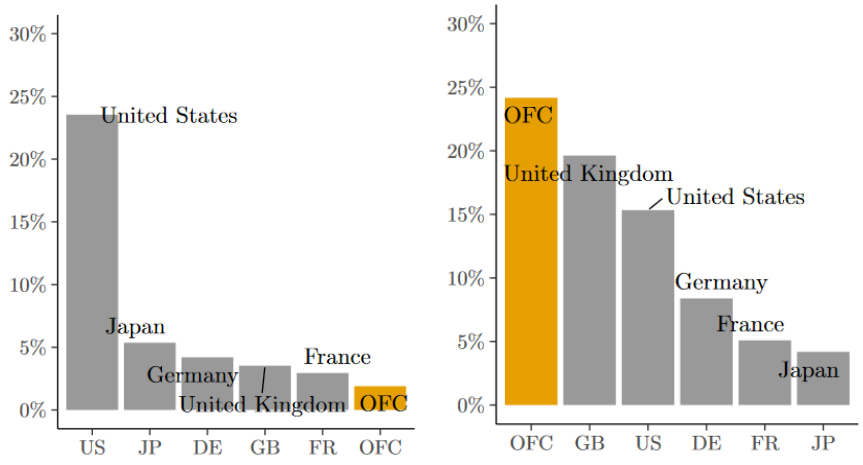
1.1 Introduction

While the Offshore Financial Centers (OFCs thereafter) represent a negligible fraction of the world GDP, they account together for more than 20% of the cross-border banking assets and liabilities, ranking them as the largest banking system ahead of the United States and the United Kingdom (Figure 1.1). This figure illustrates the importance of OFCs within the international banking architecture, which raises concerns as a large number of banks are systemically important. In other words, it is crucial to understand their position and function within banks' funding chains. Do banks use OFCs for the same reasons as non-financial corporations, *i.e.* for tax purposes? Or do they use them for other reasons that may complicate or conceal their operations?

Banks are often large and complex entities with a higher leverage on average than non-financial companies of comparable size (De Mooij, 2012, Gu et al., 2015). They are subject, in part, to common regulations that apply to all businesses, as well as regulations specific to their industry. In particular, the banking activities of large international banking groups have been subject to increased oversight since the Great Financial Crisis. Basel II and III have enabled the regulation of leverage within the banking sector through the enforcement of various prudential ratios (including the Core Equity Tier 1 ratio or leverage ratio, among others). The first objective of these rules is to increase the resilience of the banking system and preserve its capacity to lend. However, they are also used as an argument to justify exempting banks from certain rules limiting profit shifting.

Figure 1.1: Relative weight of countries in global GDP (left) and in the total of cross-border assets (right)



Note: The list used to create the 'Offshore Financial Centers' (OFCs) group is from Kintzler et al. (2020). Relative weight measured using national GDP (2020, or most recent year available for Jersey and Guernsey). Source: World Bank.
Lecture: OFCs represent less then 2% of the global GDP but hold 24% of the of the total of cross-border assets.

The most recent example is the recent negotiations of the OECD/G20 Base Erosion and Profit

Shifting (BEPS) initiative to implement the two-pillar solution to tax challenges. The United Kingdom[1] has pushed for a financial industry carve-out from Pillar 1 rules that would give additional taxing rights to large multinationals to the jurisdictions where users of digital services (including, but not limited to, digital services) reside. The argument pushed by banking representatives, playing on the complexity of prudential rules, has been echoed by the BEPS initiative:

> "The defining character of the [financial] sector is that it is subject to a unique form of regulation, in the form of capital adequacy requirements [...]. It is this regulatory driver that generally helps to align the location of profits with the market. The scope of the exclusion derives from that requirement, meaning that Entities that are subject to risk-based capital measures (and only those) are excluded." Pillar One – Amount A: Regulated Financial Services Exclusion, May 2022.

Moreover, in contrast to the well-documented tax avoidance practices of non-financial corporations and households, there is a noticeable lack of literature on the tax avoidance strategies of banks. This can be attributed to several factors, including the complexity of banking activities: financial schemes, special accounting rules for banks, prudential regulation, proprietary trading vs. activities for their clients, complexity of the organisation of banking groups, which often regroup different regulated activities (banking, insurance, etc.). In addition, the distinctive business model of financial institutions differs significantly from that of non-financial entities, making comparisons of their preferred profit shifting mechanisms challenging (Langenmayr and Reiter, 2017). This lack of literature is also partly due to the reliance on consolidated data, which does not report intra-group activities.

Tax avoidance by banks is an important issue for several research and policy agendas. First, it allows for a better understanding of financial circuits by decomposing their opaque intermediation activities, *i.e.* understanding what banks really do. Second, a better mapping of offshore activities would enable policymakers to complement prudential regulation, either by reinforcing or complementing existing measures for the non-financial sector. In particular, identifying the different roles of parent companies and subsidiaries allows for more targeted regulation. Finally, as tax avoidance leads to tax losses, it is important for tax authorities to better understand how to combat this phenomenon.

In this chapter, we shed new light on profit shifting by banks by examining the cross-border activities of the largest international banking groups, in particular their intensive use of intra-group exposures. First, we document the process of banking globalisation by showing the growing share

[1]Source : Financial Times, July 1st 2021 https://www.ft.com/content/f10b3e92-03e9-402b-9462-237f53b4d140

of international intermediated debt since the 1980s. We then show that the share of intra-group debt in total bank liabilities is significant, accounting for more than 50% of total bank positions. Furthermore, we observe that this share has been increasing over time, rising from 52% in 2014 to 60% in 2020. These observations testifies to the interest in focusing on banks' own activities.

We then show that the geographical distribution of these cross-border intra-group exposures is neither random nor based on the underlying cross-border economic exchanges. In contrast, we show that the distribution of cross-border intra-group liabilities is highly correlated with the corporate tax rates of both (i) creditor countries – countries in which lending banks operate – and (ii) debtor countries – countries in which lending banks operate.

For this purpose, we first group creditor countries in time-varying quintiles of corporate income tax rates. Then, we compare the distribution across these quintiles of intra-group liabilities to the distribution across the same quintiles of interbank liabilities. Our identifying assumption is that in a world without profit shifting by banks, the shape of the two distributions should be similar. We show that this is not the case: the first quintile of creditor corporate tax rates – *i.e.* the creditor countries with the lowest tax rates – represents a larger relative share in the case of intra-group liabilities than in the case of interbank liabilities. We confirm this observation by showing that the ratio of the relative share of intra-group liabilities to the relative share of interbank liabilities is disproportionately higher for this first quintile than for other quintiles. Essentially, for a given debtor country and a given creditor country, banks in the debtor country tend to borrow disproportionately more from their affiliates (relative to borrowing from other banks) if the creditor country has very low corporate tax rates that make profit shifting attractive and effective. The same pattern is observed when the creditor country is regarded as an OFCs.

Next, we provide evidence that this pattern is most pronounced when we focus on a subset of debtor countries with significant corporate tax rates, *i.e.* a subset of countries where banks have the strongest incentives to shift profits. We also examine whether this pattern has a different intensity for (i) parent bank borrowing from their subsidiaries and (ii) inter-subsidiary borrowing and find that it does not.

Finally, we examine a competing hypothesis for this pattern. We hypothesize that the disproportionate role of intra-group exposures in creditor countries within the first quintile of corporate tax rates (or considered as OFCs) reflects the practice of profit shifting by banks. However, OFCs are not only jurisdictions with very low corporate tax rates but they can also provide significant opportunities for regulatory arbitrage, which may also explain the pattern we found. We explicitly test this competing hypothesis by focusing on cross-border banking exposures within the European Union (EU thereafter). Indeed, since 2014 and the implementation of the Basel II rules in the EU (as well as the entry into force of the Single Supervisory Mechanism), the possibility of regulatory

arbitrage is very limited, if not non-existent. Nevertheless, we continue to observe our pattern – the disproportionate role of intra-group exposures in creditor countries with low corporate tax rates – in this subsample where regulatory arbitrage is unlikely.

Overall, to the best of our knowledge, this paper is the first to examine the crucial role of banks' intra-group exposures in shifting profits to low corporate tax jurisdictions. In particular, we document the disproportionate importance of intra-group bank exposures (i) when the creditor country – the country in which the lending banks operate – has a low corporate tax rate or is an OFC, and (ii) when the debtor country – the country in which the borrowing banks operate – has a high corporate tax rate.

The rest of the chapter is organised as follows. The next section briefly reviews the literature on profit shifting. Section 1.2 presents our data sources. Section 1.3 details our methodology. Section 1.4 provides an overview of the importance of cross-border assets and liabilities and intra-group exposures. Section 1.5 discusses our main findings and section 1.6 concludes.

1.2 Related Literature

1.2.1 Firm, intragroup and tax havens

Profit-Shifting

One of the first indirect piece of evidence of profit-shifting by banks was given by Demirgüç-Kunt and Huizinga (2001) who showed that the reported profits of foreign-owned banks are negatively correlated with the statutory tax rate of the country of incorporation. Huizinga et al. (2014) find that taxes influence the profitability of banks and their FDI. Merz and Overesch (2016) were the first to concentrate on banks' profit-shifting, albeit with a limited focus of tax haven: they show that the banks' tax elasticities of subsidiary profits are twice as large as the effects found in previous studies for non-financial firms. They also note that some activities' gains, in particular trading, are highly sensitive to tax rates.

Since the Country-by-Country Reporting (CbCR) requirements have been implemented[2], several studies have been able to measure the extent of profit-shifting in the European banking industry using micro-data by comparing the level of reported profits by employees in a number of tax havens and high-tax countries. The first to exploit these data were NGOs (Oxfam and Transparency International). Numerous academic work: Aliprandi et al. (2021), Bouvatier et al. (2017), Dutt et al. (2019), Fatica and Gregori (2020), Janskỳ (2020), have since then shown a clear negative

[2]CbCR is part of the Basel III prudential regulation for the financial sector. Since 2015, in the EU, article 89 of the Capital Requirements Directive IV forces financial institutions to disclose annually a) the names, natures and location of their activities b) turnover c) number of employees d) profit before tax e) tax on profit, etc. See (Delpeuch et al., 2019) for a review of CbC reporting.

correlation between the profit per employee and the statutory or effective tax rate. Because these data measure the effective taxes paid by European banks in all the location in which they conduct economic actities, they have also been used to compute effective tax rates (ETR) (Aliprandi et al., 2021).

Instruments of Profit-Shifting

The most often cited instruments for non-financial firms is transfer pricing coupled with the strategic reallocation of economic activities. The first instrument allows companies to charge artificially low (high resp.) prices for goods and services in order to increase (decrease) their profits in low-tax (high-tax) territories. Firms can also transfer specific activities (research, trading etc.) or even the ownership of brands and patents to tax-favourable locations. This practice is usually done with intellectual property and royalties and extremely common for some large non-financial firms. (Beer et al., 2018, Heckemeyer and Overesch, 2017). In a recent study using UK administrative tax data, Bilicka (2019) nuance this fact by showing that differences in leverage, which is an indirect indication of the importance of debt-shifting plays a large role (40%) for non-financial firms. Nevertheless there is currently no consensus on the relative importance oh each instrument of profit-shifting for financial companies.

Trading offshore: Langenmayr and Reiter (2017) are the first to propose a channel for profit shifting that is unique to financial corporations. Using German micro-data, they show that bank artificially relocate their proprietary trading activities in low-tax countries while the trading is still realised by operators in high-tax countries.

Debt shifting: Due to their business model of maturity transformation and and their unique ability to relocate liquidity, a large part of the literature on bank profit shifting has been dedicated to studying the artificial use of debt as a means to lower their tax base. Debt shifting is the strategic allocation of artificial debt inside a multinational corporation.[3] A firm in a high-tax country i can issue internal debt towards its subsidiary in a low-tax country j. This will create a transfer in the form of interest payments form the high-tax country to the low-tax country that will reduce the profits declared in i and increase the profits in j. In addition, most tax systems in the world allow for the deductibility of debt interest. Despite the introduction of capital and leverage ratios intended to constrain leverage in the banking sector (Basel II and III), studies have shown that corporate taxes play a role in bank's leverage (De Mooij, 2012). Indeed, while theoretically constrained, financial companies exhibit similar debt bias as non-financial companies. One of the reasons is that prudential regulation constrains the amount of external debt that banks can

[3] See Fuest and Hemmelgarn (2005) for a theoretical model that features this type of profit-shifting

have, but not the amount of internal debt, as leverage ratios (Tier 1 leverage ratio, debt-to-equity ratio and debt-to-capital) are consolidated at the parent company level. This creates an incentive for banks to use internal debt rather than external debt. In economic policy, the issue of debt shifting in banking groups has been clearly identified by the G20/OECD as part of the Inclusive Framework on BEPS (OECD, 2016). While many countries have implemented thin-capitalization rules (limitation of the tax deductibility of intererest payments), several countries had, prior to 2019, no limitation rules (in France there was no limitation for banks, Italy allowed the deduction of 96% of the total amount of interests etc.[4] The main policy recommendation to limit interest deductibility between related parties has consisted in implementing fix ratio rule and group ratio rule – "thin-capitalization" rules, based on the EBITDA of the company.[5] Thin-capitalization rules can be effective for non-financial companies,[6] but restrictions of interest deductibility only applies on net interest expenses, *i.e.* excess of financial expenses net of total financial income. Which de facto excludes any banks with a positive financial margin from the scope of the thin capitalization rules (Reiter et al., 2021, Suet and Dallemagne, 2018).

In addition, Heckemeyer et al. (2013) note that many banks have capital ratio targets higher than the minimum amount required by regulations, which means that the regulation constraint is not binding for them. Heckemeyer et al. (2013) and De Mooij and Keen (2016) are, to the best of our knowledge, the first studies on banks' debt bias. Using micro-data, they compare the debt sensitivity to tax rates between financial and non-financial company. The response is overall of the same magnitude for banks and non-banks but they show that capital-tight banks are less responsive than capital-abundant banks. De Mooij and Keen (2016) also find that larger banks are less sensitive to tax and that taxation has no impact on the use of hybrids. Gu et al. (2015) find that banks' leverages depend on corporate income tax and the international tax difference vis-à-vis other bank subsidiaries. Fatica et al. (2020) show the link between tax rates and the concentration of debt in banks affiliates and question the implication for financial stability. Bremus et al. (2020) find that the introduction of bank levies leads to lower leverage as the cost of debt rises. However, they note that the reduction in leverage is weaker the higher corporate income taxes are, showing that the tax break advantage of the debt bias mitigates the effect of the tax. Finally, the closest paper to ours is Reiter, Langenmayr and Holtmann (2021) that are the first to extensively study debt shifting in the banking sector using bilateral administrative micro-data for German international banks. They find that a ten percentage points higher corporate tax rate increases the internal debt-to-assets ratio by about 5.1 percentage points, which is a stronger effect

[4] See OECD (2016) Appendix III.B for a detailed presentation of the rules limiting interest deductibility in the banking sector.

[5] e.g., EU member states are required to limit the deductibility of 'net borrowing costs' up to 30% of the taxpayer's earnings before interest, tax, depreciation, and amortisation

[6] See Buettner et al. (2012) and Blouin et al. (2014) for empirical evidence.

than what is reported for non-banks in comparable settings.

1.2.2 Discrepancies between micro and macro estimates

The literature on profit-shifting has notoriously been limited by the scarcity of data. The particularity of studying and quantifying tax avoidance is that economic agents involved in such mechanisms – corporations, OFC authorities and households – deliberately attempt to hide information, which may lead to downward biases or overly conservative estimations. Important discrepancies still exist in the literature between studies that use micro and macro data, and this is true for the estimates of both tax elasticity and the total amounts of profit shifted; with micro estimates being generally smaller than macro estimates (Dharmapala, 2014, Tørsløv, Wier and Zucman, 2023). One of the largest and most popular databases in the literature is the Bankscope/Orbis database from the Bureau van Dijk which collects a large set of financial statement from a combination of annual reports, information providers and regulatory sources. Recent research has shown that in Orbis, little micro-data exists about the profits booked in low-tax countries because in many countries, this kind of registries simply do not exist or are incomplete which may be an explanation for the differences between micro and macro estimates (Clausing, 2016, Tørsløv, Wier and Zucman, 2023).

Against this background, our study is the first to use macro-level data that centres on banks activity as related research has so far relied exclusively on micro-data either from Orbis (De Mooij and Keen, 2016, Heckemeyer et al., 2013) in which tax-haven are near absent, or CbCR data, which only informs us about the activity conducted by European-headquartered banks.

1.3 Data sources and Methodology

1.3.1 Locational Banking Statistics

In this paper, we study the profit-shifting of banks using a restricted, macro-level dataset from the Bank of International Settlements (BIS). The *Locational Banking Statistics* dataset (LBS thereafter) provides quarterly cross-border banking positions at the country level over the last four decades. They are compiled following principles that are consistent with balance of payments statistics. Crucially, these banking positions are *unconsolidated* and the reporting of these data is made under the *residence principle*.[7] Say differently, these data tell us what are the assets and the liabilities held by banks *located* (but not necessarily *incorporated*, meaning that it can be of another nationality) in country A towards counterparts located in country B.

[7]The BIS also disseminates a dataset with consolidated cross-borders banking positions (CBS), the *Consolidated Banking Statistics* dataset, but it is of less interest for studying profit-shifting because consolidated financial statements tends to hide operations resulting from profit-shifting strategies.

These counterparts are broken down into non-financial corporations, households, general governments, but also financial institutions and banks. Regarding the latter, the dataset provides us with an additional and crucial breakdown between *intra*-company and *inter*-company positions.[8] The comparison between these two types of banking positions lies at the heart of our empirical strategy. The breakdown of banking positions by financial instruments is not available in our dataset and we thus consider cross-borders positions including all financial instruments (loans, bonds and derivatives).

The positions reported in the LBS are unconsolidated but complemented with an information about the *nationality* of the reporting banks (derived from the CBS). The nationality indicates the country where the headquarter of the reporting bank is *incorporated*. Thus, we could observe assets held by banks located in country A vis-à-vis counterparts located in country B and headquartered in, say, country C. Note also that we do not use the cross-borders banking *flows* and rather focus on the *outstanding amounts*. The reason for that is that corporate income tax rates are largely stable over time, which means that the quarterly changes in bilateral loans are probably driven by other effects than tax rates (exchange rate variations, financial and risk managements, regulatory motives, etc.). By focusing on the outstanding amounts, we filter, as it were, these short-term effects and we draw the mid-term and long-term factors behind the level of intra-group activity.

In this paper, we exploit extensively the breakdown between intra-group positions, *i.e.* cross-borders assets and liabilities held between affiliates belonging to the same banking group, and interbank positions. Unfortunately, the coverage of this dataset is uneven. In particular, regarding bilateral intra-group positions, the quality of the reporting is not sufficiently satisfying before 2014. Hence, we restrict our analysis to the period going from 2014-Q1 to 2020-Q2. The LBS data presents itself in the form of a balance sheet similar to a balance of payments but restricted to banking activities. A large part of the dataset is publicly available, but the counterpart breakdown of each reporting country is confidential. Eventually, using the liability side of the data, we observe the cross-borders positions of 28 *reporting* countries toward 67 *counterpart* countries covering 43 nationalities.[9]

Overall, at each quarter t, we observe the outstanding amounts of liabilities $L_{i,jkst}$ where:

- i denotes the *reporting*/*debtor* country (where the banks/borrowers operate),
- j denotes the *counterpart*/*creditor* country (where the counterparts/lenders are located),
- k denotes the *nationality* of the banking group (where the parent company of the banks is incorporated) and

[8] More generally, banking assets and liabilities are allocated by counterpart into four sectors and six sub-sectors.

[9] The BIS disseminates the LBS under two datasets: the LBS by Residency (LBSR) and the LBS by Nationality (LBSN) which is the one we use. See the Appendix A for more details about the countries included in our sample

- *s* denotes the *institutional sector* of the counterpart: banking sector (inter-group and intra-group), non-banking financial sector (insurance companies, hedge funds...), public sector, households, etc.

While we do not have an instrument breakdown, similar data from the BIS suggest that our statistical aggregate of 'debt' is composed of deposits for 85% and securities and derivatives for 15%. For more details about the LBS dataset, see the reporting guideline edited by the BIS as well as the Appendix A.

To the best of our knowledge, this is the first time the LBS data are used to study banks' own profit shifting, *e.g.* the tax avoidance that the banking sector uses for itself. Johannesen (2014) uses restricted Locational Banking Statistics data to measure the effect of an EU tax reform on Swiss bank deposits held by EU residents. Johannesen and Zucman (2014), O'Reilly, Parra Ramirez and Stemmer (2019) and Menkhoff and Miethe (2019) also use the LBS data to evaluate the G20 policies against households' tax evasion, namely the exchange of bank information.

1.3.2 Corporate income tax rates data

Broadly speaking, our identification strategy consists in showing that banking groups located in high-tax jurisdictions (especially in large and developed banking systems) engage in relatively intensive intra-group transactions with their subsidiaries located in low-tax jurisdictions in order to shift profits and reduce their tax burden in the high-tax jurisdiction. Thus, we need information about the corporate income tax rates in each country of our sample. We use two measures of corporate income tax rate.

Statutory corporate income tax rates We first make use the *statutory corporate income tax rates* (STR) (see the Appendix for sources and details). There are some caveats to make when using this metrics, the first being that the corporate income tax rates is not the only tax paid by companies, and sometimes not the largest. The second reason is that, tax authorities recognize the particular role played by credit institutions in the economy and banks are eligible for numerous tax breaks that make the computation of an industry-wide theoretical tax rate uneasy.[10] Having said that, we know that previous studies have found significant effects when using statutory tax rates (Gu et al., 2015). STR has thus to be considered as an imperfect proxy of the actual level of tax rate supported by financial institutions.

[10] De Mooij (2012) notes that, from a legal point of view, the frontier between debt and equity instruments has been blurred by the introduction of hybrid financial instruments (convertible debt, junk bonds, subordinated debt, warrants, etc). Banks make extensive use of these securities that open certain interest payments to tax reduction. In turn, this has led tax authorities to sometimes redefine what debt is on a case-by-case basis, which leaves room for interpretation on the theoretical tax rates. In addition, some countries make extensive use of tax rescripts are not taken into account in the statutory rates.

Effective corporate income tax rates Because of these limitations in the use of the statutory tax rates, we also run our analysis using the *effective corporate income tax rates (ETR)*. Using the information about 'profits before tax' and 'tax' declared by European banks in the Country-by-Country Reporting data (CbCR), we are able to compute an ETR from the database of (Aliprandi et al., 2021). Because some jurisdictions have only a small amount of European banks operating, small changes in tax collected or profits realised each year can produce large variations, which is why we average the ETR over time. We explain in details how we build these ETRs from CbCR data in the Appendix . Importantly, while STR are time-varying, our ETR are time invariant by construction which means that the quintiles introduced in the following section are time-invariant for ETR.

1.3.3 Methodology

Our aim is to better understand the underlying reasons for the massive cross-border assets and liabilities held by banks from the largest banking systems (US, UK, France...) in small jurisdictions classified as OFCs with no or very limited economic activity. We conjecture that these cross-borders positions are largely the results of tax avoidance strategies implemented by the banking groups incorporated in the developed countries.

As explained above, we suspect that banking groups opportunistically use intra-group liabilities to shift profits from the taxable income of the parent company or subsidiaries located in high-tax jurisdictions to this of subsidiaries located in low-tax jurisdictions such as OFCs. Basically, a subsidiary located in a low-tax country can lend to another subsidiary – or the parent company itself – located in a high-tax country. As a result, the interest income paid by the parent company (or the subsidiaries located in the high-tax country) to the subsidiary located in the low-tax country reduces the taxable income of the former and increase the taxable income of the latter.

To test this hypothesis, we examine carefully the cross-sectional distribution of cross-borders liabilities and we ask to which extent it can be related to the cross-sectional distribution of corporate income tax rates. Indeed, if our main hypothesis is true, we should observe a systematic relation between (i) the relative use of intra-group liabilities and (ii) the corporate income tax rate of both the creditor country (where the profits moves) and the debtor country (where the profits come from): the lower (resp. higher) the creditor (resp. debtor) country corporate income tax rate, the higher the incentive to shifts profits through intra-group transactions.

Quintiles of corporate income tax rates. We first build time-varying quintiles of the distribution of corporate income tax rate observed in the *creditor* country j: $Q_{1t}, ..., Q_{5t}$. To take into account the potential change in a country's statutory corporate tax rate over our period and

the downward trend in STR – the average STR in our sample is 24% in 2014 and 21% in 2020, with an important decrease from some large and high-tax countries like the USA, France etc. – we calculate time-varying quintile Q_{zt}. This means that a creditor country can move from one quintile to another over time. For example, the United States' STR was 38.9% in 2017 and 25.8% in 2018 after the tax reform, which means that the country moves from the the 5th quintile in 2017 to the 4th quintile in 2018.[11] Note, however, that the quintiles based on the ETR are, by construction, time-invariant.

Table 1.1: Creditor countries quintiles of tax rates

Quintile	1	2	3	4	5
STR – Q_{zt}	0% - 15%	15% - 20%	20% - 25%	25% - 30%	30% - 39.08%
ETR – Q_z	0% - 7.98%	8.79% - 15.62%	15.74% - 20.84%	21.02% - 25.41%	26.29% - 44.41%

Note: STR – Q_{zt}, example is given for the year 2015.

We start our analysis by using the quintiles of the corporate tax rate of the *creditor* countries. However, in a second step, we refine the analysis by also taking into account the distribution of corporate tax rates of *debtor* countries.

OFC's lists. Alternatively, rather than sorting creditor countries according to their corporate income tax rate, we also contrast the relative importance of intra-group position depending on whether the creditor country is classified as an OFC or not. For this purpose, we use several distinct lists of OFCs (see the Appendix D for more information about the countries classified as OFCs) . In particular, we use four lists of OFCs:

- First, we make use of the list created by (Aliprandi et al., 2021), based on the CbCR data on European banks. They define tax havens as jurisdictions that score low on a combination of two parameters: activity in proportion to profits using country-specific profit per employee data and tax rates, based on their computed country-specific effective tax rates. The list contains 16 territories.

- Second, we use the list from Kintzler et al. (2020), in which OFC are defined using LBS data, as countries that have the highest ratios of cross-border banking positions to the resident population. The list contains 13 territories.

- Third, we test our results with the list from Johannesen (2014). In this list of 52 countries, tax havens are countries that do not satisfy at least one the following conditions regarding the information given to tax authorities: availability, access, and exchange. This means that

[11] The first quintile corresponds to the creditors with the lowest tax rates (between 0 and 15%) and the fifth quintile to the creditors with the highest tax rates (superior to 28%).

regulation must ensure that banks keep records of the information to which domestic tax authorities must have access, and also be able to exchange it with foreign tax authorities

- Finally, the list from Hines Jr (2010) identifies tax havens based on their low business tax rates, self-promotion as financial centers, and whether they are also identified as such by other authoritative sources (OECD).

Measuring the relative use of intra-group and interbank liabilities. We now need a way to measure the importance of intra-group lending. We first denote by $Intra_{i,j,k,t}$ the outstanding amounts of intra-group liabilities issued (and reported) by banks located in the *creditor* country j and headquartered in the *nationality* country k to related banks (be they subsidiaries or branches) located in the *debtor* country i at the end of quarter t. Similarly, we denote by $Inter_{i,j,k,t}$ the total outstanding amount of liabilities issued by banks resident in country j and headquartered in the *nationality* country k to other banks (excluding affiliates) resident in country i at the end of quarter t.

We start the analysis by comparing the distribution of intra-group and interbank liabilities across quintiles of creditor country tax rates Q_z. In particular, we examine the relative share of each quintile Q_z in the total liabilities issued by our pool of debtor countries:

$$\begin{cases} Share^{Intra}_{Q_z,i,k,t} = \dfrac{\sum\limits_{j \in Q_z,i,k,t} Intra_{i,j,k,t}}{\sum\limits_{j,i,k,t} Intra_{i,j,k,t}} \\ Share^{Inter}_{Q_z,i,k,t} = \dfrac{\sum\limits_{j \in Q_z,i,k,t} Inter_{i,j,k,t}}{\sum\limits_{j,i,k,t} Inter_{i,j,k,t}} \end{cases} \tag{1.1}$$

In principle, if our main hypothesis is correct, we should observe that banks in debtor countries borrow significantly more from their subsidiaries located in low-tax jurisdictions (in comparison with their subsidiaries resident in high-tax jurisdictions). However, there are many factors other than corporate tax rates that may affect the relative intensity of intra-group transactions between i and j. For example, the level of trade between the two countries is likely to have a significant impact on the level of intra-group transactions. Therefore, we use the ratio of the relative shares of intra-group liabilities to the relative share of interbank liabilities because we believe that most of these factors affecting the level of intra-group positions will also affect the level of interbank positions. Conversely, our hypothesis is that, unlike intra-group transactions, interbank transactions are not directly affected by corporate income tax rates. In a sense, interbank liabilities act as a control group for intra-group liabilities with the same characteristics: our strategy is conceptually analogous to a difference-in-differences strategy where control group is made of loans to unrelated

banks, treated group is made of loans to related banks, and the treatment is the corporate tax rate of the lending country (or the corporate tax rate differential between the lending country and the borrowing country).

For each pair of debtor country - creditor country tax rate quintile $\{i, Q_z\}$, we construct the ratio of the relative share of intra-group liabilities to the relative share of interbank liabilities:[12]

$$R_{Q_z,i,k,t} = \frac{Share^{Intra}_{Q_z,i,k,t}}{Share^{Inter}_{Q_z,i,k,t}} \tag{1.2}$$

This ratio of relative shares $R_{Q_z,i,k,t}$ captures discrepancies in the allocation of intra-group and interbank positions across quintiles Q_z for each debtor country i of nationality k at time t.[13] Another way to understand this ratio is to consider that it indicates to which extent the ratio of intra-group to interbank liabilities for a given quintile Q_z differs from the same ratio for the entire population of creditor countries.

$$R_{Q_z,i,k,t} = \frac{\dfrac{\sum\limits_{j \in Q_z,i,k,t} Intra_{i,j,k,t}}{\sum\limits_{j,i,k,t} Intra_{i,j,k,t}}}{\dfrac{\sum\limits_{j \in Q_z,i,k,t} Inter_{i,j,k,t}}{\sum\limits_{j,i,k,t} Inter_{i,j,k,t}}} = \frac{\dfrac{\sum\limits_{j \in Q_z,i,k,t} Intra_{i,j,k,t}}{\sum\limits_{j,i,k,t} Inter_{i,j,k,t}}}{\dfrac{\sum\limits_{j \in Q_z,i,k,t} Intra_{i,j,k,t}}{\sum\limits_{j,i,k,t} Inter_{i,j,k,t}}} \tag{1.3}$$

Alternatively, instead of using quintiles of corporate income tax rates, we calculate the relatives shares and the ratios for both OFCs creditor countries and non-OFCs creditor countries:

$$\begin{cases} Share^{Intra}_{OFC,j,k,t} = \dfrac{\sum\limits_{j \in OFC,i,k,t} Intra_{i,j,k,t}}{\sum\limits_{j,i,k,t} Intra_{i,j,k,t}} \\ Share^{Inter}_{OFC,j,k,t} = \dfrac{\sum\limits_{j \in OFC,i,k,t} Inter_{i,j,k,t}}{\sum\limits_{j,i,k,t} Inter_{i,j,k,t}} \end{cases} \tag{1.4}$$

$$R_{OFC,j,k,t} = \frac{Share^{Intra}_{OFC,j,k,t}}{Share^{Inter}_{OFC,j,k,t}} \tag{1.5}$$

Identification strategy. We now compute the weighted average ratio of $R_{Q_z,j,k,t}$ and $R_{OFC,j,k,t}$. Formally:

[12] Note that this ratio computed at the quintiles level Q_z can be seen as a weighted average of the individual ratios with appropriate weights $w_{i,j,k,t}$

$$R_{Q_z,i,k,t} = \sum_{j \in Q_z,i,k,t} w_{i,j,k,t} \cdot R_{i,j,k,t} = \sum_{j \in Q_z,i,k,t} w_{i,j,k,t} \cdot \frac{Share^{Intra}_{i,j,k,t}}{Share^{Inter}_{i,j,k,t}}$$

[13] For the moment, we do not make use of the nationality nor the time dimension. We nonetheless keep the subscripts k and t to keep in mind these other sources of variability.

$$\begin{cases} \bar{R}_{Q_z} = \sum_{i,k,t} R_{Q_z,i,k,t} \cdot w_{Q_z,i,k,t} \\ \bar{R}_{OFC} = \sum_{i,k,t} R_{OFC,i,k,t} \cdot w_{OFC,i,k,t} \end{cases} \tag{1.6}$$

where Q_z denotes the zth quintile and $w_{Q_z,i,k,t} = \frac{L_{Q_z,i,k,t}}{\sum_{Q_z,i,k,t} L_{Q_z,i,k,t}}$ denotes the weight of each observation in terms of liabilities. Note that these weighted average ratios are equivalent to aggregate ratios, *i.e.* the ratios of the aggregate outstanding amount of intra-group liabilities in quintile Q_z over the aggregate outstanding amount of interbank liabilities in quintile Q_z. We could also aggregate these ratios at different intermediate levels: for instance, we could compute the same weighted average ratio for each end-of year quarter or for a subset of debtor countries j as we will do later in the analysis.

As previously stated, in line with our main hypothesis, we expect to observe larger ratios for the bottom quintiles of creditor countries (in contrast to higher quintiles of creditor countries) or for creditor countries categorized as OFCs (as opposed to creditor countries not categorized as OFCs):

$$\begin{cases} \bar{R}_{Q_1} > \bar{R}_{Q_5} \\ \bar{R}_{OFC} > \bar{R}_{nonOFC} \end{cases} \tag{1.7}$$

So far, we have only used the corporate tax rate of *creditor* countries. However, we can also use information on the corporate tax rate in *debtor* countries. Indeed, for a given level of corporate income taxation in the creditor country, the higher the corporate tax rate in the debtor country, the stronger the incentives to shift profits.

We now group debtor countries according to the level of their corporate tax rate (STR or ETR). We proceed in the same way as for creditor countries and we build time-varying quintiles of corporate tax rates. We then repeat the previous analysis for (i) low corporate tax rate debtor countries (1st and 2nd quintiles) and (ii) high corporate tax rate debtor countries (4th and 5th quintiles). Formally, we build:

$$\begin{cases} \bar{R}^{HTR}_{Q_z} = \sum_{i \in \tilde{Q}_4/\tilde{Q}_5,k,t} R_{Q_z,i,k,t} \cdot w_{Q_z,i,k,t} \\ \bar{R}^{LTR}_{Q_z} = \sum_{i \in \tilde{Q}_1/\tilde{Q}_2,k,t} R_{Q_z,i,k,t} \cdot w_{Q_z,i,k,t} \end{cases} \tag{1.8}$$

where HTR (LTR resp.) means high (low resp.) corporate tax rates in the creditor country, $\tilde{Q}_z$ refers to the corporate tax rates in debtor countries and Q_z refers to the corporate tax rates in creditor countries. We expect to observe a significant positive difference in the relative use of intra-group debt between high and low-tax rate debtor countries, especially for low creditor countries'

tax rate Q_z or for OFC's countries:[14]

$$\begin{cases} \bar{R}^{HTR}_{Q_1} > \bar{R}^{LTR}_{Q_1} \\ \bar{R}^{HTR}_{OFC} > \bar{R}^{LTR}_{OFC} \end{cases} \tag{1.9}$$

1.3.4 Taking advantage of the nationality dimension

As explained above, an important feature of the data is the *nationality* dimension, *i.e.* the information on the country of incorporation of banks resident in a given reporting country. This information is very relevant for the analysis of profit shifting as it allows us to classify intra-group transactions into three different groups according to the legal status of the entities operating in the debtors and creditors countries.

- In the first group, we impose the restriction that the reporting (debtor) country must be the same as the *nationality* country. In other words, we focus on liabilities issued by banks operating in the country in which they are incorporated. It can be the head office or a domestic subsidiary. This corresponds to the banking position 1 to 4 in the Figure 1.13 in appendix A.

$$\bar{R}_{Q_z, i=k} = \sum_{j \in Q(z)} \sum_{i=k,t} R_{i,j,k,t} \cdot w_{i,j,k,t} \tag{1.10}$$

- In the second group, we impose the restriction that both the reporting (debtor) country and the counterpart country must be different from the country of *nationality*. In other words, we consider liabilities where both the creditor and the debtor banks operate in countries different from their country of incorporation. This corresponds to the banking position 5 and 6 in the Figure 1.13 in appendix A.

$$\bar{R}_{Q_z, i \neq k, j \neq k} = \sum_{j \in Q(z)} \sum_{i \neq k, j \neq k, t} R_{i,j,k,t} \cdot w_{i,j,k,t} \tag{1.11}$$

- The third group is of less interest. We impose the restriction that the reporting (debtor) country must be different from the *nationality* country and that the counterpart (creditor) country must be the same as the *nationality* country. In other words, we focus on lending by head office or domestic subsidiaries to banks operating in a third country. A priori, in our setting, there is no incentive to shift profits from this third country to the country of incorporation.

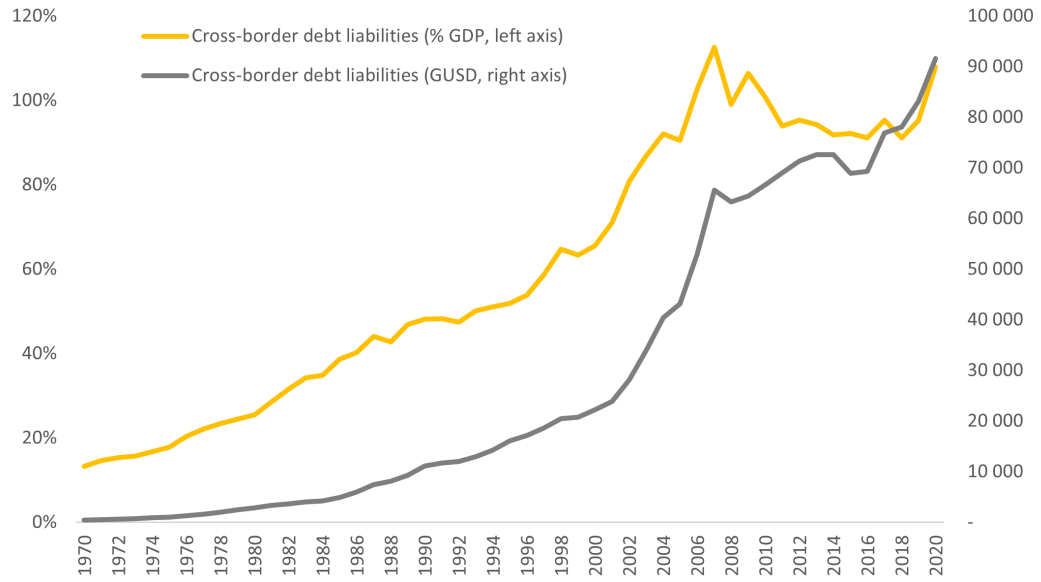
[14] It is less clear that we should observe significant differences for higher quintile where we have not observed any specific pattern previously.

1.4 Globalization and offshore lending

1.4.1 What do Locational Banking Statistics represent as a proportion of the total cross-border capital stocks?

Before delving into the objects defined above, let us contextualize what the Locational Banking Statistics capture, both in relation to other macroeconomic indicators and its temporal evolution. To do so, we take advantage of the External Wealth of Nations International Investment Position (EWNII) as compiled by Lane and Milesi-Ferretti (2017).

Figure 1.2: Cross-border debt liabilities (% of GDP, **left**, billions USD, **right**)



Source: External Wealth of Nations International Investment Position (EWNII) as compiled by Lane and Milesi-Ferretti (2017).

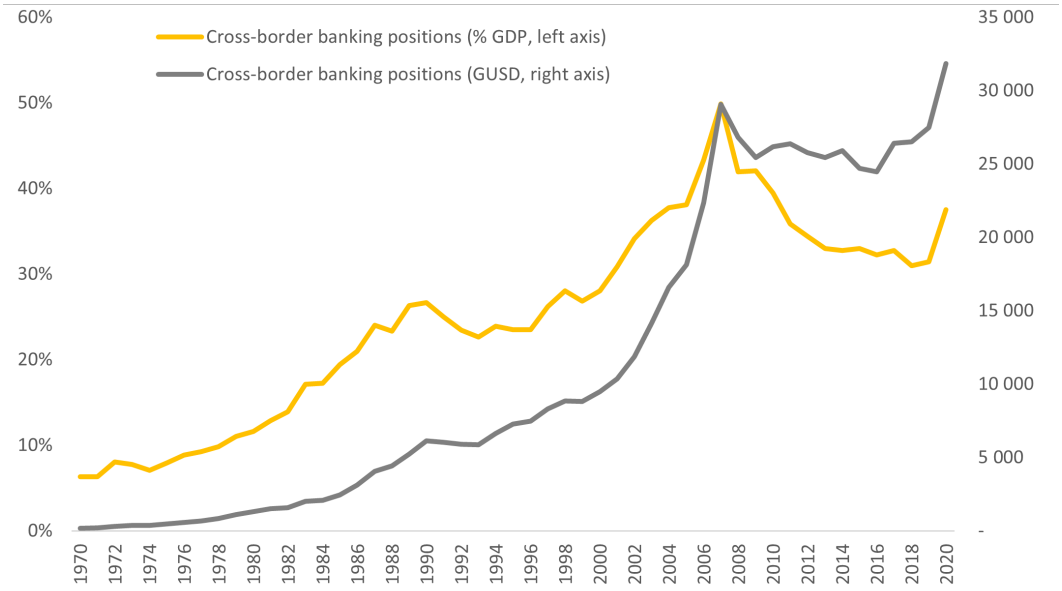
External financial wealth are claims by domestic residents on non-residents. The cross-border loans and deposits undertaken by banks constitute one of the components of cross-border financial stocks. External financial liabilities comprises four categories: foreign direct investments, portfolio equity securities, derivative products, debt instruments. It is within this latter category, accounting for slightly less than half (44%) of external wealth in 2020, that our data falls.

While at the outset of the 1970s, cross-border debt instruments accounted for less than 20% of the global GDP, their share has fluctuated between 90% and 110% of the GDP since the mid-2000s. Despite this apparent stability, their overall volume more than doubled between 2004 and 2020, surging from 40,000 billion USD to 92,000 billion USD (Figure 1.2).

Within the category of debt instruments, we find debt securities and 'other investments,' encompassing loans, borrowings, commercial credits, ..., primarily undertaken by banks. It is this specific sub-category, namely 'other investments,' that constitutes the focal point of our analyses.

As of the end of 2020, the 'other investments' conducted by banks accounted for 35% of the total debt liabilities, equivalent to 32,000 billion USD. Lane and Milesi-Ferretti (2018) observed a decline in cross-border banking activities following the Global Financial Crisis (GFC), which they attributed, among other factors, to the impacts of new regulatory measures that curtailed opportunities for international arbitrage. Consequently, while the liabilities recorded by the Locational Banking Statistics (LBS) amounts to 50% of global GDP in 2007, they sharply declined to approximately one-third of the world GDP in 2012. Since then, they have remained at this level, albeit with a resurgence in 2020 (Figure 1.3).

Figure 1.3: Cross-border banking positions (% of GDP, **left**, billions USD, **right**)

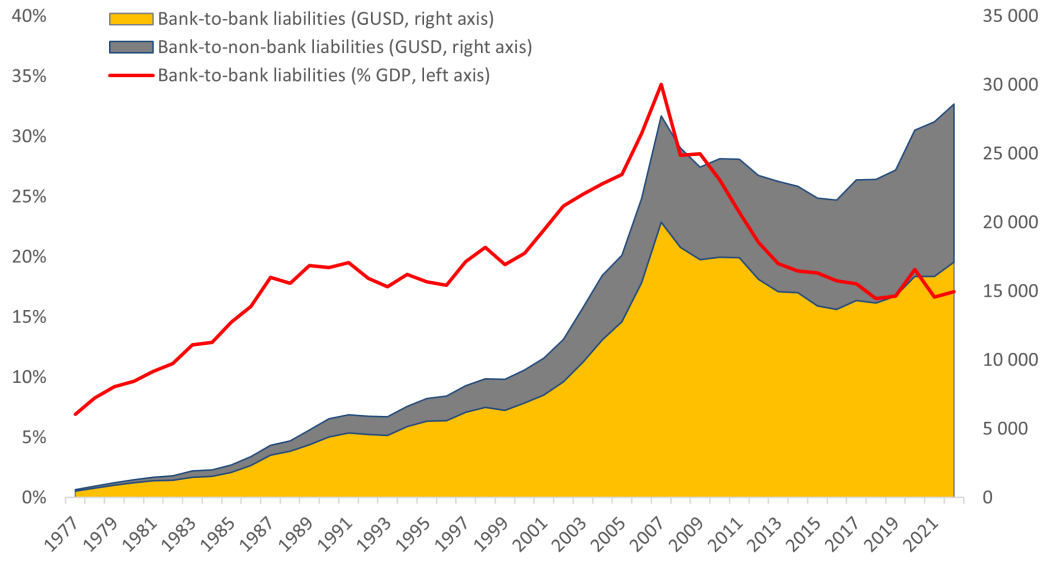


Source: External Wealth of Nations International Investment Position (EWNII) as compiled by Lane and Milesi-Ferretti (2017).

1.4.2 The share of intragroup in international banking positions

As previously mentioned, international banking positions, as captured by the Locational Banking Statistics, allow for the distinction between those vis-à-vis banking sector and those vis-à-vis non-banking sector. Interestingly, we observe that the decline in international banking positions can be attributed to a decrease in bank-to-bank positions, while bank-to-non-bank positions remained stable since the Global Financial Crisis (GFC), hovering around 10% of the global GDP. Nevertheless, bank-to-bank positions continue to surpass those vis-à-vis the non-banking sector by 50%.

Figure 1.4: Bank-to-bank liabilities (% of GDP, **left**, billions USD, **right**) and bank-to-non-bank liabilities (billions USD, **right**)



Source: External Wealth of Nations International Investment Position (EWNII) as compiled by Lane and Milesi-Ferretti (2017).

Since 2014, a new breakdown of the Locational Banking Statistics has been disseminated, allowing for a more detailed decomposition of the counterparty sector. Specifically, it allows the examination of intragroup bank-to-bank positions. However, there currently exists no breakdown that facilitates the identification of intragroup positions in bank-to-non-bank positions. It is not possible to identify, for a given banking group in a country P1, the loans contracted with its real estate subsidiary located in a country P2. As a result, our focus is directed toward intragroup positions involving loans and deposits between two banks.

Despite the limited depth of the data, two noteworthy observations emerge: intragroup positions predominate, accounting for more than 50% of the total banking positions. Furthermore, we observe that this share has been on the rise over time, increasing from 52% in 2014 to 60% in 2020. This implies that the growth in intragroup positions is instrumental in the observed stabilization of bank-to-bank positions (expressed as a percentage of GDP, Figure 1.4).

1.5 Evidence of Profit-Shifting

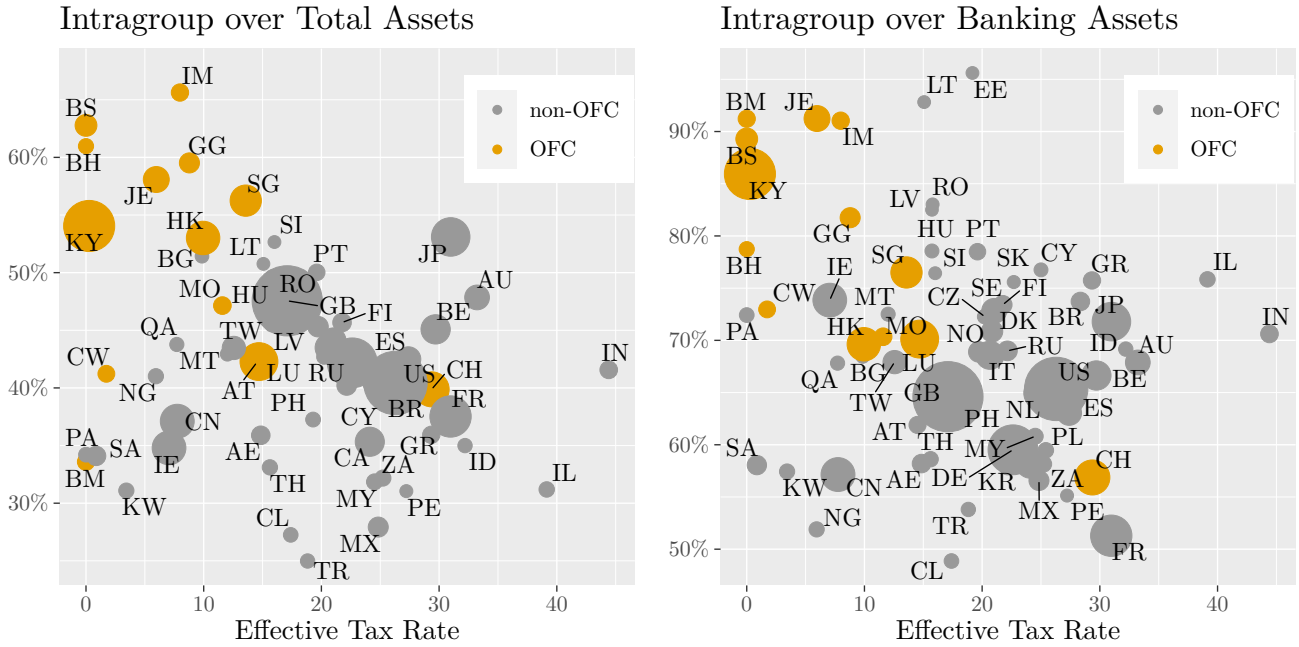
1.5.1 Baseline results

The sample of debtor countries is made of 28 banking systems. Together, they represent around 55% of cross-border banking liabilities and 58 % of cross-border banking liabilities with banking counterparties. The sample of creditor countries is restricted by data availability and is made of 67 countries. The time period covered goes from 2014-Q1 to 2020-Q2. Before examining our

main variables of interest, namely the relative shares defined in equation 1.1 in section 1.3 and the associated ratios (equations 1.2 and 1.4) aggregated at different levels of interest (quintiles of corporate tax rate of creditor countries Q_z, OFC status...), we should have a preliminary look at the dataset at a more disaggregated level.

In the Figure 1.5 below, for each creditor country, we plot the ratios of intra-group assets to (i) bank assets and (ii) total assets[15] (considering all debtor countries and nationalities, and averaging over time) against the *effective* corporate tax rate of these creditor countries.

Figure 1.5: Share of intragroup banking assets on the total of assets (**left**) or on the total of banking assets (**right**) aggregated by country



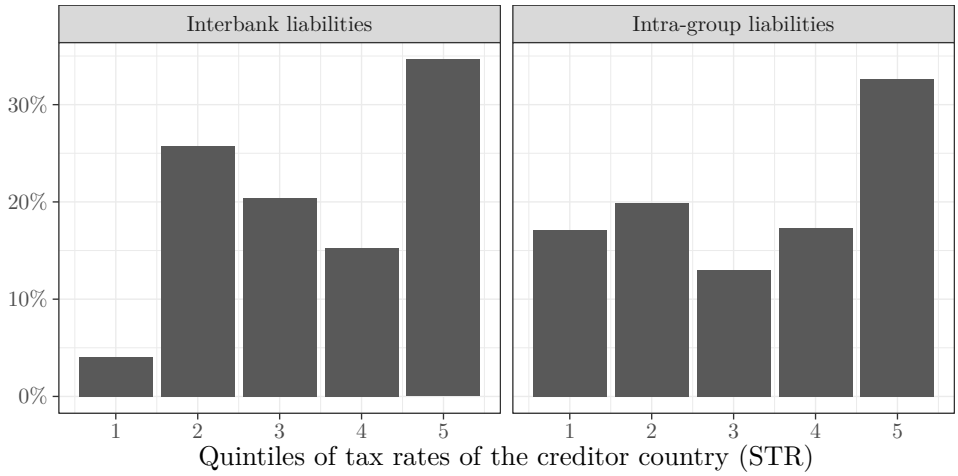
Note: Weighted average between 2014-Q1 and 2020-Q2. Each dot represents for each creditor country the ratio intragroup debt holding over its total debt holding **left** or over its total banking holding **right**. "OFC" countries are defined according to the lists from Kintzler et al. (2020) Lecture: 59 % of the assets held by Guernsey is intragroup debt **left**. 91 % of the banking assets held by Jersey is intragroup debt.

We observe a fairly clear negative relationship between (i) both measures of the importance of intra-group positions and (ii) the level of the effective corporate tax rate: the lower this effective tax rate, the higher the share of intra-group assets in banking assets or in total assets. We can also see that jurisdictions classified as OFCs (yellow dots) tend to be characterised by both very low tax rates and very significant intra-group positions (often in excess of 80% of bank assets for the most aggressive OFCs like the Caïman Island or Jersey for instance). Overall, this first chart suggests that banks tend to lend more and more to their affiliates (as opposed to other banks) as the corporate tax rate in their country of residence decreases, a behaviour consistent with the profit shifting hypothesis.

[15]We still focus on liability positions, but since we are taking here the perspective of the counterpart/creditor countries, these liabilities of the debtor/reporting countries are assets for the creditor countries.

Continuing our analysis, we now take the debtor country's perspective and we examine the distribution of intra-group and interbank liabilities in relation to the corporate income tax rates imposed on banks operating in the creditor countries. For this purpose, as explained in the section 1.3, we group creditor countries in quintiles of corporate tax rates (ETR or STR) and we examine the *relative* share represented by each quintile for intra-group liabilities on the one side and interbank liabilities on the other side. In other word, we show in the Figure 1.6 the weighted average $Share^{Intra}_{Q_z,i,k,t}$ and $Share^{Inter}_{Q_z,i,k,t}$ previously defined in the section 1.3.

Figure 1.6: Share of the total intra-group liabilities (right) and total interbank liabilities (left) held by each creditor country tax rate quintile (STR), full sample.



Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents the share of total interbank debt (**left**) and the share of total intra-group debt held by each quintile (**right**). Lecture: Using STR, creditor banks that resides in country which tax rates in Q1 hold 3.9% of the total of interbank debt and 17.1% of the intra-group debt.

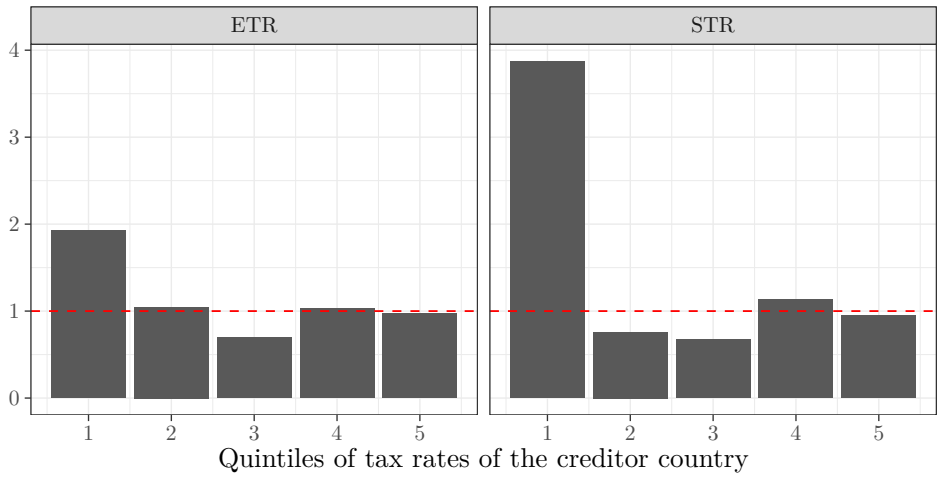
For both types of banking positions, we first observe that the 5th quintile is the largest: in both cases, it represents around 30-35% of intra-group or interbank liabilities. In other words, the largest share of both intra-group and interbank liabilities is issued to banks resident in creditor countries with significant corporate tax rates.[16] It is not surprising given that most of banking transactions occurs between entities operating in the largest banking systems that mainly belong to the 5th quintile.

However, while the distributions from the 2nd to the 5th quintile are broadly similar for the two types of banking positions, we also observe that the relative importance of the 1st quintile differs significantly between intra-group and interbank positions: a larger relative share of cross-border liabilities is issued to banks operating in creditor countries with the lowest corporate tax rates in the case of intra-group liabilities (17.1%) than in the case of interbank liabilities (3.9%). In other words, countries in the 1st quintile are almost absent from cross-borders interbank financing while they gain a sizeable share when it comes to intra-group financing.

[16]While the quintiles used in this Figure are built based on STR, the same Figure with quintiles build based on ETR can be found in Figure 1.17 in Appendix E.

Now, we move to the examination of our main variable of interest, namely the ratio of intra-group to interbank liabilities $R_{Q_z,i,k,t}$. In the Figure 1.7, we present the distribution of this ratio across quintiles of creditor country tax rates for both ETR (left) and STR (right). If the ratio is greater than one, it indicates that the quintile considered represents a larger relative share of intra-group positions compared to interbank positions.[17]

Figure 1.7: Weighted average ratio of intra-group liabilities to interbank liabilities broken down by creditor country tax rate quintile, full sample.



Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its share in total intragroup debt holding over its share in total interbank debt holding. Lecture: Using STR, creditor banks that resides in country with the lowest tax rates (Q1) hold relatively 3.9 times more intragroup assets as they hold interbank assets.

For both measurements of corporate income tax rate, we observe a striking pattern in line with the conclusions drawn from Figure 1.7: the ratio for the 2nd to the 5th quintile fluctuates around one – *i.e.* the distribution of intra-group and interbank liabilities are similar for these quintiles – but the ratio for the first quintile indicates that intra-group liabilities issued to banks operating in these low tax rate jurisdictions are two to four times larger than similar interbank liabilities on average. Said differently, the ratio of intra-group to interbank liabilities for this first quintile is two to four times larger than the same ratio for the full sample of creditor countries.

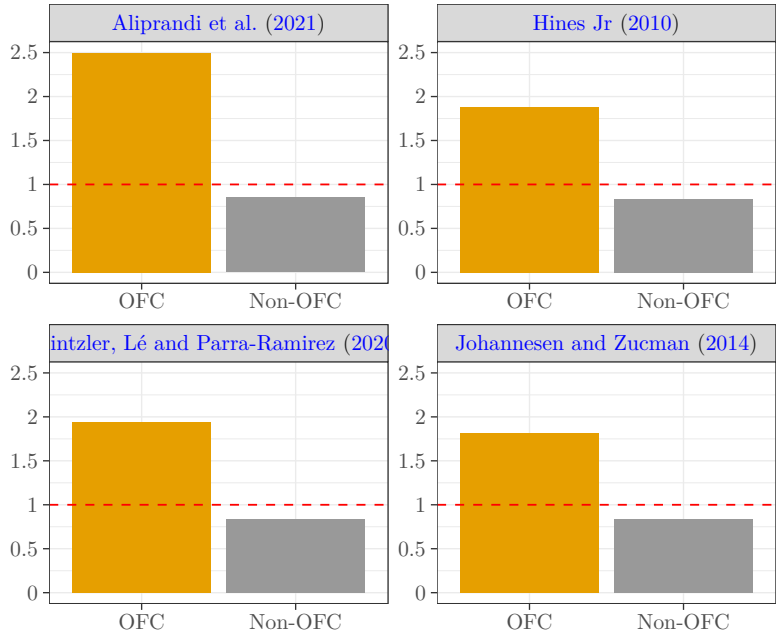
We can observe a similar patterns if we classify creditor countries according to their OFC status (rather than according to their STR or ETR). In Figure 1.8, we present the weighted average ratio of intra-group to interbank liabilities for banks operating in OFCs (R_{OFC}, in yellow) and banks operating in non-OFCs (R_{nonOFC}, in gray) according to four distinct lists of OFCs.[18]

Unsurprisingly, the relative share of intra-group liabilities from creditor countries classified as OFCs is significantly higher – between 1.5 and 2.5 times larger – than the relative share of

[17] In the Appendix E, we reproduce the Figure 1.7 and 1.8 using a sample of debtor countries restricted to the five countries with the largest outstanding amount of liabilities (United States, United Kingdom, France, Spain, Italy). Germany and Japan report data to the BIS but do not authorize their dissemination

[18] In the Appendix E, we reproduce the Figure 1.8 using a sample of debtor countries restricted to the five countries with the largest outstanding amount of liabilities (United States, United Kingdom, France, Spain, Italy). Germany and Japan report data to the BIS but do not authorize their dissemination

Figure 1.8: Weighted average ratio of intra-group liabilities to interbank liabilities broken down by OFC status of creditor countries, full sample.



Note: Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each type of creditor country the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. "OFC" countries are defined according to the lists from Aliprandi et al. (2021), Hines Jr (2010), Johannesen and Zucman (2014), Kintzler et al. (2020) Lecture: Creditor banks located in OFCs (using the Aliprandi list) hold relatively 3.25 times more intra-group debt from high-tax countries as they hold interbank debt from high-tax countries.

comparable interbank liabilities. In contrast, the relative importance of intra-group and interbank liabilities of banks resident in non-OFC creditor countries are much more similar. Crucially, this result is very robust to the use of different lists of OFCs.

So far, we have only considered corporate tax rates in creditor countries. However, corporate tax rates in debtor countries are also likely to have a strong influence on the incentives to shift profits and thus on the relative importance of intra-group borrowing.

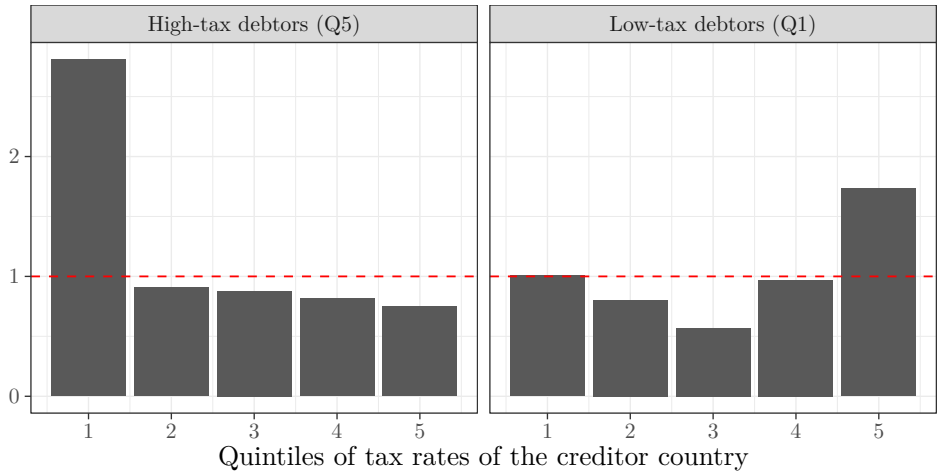
1.5.2 Taking into account the corporate tax rates of debtor countries

The results above use only the cross-sectional distribution of creditor countries' corporate tax rates, *i.e.* the tax rates paid by banks on profits shifted through intra-group debt. We now take into account the cross-sectional distribution of corporate tax rates in debtor countries, *i.e.* the tax rates that banks would paid on profits in the absence of profit shifting. Indeed, the incentives to shift profits through intra-group debts to affiliates resident in countries in the bottom quintile of the corporate tax rate distribution are significantly reduced when the debtor country has a broadly similar low corporate tax rate. Conversely, the incentives to shift profits are strengthened when banks operating in the debtor country are subject to a relatively high corporate tax rate.

In Figure 1.9, we reproduce the distribution of the ratio $R_{Q_z,i,k,t}$ across the quintiles of creditor countries' corporate tax rates (i) for banks resident in debtor countries with a high corporate tax

rates on the one side ($\bar{R}^{HTR}_{Q_z}$, left) and (ii) for banks resident in debtor countries with low corporate tax rates on the other side ($\bar{R}^{LTR}_{Q_z}$, right). We classify debtor countries in the low/high corporate tax rate category as follow: low corporate tax rate debtor countries are countries in the 1st quintile and high corporate tax rate debtor countries are countries in the 5th quintile. For robustness sake, we repeat this analysis in the Figure 1.20 in the Appendix E where low corporate tax rate countries are now defined as countries in the 1st or the 2nd quintile and high corporate tax rate countries as countries in the 4th or the 5th quintile.

Figure 1.9: Weighted average ratio of intra-group liabilities to interbank liabilities from high-tax debtors (Q5, **left**) and low-tax debtors (Q1, **right**) broken down by creditor country tax rate quintile, full sample.



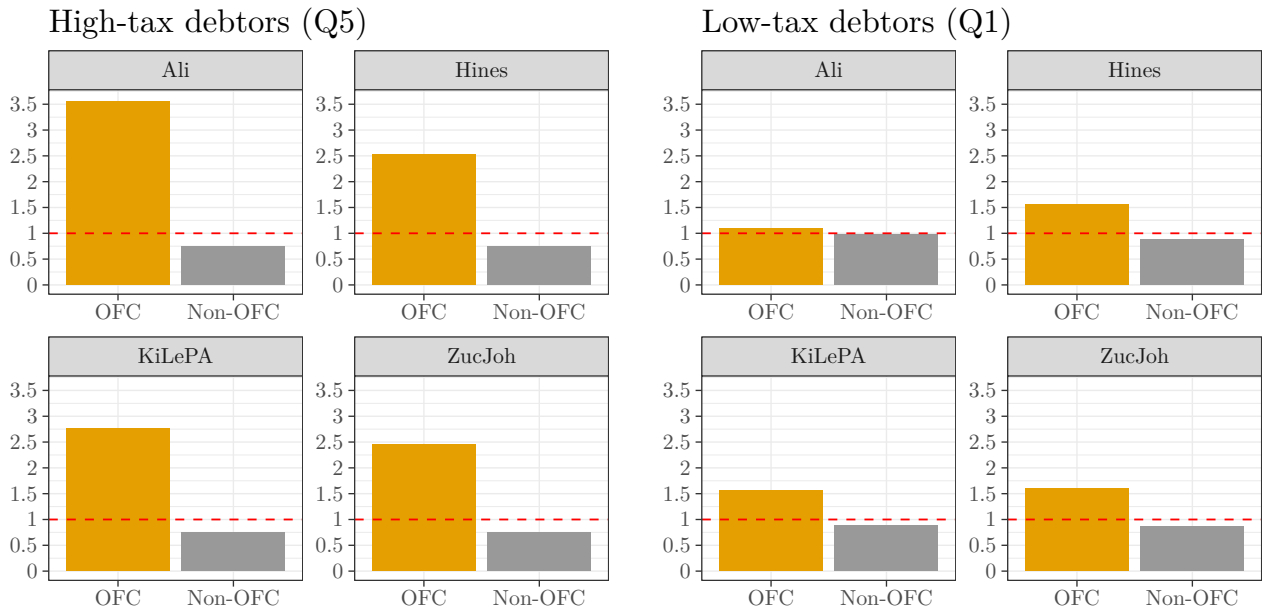
Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. Lecture: Using ETR, creditor banks that resides in country which tax rates in Q1 hold relatively 4.2 times more intr-agroup debt as they hold interbank debt.

This Figure 1.9 supports our main hypothesis that the relative importance of intra-group liabilities reflects profit shifting by banks. We still observe a disproportionate relative share of intra-group liabilities in creditor countries with the lowest tax rates (1st quintile), but only for banks resident in debtor countries with relatively high corporate tax rates (left-hand side). In other words, when banks operate in a debtor country with a low corporate tax rate, they have no particular incentive to shift profits by borrowing from subsidiaries operating in countries with low corporate tax rates. Note also that while the ratio of intra-group to interbank liabilities is around 2 for the whole sample of debtor countries, it rises to almost 3 when we focus on the sample of high-tax debtor countries.

This finding is entirely confirmed if we group creditor countries according to their OFC status rather than their corporate tax rate as shown in Figure 1.10: the relative use of intra-group vs interbank liabilities differs significantly between OFC and non-OFC creditor countries but only when the corporate tax rate in the debtor country is sufficiently low (Q_1 vs Q_5).[19]

[19]In Appendix E, we show that this finding is confirmed if we compare debtor countries in the first and the second quintile to debtor countries in the fourth and the fifth quintile (see Figures 1.21).

Figure 1.10: Weighted average ratio of intra-group liabilities to interbank liabilities from high-tax debtors (Q5, **left**) and low-tax debtors (Q1, **right**) broken down by type of creditor country (non-OFC vs OFC).



Note: Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each type of creditor country the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. The debtors are either high-tax countries (fifth quintile of tax rates, left) or low-tax countries (first quintile of tax rates, right). "OFC" countries are defined according to the lists from Aliprandi et al. (2021), Hines Jr (2010), Johannesen and Zucman (2014), Kintzler et al. (2020) Lecture: Creditor banks located in OFC (using the Aliprandi list) hold relatively 3.25 times more intra-group debt from high-tax countries as they hold interbank debt from high-tax countries.

1.5.3 Who shifts profits ?

Our main finding establishes that banks tend to borrow disproportionately more from their subsidiaries located in low corporate tax jurisdictions than they do from other banks operating in the same jurisdictions. This is all the more true when these banks themselves operate in a jurisdiction with high corporate tax rates. We interpret this as evidence of profit shifting.

However, these evidence do not tell us who in the high-tax countries avoid taxes the most. In fact, our evidence are consistent with two intertwined but somewhat different stories. On the one side, it could be that banks operating in the largest banking systems in which they are incorporated, such as the US, UK, or France shift their profit towards OFCs. In this case, it would be the parent companies of these high-tax countries that shift profits. In the second case, it is foreign companies located in high-tax countries that are avoiding taxes by creating intra-group towards other subsidiaries located in lower-tax countries. This questions is at the heart of a recent literature that show the disproportionate role foreign subsidiaries play in distorting profit localisation (Bilicka, 2019). Interestingly, the nationality dimension of the data allow us to explore this question by comparing two types of banking position:

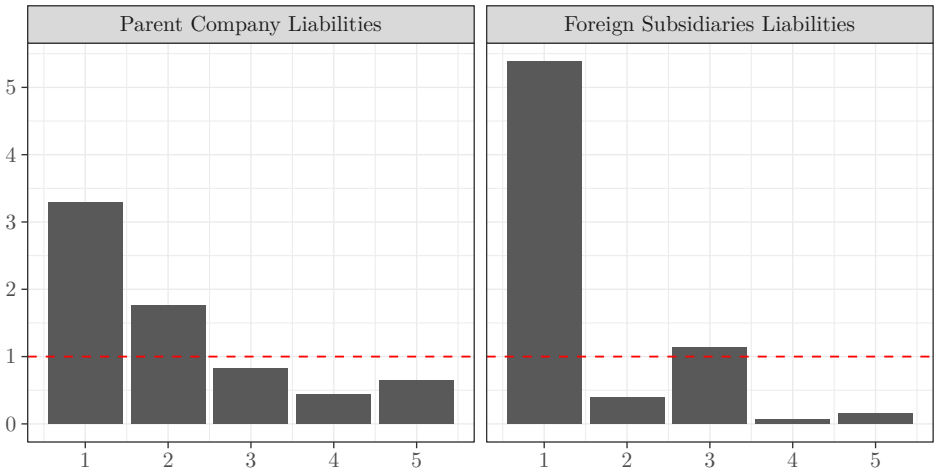
- Intra-group liabilities issued by the *parent company* (or by domestic subsidiaries) to sub-

sidiaries resident in another (creditor) country. This corresponds to the banking positions 1 or 2 in the Figure 1.13 in Appendix A. This banking position represents 31.5% of the total of intra-group debt of our sample.

- Intra-group liabilities issued by subsidiaries resident in a (debtor) country different from the country of incorporation to subsidiaries resident in another (creditor) country also different from the country of incorporation. This corresponds to the banking position 5 in the Figure 1.13 in Appendix A and represents 23.8% of the intra-group debt in our sample

As explained in the section 1.3, we also construct the weighted average ratio of relative shares of intra-group and interbank liabilities (broken down by quintile) for these two types of banking positions: $\bar{R}_{Q_z,i=k}$ and $\bar{R}_{Q_z,i\neq k,j\neq k}$. Then, we could examine to which extent our main finding – the importance of the weighted average ratio of the first quintile and its deviation from the same ratio for other quintiles – is present on both samples.

Figure 1.11: Weighted average ratio of intra-group liabilities to interbank liabilities of parent company (**left**) and foreign subsidiaries (**right**) from high-tax debtors (Q5) broken down by creditor country tax rate quintile, full sample



Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. On the left we present the ratio of liabilities issued by parents companies (or domestic subsidiaries); on the right, the ratio of liabilities issued by foreign subsidiaries to banks different from the country of incorporation (i.e., the parent country).

Several observations can be made from Figure 1.11. First, we continue to observe the relative importance of the first quintile for both (i) parent banks' borrowing from their subsidiaries (left-hand side) and (ii) inter-subsidiary borrowing (right-hand side). Second, we remark that the relative importance of the first quintile is significantly more intense for inter-subsidiary borrowing: the volume of intra-group borrowing from countries in the first quintile is three times the volume of interbank borrowing in the case of parent banks' borrowing while it is five times the volume of interbank borrowing for subsidiaries. It is tempting to relate this observation to differences in the fight against profit shifting but we would need additional evidence to support this hypothesis.

Despite this observed difference, we conclude that both the countries in which the parent companies of banking groups are located – mainly developed countries – and the countries in which their subsidiaries operate bear the costs of profit shifting.

1.5.4 Profit shifting or regulatory arbitrage ?

The evidence presented in the previous sections tend to support the profit shifting hypothesis: banks operating in countries with high corporate tax rate use more intensively intra-group borrowing from their affiliates resident in countries with low corporate tax rates in order to shift profits and reduce their tax burden. However, jurisdictions with low or limited corporate tax rates may also have less restrictive banking regulations and banks may try to exploit this through intra-group transactions. In other words, our evidence are not inconsistent with regulatory arbitrage at first glance.

The fact that we do not find a more intense pattern in the case of parent banks' borrowing from their subsidiaries than in the case of inter-subsidiary borrowing is a first indication that regulatory arbitrage is not necessarily a good competing explanation. Indeed, most banking regulations operate mainly at the highest level of consolidation, not least to avoid regulatory arbitrage. Accordingly, we would expect to see stronger evidence of profit shifting in the case of parent banks' borrowing from their subsidiaries than in the case of inter-subsidiary borrowing. We observe the opposite.

In this section, we nonetheless test more explicitly this competing hypothesis of regulatory arbitrage. For this purpose, we take advantage of the composition of our sample which includes 13 debtor countries and 27 creditor countries belonging to the European Union (among 28). Our dataset thus covers a large fraction of cross-border banking positions between banks resident in EU member states. Remember that Germany report data to the BIS but do not authorize their dissemination.

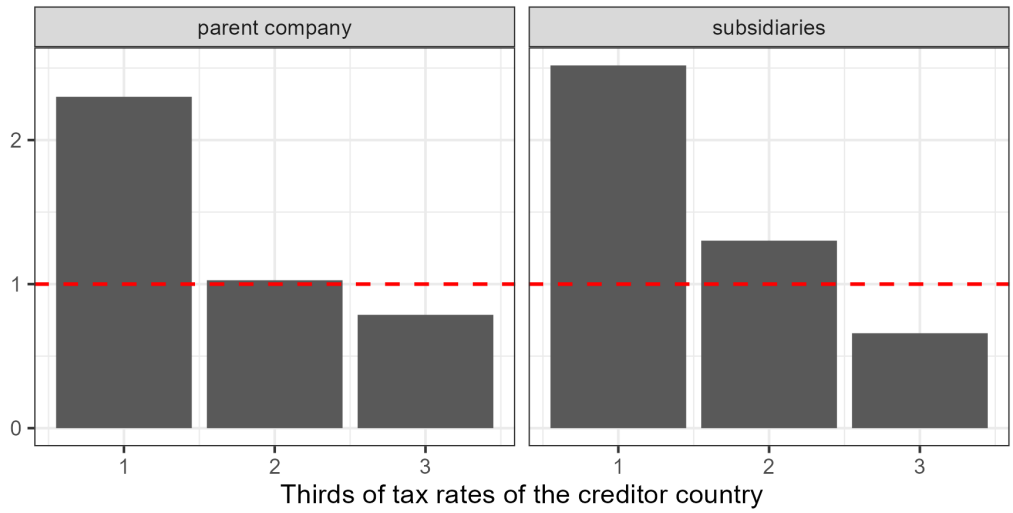
Since 2014, there is a single banking regulation in the European Union (the *Capital Requirements Regulation* and the *Capital Requirements Directive IV* have both implemented the Basel II regulatory framework) and a single supervision mechanism (SSM) within the Eurozone. Consequently, the possibility of regulatory arbitrage by EU banks using intra-group transactions with their subsidiaries resident in other EU member states are significantly reduced, if not entirely eliminated. We could then reproduce our analysis on this subset of Eurozone member countries to see whether our main finding still hold on a sample of countries where regulatory arbitrage is unlikely.

However, since the total number of countries has decreased significantly (from 28 to 13 for the reporting countries), we no longer breakdown the population into quintiles based on corporate income tax rates but rather into terciles. It should be noted that this sampling restriction results in

the exclusion of the most aggressive OFCs, *i.e.* those characterized by zero or near-zero corporate income tax rates. Consequently, all else being equal, the underlying level of profit shifting is likely to be lower and our test must be considered as conservative.

In the Figure 1.12, we show how the ratio $R_{T_z,i,k,t}$ (where T_z denotes the zth tercile) varies across terciles of the creditor country's tax rate. If regulatory arbitrage is the main driver of our previous findings, we should not observe any particular pattern: we expect to find a ratio fluctuating around 1 for all three terciles.

Figure 1.12: Weighted average ratio of intra-group liabilities to interbank liabilities of parent company (**left**) and foreign subsidiaries (**right**) broken down by creditor country tax rate tercile, European Union sample.



Note: Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. On the left we present the ratio of liabilities issued by parents companies (or domestic subsidiaries); on the right, the ratio of liabilities issued by foreign subsidiaries to banks different from the country of incorporation.

However, despite the exclusion of the most aggressive OFCs, we observe a similar pattern to that of the full sample: banks tend to borrow significantly more from their affiliates (compared to interbank borrowing) when the countries where the creditor banks are located have a low corporate tax rate. This observation is true for both (i) parent banks' borrowing from their subsidiaries (left-hand side) and (ii) inter-subsidiary borrowing (right-hand side). In other words, in an identical regulatory and supervisory environment with no regulatory arbitrage opportunity, banks in the least taxed European countries tend to issue more than twice as much intra-group debt as interbank debt. This confirms that the profit shifting hypothesis in itself has significant explanatory power.

1.6 Conclusion

In this chapter, we document for the first time in a multi-country perspective the extent of one of the main channels of profit shifting by banks. In particular, we show that the distribution of cross-border intra-group liabilities is highly correlated with the corporate tax rates of both (i) creditor countries – countries in which the lending banks operate – and (ii) debtor countries – countries in which the lending banks operate. This pattern of artificial intra-group debt holds for a large number of countries, including those with the largest banking sectors (the United States, the United Kingdom, France, Spain, Italy, etc.). We also show that this pattern is more pronounced for banks located in high-tax countries, regardless of their nature (parent companies or foreign subsidiaries). Moreover, by examining the case of intra-group debt in the European Union, we are able to rule out a competing explanation, namely regulatory arbitrage, and show that the main determinant is the tax rate of the creditor country.

Banks are not immune to the well-documented phenomena affecting non-financial companies. It is therefore necessary to question the philosophy of international, European and national regulations, which have tended to exclude banks from the new rules. More specifically, by demonstrating that all banks (parent companies, branches and subsidiaries) play with the CIT rates of the counterparty countries, we show that regulations aimed at the countries with the most developed banking systems may not be sufficient. Moreover, since we are able to document this pattern using unconsolidated data, we show that rules that apply only at the consolidated level, which is common for prudential regulation, are not sufficient to limit the erosion of the tax base.

For the time being, the data do not allow us to identify the intragroup when the counterparty is a non-bank. As some financial groups carry out both banking and non-banking activities, we can hypothesise that these companies are able to artificially issue intra-group debt to a non-bank counterpart, which we cannot take into account for the time being. Moreover, since we do not know the interest rates at which the loans are granted, we have so far only documented one instrument (debt-shifting), but it would not be surprising if banks also use the instrument of transfer pricing, allowing them to shift even more to low-tax jurisdictions. It would therefore be interesting for international organisations to disseminate data on interest income by sector in order to isolate banks and possibly identify over-yielding. Moreover, as noted in the literature, banks make use of derivatives that can be treated as debt from a fiscal point of view, opening the door to more tax deductibility, while at the same time being considered as capital by the regulator (De Mooij, 2012). Unfortunately, data on this type of instrument is still partial, but new initiatives such as the European Market Infrastructure Regulation (EMIR) may soon provide access to new micro-level data on derivatives.

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1.8 Appendix

A Locational Banking Stastitics (LBS)

Following the LBS description of BIS[20]: "*The locational banking statistics (LBS) measure international banking activity from a residence perspective, focusing on the location of the banking office. They are compiled following principles that are consistent with balance of payments statistics. The LBS capture outstanding claims (financial assets) and liabilities of internationally active banks located in reporting countries on counterparties residing in more than 200 countries. Banks record their positions on an unconsolidated basis, including intragroup positions between offices of the same banking group. The LBS capture around 95% of all cross-border banking activity.*"

While our sample covers the Q1 2014 to Q2 2020 period, some countries have started to report data at a later period: Hong Kong Q4 2014, Bahamas Q2 2015, Philippines Q4 2016, Spain Q1 2017, Malaysia Q3 2017 and Cayman Islands Q2 2018.

Table 1.2: List of the 28 reporting countries (debtors)

Austria (AT)	Australia (AU)	Belgium (BE)	Bahamas (BS)
Canada (CA)	Finland (FI)	Cyprus (CY)	Denmark (DK)
Spain (ES)	France (FR)	United Kingdom (GB)	Hong Kong SAR China (HK)
Cayman Islands (KY)	Indonesia (ID)	Ireland (IE)	Italy (IT)
South Korea (KR)	Netherlands (NL)	Luxembourg (LU)	Macao SAR China (MO)
Malaysia (MY)	Turkey (TR)	Philippines (PH)	Portugal (PT)
Sweden (SE)	Chinese Taipei (TW)	United States (US)	South Africa (ZA)

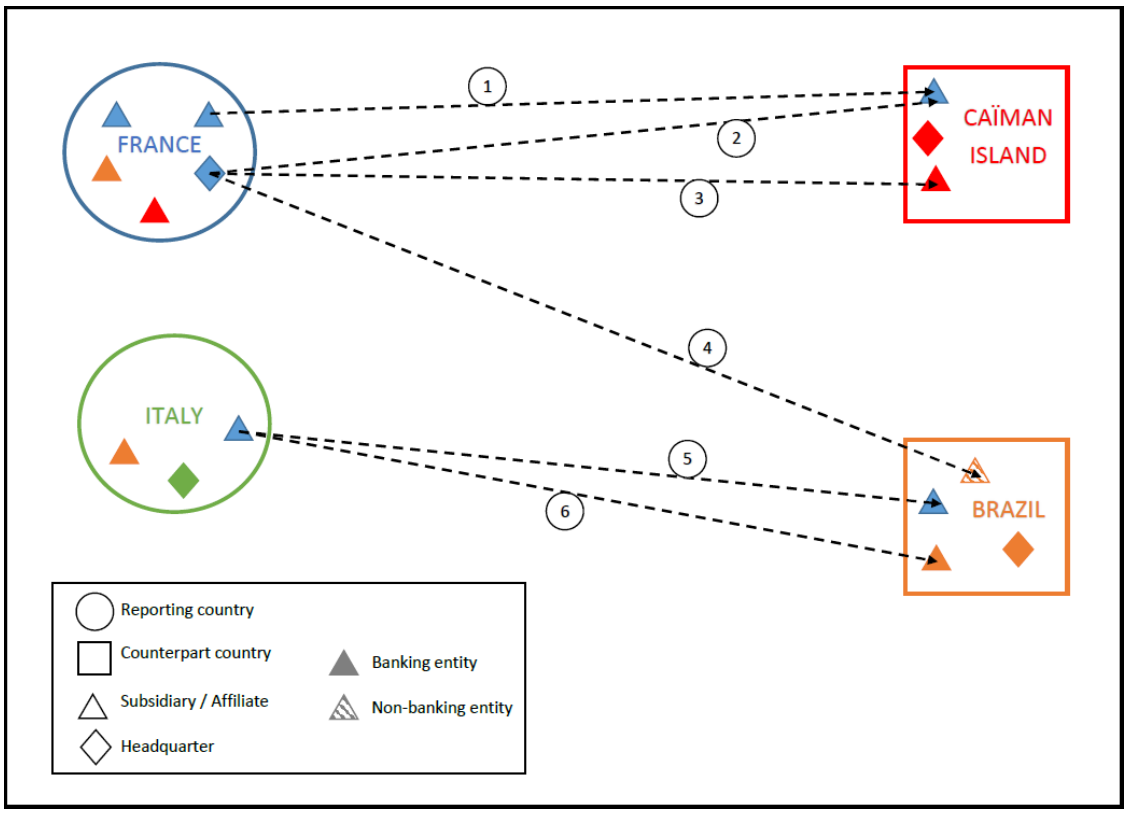
Table 1.3: List of the 67 counterparty countries (creditors)

Czechia (CZ)	Germany (DE)	Hungary (HU)	Slovakia (SK)
United Arab Emirates (AE)	Austria (AT)	Belgium (BE)	Bermuda (BM)
Brazil (BR)	Canada (CA)	Switzerland (CH)	China (CN)
Spain (ES)	France (FR)	United Kingdom (GB)	Hong Kong
Indonesia (ID)	Ireland (IE)	India (IN)	SAR China (HK)
South Korea (KR)	Cayman Islands (KY)	Luxembourg (LU)	Japan (JP)
Mexico (MX)	Malaysia (MY)	Philippines (PH)	Malta (MT)
Singapore (SG)	Thailand (TH)	Chinese Taipei (TW)	Sweden (SE)
Bulgaria (BG)	Italy (IT)	Jersey (JE)	United States (US)
Poland (PL)	Russia (RU)	Turkey (TR)	Netherlands (NL)
Curaçao (CW)	Cyprus (CY)	Estonia (EE)	Chile (CL)
Greece (GR)	Israel (IL)	Isle of Man (IM)	Guernsey (GG)
Panama (PA)	Peru (PE)	Portugal (PT)	Kuwait (KW)
Australia (AU)	Bahamas (BS)	Romania (RO)	Saudi Arabia (SA)
Norway (NO)	Denmark (DK)	Lithuania (LT)	Finland (FI)
Bahrain (BH)	Iran (IR)	Macao SAR China (MO)	Nigeria (NG)
Latvia (LV)	Qatar (QA)	Slovenia (SI)	South Africa (ZA)

[20] https://www.bis.org/statistics/about_banking_stats.htm?m=6%7C31

The nationality dimension In the in Figure 1.13 below, we present the structure of the dataset using stylized examples of positions. To illustrate the richness of this dataset, we identify six typical banking positions using different breakdowns.

Figure 1.13: Structure of the LBSN dataset



1. Outstanding amounts (assets or liabilities depending on which way you look at it) of banks resident in France, of French nationality (*i.e.* whose parent company is incorporated in France) vis-à-vis one of its subsidiaries resident in the Cayman Islands.

2. This position is identical to the previous one in our data because we cannot distinguish between parent company and subsidiaries when the reporting country and the country of nationality are the same.

3. Outstanding amounts of banks resident in France, of French nationality (*i.e.* whose parent company is incorporated in France) vis-à-vis another bank resident in the Cayman Islands

4. Outstanding amounts of banks resident in France, of French nationality (*i.e.* whose parent company is incorporated in France) vis-à-vis a non-bank entity resident in Brazil (non-bank financial entity or non-financial entity)

5. Outstanding amounts of banks (subsidiaries) resident in Italy, of French nationality (*i.e.* whose parent company is incorporated in France) vis-à-vis a subsidiary of the same group

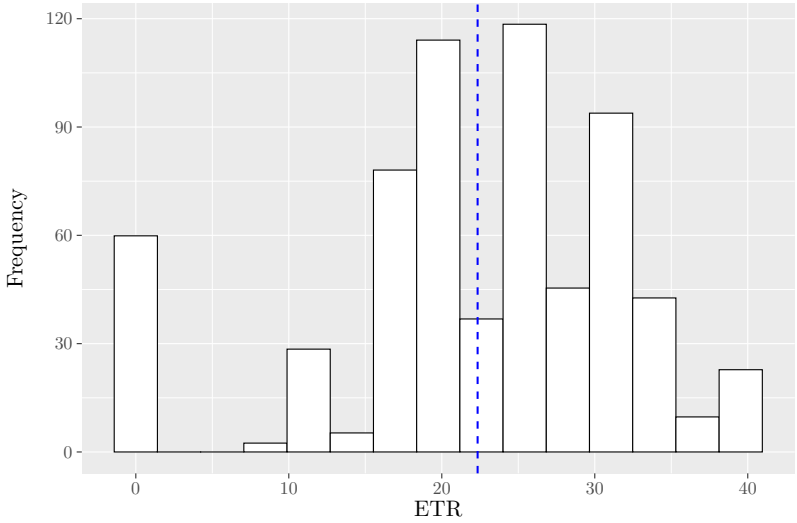
resident in the Cayman Islands

6. Outstanding amounts of banks (subsidiaries) resident in Italy, of French nationality (*i.e.* whose parent company is incorporated in France) vis-à-vis a bank resident in Brazil

B Statutory Corporate Income Tax (CIT)

We used data from the Tax Foundation think-tank which to our knowledge has the largest database on tax rates. It is freely available at: https://taxfoundation.org/publications/corporate-tax-rates-around-the-world/. It is a synthesis of the lists published by audit firms combined with original data collection.

Figure 1.14: Histogram of the Statutory Tax Rates



C Effective Corporate Income Tax (CIT)

We make use of the Country-by-Country Reporting data (CbCR thereafter) for banks in the European Union. CbCR is part of the Basel III prudential regulation for the financial sector. Since 2015, in the EU, article 89 of the Capital Requirements Directive IV forces financial institutions to disclose annually a) the names, natures and location of their activities b) turnover c) number of employees d) profit before tax e) tax on profit, etc. See Delpeuch et al. (2019) for a review of CbC reporting. The data include key variables - 'profit before tax' and 'tax'- that allow to compute effective tax rates for each country. Our computation is conducted on the 46 largest banks in the European Union from 2013 to 2019, operating in 152 countries which represent 4418 observations. Because some jurisdictions have only a small amount of European banks operating and due to the important variations in both tax collected and profits realised each year, we calculate weighted average tax rates for each country in the following way:

$$ETR_i = \frac{\sum_b \sum_t Tax_{ibt}}{\sum_b \sum_t Profits_{ibt}} \tag{1.12}$$

Where i is the country, t the year and b the individual bank. Similarly to Aliprandi et al. (2021), we extract only positive profits and positive taxes.

Figure 1.15: Histogram of the Effective Tax Rates

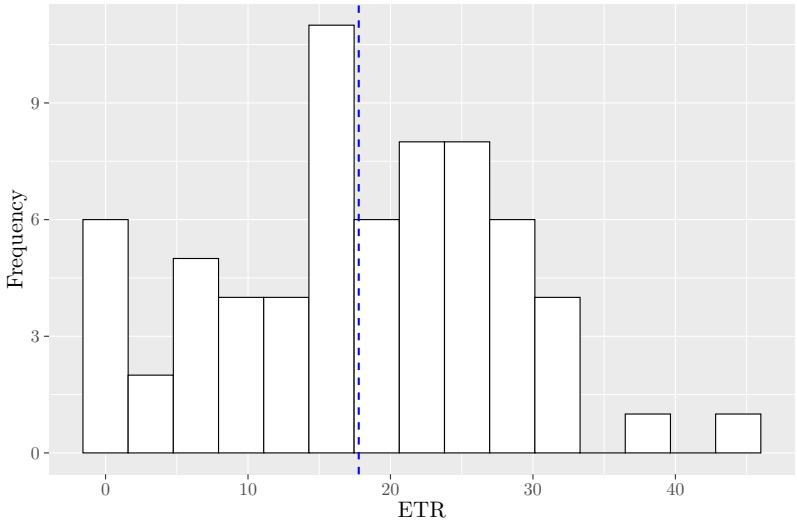


Table 1.4: List of reporting banks (CbCR data)

ABN AMRO Group NV	Allied Irish Banks Plc
Banca Monte dei Paschi di Siena SpA	Banco Bilbao Vizcaya Argentaria SA
Banco de Sabadell SA	Banco Popular Espanol SA
Banco Santander SA	Bankia SA
Barclays Plc	Bayerische Landesbank
Belfius Banque SA	BNP Paribas SA
Commerzbank AG	Credit Agricole Group
Credit Mutuel Group	Credit Suisse Group AG
Danske Bank A/S	DekaBank
Deutsche Bank AG	Dexia SA
DNB ASA	DZ Bank AG
Erste Group Bank AG	Groupe BPCE
HSBC Holdings Plc	ING Groep NV
Intesa Sanpaolo SpA	KBC Group NV
Kreditanstalt für Wiederaufbau	Landesbank Baden-Wuerttemberg
Landesbank Hessen-Thueringen Girozentrale	Lloyds Banking Group Plc
Nationwide Building Society	NIBC Bank NV
Norddeutsche Landesbank Girozentrale	Nordea Bank AB
Rabobank	Raiffeisen Bank International AG
Royal Bank of Scotland Group Plc	Skandinaviska Enskilda Banken AB
Societe Generale SA	Standard Chartered Plc
Svenska Handelsbanken AB	Swedbank AB
UBS Group AG	UniCredit SpA

Table 1.5: Computed effective tax rates

Country	ETR	Quintile	Country	ETR	Quintile
Bahrain (BH)	0.00	1	Estonia (EE)	19.18	3
Bermuda (BM)	0.00	1	Philippines (PH)	19.29	3
Bahamas (BS)	0.00	1	Portugal (PT)	19.60	3
Panama (PA)	0.00	1	Norway (NO)	19.71	3
Cayman Islands (KY)	0.27	1	Czechia (CZ)	20.22	3
Saudi Arabia (SA)	0.86	1	Italy (IT)	20.66	3
Curaçao (CW)	1.73	1	Denmark (DK)	20.84	3
Kuwait (KW)	3.43	1	Sweden (SE)	21.02	4
Nigeria (NG)	5.94	1	Finland (FI)	21.75	4
Jersey (JE)	5.97	1	Russia (RU)	22.15	4
Ireland (IE)	7.06	1	South Korea (KR)	22.18	4
Qatar (QA)	7.72	1	Germany (DE)	22.62	4
China (CN)	7.75	1	Slovakia (SK)	22.69	4
Isle of Man (IM)	7.98	1	Canada (CA)	24.11	4
Guernsey (GG)	8.79	2	Malaysia (MY)	24.51	4
Bulgaria (BG)	9.85	2	Mexico (MX)	24.83	4
Hong Kong SAR China (HK)	9.95	2	Cyprus (CY)	25.00	4
Macao SAR China (MO)	11.59	2	Netherlands (NL)	25.00	4
Malta (MT)	12.02	2	South Africa (ZA)	25.22	4
Chinese Taipei (TW)	12.56	2	Poland (PL)	25.41	4
Singapore (SG)	13.57	2	United States (US)	26.29	5
Austria (AT)	14.51	2	Peru (PE)	27.22	5
Luxembourg (LU)	14.69	2	Spain (ES)	27.39	5
United Arab Emirates (AE)	14.85	2	Brazil (BR)	28.35	5
Lithuania (LT)	15.07	2	Greece (GR)	29.33	5
Thailand (TH)	15.62	2	Switzerland (CH)	29.36	5
Hungary (HU)	15.74	3	Belgium (BE)	29.70	5
Latvia (LV)	15.74	2	France (FR)	30.97	5
Romania (RO)	15.79	3	Japan (JP)	30.98	5
Slovenia (SI)	16.01	3	Indonesia (ID)	32.20	5
United Kingdom (GB)	17.10	3	Australia (AU)	33.22	5
Chile (CL)	17.39	3	Israel (IL)	39.14	5
Turkey (TR)	18.83	3	India (IN)	44.41	5

D OFC list

Below are the details of the countries identified as 'tax havens' or OFC.[21]

Table 1.6: List of Offshore Financial Centers (Kintzler et al., 2020)

Cayman Islands (the) (KY)	Isle of Man (IM)	Curaçao (CW)
Guernsey (GG)	Bahamas (the) (BS)	Singapore (SG)
Jersey (JE)	Bermuda (BM)	Switzerland (CH)
Macao (MO)	Hong Kong (HK)	Bahrain (BH)
Luxembourg (LU)		

Table 1.7: List of Offshore Financial Centers (Aliprandi et al., 2021)

Bahamas	Hong Kong	Macao
Bermuda	Ireland	Malta
British Virgin Islands	Isle of Man	Mauritius
Cayman Islands	Jersey	Panama
Gibraltar	Kuwait	Qatar
Guernsey	Luxembourg	

Table 1.8: List of Tax Havens from Johannesen and Zucman (2014)

Andorra	Dominica	Niue
Anguilla	Gibraltar	Panama
Antigua and Barbuda	Grenada	Saint Kitts and Nevis
Aruba	Guernsey	Saint Lucia
Austria	Hong Kong	Saint Vincent and the Grenadines
Bahamas (the)	Isle of Man	Samoa
Bahrain	Jersey	San Marino
Belgium	Liberia	Seychelles
Belize	Liechtenstein	Singapore
Bermuda	Luxembourg	Sint Maarten (Dutch part)
Barbados	Macao	Switzerland
Cayman Islands (the)	Malaysia	Trinidad and Tobago
Chile	Malta	Turks and Caicos Islands (the)
Cook Islands (the)	Marshall Islands (the)	Uruguay
Costa Rica	Monaco	Vanuatu
Curaçao	Montserrat	Virgin Islands (British)
Cyprus	Nauru	Virgin Islands (U.S.)

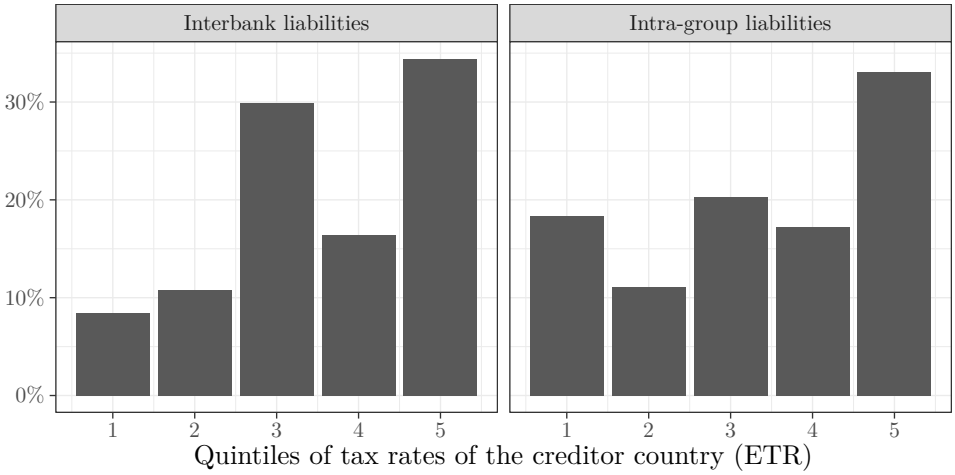
[21] Since 2010, Curaçao and Sint Marten came into existence due to the secession of the Netherlands Antilles. We have removed the Netherlands Antilles from the Johannesen & Zucman list which goes from 52 to 51 countries and from the Hines list. He have also added Curaçao and Sint Marten to the Hines Jr list which thus goes from 52 to 53.

Figure 1.16: Lists of Tax Havens from Hines Jr (2010)

Andorra	Guernsey	Nauru
Anguilla	Hong Kong	Netherlands Antilles
Antigua and Barbuda	Ireland	Niue
Aruba	Isle of Man	Panama
Bahamas	Jersey	Samoa
Bahrain	Jordan	San Marino
Barbados	Lebanon	Seychelles
Belize	Liberia	Singapore
Bermuda	Liechtenstein	St. Kitts and Nevis
British Virgin Islands	Luxembourg	St. Lucia
Cayman Islands	Macao	St. Martin
Cook Islands	Maldives	St. Vincent and the Grenadines
Costa Rica	Malta	Switzerland
Cyprus	Marshall Islands	Tonga
Djibouti	Mauritius	Turks and Caicos Islands
Dominica	Micronesia	Vanuatu
Gibraltar	Monaco	
Grenada	Montserrat	

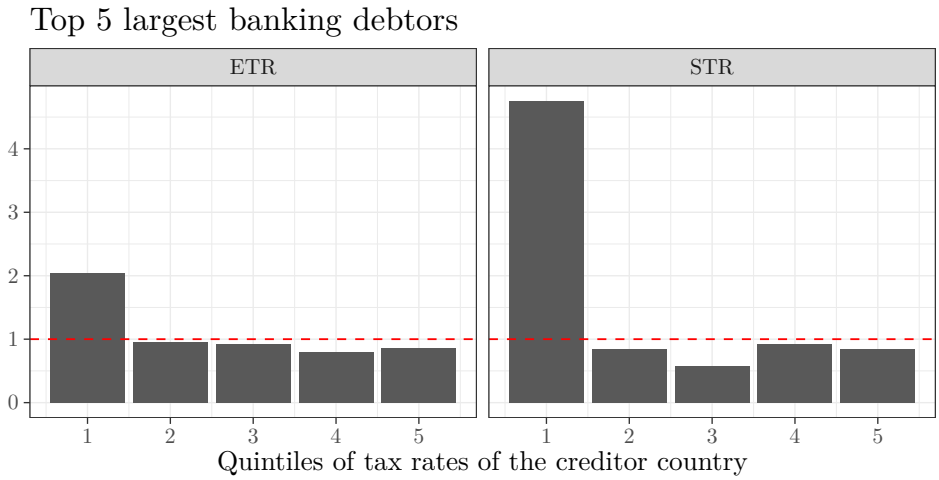
E Supplementary results

Figure 1.17: Relative share of weighted intragroup liabilities **(left)** and interbank liabilities **(right)** broken down by creditor country tax rate quintile (ETR), full sample.



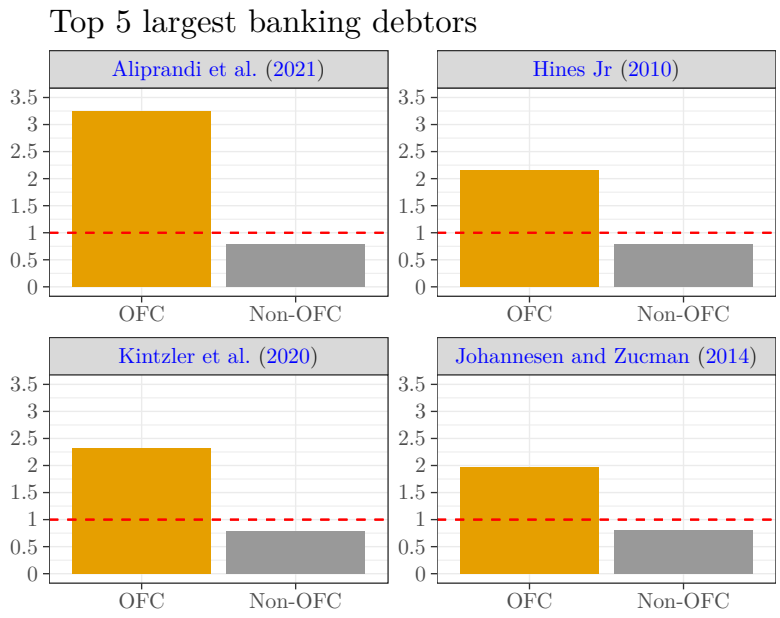
Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the relative market share in intragroup debt **left** and its relative market share in interbank debt holding **right**. Lecture : Using ETR, creditor banks that resides in country which tax rates in Q1 hold relatively 4.2 times more intragroup debt as they hold interbank debt.

Figure 1.18: Weighted average ratio of intra-group liabilities to interbank liabilities broken down by creditor country tax rate quintile, top 5 largest debtors countries.



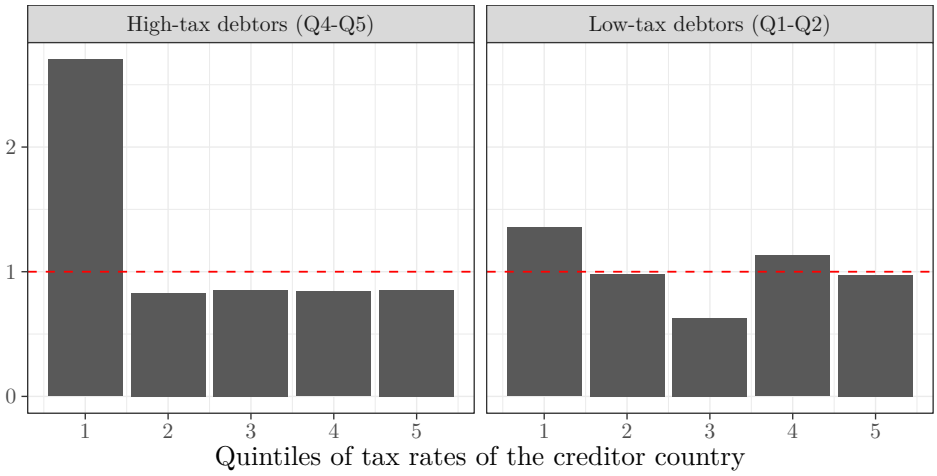
Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its share in total intragroup debt holding over its share in total interbank debt holding. Debtors located in the United-States, United Kingdom, France, Spain, Italy. Lecture : Using STR, creditor banks that resides in country with the lowest tax rates (Q1) hold relatively 3.9 times more intragroup assets as they hold interbank assets.

Figure 1.19: Weighted average ratio of intra-group liabilities to interbank liabilities broken down by OFC status of creditor countries, top 5 largest debtors countries.



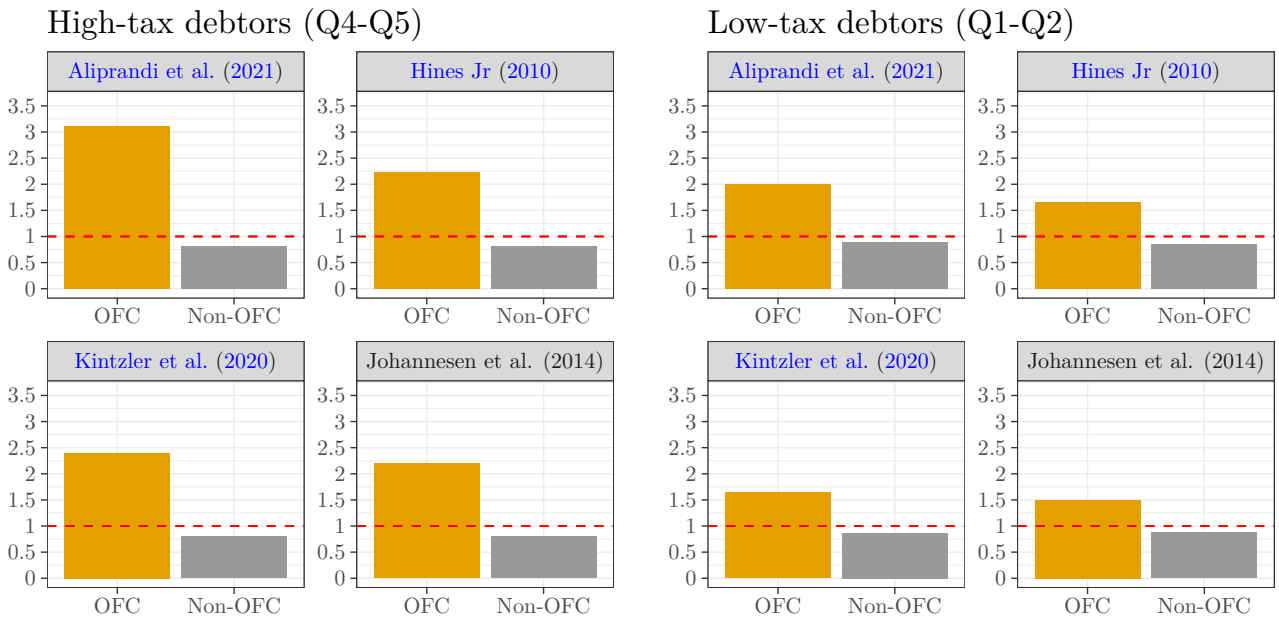
Note: Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each type of creditor country the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. Debtors located in the United-States, United Kingdom, France, Spain, Italy. "OFC" countries are defined according to the lists from Aliprandi et al. (2021), Hines Jr (2010), Johannesen and Zucman (2014), Kintzler et al. (2020) Lecture : Creditor banks located in OFCs (using the Aliprandi list) hold relatively 3.25 times more intra-group debt from high-tax countries as they hold interbank debt from high-tax countries.

Figure 1.20: Weighted average ratio of intra-group liabilities to interbank liabilities from high-tax debtors (Q4-Q5, **left**) and low-tax debtors (Q1-Q2, **right**) broken down by creditor country tax rate quintile.



Note : Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each quintile the ratio of its relative share in intragroup debt holding over its relative share in interbank debt holding. Lecture : Using ETR, creditor banks that resides in country which tax rates in Q1 hold relatively 4.2 times more intragroup debt as they hold interbank debt.

Figure 1.21: Weighted average ratio of intra-group liabilities to interbank liabilities from high-tax debtors (Q4-Q5, **left**) and low-tax debtors (Q1-Q2, **right**) broken down by type of creditor country (non-OFC vs OFC).



Note: Weighted average between 2014-Q1 and 2020-Q2. Each bar represents for each type of creditor country the ratio of its relative share in intra-group debt holding over its relative share in interbank debt holding. The debtors are either high-tax countries (fourth and fifth quintile of tax rates, left) or low-tax countries (first and second quintile of tax rates, right). "OFC" countries are defined according to the lists from Aliprandi et al. (2021), Hines Jr (2010), Johannesen and Zucman (2014), Kintzler et al. (2020) Lecture : Creditor banks located in OFC (using the Aliprandi list) hold relatively 3.25 times more intra-group debt from high-tax countries as they hold interbank debt from high-tax countries.

Chapter 2

Banking (Des)Integration between Hong Kong and China

2.1 Introduction

The recent protests in Hong Kong Special Administrative Region (henceforth Hong Kong) of late 2019 and Hong Kong authorities' response to the COVID-19 pandemic have gathered attention from the international press and many have rushed to call the end of "China's financial windows".[1] The pandemic restrictions put in place were some of the most constraining, even in the region. This, combined with civil tensions that started in March 2019, partially explains why Hong Kong has seen negative growth in 2019, 2020 and 2022. At the same time, the authorities have also had to extensively communicate after the National Security Law[2] that was passed in 2020, to reassure foreign investors about of Hong Kong outlook. Taken together, these two factors have been at the heart of foreign analysis of Hong Kong economic prospects. What may otherwise be lacking in the current economic discussion is taking into account that the Special Administrative Region (SAR)'s main competitive advantage compared to other financial centers in the region – Singapore, Tokyo, Seoul etc. – is its unique economic relationship with Mainland China (Lai, 2012). Indeed, Hong Kong enjoys deep economic and financial integration with People's Republic of China (henceforth China), which continues to broaden. Hong Kong's economy is based on services (93% in Q1 2023)[3], most of which are directly linked to international – and especially Chinese – demand: wholesale and retail trade, real estate business, finance and insurance. However, it is more probable that international causes, i.e., China lackluster performance in 2020 and 2022 (with a GDP growth of respectively 2.2% and 3%, its lowest values since 1976[4]) are the main drivers of the recent Hong Kong economic slowdown, rather than national causes.

Falling into this context, this chapter documents the strong economic integration between China Mainland and Hong Kong by focusing on the financial sector and more specifically through the lens of the banking industry. Our main contribution is that, using macro-level data of gross banking flows, we study the bank lending channel of China monetary policy, through the special case of Hong Kong banks, which are China's largest lenders. While while we have an increased understanding of China as an international creditor (Cerutti et al., 2023, Horn et al., 2021, Kaaresvirta and Laakkonen, 2021, Liu, 2023), the question on how foreign banks lend to China and how their activities are impacted by China monetary policy remains understudied.

In the present chapter, we fill this gap by investigating the impact of China's monetary shocks on Hong Kong cross-border lending. To this end, we use a variety of policy variables and rely on

[1] Guardian, November 2019; Reuters, December 2019; Financial Times (FT), December 2020; FT, January 2021; FT, December 2021.

[2] The National Security Law was proposed in 2019, it enables extradition of Hong Kong nationals to foreign territories including the Mainland. A large number of Hong Kong residents opposed the law and several countries have condemned the law, as an unprecedented breach to the freedom of speech guaranteed by Hong Kong constitution.

[3] Source : Hong Kong Monetary Authority (HKMA)

[4] Source : World Bank

the local projections methodology. Our key result is that Hong Kong cross-border lending reacts counter-cyclically to China monetary policy. More precisely, expansionary monetary policy reduces lending from Hong Kong to China. Our main explanation mechanism is the "return-chasing" (Avdjiev and Hale, 2019) behaviour from investors, that typically employ carry-trade strategies. High-risk-tolerant agents that search for high yield, decrease their lending when Mainland's interest rates are lower. Conversely, we also show that Hong Kong cross-border lending to the rest of the world reacts negatively to China expansionary monetary which shows a crowding out effect of capital that flows to China. For the sake of completeness, we study the influence of US monetary policy on Hong Kong banking claims and show that it has an opposite effect as China monetary policy, in accordance to both a "return-chasing" mechanism (as expected returns on US assets increase) and a flight-to-quality mechanism. The last explanation also applies to more risk-averse investors.

The rest of the chapter is organized as follows, section 2.2 presents Hong Kong banking sector, section 2.3 the institutional setup of China's monetary policy, section 2.4 the banking spillover of monetary policy. In section 2.5 we introduce the data and our methodology, sections 2.6 and 2.7 present our results and robustness checks respectively.

2.2 Hong Kong banking sector

Hong Kong has become one the main Offshore Financial Centres (OFC) (Dharmapala and Hines Jr, 2009), by maintaining a low level of corruption, high political stability (at least until 2020), and a general good economic situation which have allowed for the development of its financial industry, which represented close to 20% of its GDP (Q1 2023).[5] Since 1983, Hong Kong has operated under a currency board with the US dollar, with the exchange rate fluctuating between 7.75-7.85. The system has proven extremely resilient over time and has facilitated trade as well as the development of Hong Kong finance industry (Cabrillac et al., 2022). The peg, which comes at the cost of monetary policy autonomy, is a factor of transmission of the US business cycle, that has forced the Hong Kong Monetary Authority (HKMA), in charge of the Exchange Fund, to become a pioneer in macroprudential policy.

Hong Kong is one of the key hubs for global systemically important banks (G-SIBs), it hosts more than 200 banking institutions with assets of 920% of GDP as of end-October 2021 (IMF, 2022). Most large banking groups that are present in the region have their headquarters outside Hong Kong. In addition, BIS's Locational Banking Statistics indicate that local banking claims are smaller than cross-border claims (1.60 USD trillion and 1.82 USD trillion respectively) which

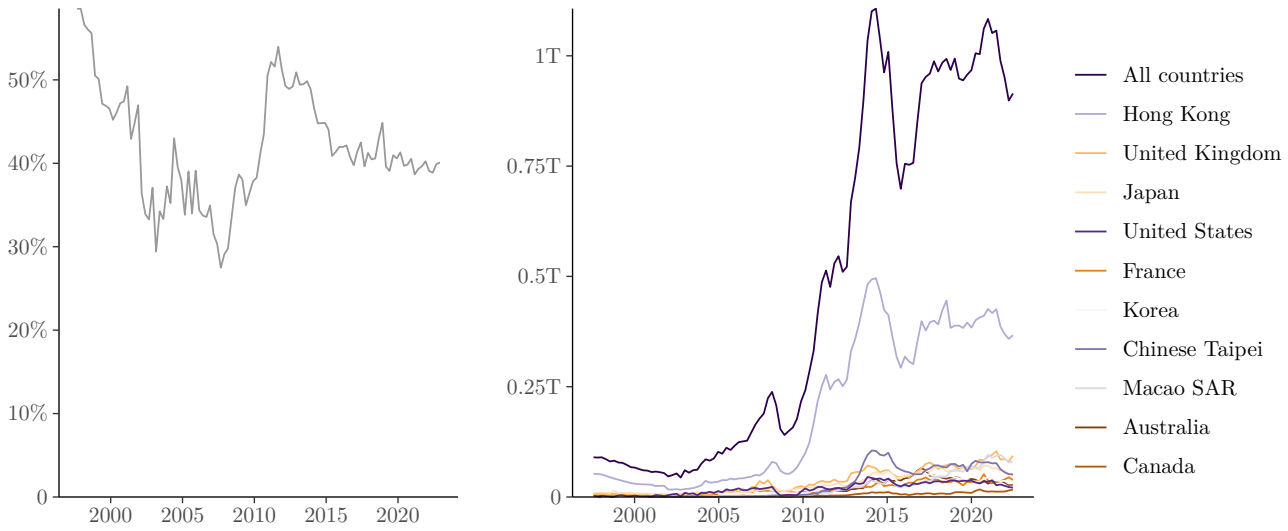
[5]Source: Hong Kong Monetary Authority HKMA

is evidence of a highly multinational sector. While this sector has been strongly impacted by the pandemic crisis, it still remains an important share of the Hong Kong economy (see Appendix A).

Special relation with China Mainland

Since July 1997, the relationship between China and Hong Kong SAR has functioned under the principle of "One country, two systems". This principle states that while politically there is only one China, Hong Kong could retain its local government, law (based on Commonwealth Common Law), trade polices etc. that enables its development as a financial center. Hong Kong also benefits from deep ties with China, to the point that its economic dependence may threaten future opportunity for economic growth (IMF, 2022). Indeed, Hong Kong is the *de facto* gateway for financial flows to China, almost 2/3 of China's inward and outward investment were originated from, or intermediated via Hong Kong. Figure 2.1 shows that Hong Kong is by far China's banking debt holder. In the last decade, it has held between 40% and 50% of China international banking liabilities. There is also an important integration of stock exchanges with the Mainland: the Shanghai-Hong Kong Stock Connect was officially launched in 2014 and the Shenzhen-Hong Kong Stock Connect was launched in 2016. They both established two-way trading links that enable investors in each market to trade shares on the other market using their local brokers and clearing houses.[6]

Figure 2.1: Share of China banking liabilities held by Hong Kong (left) and ten largest China banking liabilities holders (right, trillion USD dollars, 1997-2023)



Lecture: on the the left, in 2020, 40% of China banking liabilities were held by Hong Kong (on a residency basis). On the right, the total of Chinese banking liabilities were about USD 1 trillion in 2020, of which around 0.1 trillion were held by the United Kingdom. Source: BIS LBS, Macrobond, Honk Kong Monetary Authority

[6] "The stock connect allows qualified mainland China investors to access eligible Hong Kong shares as well as Hong Kong and overseas investors to trade eligible A shares subject to a certain amount of daily quota." (Shanghai Stock Exchange website).

Hong Kong is also the deepest offshore renminbi (RMB - yuan) liquidity pool and largest clearing hub.[7] One of the reasons that explain Hong Kong dominance in accessing the Chinese market is that it has benefited from the implementation of the Qualified Foreign Institutional Investor (QFII, launched in 2002) Scheme and RMB Qualified Foreign Institutional Investor (RQFII, launched in 2011) Scheme, which have been unified in 2020. The QFII Scheme was a transitional arrangement that allowed international institutional investors who met certain qualifications to directly invest in a permitted range of financial products in mainland China's capital market with quotas; and RQFII allowed to directly invest by using offshore RMB. Hong Kong was the pilot region for both schemes – for RQFII, it was the only qualified region until 2013.[8] In addition, two other programs – Northbound Bond Connect (inflows into China from Hong Kong without quotas) and Southbound Bond Connect (inflows into China from Hong Kong with quotas) – were set up in 2017, giving another access for international investors to the Chinese bond market via Hong Kong.[9]

Pan et al. (2018) have also documented that the large financial Chinese companies favor Hong Kong when deciding to expand abroad. By studying the geographical incorporation of China's 'big four' banks (BOC, Bank of China; CCB, China Construction Bank; ICBC, Industrial and Commercial Bank of China; and ABC, Agricultural Bank of China) in foreign territories, they show a relatively small importance of other large Asian cities (Tokyo and Seoul) but a large role of OFC that offer tax advantages and/or financial secrecy including Hong Kong and Macau.

2.3 China Monetary Policy

2.3.1 Institutional arrangement and policy variables

In this section, we will discuss the institutional arrangement of the Chinese central bank which differs greatly from the established norms in advanced economies. Following a top-down approach we will first present the general mandate of the PBoC, then its intermediary targets and its monetary policy tools.

The first point of departure from other Central Banks is that the PBoC is only partially independent: if *de jure* the PBoC seems independent at the overall institutional level and in conducting its monetary policy (choice of intermediary targets and implementation tools), several authors (Hess, 2020, Jones and Bowman, 2019) have argued that it is *de facto* under the authority of the State Council, which directly controls Governor and Deputy Governors' appointments as

[7] 945 billions of RMB deposits were recorded in 2021. Over 70% of the world's RMB payments are settled through Hong Kong, according to SWIFT statistics. It also hosts the largest offshore RMB bond (HKMA website).

[8] Source : Shanghai Stock Exchange website

[9] For a more general presentation of capital markets reforms in Chine see (Schipke et al., 2019)

well as the PBoC budget.[10] Officially, the PBoC has a dual mandate[11] of price stability and economic growth but as Zhou Xiaochuan (PBoC Governor from 2002 to 2018) noted: "The single objective of maintaining price stability is an enviable arrangement [...]. However, it is not yet realistic for China". Instead, "The [PBoC] has multiple objectives, which not only include such four annual objectives as ensuring price stability, boosting economic growth, promoting employment, and broadly maintaining balance of payments, but also cover two dynamic objectives, namely, financial reform and opening up, and financial market development" (Zhou, 2016), which makes the PBoC one of the central banks with the largest multi-objective framework (Jones and Bowman, 2019).

To meet its extensive multi-objective the PBoC used to have – at least until 2018 – a large amount of intermediary targets. The main targets were M2 growth, domestic loan growth, exchange rate stability, and banking system stability, which implies maintaining the profitability of state-owned banks (Chen et al., 2013, Fu and Ho, 2022). But the relative weight given to each intermediary target is not fixed and has largely changed during the last two decades. For example, up until the 2000s, credit growth was the main target. Girardin et al. (2017) consider that, since the early 2000s, the conduct of monetary policy has been characterised by implicit inflation targeting. But during the 2016-2018 period, Jones and Bowman (2019) note that: "PBoC monetary policy communication emphasised the financial stability objective more prominently, reflecting concerns over high debt levels and rising complexity in the financial system". In addition, it has to be noted that all targets (i.e., GDP growth, unemployment rate, inflation, M2 growth, etc.) are moving targets. Contrary to central banks of advanced economies that review their targets sparingly, the PBoC publishes updated targets each December for the following year (e.g., the target for inflation was 3% in 2007 and 4.8% in 2008) (McMahon et al., 2018). In addition, in March 2018, with the reforms launched by Xi Jinping that consolidated his power, the PBoC experienced important changes regarding its objectives and did not publish a target for M2 growth – considered to be its primary target – nor for credit growth, for the first time since the mid 1990s.

Over the period studied, the monetary policy implementation has also undergone substantial change in China. As a reflection of the multi-objectives and the multitude of targets, China central bank also uses a variety of tools to implement its policy. Since the 1990s, the overall evolution has consisted in moving from a policy implemented via quantity controls to a more

[10] One of the main reasons for the extended control of the State Council over the PBoC is that the Monetary Policy Committee (MPC) has more external than internal members: only 4 out of its 14 members are PBoC officials. This setup was chosen intentionally to foster more diverse views but runs the risk of subordinating monetary policy to other government agencies (Hess, 2020).

[11] Article 3 of the Central Bank Law of March 1995 states that: "The objective of monetary policy is to maintain the stability of the value of the currency, and thereby to promote economic growth". Here 'value of the currency' has been both understood by central bankers such as Yi Gang (PBoC Governor since 2018) as *internal* – meaning inflation – and *external* – meaning exchange-rate stability (Gang, 2018).

market-based approach (Chen et al., 2013, Fu and Ho, 2022, Jones and Bowman, 2019). For the late 1990s, Geiger (2006) and Maino and Laurens (2007) have suggested that – unlike central banks of advanced economies – interest rates did not have a large role in the conduct of monetary policy but that the preferred tool was a mix of credit quotas, window guidance, soft borrowing constraints of state-owned financing firms, and active management of the exchange rate through the use of foreign reserves. For the period stretching from the early 2000s to 2017, the PBoC used two categories of instruments (Chen et al., 2013, Hess, 2020); the first serves to influence liquidity on the interbank money market and comprises regulatory reserves requirements (RRR – with a tiering system based on bank size since 2008), interest rates on required and excess reserves, standing facilities (borrowing and deposit) and open market operations (lending, purchases and sales of assets). The second category is particular to the PBoC and consists in directly influencing retail lending and deposits by regulating the rate, as well as suggesting, or imposing, window guidance which are quarterly quotas for state-owned banks. Since 2017 however, the PBoC has de-emphasized its communication on the quantity-based instruments (McMahon et al., 2018) and shifted to "regulating price indicators" (Gang, 2018). In fact, the current focus seems to be on short-term money-market rates, in particular the pledged 7-day reverse repo rate which is a weighted average of participating deposit institutions (known as "DR007"), that is closely monitored by market participants.[12] Even more recently, the revision in mid-2019 of the Loan Prime Rate[13] (LPR) has increased its importance as part of market-based reforms, making it the main medium-term policy rate (Das and Song, 2022).

To summarize, the PBoC enjoys limited independence which reduce its ability to do forward guidance and has numerous policy instruments aimed at several intermediate targets that have changed in the last two decades. This creates a well-known challenge as to which economic variable(s) can best measure PBoC's policy (Das and Song, 2022, Fu and Ho, 2022). Chen et al. (2018) advocate against using a classical Taylor rule, proposing a modified version that takes into account the moving targets of the PBoC (M2 and GDP growth) instead of an output gap. Some researchers have opted for event-studies (Fu and Ho, 2022, Sun, 2020), while others (Das and Song, 2022, Fu and Ho, 2022, Girardin et al., 2017, Sun, 2013, 2018) have used narrative approaches which allow to construct narrative-based shocks of monetary surprises. This takes into account that monetary policy in China can take different forms but still makes the strong assumption that they can be

[12]This was confirmed in the 2020 Q4 China Monetary Policy Report: "when observing market rates, we need to focus on the weighted average of DR007, which is the main indicator of market rates."

[13]The LPR is the lending rate provided by commercial banks to their highest quality customers, and serves as the benchmark for rates provided for other loans. The LPR reporting group is comprised of 18 commercial banks in China, including an original core group of 10 national banks, plus two municipal commercial banks, two rural village commercial banks, two foreign invested banks and two privately operated banks. "LPR quoting banks shall submit their quotations by means of adding a few basis points to the interest rate of open market operations (mainly referring to the rate of the medium-term lending facility)." Announcement of the People's Bank of China No.15 [2019]

summarized in a standardized unique variable. By relying on Taylor rules or by using narrative approach, researchers assign a part of the variations that are guided by the rule, i.e, that is due to the systematic component of monetary policy and another part of variations that are the monetary "surprises". This is done in order to identify the causal effect of monetary policy, which requires looking at the exogenous deviations from the monetary rule. Our approach is similar to Jones and Bowman (2019) and Kim and Chen (2022) in that we directly consider the effect of various policy variables: our preferred policy variables are the 7-day repo, the RRR and we also compare our results using the LPR.

2.3.2 Global footprints

While the international impact of US monetary policy has been the subject of numerous studies leading to a new literature on the 'Global Financial Cycle' of Rey (2013), scarce research exists on the international impact of China monetary policy. This recent literature has focused so far on real effects of monetary policy spillovers: Vespignani (2015) finds that expansionary monetary policy from China has an positive impact on Euro area economies through a increase in demand for exports. Similarly, Cho and Kim (2021) focus on the impact of monetary policy shocks to trade, via the terms of trade channel in Asian economies. Finally, Miranda-Agrippino et al. (2020) and Beirne et al. (2023) compare the relative impact of China and US monetary shocks. Beirne et al. (2023) conclude that PBoC policy has a stronger impact on Asian economies due to their high-interconnectedness, and that the responses to shocks are more persistent. Miranda-Agrippino et al. (2020) also find sizable impact, but note that financial variables are not the main transmission channel but rather domestic prices. Our paper differs in that we focus on one bilateral relationship from Hong Kong to China and study the bank-lending channel of PBoC's policy.

2.4 Bank-Lending Channel

The existing empirical evidence on the effect of monetary policy on cross-border bank lending is mixed (Albrizio et al., 2020). Two main competing strands of explanation exists: the first is the risk-taking channel proposed by Bruno and Shin (2015a,b) which is consistent with the bank lending channel. It states that U.S. expansionary monetary policy increases cross-border bank capital flows through higher leverage of international banks. In times of financial stress this phenomenon can also be coupled with a "flight to quality" where investors retract from foreign lending. Temesvary et al. (2018) corroborate these results using banks-firms matched loan-level data. Morais et al. (2019) find, using high-quality micro data, that in the case of Mexico, monetary tightening from US and Europe has a negative effect on local credit. Symmetrically, when the monetary policies of core

economies are exhibit a more accommodative stance, global banks have lower yields in domestic markets, so they expand to emerging markets reaching for higher yield, with higher credit and liquidity risk-taking, and thus lead a local credit boom. When monetary policy becomes tighter, they withdraw from emerging markets.

In contrast, another strand of the literature finds that increases of US short-term interest rates induce increases in cross-border lending (Avdjiev et al., 2018, Cerutti et al., 2017). Indeed, according to the portfolio rebalancing channel, monetary policy tightening diminishes the net worth and collateral value of domestic borrowers and thus leads banks to reallocate more credit toward relatively safer borrowers abroad (Correa et al., 2022). More research has nuanced this result: Avdjiev and Hale (2019) find that the result depends heavily on the international capital flow regime. Albrizio et al. (2020) and Avdjiev and Hale (2019) try to reconcile previous results and point out that they depend heavily on the modelling choices that are made, especially how to differentiate between macroeconomic fundamentals and the monetary policy stance (surprise shocks). Even so, Avdjiev and Hale (2019) find that an increase in both components (macro fundamentals and "monetary policy stance") has a positive impact on cross-border lending while Albrizio et al. (2020) find that only the first component has a positive impact and that exogenous monetary policy tightening in systemically important economies leads to a decline in cross-border bank lending.

2.5 Data and Empirical Specification

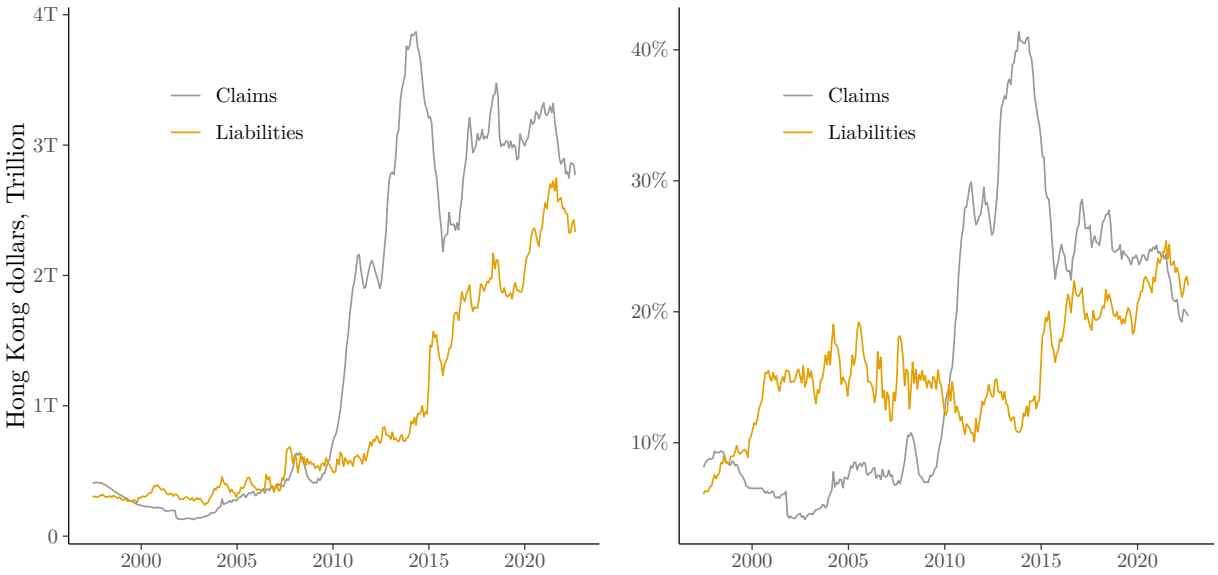
2.5.1 Data and stylized facts

In order to study the banking claims from Hong Kong, we use monthly external banking claims and liabilities data from HKMA, here presented as either claims to China or claims to the rest of the world.[14] This data comprises all the cross-border claims on bank's balance sheet that are resident in Hong Kong, which includes subsidiaries of Chinese and global banks from core economies as well as Hong Kong national banks. Figure 2.2 shows the dramatic increases – both in absolute and relative terms – of cross-border claims between 2010 and 2013. The early 2010s saw a global reduction in cross-border flows with continued expansion of regional banking, due to both lower supply and demand as well as a changing regulatory environment (Claessens, 2017). This increase was followed by an important decrease starting in late 2014. Liabilities to China have steadily increased since 2015 which coincides with the strengthening of the Belt Road Initiative.[15]

[14]Following the reporting guidelines of the Bank for International Settlements (BIS), 'claims' are all the assets recorded on bank's balance sheet which are loans and debt securities. From discussions with BIS officials, we know that the coverage of derivatives is only very partial.

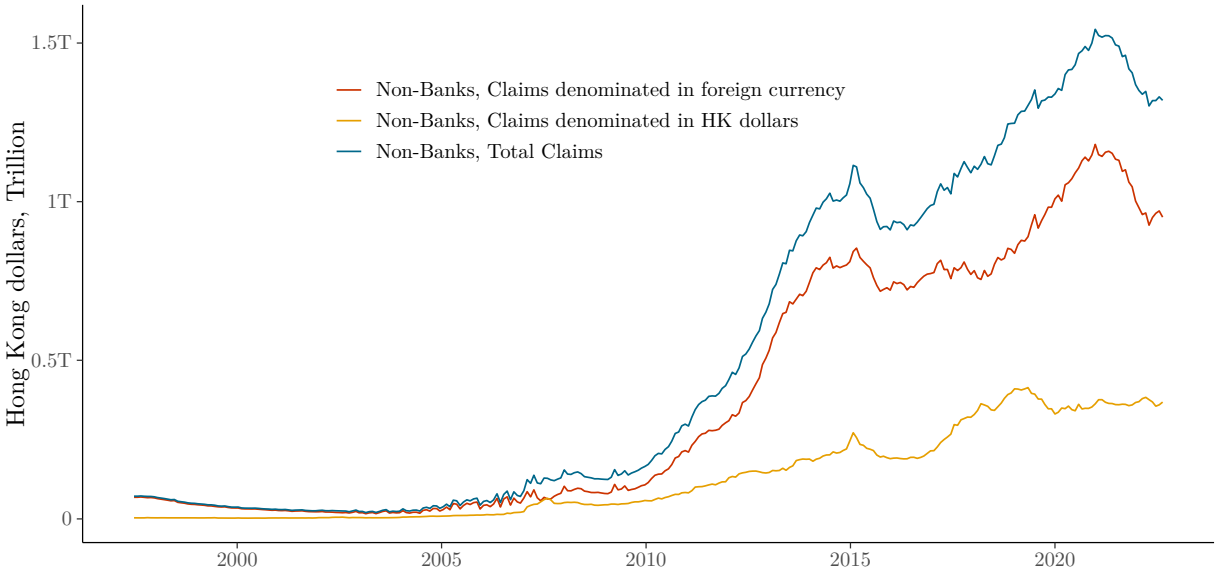
[15]Hong Kong's Financial Secretary John Tsang announced in his budget speech in February 2015 that the territory would join the Asian Infrastructure Investment Bank (AIIB), China's development bank for the Silk Road Economic

Figure 2.2: Hong Kong amounts outstanding with China as counterparty (**left**, trillion HK dollars) and as share in the total of Hong Kong cross-border amounts outstanding (**right**, 1997-2023)



Lecture: **left** in 2020, Hong Kong cross-border banking claims on China amounted to HKD 3 trillion (USD 385 billions). **Right** in 2020, 25% of Hong Kong cross-border banking claims were on China and 20% of Hong Kong banking liabilities were held by China. Source: Macrobond, Honk Kong Monetary Authority

Figure 2.3: Hong Kong banking claims vis-à-vis China Mainland non-banking counterparties (trillion HK dollars, 1997-2023)



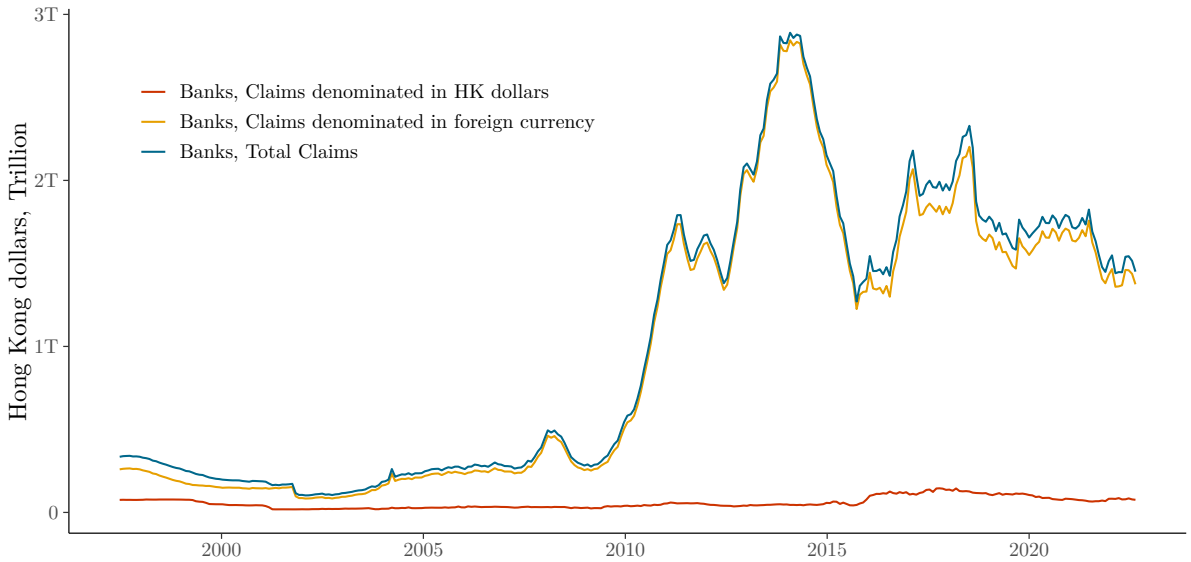
Source: Macrobond, Honk Kong Monetary Authority

When looking at the detail of the counterparty of these claims (Figures 2.4 and 2.4), we see that 70% of these claims are banking counterparties and that 30% are non-banks (which includes other financial institutions). The claims with banking counterparties are almost entirely

Belt.

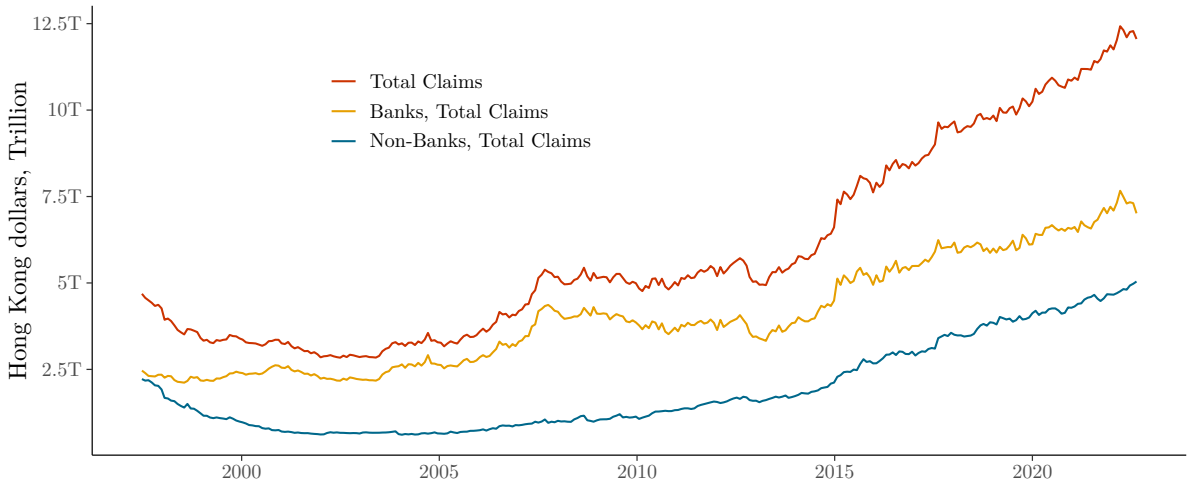
denominated in foreign currency (i.e., not in HKD[16]) while a larger part of non-banking claims are denominated in HKD (from 12% to 15%). Another difference between the counterparties is that the decrease after 2014 is much more important for banking counterparties than non-banking claims and happens much sooner, compared to non-banking counterparties that mostly declined in 2015. One explanation might be the nature of the claims, with on one side mainly interbanking loans which tend to be short or medium-term and on the other side non-banking assets which can be long-term – especially loans granted to non-financial firms.

Figure 2.4: Hong Kong banking claims vis-à-vis China Mainland banking counterparties (trillion HK dollars, 1997-2023)



Source: Macrobond, Honk Kong Monetary Authority

Figure 2.5: Hong Kong banking claims vis-à-vis the rest of the World (trillion HK dollars, 1997-2023)



Source: Macrobond, Honk Kong Monetary Authority

[16]In the basket of foreign currencies, around half of the claims are denominated in renminbi RMB, and the other half in US dollar. Other international currency denomination (i.e., euro, pound sterling, yen etc.) are marginal.

2.5.2 Empirical specification

Our first objective is to measure the transmission of China monetary policy shocks to Hong Kong banks. To this end, our strategy is based on the estimation of local projections (LP henceforth) using the method proposed by Jordà (2005). Local projections are similar to impulse response functions generated from VARs (Plagborg-Møller and Wolf, 2021), they account for the response, measured at different time horizons h, between exogenous and endogenous variables. Compared to VARs, LP have the advantage of producing impulse responses without having to specify the dynamic of a multivariate system. In addition, they are robust to highly persistent data (Montiel Olea and Plagborg-Møller, 2021), which our sample exhibits. Our sample is composed of monthly data spanning from October 2009 to March 2023, with $T = 162$. The baseline specification for the model is the following:

$$y_{t+h} = \sum_{l=1}^{p} \rho_{h,l} y_{t-l} + \beta_h \Delta Shock_t + \sum_{l=1}^{p} \delta_{h,l} \Delta X_{t-l} + \mu_h \Delta i_{US} + \varepsilon_{h,t} \tag{2.1}$$

where y_t is the log of the outcome variable of interest (claims to China or to the ROTW, with banking counterparty or non-banking counterparty) at time t and ρ_l are the autoregressive coefficients for the endogenous variable. $Shock_t$ is the monetary policy shock (first difference of the 7-day interbank repo or the first difference of the RRR[17]), X_{t-l} is a vector of monthly lagged controls that include: the Hong Kong Economic Policy Uncertainty (EPU) index from Luk et al. (2020), the VIX, the Chinese Purchasing Managers' Index (PMI) and the Wu and Xia (2016) shadow rate to measure US monetary policy (for source and summary statistics see Appendix B).[18] We include the Hong Kong EPU to control for the general economic stress in Hong Kong. The Chinese PMI is a "pull" factor, which serves as a proxy for the credit demand of the recipient country. An increase in China's manufacturing orders reflected by the PMI indicates a growing production which, in turn, is expected to have a positive impact on the outcome variable, due to an increase in Chinese demand for credit. PMI is our preferred control but, since no similar index exists at a monthly frequency for the SAR's activity which is mainly composed of services, we turn to EPU.

As we are constrained by the limited size of our sample and aim for the most parsimonious modelling option, we do not include any control for HKMA monetary policy as their rates follow closely the US Fed rates. Our "global" factors are thus the US monetary policy variable and the VIX. The latter is a typical proxy for global risk aversion (Avdjiev and Hale, 2019) that serves as a "push" factor, i.e., it controls for international elements that drive capital flows. Here the

[17] As China operates a tiering system for reserve requirement ratios (different for large, medium-sized and small-sized banks), we use a weighted average for financial institutions.

[18] As the US rates were raised in 2022, Wu-Xia shadow rates are no longer updated after February 2022. Starting from March 2022, we use effective Federal Funds rates.

VIX is assumed to be negatively correlated with capital inflows to China, due to "fly-to-quality" behaviours, investors retract from emerging markets in times of financial stress. As Hong Kong operates under a peg currency board with the US dollar, US monetary policy has direct impact on Hong Kong economy as the HKMA matches the rate of the FED and indirect impact through the Global Financial Cycle (Miranda-Agrippino et al., 2020, Rey, 2013). We expect that, *ceteris paribus*, an increase in US Fed Rates negatively impacts Hong Kong claims with China, as the yield spread between China and the US would decrease, reducing the difference in expected returns on assets between the two countries.

We set the number of lags to 4.[19] We also add contemporaneous effect for the US monetary policy i_{US}. By lagging certain control variables by one period, we implicitly make the following ordering assumption: Chinese and US monetary policies have instantaneous impact while the VIX, Chinese PMI and Hong Kong EPU only have lagged impacts.

2.6 Results

2.6.1 Claims to China

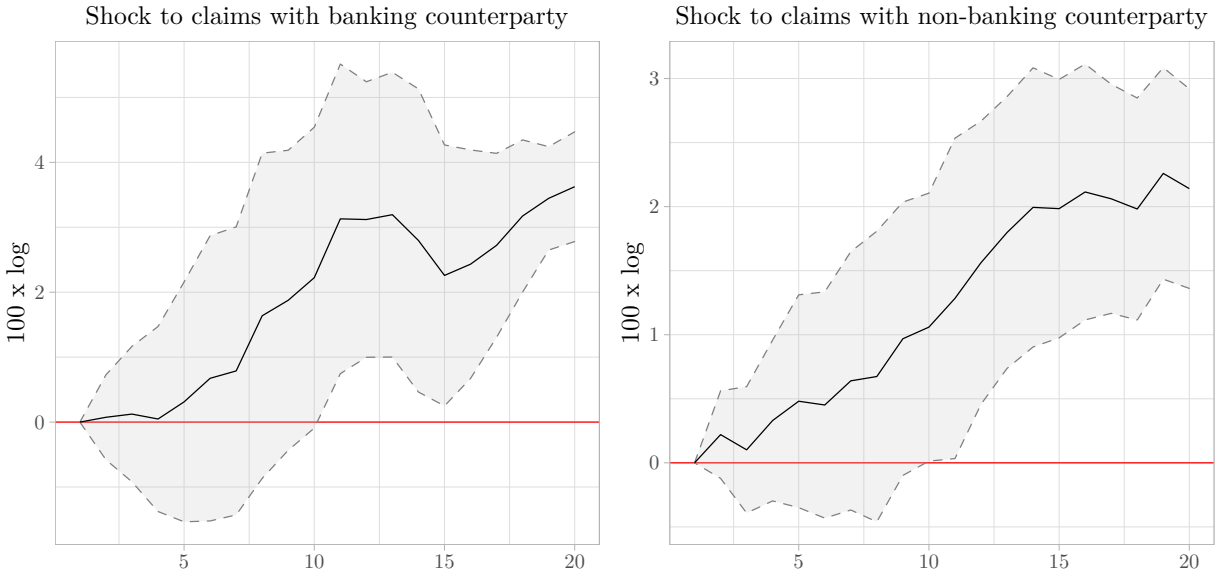
Our first results measure the impact of a positive shock of China monetary policy on cross-border Hong Kong claims to China with both banking and non-banking counterparties. As shown in Figure 2.6, the effects are positive, large and economically significant for both type of debtors which is consistent with the cross-border bank lending and the risk-taking channels of monetary policy. The reactions are of similar magnitude, with a maximal response of 3%. We can note that the peak is reached after 10 months for banking claims, while claims to non-banks' response is delayed, reaching its maximum after 15 months. The total decrease of the 7-day repo in 2015 is 185 base points corresponding to around 13 standard deviations. According to Figure 2.6, this would lead to close to a 40% decrease in the outcome variable which is approximately the amount of the decline of cross-border lending observed in 2015.

Our second results make use of reserve requirements ratios. Contrary to a shock to the 7-day repo, the response to the RRR is non-significant (Figure 2.7). While the difference of responses may be surprising compared to our previous results, it is in line with the findings of Kim and Chen (2022) who show that in the last decade, the size and effects of short-term interest rate shocks are larger than increases to the RRR which is a consequence of the PBoC moving away from a quantity-based policy to an interest rate-based policy framework. This also shows that RRR and

[19] Following the recommendation of Montiel Olea and Plagborg-Møller (2021) for the "lag-augmented approach", we make sure that our LP procedure utilizes as much data as possible, while avoiding over-parameterization. This conservative choice of lags allows us to compute Newey-West standard errors for robust inference over non-stationary data and to estimate impulse responses at long horizons.

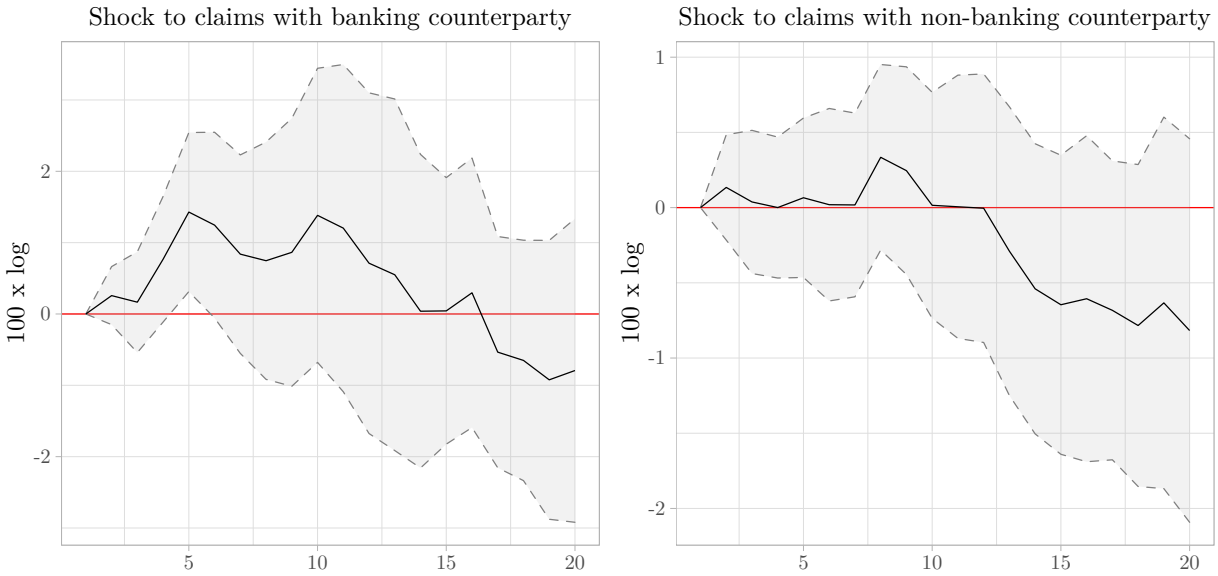
7-day repo rates are not perfect substitute, especially in measuring their effect on foreign banks. A decrease in RRR frees up liquidity for local bank, increasing their capacity to lend and thus decrease the price of credit, but it only has an indirect impact – via an increase in credit supply – on Hong Kong banks as they are not subject to the same regulatory environment as local credit institutions.

Figure 2.6: Claims to China, 7-day interbank repo rate: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Figure 2.7: Claims to China, RRR: Response to a one standard deviation shock

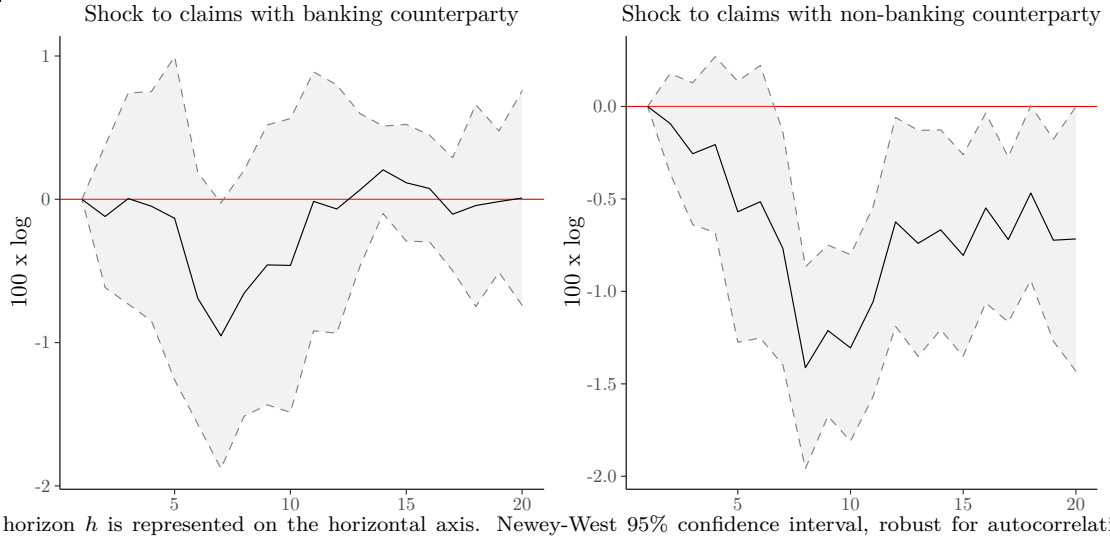


Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

2.6.2 Claims to the rest of the world

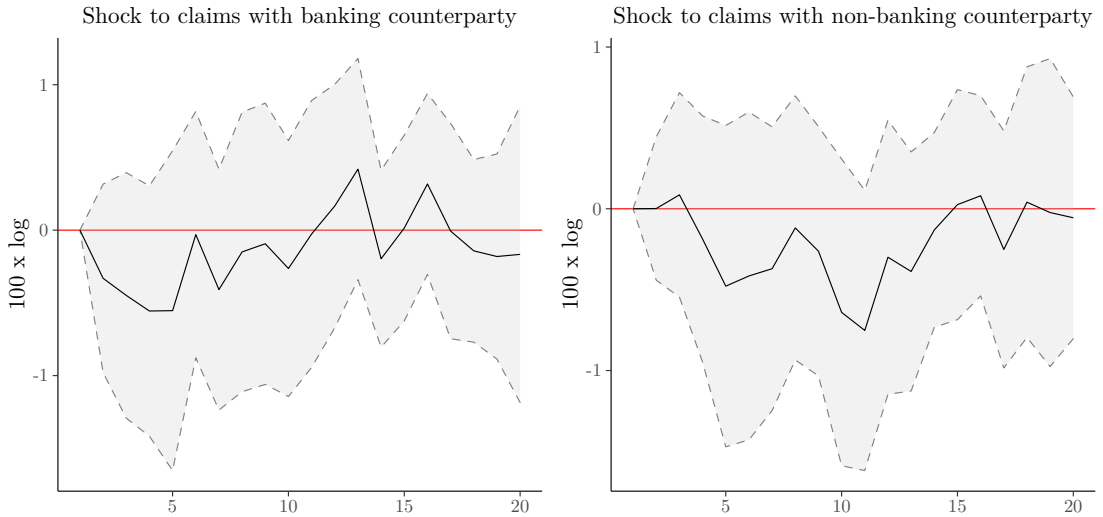
We then turn to estimation of the response of Hong Kong claims to the ROTW to positive 7-day interbank repo rate shocks (Figure 2.8) and to positive RRR shocks (Figure 2.9). The response to the first shock is negative for both banking (only partially significant) and non-banking counterparties. In both cases, the maximum effect is reached after 6 to 7 months after the shock and is between -1 and -1.5%. This, in addition to our previous results, is evidence that PBoC monetary policy largely influences Hong Kong bank portfolio choices, they reduce their foreign lending and redirect their assets to the Mainland when the Chinese interest rates increase. The responses to shocks to reserve requirements are non-significant for both banking and non-banking counterparties, confirming our previous findings showing that RRR are no longer the relevant policy variables.

Figure 2.8: Claims to ROTW, 7-day interbank repo rate: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Figure 2.9: Claims to ROTW, RRR: Response to a one standard deviation shock

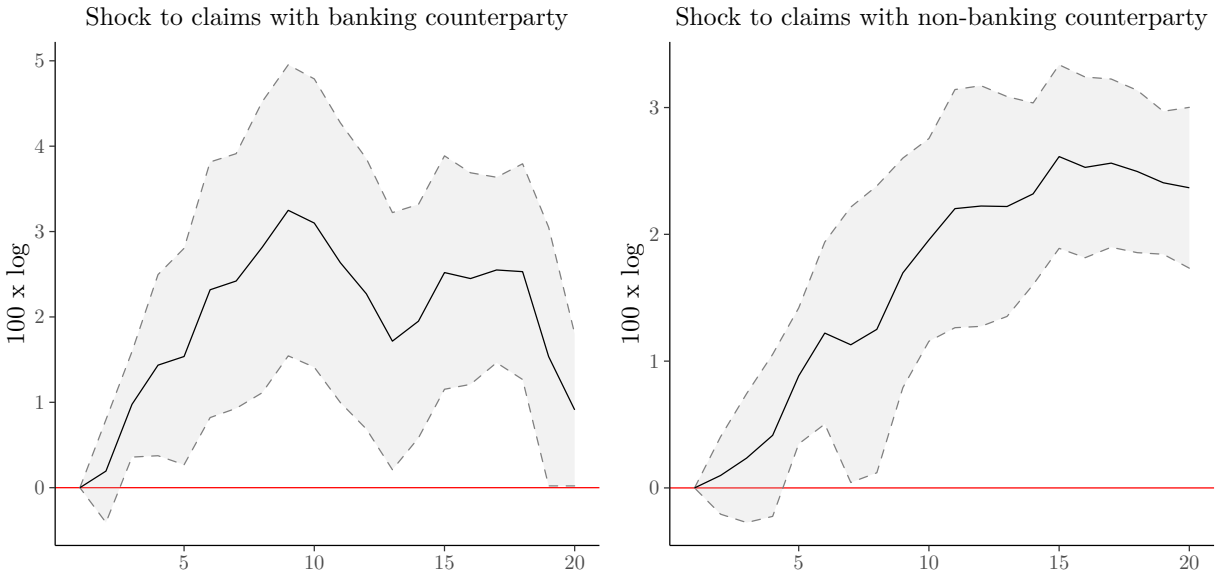


Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

2.7 Robustness

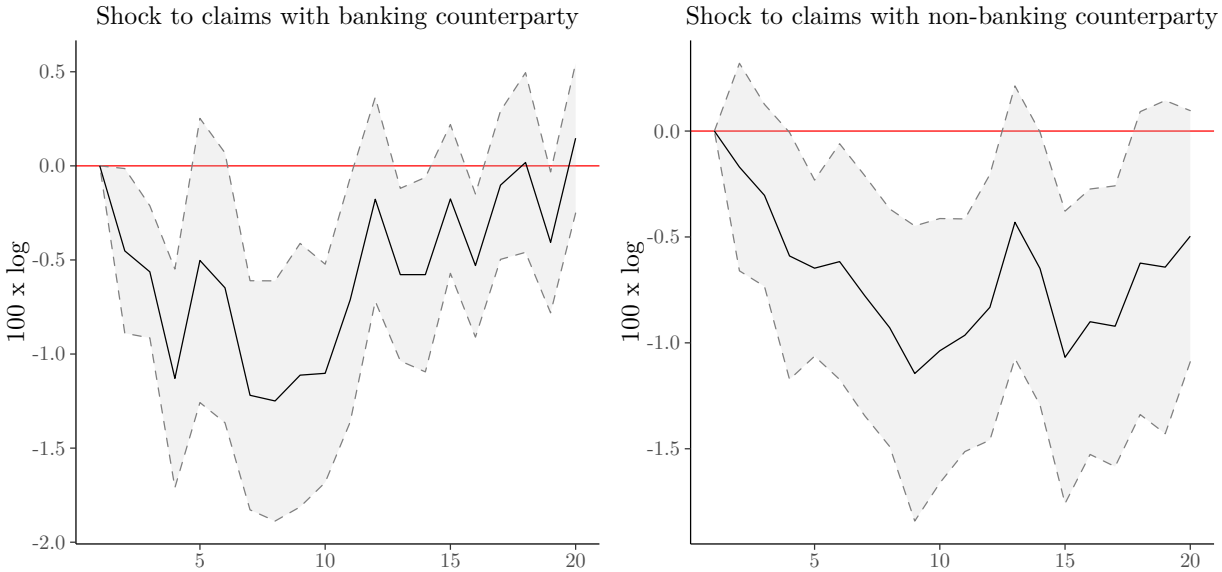
2.7.1 Alternative shocks

Figure 2.10: Claims to China, LPR: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Figure 2.11: Claims to ROTW, LPR: Response to a one standard deviation shock



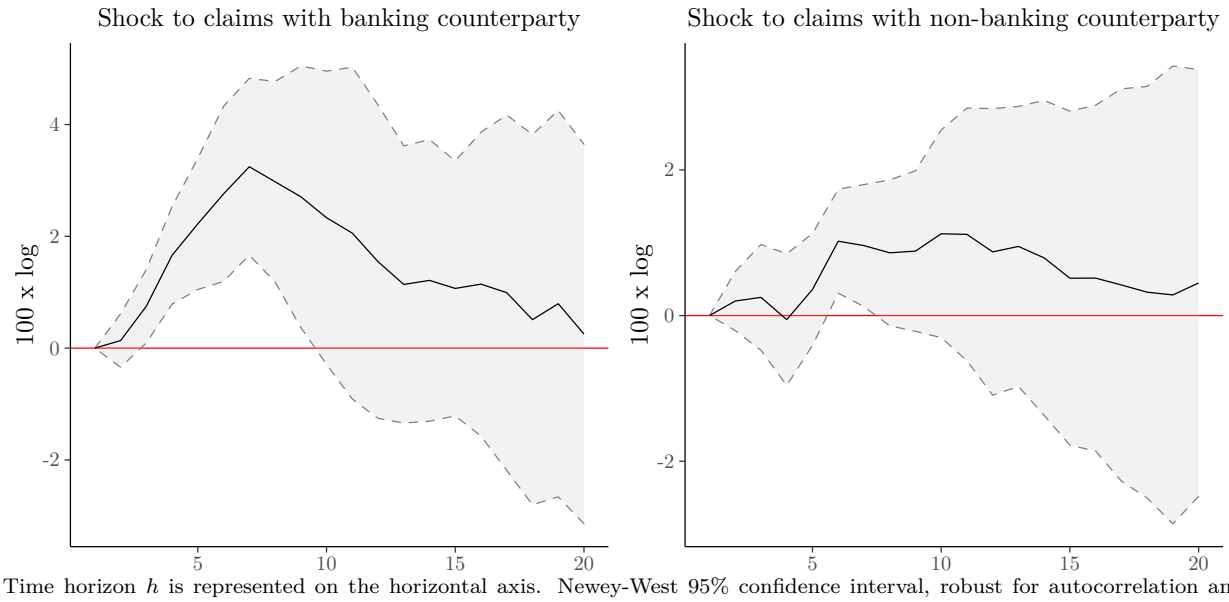
Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

PBoC's monetary policy is also captured by its control over national bank credit pricing and its quantity. We conduct a similar analysis as previously this time using the Loan Prime Rate (LPR, 1 year or less) i.e., the administered lending rate provided by commercial banks to their highest quality costumers. It is only available since 2013 which reduces the size of our sample to only 117 points. As can be seen in Figure 2.10, there is also a positive and significant response of

cross-border claims to China following an increase in the LPR; and this is true for both banking and non-banking counterparties. On the other hand there is a negative response of cross-border claims to the rest of the world to an increase in the LPR (Figure 2.11, and again, this result holds for claims to banks and non-banks, which confirms our previous findings.

We then turn to the exogenous China monetary shock proposed by Das and Song (2022). Despite using lag controls, our specification might be susceptible to endogeneity bias – and to a lesser extent to reverse causality. For example, a decrease in interest rates might be due to growth slowdown which could simultaneously impact cross-border credit and our endogenous variable. To capture the unexpected component of monetary policy events Das and Song (2022) look at the daily close-to-close change in the rate on one-year and five-year interest rate swaps (IRS) based on the interbank 7-day repo rate, around the date of policy announcements. We then aggregate their daily time series by month which give two time series: cumulative monetary shocks by month on one-year IRS and five-year IRS from August 2009 to April 2020. Figures 2.12 and 2.13 display the results for the 1-year IRS monetary shock, see Appendix C for the results of the 5-year IRS.

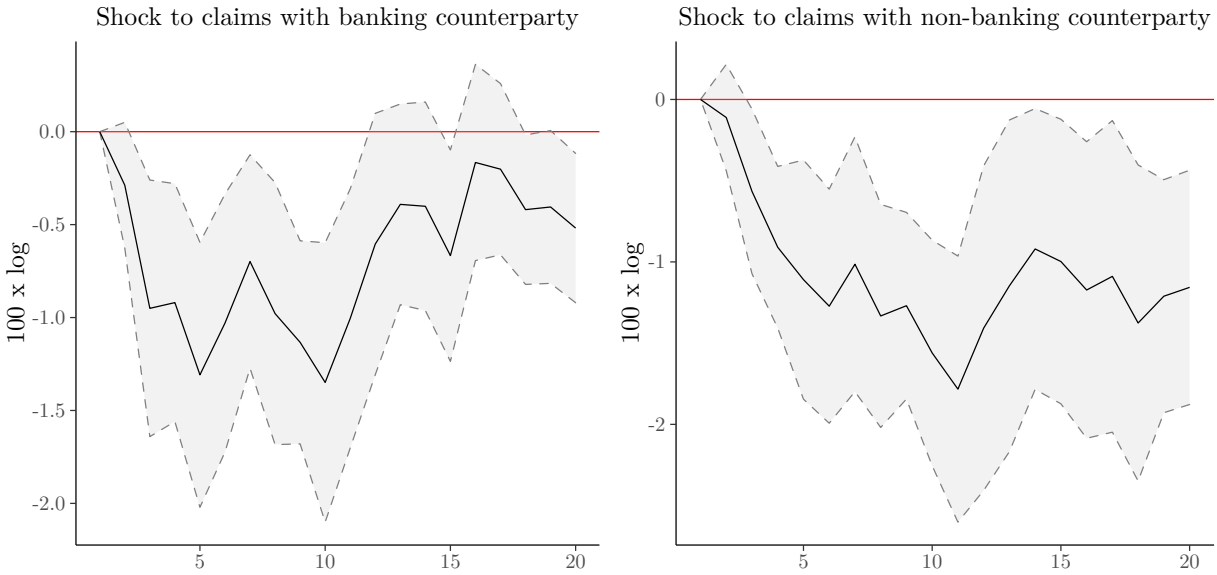
Figure 2.12: Claims to China, 1-year IRS exogenous shock: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

The response of claims to banking counterparty to the shock is positive and of similar magnitude as our previous results, with a maximum of around 3%. On the contrary, the response of claims to non-banking counterparty is flatter than previously, indicating that they may respond to the part of interest rates variation that is linked to macro fundamentals rather than monetary surprises. This is consistent with stylized facts that show that the decline of this type of claims in 2014-2015 has been delayed and smaller, compared to claims with banking counterparty.

Figure 2.13: Claims to ROTW, 1-year IRS exogenous shock: Response to a one standard deviation shock



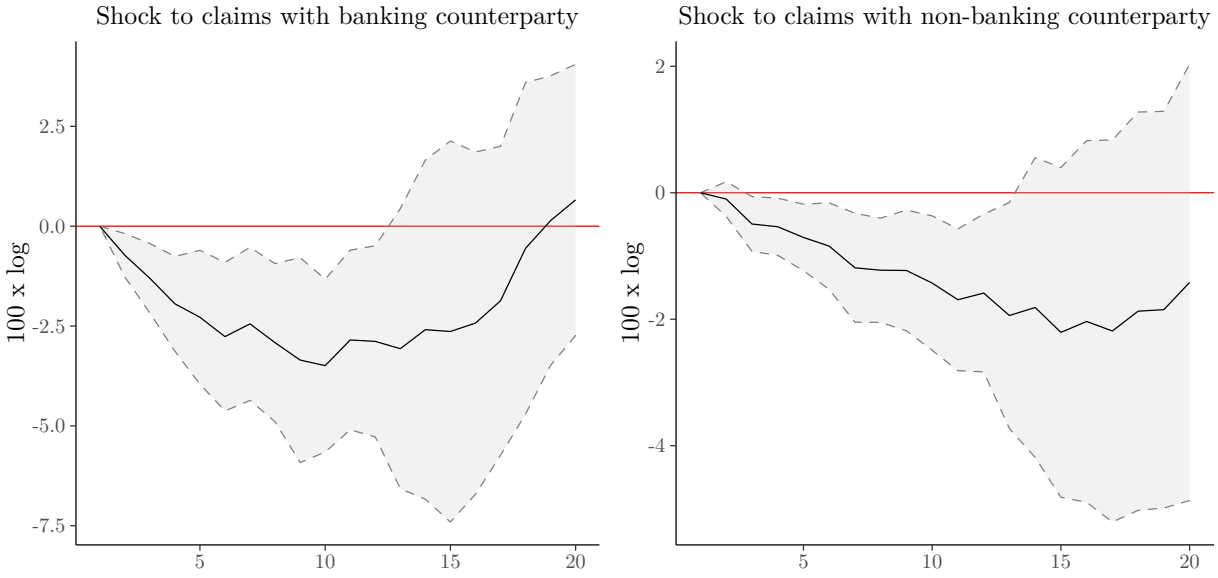
Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

2.7.2 US Monetary policy shocks

In order to verify our findings we also consider shocks to US monetary policy rates. Indeed, according to our previous results, we expect an increase in Federal Funds rate to negatively increase the cross-border lending from Hong Kong to China if the "search-for-yield" behavior is the driver of the changes in banking flows. Conversely, an increase in Fed Funds rate is supposed to increase the cross-border lending from Hong Kong to the rest of the world. It has to be noted that there is also a composition effect: as claims to the US are part of the aggregate 'claims to the ROTW', US monetary policy is both a global 'push' factor as well a local 'pull' factor. Nevertheless, as pointed out by Avdjiev and Hale (2019), there is no conclusive empirical evidence regarding the sign of the effect of advanced economies' monetary policies have on cross-border bank flows, as the relationship between US monetary policy and international bank lending is time-varying.

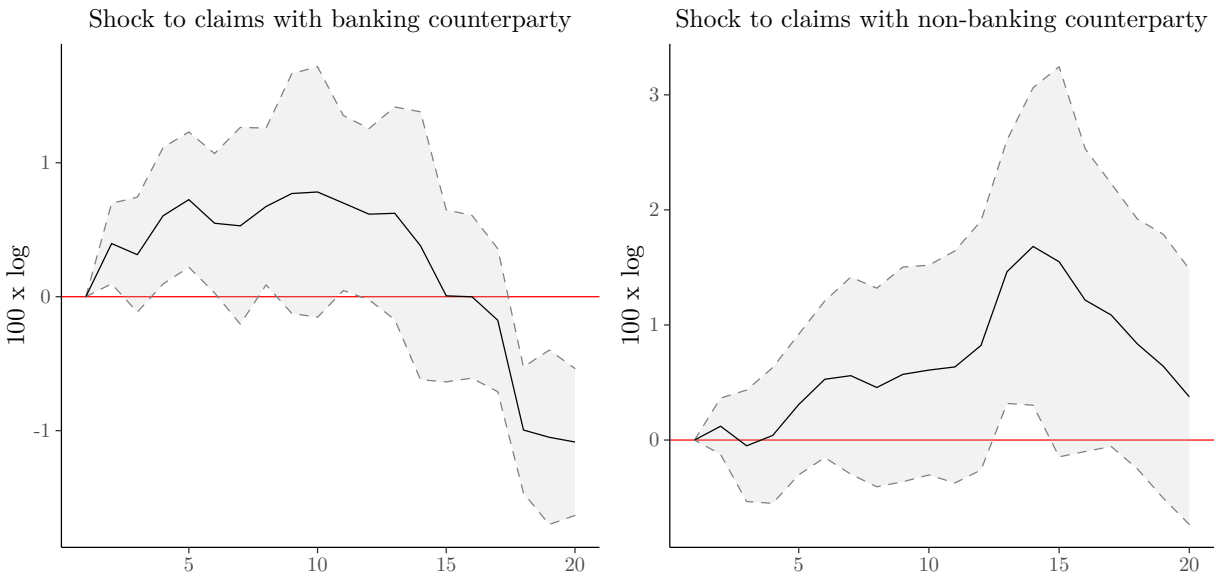
We repeat a similar analysis as in Section 2.7.1, this time using the Mainland interbank 7-day repo as a contemporaneous and lagged control for China monetary policy. We find, in accordance with the bank-lending channel and the risk-taking channel, that a positive shock to US monetary policy induces a negative response of claims of Hong Kong banks to China (Figure 2.14) and a positive response of claims to the rest of the world (Figure 2.15. This confirms our previous results which can be explained by a crowding out effect as China, world's largest emerging market, competes with advanced economies that also chase a limited amount of capital held by global banks.

Figure 2.14: Claims to China, US Monetary Policy: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Figure 2.15: Claims to ROTW, US Monetary Policy: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

2.8 Conclusion

In this chapter we have shown that Hong Kong external banking claims are heavily influenced by the Chinese and US monetary policy. The "search-for-yield" behavior explains that banks, including foreign banks located in Hong Kong, could benefit from the Chinese high interest rates between early 2011 and late 2014, at a time when monetary policies in advanced economies were extremely accommodating. With the PBoC cutting rates by almost half over the course of 10 month going from 4.1% in December 2014 to 2.35% in September 2015, the spread between PBoC's rates and the rates of core central banks (the FED, the ECB, BoE, BoJ) decreased, which coincides with an important decline of cross-border flows during this period. In that sense, the behaviour or Hong Kong banks in China is similar to what is observed from core economies' banks lending to emerging markets.

Our results shed light on the important banking integration between the two countries and are part of a recent literature on the "global footprints" (Miranda-Agrippino et al., 2020) of PBoC's policies. In addition, it is important to note, in the recent debate about the economic outlook of Hong Kong, that the territory's prosperity has been largely built on its capacity to have a privileged access to Mainland's markets, be it in terms of trade, financial services, acquisition of assets etc. This means that a perhaps under-discussed threat for Hong Kong economic role as an offshore financial center is the political will of China in keeping it its global window to capital. Two forces are at play; on the one hand Hong Kong executive authorities have renewed support from China's leaders which may benefit the territory in the short and medium terms. On the other hand, Chinese capital accounts are opening up and the Shenzen-Shanghai Stock Exchange connect is still developing, which indicates that Hong Kong's absolute advantage may be diminishing in the future, as well as China's need of a territory like Hong Kong. We would even argue that the recent Chinese tightening on Hong Kong civil liberties is a sign of that.

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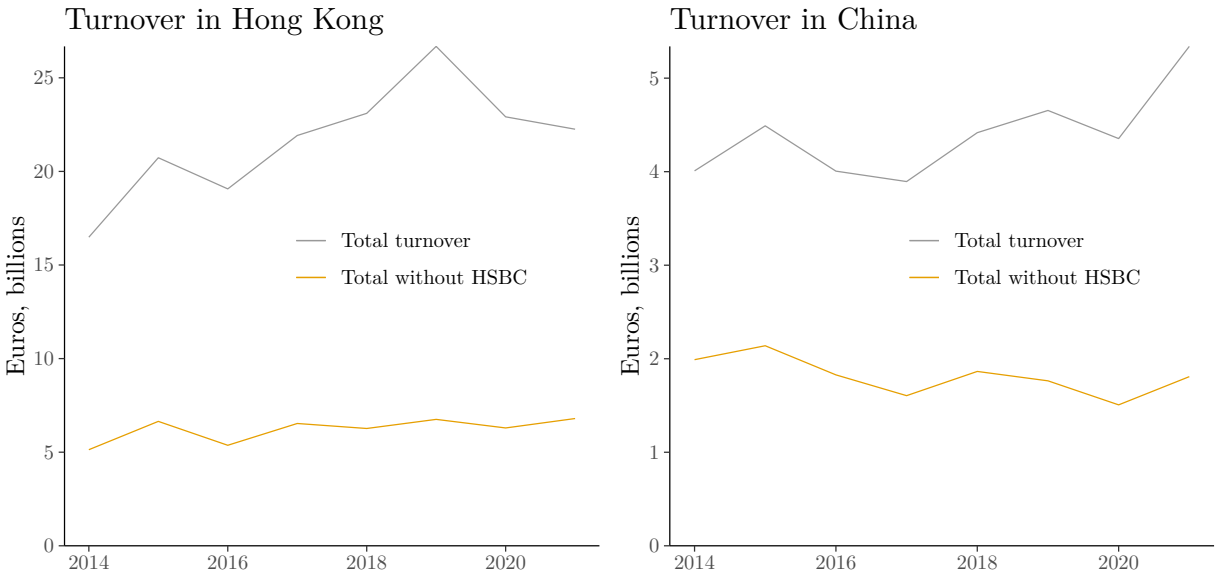
Appendix

A Performance of European banks in Hong Kong and China

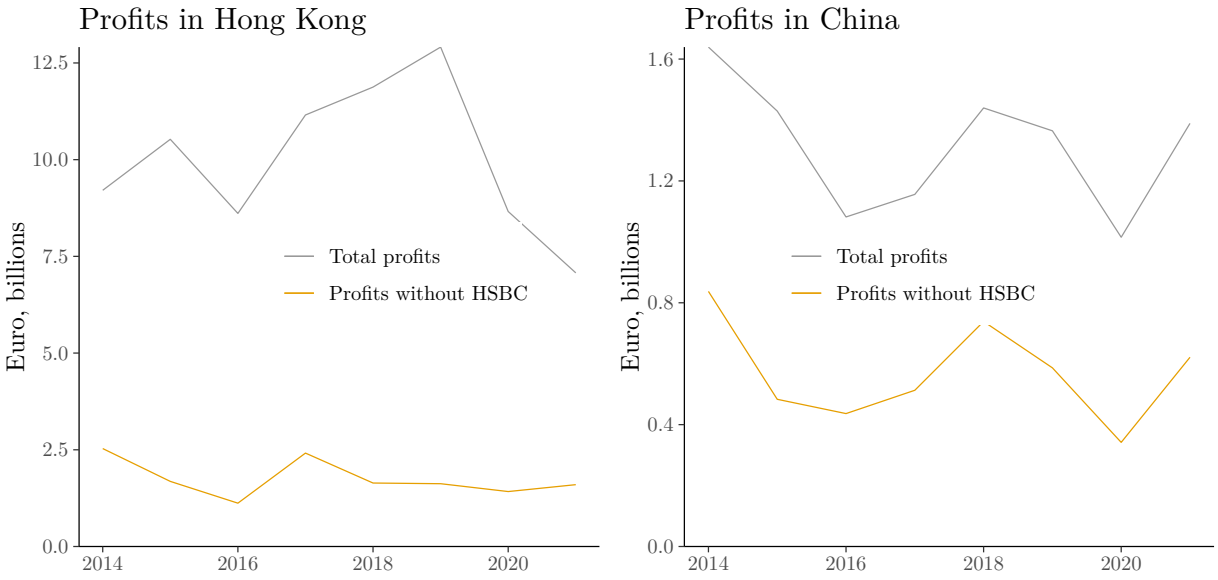
We make use of the Country-by-Country Data (CbCR) made available by Aliprandi et al. (2021) for European banks and we extend it for the year 2021. Figures 2.16 and 2.17 document the poor performance of Europeans banks in Hong Kong during the years 2020 and 2021. Nevertheless, the number of employees has remained stable, showing that there is no drain from Hong Kong offices to other large Asian financial centers.

Figure 2.16: Turnover of European banks in Hong Kong (**left**) and China (**right**), (2014-2021)



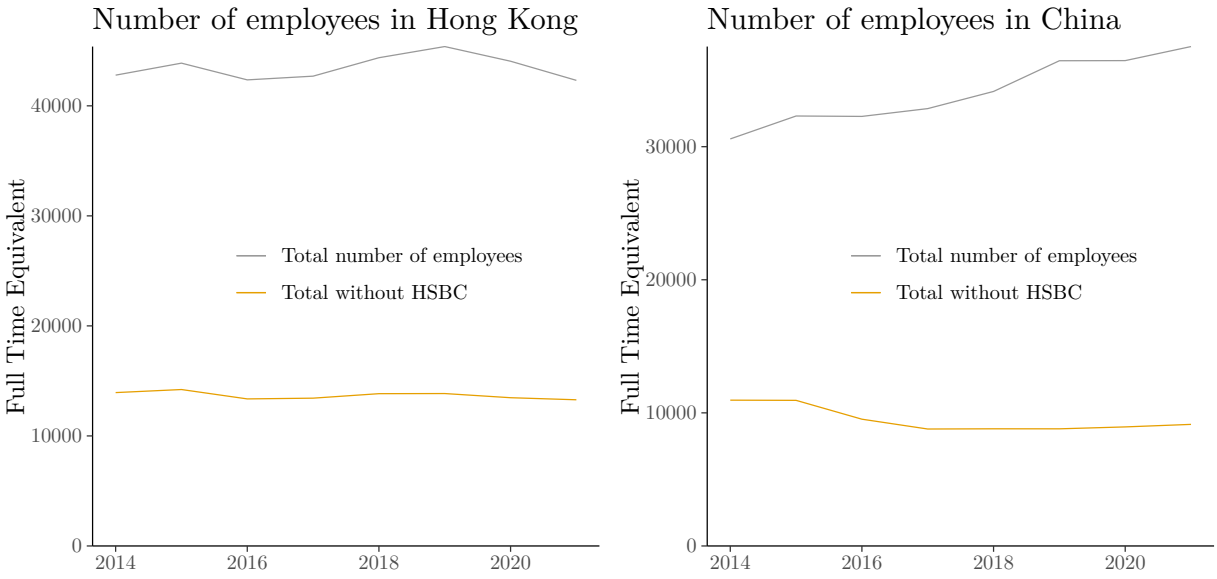
Source: Aliprandi et al. (2021) and author's collection from bank's public data.

Figure 2.17: Profits of European banks in Hong Kong (**left**) and China (**right**), (2014-2021)



Source: Aliprandi et al. (2021) and author's collection from bank's public data.

Figure 2.18: Number of employees of European banks in Hong Kong (**left**) and China (**right**), (2014-2021)



Source: Aliprandi et al. (2021) and author's collection from bank's public data.

Table 2.1: List of reporting banks in China (CbCR data)

Banco Santander	Barclays	BBVA
BNP Paribas	BPCE	Commerzbank
Crédit Agricole	Danske Bank	Deutsche Bank
Handelsbanken	HSBC	ING
Intesa Sanpaolo	KBC Bank	Monte dei Paschi
Nord LB	Nordea	Rabobank
RBS	SEB Bank	Société Générale
Standard Chartered	Swedbank	Unicredit

Table 2.2: List of reporting banks in Hong Kong (CbCR data)

Abn Amro	Banco Santander	Barclays
BBVA	BNP Paribas	BPCE
Commerzbank	Crédit Agricole	Crédit Mutuel
Deutsche Bank	DZ Bank	Handelsbanken
HSBC	ING	Intesa Sanpaolo
KBC Bank	Lloyds Banking Group	Monte dei Paschi
Rabobank	RBS	SEB Bank
Société Générale	Standard Chartered	

B Data Description

- Hong Kong, External Liabilities & Claims, Banks & Non-Banks Positions HKD. Source: HKMA, Macrobond.
- United States, Policy Rates, Shadow Rates. Source: Federal Reserve Bank of Atlanta Federal Funds Rate (Wu-Xia), Macrobond.
- Hong Kong Economic Policy Uncertainty. Source: Luk et al. (2020) https://sites.google.com/site/paulskluk/economic-policy-uncertainty-in-greater-china
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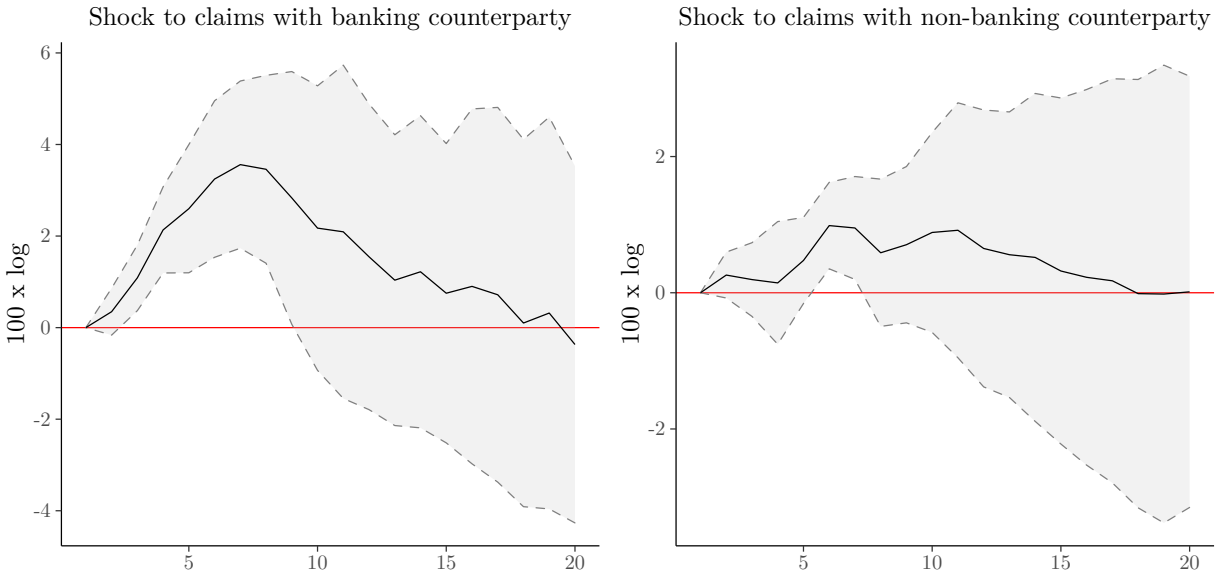
- United States, Volatility Indices, CBOE, S&P 500 Volatility Index (VIX), Close. Source: S&P 500, Macrobond.
- China Purchasing Managers Index, Manufacturing, PMI, SA, Index. Source : China Federation of Logistics & Purchasing, Macrobond.
- China, Policy Rates, Prime Lending Rate of Financial Institutions, 1 Year or Less. Source Source: People's Bank of China, Macrobond.
- China, High Frequency Monetary Policy Shocks (Main shocks). Source: Das and Song (2022) https://github.com/wtsong/china_mpshocks

Table 2.3: Summary statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
log_tot_banks_cn	162	28.151	0.362	26.744	28.046	28.331	28.692
log_tot_nbanks_cn	162	27.412	0.607	25.725	27.188	27.832	28.065
log_tot_banks_rotw	162	29.304	0.226	28.833	29.099	29.470	29.668
log_tot_nbanks_rotw	162	28.709	0.369	28.070	28.321	29.027	29.225
repo	162	2.697	0.649	1.900	2.250	2.700	4.100
reserve_large_banks	162	16.693	3.189	11.032	13.500	20.000	21.500
vix	162	17.738	5.364	10.125	13.693	20.483	32.035
hk_epu	162	166.392	72.747	36.270	116.490	206.875	340.410
wu_xia	162	0.017	1.724	−2.986	−1.423	1.577	4.103
cn_pmi	162	50.725	1.825	35.700	50.100	51.400	55.800
prime_rate	117	4.363	0.646	3.643	3.850	4.310	5.770
shock_1y	129	−0.008	0.086	−0.368	0	0	0.42
shock_5y	129	−0.005	0.076	−0.285	0	0	0.37

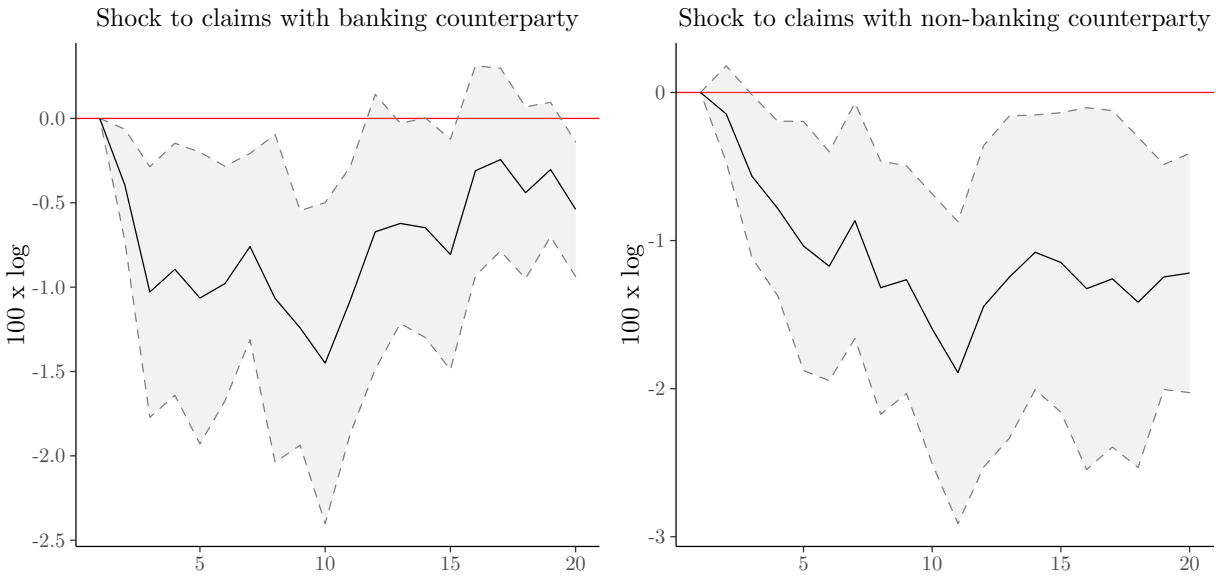
C Supplementary results

Figure 2.19: Claims to China, 5-year IRS exogenous shock: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Figure 2.20: Claims to ROTW, 5-year IRS exogenous shock: Response to a one standard deviation shock



Time horizon h is represented on the horizontal axis. Newey-West 95% confidence interval, robust for autocorrelation and heteroskedasticity, are reported.

Chapter 3

Forward Guidance and Fiscal Policy in the Time of COVID-19

This chapter is based on a joint work with Rémi Odry-Habab. An earlier version of this document has been submitted as an EconomiX Working Paper. The authors are thankful to Christophe Blot, Valérie Mignon, an anonymous referee and participants of the AFSE Congress 2023 for valuable comments and suggestions.

3.1 Introduction

"Tout sera mis en œuvre pour protéger nos salariés
et pour protéger nos entreprises *quoi qu'il en coûte"*

"Everything will be done to protect our employees
and to protect our companies *whatever it takes*"
Emmanuel Macron, *Statement to the French citizens*, March 12, 2020

The COVID-19 crisis has been a multi-faceted crisis, requiring public authorities to take rapid actions on sanitary and socio-economic measures. The severity of the pandemic and the scale of the policies implemented to fight the economic downturn have led French President Emmanuel Macron to declare: "We are at war[1]". This declaration was part of a larger strategy of the French Presidency of maintaining a high level of communication throughout the crisis by announcing all major COVID-19-related decisions during formal announcements broadcasted live, called *Adresses aux Français* ("Statement to the French citizens"). The speeches usually contained an overview of the health situation – number of cases, stress level on hospital capacities, etc.– but special attention was given to lockdown announcements as well as the general economic outlook and policy agenda. While there are striking similarities with war-like episodes of communication[2], we consider here that there is a more direct lineage with the monetary policy of forward guidance adopted in advanced economies since the early 2010s. Indeed, the French President 'whatever it takes' mantra of March 12, echoes the famous statement of July 26, 2012, pronounced at the height of the eurozone crisis by Mario Draghi, President of the European Central Bank (ECB) from 2011 to 2019. The comparison holds not only at a surface level – the same words pronounced by economic leaders in a time of crisis – but also for the economic agenda that this sentence has come to represent; an agenda that consists in large public interventions during downturns in order to minimize uncertainty and preserve economic agents from the severity of the crisis.

In the aftermath of the Great Financial Crisis, and especially in Europe during the sovereign debt crisis, central banks from advanced economies have adopted a policy of forward guidance[3] in order to anchor market's expectations on the future of monetary policy in a zero-lower-bound environment.

If we translate these policies to the multi-faceted COVID-19 crisis, it consists for fiscal authorities in making committing statements about the outlook for future rescue envelopes, in order to

[1] *Statement to the French citizens*, March 16, 2020.
[2] For a more in-depth study of war metaphors used in political speeches during COVID-19, see Castro Seixas (2021).
[3] Forward guidance as defined by Woodford (2012) consists in "explicit statements by a central bank about the outlook for future policy, in addition to its announcements about the immediate policy actions that it is undertaking".

fight recessions. In France, from March to November 2020, four amending budget laws increased the fiscal packages devoted to the crisis to about €180 billion (around 8% of GDP) in combination with public guarantees of €327 ½ billion (close to 15% of GDP) (IMF, 2021). A first wave of exceptional measures was directly announced by President Macron on the 12th and 16th of March 2020 including (i) the creation of a simplified and reinforced partial activity scheme, (ii) the postponement of social security and fiscal instalments for companies and accelerated refund of tax credits (e.g., CIT and VAT), (iii) state guarantees for bank loans to companies and credit reinsurance schemes and (iv) the postponement of rent and utility payments for affected micro-enterprises and small and medium entreprises (SMEs). Two additional measures were announced on April, 14th: (v) support measures for the hardest-hit sectors (tourism, events etc.) and (vi) direct transfers for low-income families. Those measures were not only exceptional by their economic scale but also by their declared ambition; their goal was to shield the French economy from the pandemic and freeze the incoming financial crisis, and such as long as the pandemic would last. An important question regarding the definition of fiscal forward guidance, is to characterize who is the intended audience for the fiscal forward guidance. Is it the general public ? Voters ? Or economic actors ? In this chapter we consider that while the speeches were made for a larger audience – which sets them apart from monetary policy communication that is in nature a technical communication – economic sections of the addresses were made with specific actors in mind: business owners (large or SME), employers and in general independent workers. This is reflected in the general non-technical tone of the addresses, which are at the same time: political speeches, technical summaries of the pandemic and commitment to fiscal spending.

Campbell, Evans, Fisher and Justiniano (2012) propose a the taxonomy of forward guidance: the first type is the Delphic forward guidance in which the policymaker "publicly states a forecast of macroeconomic performance based on the policymaker's potentially superior information about future macroeconomic fundamentals and its own policy goals". The second type is the Odyssean forward guidance, which is stronger because the policymaker publicly commit to action. We consider that Macron's announcements are more akin to Odyssean forward guidance, in the sense that there is a public commitment to fiscal intervention. These commitments however, have the same potential shortcomings as monetary forward guidance, in the sense that it lacks enforcement mechanism which opens fiscal communication to the well-known critique of dynamic inconsistency (Kydland and Prescott, 1977). Nonetheless, the theoretical issue raised by fiscal forward guidance has been studied by Fujiwara and Waki (2020) who have been able to show that selective communication can be welfare-improving.

The main motivation of the chapter is to investigate whether the temporary adoption by French fiscal authority of a forward guidance stance was successful at anchoring public expectations during

the COVID-19 crisis. Specifically, we contribute to the literature by analysing the effect of French President Macron announcements on economic agents' expectations on the French economy, proxied by the French stock index and the spread between the 10-year French and German government bonds. The first variable allows us to capture the expectations of economic agents on large private companies whereas the second variable is an important indicator of market perception of fiscal vulnerability. From a methodological viewpoint, we estimate event-dummy regressions, relying on daily data.

The remainder of the chapter is organized as follows. Section 3.2 reviews the related literature. Section 3.3 presents the data and develops the empirical methodology. Section 3.4 discusses the main results. The last section concludes.

3.2 Related Literature

A vast literature deals with the effects of monetary forward guidance from both a theoretical and an empirical point of view (Blinder et al., 2008, Campbell et al., 2012, Del Negro et al., 2012, Hagedorn et al., 2019, Lunsford, 2020, McKay et al., 2016, Moessner et al., 2017) and generally concludes on the effectiveness of forward guidance, especially near the zero-lower-bound (Hamilton and Wu, 2012, Wu and Xia, 2016). Special attentions have been given to the effects of unconventional monetary policy announcements on stock markets and government bonds (Altavilla et al., 2016, Falagiarda and Reitz, 2015, Glick and Leduc, 2012), including since the start of the COVID-19 crisis (Cortes et al., 2022, Rebucci et al., 2022).

While there is a large literature on the importance of fiscal policy during downturns (see Ramey (2019) for a review of the channel and size effect of fiscal policy in times of crisis), the existing research on the influence of fiscal authorities' communication on financial markets in times of stress is more limited. Aıt-Sahalia et al. (2012) examine the impact of macro and financial sector policy announcements during the Global Financial Crisis, such as government guarantees, on diverse countries and find that they reduce interbank risk premia. Gödl and Kleinert (2016) investigate the impact of three categories of news events on eurozone bond yields: publications of economic forecasts, announcements of fiscal assistance, and austerity measures. They find a market reaction only for growth and budget deficit forecasts.

Several papers study the importance of officials' speeches during the eurozone sovereign debt crisis. Mohl and Sondermann (2013) show that the more euro area governments issued statements at the same time, the more bond spreads increased. In addition, politicians from highly-rated countries have stronger impact on spreads. Similarly, Ehrmann et al. (2014) show that the exchange rate volatility was increasing in the eurozone in response to news, on days when several politicians

from AAA-rated countries went public with negative statements. More recently, Afonso et al. (2020) assess the effect of a mix of fiscal and monetary policies on 10-year sovereign bond yield spreads. Releases from the European Commission (EC) announcing higher debt and better budget balance forecasts contribute to the rise and the decline of spreads, respectively. Fendel et al. (2021) study the sovereign yields and spreads of European variation following announcements by the ECB and the EC. Delatte and Guillaume (2020) also find significant impacts of both monetary policy and fiscal communication at the EU level. In a similar idea, Havlik et al. (2022) find that monetary policy announcements have larger effects than fiscal policy announcements while Next Generation EU had a significant impact, especially on core countries. Finally, the closest paper to ours is Falagiarda and Gregori (2015) which studies the effects of announcements from three different Italian governments on bond spreads during the 2009-2013 period and shows that the credibility of the administration matters, creating substantial differences in the speeches' reception – Monti's cabinet having the highest impact. Our paper aims to shed light similarly in a one-country setting, but this time, in the context of the COVID-19 crisis.

3.3 Data and Methodology

3.3.1 Data

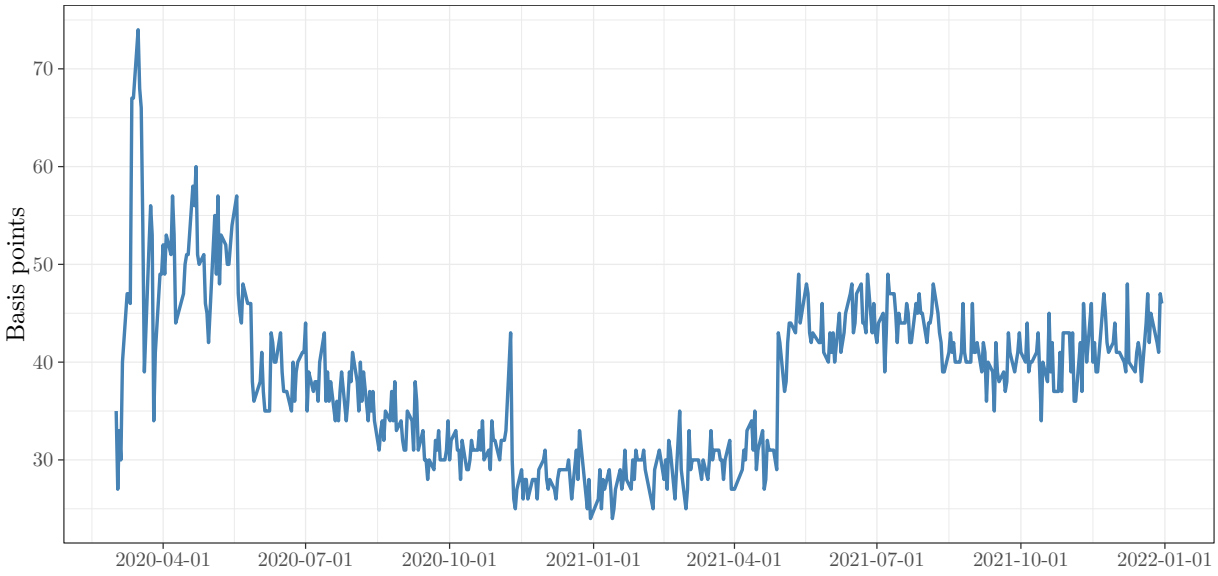
To assess market's reaction to presidential announcements we use two variables. The first one is *Announcement*, a dummy variable which captures the effect of the day of E. Macron's announcements. Because the declarations are always done in the evening (i.e., outside stock-exchange opening hours[4]), we also add dummies for the the day before and after the addresses. The second one is *announcement_news*, which captures the effect of the news of E. Macron's future speech on the market. Because the "Addresses aux Français" did not follow a planned schedule like the ECB press conferences for example, the news that the President was going to make a public address could be, in the context of COVID-19, an event *in itself* that could set off a reaction. The dates for the news have been retrieved using AFP (French Press Agency) dispatches which make the basis for French economic news. The variable *announcement_news* takes the value 1, the first day in which the news of a future speech by E. Macron appears in dispatches.

We investigate the impact of fiscal announcements on two different series: (i) the spread between the 10-year French and German government bonds and (ii) the returns of CAC40/CAC All-Tradable[5], the French stock indexes. We use the first difference (for the spread) and first log differences (for the CAC40/CAC All-Tradable) of business daily data (5 days per week), collected

[4]See Appendix A.2 and A.3 for a detailed table of the announcements.

[5]We use both the CAC40, which is the collection of the 40 largest quotations, as well as the CAC All-Tradable that consists of all the companies traded on Euronext Paris.

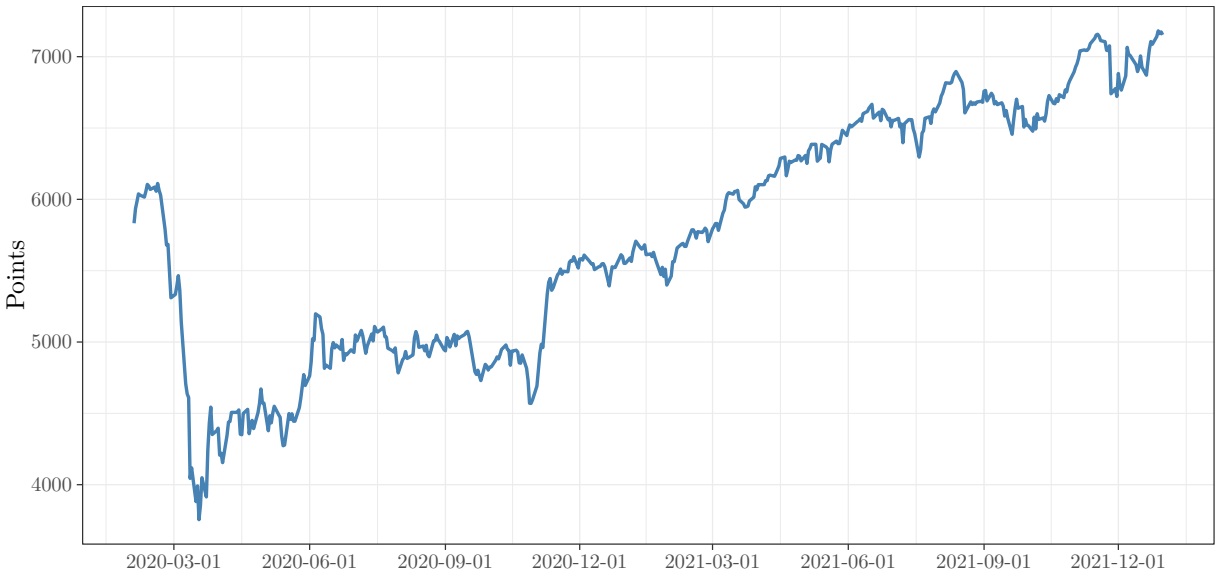
Figure 3.1: Evolution of the French spread vis-à-vis Germany, in basis points (2020-2021)



Source: Macrobond

for the period from March 1, 2020 to December 12, 2021 which is the period of the COVID-19 crisis that saw the most presidential announcements.[6] We use equity indices as proxies of the general expectations of investors on the financial health of large traded company whereas the 10-year spread[7] is used to measure market's perception on the general fiscal health, or budgetary 'seriousness', of France with regard to Germany.

Figure 3.2: Evolution of the CAC40 stock index, in points (2020-2021)



Source: Macrobond

The French spread vis-à-vis Germany is relatively narrow but has increased sharply during the

[6] As noted by Gödl and Kleinert (2016), using the first difference ensures stationary series and eliminates the fundamental determinants of the series which need not to be explained here.

[7] Which is commonly used in the literature since the Eurozone crisis (Falagiarda and Gregori, 2015, Mohl and Sondermann, 2013).

onset of the crisis which was a period of renewed volatility[8], up to a 70 basis point difference in March 2020, and decreased until the end of 2020, to return to its pre-crisis level, of around 30 basis points (Figure 3.1). The spread re-increased during Q2-2021, to average 40 basis points.

Similarly, the CAC40 has decreased sharply during the beginning of the crisis, going from around 6000 points in early 2020 to dropping below 4000 points in March 2020. It has continuously increased since then, regaining its pre-pandemic level in March 2021.

3.3.2 Methodology

In order to study the impact of E. Macron's announcements we use a methodology common in the financial literature – event-dummy regressions (Gödl and Kleinert, 2016) – which allows to include controls for specific events. Due to the large role that ECB press conferences and policy briefs plays on the evolution of financial series such as stock exchange indexes and sovereign bond spreads, we include these events in our study. While in recent years the ECB policy has lowered all yields and narrowed spreads (Altavilla et al., 2019), the 2020-2021 period has seen renewed volatility. To account for high volatility clustering, we use an ARMA(1,1) – EGARCH(1,1) model, proposed by Nelson (1991). The use of a GARCH-class model allows use to directly study the effects of the announcements on both the mean equation and the conditional variance model. The reason for turning to an E-GARCH specification rather than a standard GARCH is twofold: the E-GARCH allows us to model asymmetric effects, defined as the different impacts on conditional volatility of positive and negative shocks of equal magnitude (Chang and McAleer, 2017), which is a common feature of stock returns. More importantly, the E-GARCH does not impose any sign restrictions on the coefficients $\omega, \alpha, \gamma, \beta$ which is a property needed to study the volatility effects.[9] Our specification is given by:

$$\begin{aligned} \Delta Y_t = c + \rho \Delta Y_{t-1} + \mu_1 Announcement_news + \mu_2 Announcement_{t-1} \\ + \mu_3 Announcement_t + \mu_4 Announcement_{t+1} + \theta Monetary_t + \delta \Delta X_t + \varepsilon_t + \theta \varepsilon_{t-1} \end{aligned} \tag{3.1}$$

Where ε_t is the error process such that $\varepsilon_t = \sigma_t z_t$. With z_t being an i.i.d. sequence with zero mean and unit variance, σ_t^2 denoting the conditional variance given by:

$$\begin{aligned} log(\sigma_t^2) = \omega + \alpha(|z_{t-1}| - \mathbb{E}[|z_{t-1}|]) + \gamma z_{t-1} + \beta \log(\sigma_{t-1}^2) \\ + \eta_1 Announcement_news + \eta_2 Announcement_{t-1} + \eta_3 Announcement_t \\ + \eta_4 Announcement_{t+1} + \vartheta Monetary_t + \zeta \Delta X_t \end{aligned} \tag{3.2}$$

ΔY_t denotes the 10-year spread expressed in first differences or the CAC40, CAC All tradable

[8] The declaration of ECB President C. Lagarde during a press conference on March 12th 2020 that the "[ECB is] not here to close spreads" participated to briefly increase financial stress in the Eurozone.

[9] Which is also the reason we prefer EGARCH over GJR-GARCH or TGARCH models)

in log-differences. *Announcement* is a dummy variable which takes the value 1 the days of E. Macron's announcements, and *Announcement_news* is a dummy variable which takes the value 1 the day the news of a forthcoming presidential announcement is released. $Monetary$ is also a dummy variable, which takes the value 1 the days of ECB monetary announcements extracted from the database of Altavilla et al. (2019). X_t is a matrix of first-differenced controls that include: a) the *VSTOXX*, the Euro VIX which is commonly used in the literature on the determinants of sovereign spreads (Falagiarda and Gregori, 2015), to control for the euro-wide level of volatility[10] b) ($COVID_deaths$) which measures the daily number of COVID-related deaths in French hospitals of people. These data exhibit a high degree of seasonality which is why we use the seven-day moving average.[11] We prefer this indicator over the daily number of COVID cases detected and the number of COVID admissions in intensive care units (ICU). Regarding the daily number of COVID cases, it is a variable that measures not only on the severity of the crisis but also the general population's will to be tested, and testing availability (ease to be tested and price) which creates issue as some of these determinants are highly depend on authorities reaction.[12] Regarding the number of patients in ICU, due to physical constraints, there exist a ceiling[13], which lead health authorities to redirect some patients to other hospital services at the highest point of the crisis (Astruc et al., 2022).

Due to the quality issues raised by COVID-related data (seasonality, misreporting, etc.), we complete our analysis with c) the *Oxford COVID-19 government response tracker* from Hale et al. (2021) which is an index that measures the stringency of the national public response to the global pandemic and d) Google LLC mobility index for public transportation Google LLC (2023). As we are dealing with economic agents decisions and expectations, we are not only interested in controlling for the intensity of the pandemic *per se* but also the severity of the crisis perceived by French citizens and French authorities. The number of deaths and our policy proxies are different in nature, while the first one was available to leaders and citizens on a daily basis, the stringency index and mobility index are *ex-post* proxies of the response to the pandemic. The first one measures government decisions which can have direct impact on the economic activity (imposing lockdowns or curfews, restricting travel distances or limiting public demonstration), it takes the value 0 when no restriction is implemented and 100 is the theoretical highest value. The second one is the mobility index developed by Google LLC during the pandemic that compares the number of visitors to transit stations to baseline days (base 100 is the median value for the 5-week period

[10] Alternatively we use the *total stock market index (totmkteu)* to control for market-wide business climate changes in the EU, regressions available in the Appendix A.3

[11] Some hospitals reported on mondays deaths that had happened during the week-end, which artificially creates peaks and troughs in the daily data.

[12] In addition, testing only became widely in France in July 2020, five months after the onset of the pandemic. Source: Arrêté du 20 juillet 2020

[13] Point de vigilance CNS COVID-19 : "Pratiques de tri des patients" October 28, 2020

from January 3 to February 6, 2020).[14]

3.4 Results

3.4.1 Sovereign spreads

The top section of Table 3.5 displays the results of the estimation for the mean equation of the sovereign bond spread and the bottom section, the estimation for the conditional variance. We separate our sample and estimate our model on the first (incomplete) year (2020-03/2020-12) then on the second year (2021-01/2021-12), in line with the lockdowns schedule: over the three lockdowns established in France during the COVID-19 crisis, two happened in 2020, both being the most restrictive ones. Our sampling strategy aims then to observe the effect of fiscal announcements in environments with different levels of uncertainty. We specify two different models for each year, with COVID_deaths controls. For the resultts with the policy variables see Appendix B

The effect of the news of forthcoming announcements is significant and negative for both periods, (-1.29 basis points the day of the announcement news in 2020 and -1.79 basis points in 2021) indicating a decrease in the 10-year French and German government bond spread. This means that news of future presidential speeches had a positive impact on market's expectations during the entirety of the pandemic. The other variables measuring the effect of the announcements, at $t-1$, t and $t+1$ are not stable between the two period. $Annoucement_{t-1}$ is negative and significant in 2020 (-0.46) and positive and significant for the year 2021 (2.99). Interestingly, the coefficient of $Annoucement_{t+1}$ shows no significant impact on the spread the day after the announcement, which indicates a lack of lagged surprise effect. Overall, when combining this with the effect of the news announcement, we can conclude that fiscal communications have a net positive impact in 2020 – future announcements as well as announcement themselves help to reduce spreads – but a mixed impact in 2021.

The Euro VIX ($VSTOXX$) is significant and counter-intuitively, negative for both 2020 and 2021. Our hypothesis is that, except for the period of March 2020 and May 2021, the spread has been stable or decreasing during this period: higher volatility on markets translate in a overall decrease of the spread. We found a significant, albeit small, positive effect of $COVID_deaths$, because we measure the effect of an increase of a hundred in the number of daily deaths.

Volatility analysis

The analysis of the spread volatility (bottom of Table 3.5, conditional variance of the EGARCH process). The estimated coefficient lag effect (β) of the the variance equation is statistically sig-

[14] See Appendix A.2

Table 3.1: Parameter estimates, Sovereign Spread

	ΔSpread	
	2020-03/2020/12	2021-01/2021-12
Mean equation		
$Announcement_news$	-1.29^{***}	-1.76^{***}
	(0.17)	(0.06)
$Announcement_{t-1}$	-0.46^{**}	2.99^{***}
	(0.22)	(0.03)
$Announcement_t$	1.60	−1.29
	(2.69)	(1.21)
$Announcement_{t+1}$	−0.89	−1.54
	(0.95)	(1.28)
$Monetary$	−0.64	−1.55
	(1.58)	(1.39)
$\Delta VSTOXX$	-0.25^{***}	-0.19^{***}
	(0.04)	(0.03)
$\Delta COVID_deaths$	0.01^{***}	0.08^{***}
	(0.00)	(0.00)
Conditionnal variance		
omega	0.10	0.72^{**}
	(0.33)	(0.33)
alpha	0.13	−0.09
	(0.12)	(0.11)
beta	0.90^{***}	0.66^{***}
	(0.15)	(0.16)
gamma	−0.19	−0.34
	(0.23)	(0.34)
$Announcement_news$	−0.96	−1.92
	(0.63)	(1.73)
$Announcement_{t-1}$	0.18	-3.14^{***}
	(1.26)	(0.91)
$Announcement_t$	1.35^{***}	0.39
	(0.45)	(0.90)
$Announcement_{t+1}$	−1.06	0.57^{*}
	(0.96)	(0.34)
$Monetary$	1.00^{*}	0.58^{*}
	(0.57)	(0.34)
$\Delta VSTOXX$	−0.00	0.05
	(0.04)	(0.05)
$\Delta COVID_deaths$	0.00	0.00
	(0.01)	(0.00)
Log likelihood	−546.12	−630.45
AIC	5.28	5.02
BIC	5.58	5.28
Q(5)	0.68	0.40
Q(10)	0.43	0.22
$Q^2(5)$	0.85	0.18
$Q^2(10)$	0.91	0.40

Note: ARMA(1,1) – GARCH(1,1) regressions on the daily basis points changes in the 10-year bond spread. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Intercept and ARMA(1,1) are included but not reported. Robust standard errors are used (reported in parenthesis). Q(5) and Q(10) are the p.value of the Ljung-Box test for the autocorrelation of the standardized residuals up to the 5th and 10th order, respectively. $Q^2(5)$ and $Q^2(10)$ are the p.value for the squared standardized residuals. The coefficients for $COVID_deaths$ have been multiplied by 100.

nificant in both, which justifies the use of a GARCH model. As the α and γ coefficient for the asymmetric effects are non-significant we cannot conclude on the presence of asymmetric effects.[15]

Concerning the effect of monetary announcement, if we look at the effect on the mean equation and the volatility, we can see that the sign of the effect is not clear (the coefficient is not significant, with a large standard error) but that it is a important driver of volatility. This indicate that the central bank communication is not systematically positively of negatively received but it remains one the main drivers of volatility in the sovereign bond market (Altavilla et al., 2019). Interestingly, for the year 2020, the effect of presidential speeches on volatility $Annoucement_{t-1}$ (1.35 bp) is comparable in magnitude with the effect of press conferences given by the ECB (1.00), which are the only two variable which a statistically significant effect in the estimation. There is no such effect for the year 2021, partially because the sovereign spread had stabilized compared to the beginning of the crisis. In 2021, neither the news, nor the presidential announcements *themselves* affect it. There is a large negative effect the day before the announcement (-3.14 bp) only a small increase in volatility the day after the announcement which indicates that there was strong expectations from the market. As announcement became more common, we see less variation in preparation to the announcement and more variation the day after, as a consequence. It also indicates There is that there is a small surprise effect in markets' reaction and that all the relevant information of the speeches had not been included in investors' expectations.

3.4.2 CAC40

Tables 3.6 replicate the same identification and sampling strategies by considering the returns (i.e., log-differences) of the CAC40 and the CAC-All Tradable indexes and their corresponding volatility. Overall, the two indexes are similarly impacted, albeit with smaller coefficients for CAC-All Tradable, possibly showing that equities of the largest companies are more sensitive to fiscal announcements.

A look at the specific year 2020 endorses the significant role of the news of presidential announcements. Indeed, the *Annoucement_news* has a small and significantly negative impact on the CAC index (reducing the returns by 0.23% and 0.25% respectively). On the contrary, for the year 2021, the impact is positive, and larger (+0.80% and +0.68%) than for year 2020. still consistent with the "learning" hypothesis i.e., that financial markets were expecting further expansion, or at least a continuation, of the generous *"quoi qu'il en coûte"* (whatever it takes/costs) policy of public spending implemented since the start of the pandemic: investors became accustomed to presidential addresses and as the financial and economic crisis waned, news of future announcement

[15]The regularity conditions for the presence of asymmetric effects in EGARCH estimation is $\alpha \neq 0$ (Chang and McAleer, 2017).

Table 3.2: Parameter estimates, French Stock exchange returns

	2020-03/2020-12		2021-01/2021-12	
	CAC_40	CAC_All	CAC_40	CAC_All
Mean equation				
$Announcement_news$	-0.23^{***}	-0.25^{***}	0.80^{***}	0.68^{***}
	(0.06)	(0.01)	(0.16)	(0.00)
$Announcement_{t-1}$	-0.09	-0.14	0.34^{***}	0.36^{***}
	(0.38)	(0.24)	(0.04)	(0.00)
$Announcement_t$	0.15	-0.12	0.29	0.15
	(0.20)	(0.29)	(0.68)	(0.32)
$Announcement_{t+1}$	-0.06	-0.18	-0.19^{*}	-0.14^{**}
	(0.14)	(0.14)	(0.10)	(0.06)
$Monetary$	-0.56^{*}	-0.32	-0.45^{***}	-0.15
	(0.33)	(0.27)	(0.09)	(0.18)
$\Delta VSTOXX$	-0.53^{***}	-0.51^{***}	-0.40^{***}	-0.38^{***}
	(0.02)	(0.03)	(0.03)	(0.00)
$\Delta COVID_deaths$	-0.01	-0.00^{***}	-0.00	-0.06^{***}
	(0.07)	(0.00)	(0.00)	(0.00)
Conditionnal variance				
$omega$	0.01	0.00	-0.29^{***}	-0.25^{***}
	(0.04)	(0.03)	(0.01)	(0.00)
$alpha$	-0.10	-0.08	-0.20^{***}	-0.13^{***}
	(0.10)	(0.08)	(0.01)	(0.00)
$beta$	0.93^{***}	0.93^{***}	0.84^{***}	0.87^{***}
	(0.08)	(0.07)	(0.29)	(0.22)
$gamma$	0.34^{**}	0.32^{***}	-0.51^{***}	-0.41^{**}
	(0.15)	(0.12)	(0.05)	(0.20)
$Announcement_news$	-0.83	-0.75	-2.07^{***}	-1.14^{***}
	(0.93)	(0.85)	(0.36)	(0.01)
$Announcement_{t-1}$	-0.33	-0.26	0.22	0.42
	(0.87)	(0.90)	(0.94)	(0.87)
$Announcement_t$	-0.01	0.26	1.30	0.90
	(0.62)	(0.71)	(1.97)	(2.80)
$Announcement_{t+1}$	0.32	0.06	-0.44	-0.61
	(0.90)	(0.85)	(0.77)	(0.01)
$Monetary$	0.37	0.31	0.33	0.42
	(0.37)	(0.35)	(0.53)	(0.55)
$\Delta VSTOXX$	0.05	0.04	0.04^{***}	0.04^{***}
	(0.04)	(0.04)	(0.00)	(0.00)
$\Delta COVID_deaths$	0.82^{**}	0.79^{***}	0.71^{***}	0.31^{*}
	(0.32)	(0.27)	(0.04)	(0.17)
Log likelihood	-303.42	-296.42	-130.73	-108.61
AIC	3.03	2.96	1.16	0.99
BIC	3.33	3.26	1.42	1.25
Q5	0.46	0.49	0.31	0.12
Q10	0.34	0.40	0.65	0.25
Q5_2	0.92	0.84	0.20	0.23
Q10_2	0.35	0.23	0.24	0.40

Note: ARMA(1,1) – GARCH(1,1) regressions on the daily returns of CAC stock indexes. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Intercept and ARMA(1,1) are included but not reported. Robust standard errors are used (reported in parenthesis). Q(5) and Q(10) are the p.value of the Ljung-Box test for the autocorrelation of the standardized residuals up to the 5th and 10th order, respectively. $Q^2(5)$ and $Q^2(10)$ are the p.value for the squared standardized residuals. The coefficients for $COVID_deaths$ have been multiplied by 100.

was positively received , with a small negative surprise effect after the announcement (-0.19 % and -0.14%)

CAC indexes are also driven by monetary policy announcements. The negative sign may be seen as surprising at first sight because when the ECB announces an increase in the asset purchase program[16], according to the portfolio-rebalancing channel, this pushes up the prices of the assets purchased by the central bank, leading to an overall increase in assets prices as a consequence of agents seeking substitutes. Here, on the contrary, it appears that when the ECB reacts to the severity of the crisis, it creates a negative signal to the market, dampening the index performance, as investors take monetary reactions as a sign of financial stress. As expected, the variation of the CAC40 is also negatively associated (-0.53% and -0.51% in 2020, -0.40% and -0.38% in 2021) with the European VIX, more volatility translates in lower indexes' performance. The coefficient of associated with the number of COVID_deaths (which is multiplied by a 100) is negative, albeit small and not always significant.

Volatility analysis

The volatility analysis of Table 2 asserts the importance of taking into account asymmetric effects. The α coefficients indicating asymmetric effects non-significant which is an indication of non-asymmetric effects in 2020 which is not abnormal as this time period cover the brunt of the crisis. In comparison the coefficient for the year 2021 is significantly negative.

Regarding the effects of the announcements we find no significant effects in 2020 and 2021. On the contrary we see a strong impact of the fiscal authority communication strategy in 2021: unlike the announcements themselves, the press releases of a forthcoming announcements had a strong and positive impact. Taking into account that the year 2021 has seen lower volatility overall, and based on the previous result regarding the effect of *Annoucement_news* on the CAC index in 2021, it appears that news of presidential addresses during the second year of the pandemic were very positively received, and even expected as their news decreased the volatility. Interestingly, the coefficients associated with $\Delta COVID_Deaths$ are large, especially for the year 2020 (0.82 and 0.79)), which means that 100 additional daily deaths increase the volatility of the CAC indexes by around 0.8%.

[16]On 18 March 2020, the Pandemic Emergency Purchase Programme (PEPP) was implemented in response to the financial and economic crisis as the Eurozone was facing a sharp increase in financial stress on sovereign debt markets, with an initial envelope of €750 billion (ECB website).

3.5 Conclusion

This chapter contributes to the literature on fiscal policy and its tools, examining the proper effects of announcements, in the same way as monetary policy announcements. Our research goal is to develop the study of government's communication in times of economic stress. In the similar way that central banks exert the role of lender of last resort which creates a space for them to conduct forward guidance, fiscal authorities have taken the role of communicating their action during the COVID-19 pandemic, anchoring the expectations of economic agents about future policy.

We focus on the specific announcements made by French President E. Macron during the COVID-19 crisis, which contained an overview of several key indicators as well as fiscal policy commitments. We explore the impact of these announcements on four different variables: the 10-year French and German government bond spread, the French stock exchange index limited to the forty biggest companies (CAC40) or to all listed companies (CAC-All tradable), and the volatility of all theses variables.

Our findings corroborate our initial hypothesis: the presidential announcements, as well as the press release of their forthcoming, significantly impact market expectations. In most of our specifications, they tend to positively impact the French stock exchange index while helping reduce the French-German 10-year bond spread. Surprisingly, the press release for forthcoming announcements has more significant impacts than the announcements themselves. From these results, an important policy recommendation can be deduced: in times of uncertainty, fiscal policy makers can specifically communicate to temper markets and support conventional fiscal policies. Furthermore, the negative impact on spreads reveals that fiscal spending is not sanctioned by financial markets.

Our analysis could gain in precision and value from a more in-depth analysis of the tone of fiscal authority speeches, unfortunately our sample is not large enough to implement any NLP sentiment analysis methods. From a methodological point of view, another extension could consist in using FIGARCH models to better take into account the long-run dynamic dependencies in the conditional variance. Finally, using higher-frequency data would allow us to measure real-time reaction of financial markets to Presidential announcements. For example, CAC Futures that are continuously traded during Presidential announcements (contrary to the stock index itself which is traded until 5 p.m.) would allow future research to conduct event-studies similar to what has been done in the literature studying monetary policy.

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Appendix

A Data Description

Economic Variables

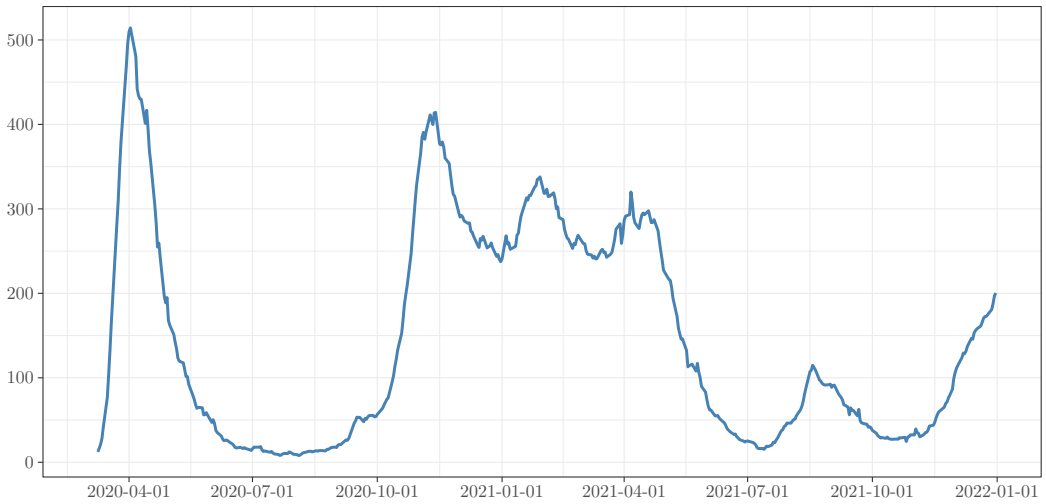
- French 10-year bond yield: Macrobond Source
- German 10-year bond yield: Macrobond Source
- French CAC40 stock indexes : Macrobond Source
- Total Market EU : Datastream Source (Mnemonic TOTMKEU)

Pandemic variables

- COVID_Deaths: French governmental data repository, https://www.data.gouv.fr/fr/datasets/donnees-hospitalieres-relatives-a-lepidemie-de-covid-19/

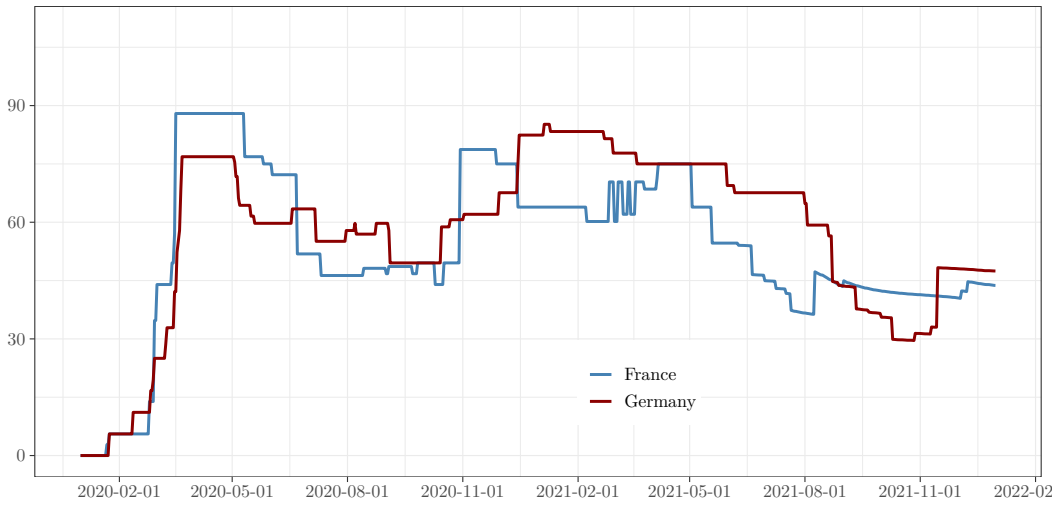
  Due to a break in coverage, we have aggregated two files from the database "covid-cedc-sex-quot" and "covid-hospit-2023-03-23-18h00" in order to maximise time-coverage.
- Mobility Indexes: https://www.google.c om/covid19/mobility/
- Strigency Index: https://www.bsg.ox.ac.uk/research/covid-19-government-response-tracker

Figure 3.3: Daily Number of COVID-related death in French Hospitals (2020-2021)



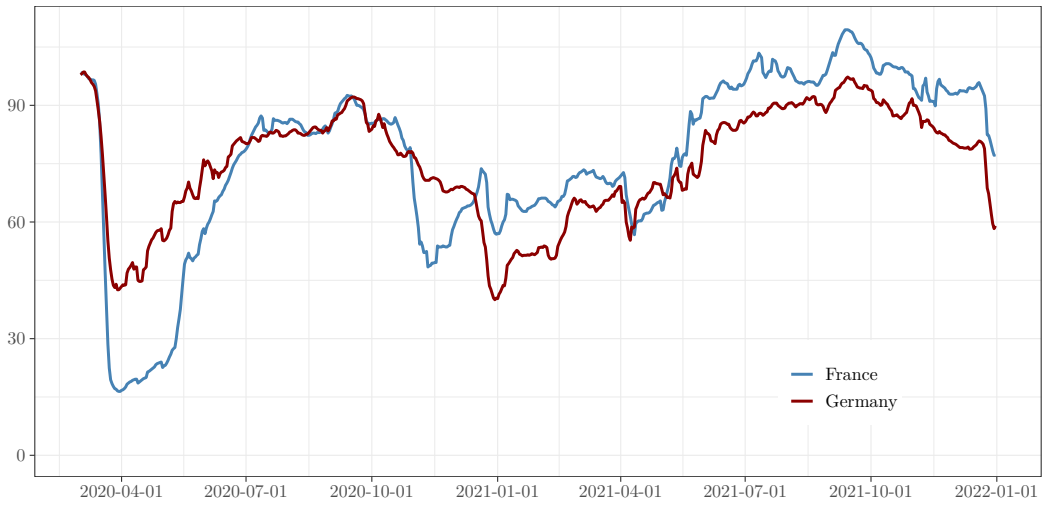
Seven-day moving average. Source: French governmental data repository, https://www.data.gouv.fr/fr/datasets/donnees-hospitalieres-relatives-a-lepidemie-de-covid-19/

Figure 3.4: Evolution of the Stringency Index (2020-2021)



Source: Hale et al. (2021)

Figure 3.5: Evolution of the use of Public transport stations (2020-2021)



Source: Google LLC (2023)

Presidential Announcements

Table 3.3: Dates and Hours of French Presidential Announcements on French national TV

Announcements	***Day***	***Hour (GMT+2)***
13/03/20	Thursday	20:00
16/03/20	Monday	20:00
13/04/20	Monday	20:00
14/06/20	Sunday	20:00
14/10/20	Wednesday	20:00
28/10/20	Wednesday	20:00
24/11/20	Tuesday	20:00
31/03/21	Wednesday	20:00
12/07/21	Monday	20:00
09/11/21	Tuesday	20:00

Source : Élysée website

Press releases dates for announcements news

Table 3.4: Dates and Hours of press news for E. Macron future addresses

Announcements	***Day***	***Hour (GMT+2)***
11/03/2020	Wednesday	8:43
16/03/2020	Monday	6:25
08/04/2020	Wednesday	14:47
11/06/2020	Thursday	11:11
13/10/2020	Tuesday	12:00
26/10/2020	Monday	14:09
18/11/2020	Wednesday	14:57
31/03/2021	Wednesday	2:58
09/07/2021	Friday	11:30
05/11/2021	Friday	14:09

Source : AFP news retrieved using the Factivia Database.

On the 16/03/2020 and 31/03/2021, the date of the news corresponds with the day of E. Macron speech. In order to avoid colinearity issues, we decided to code 1 for the *annonce* and 0 for the *annonce_news*. Either option does not significantly change the result.

B Supplementary Estimations

Table 3.5: Parameter estimates, Sovereign Spread

	2020-03/2020/12	2021-01/2021-12
Mean equation		
Announcement_news	-1.37^{***}	-1.21^{***}
	(0.00)	(0.39)
$Announcement_{t-1}$	-0.48	3.79^{***}
	(0.81)	(0.08)
$Announcement_t$	1.20	-2.64^{*}
	(1.37)	(1.37)
$Announcement_{t+1}$	-0.80	-0.84
	(0.68)	(0.83)
Monetary	-1.26	-2.97
	(1.92)	(6.54)
$\Delta VSTOXX$	-0.18^{***}	-0.20^{***}
	(0.00)	(0.05)
Stringenct_index	0.11^{***}	0.06
	(0.00)	(0.14)
Mobility_index	-0.21	-0.08
	(0.65)	(0.06)
Conditionnal variance		
omega	0.12^{***}	0.93^{*}
	(0.04)	(0.54)
alpha	0.15	-0.03
	(0.12)	(5.08)
beta	0.91^{***}	0.56^{***}
	(0.30)	(0.21)
gamma	-0.34^{***}	-0.27
	(0.02)	(4.90)
Announcement_news	-0.23	-0.21
	(0.16)	(3.67)
$Announcement_{t-1}$	0.32	-2.23^{***}
	(0.27)	(0.37)
$Announcement_t$	1.26^{***}	-2.43
	(0.24)	(2.67)
$Announcement_{t+1}$	-0.83	1.17
	(0.65)	(1.97)
Monetary	1.53^{***}	0.89
	(0.17)	(0.86)
$\Delta VSTOXX$	-0.02^{*}	-0.01
	(0.01)	(0.01)
Stringency_index	-0.01^{***}	0.09
	(0.00)	(0.59)
Mobility_index	-0.05	0.03
	(0.05)	(0.21)
Log likelihood	-548.05	-605.39
AIC	5.34	4.84
BIC	5.67	5.13
Q(5)	0.45	0.37
Q(10)	0.05	0.29
$Q^2(5)$	0.14	1.00
$Q^2(10)$	0.22	0.98

Note: ARMA(1,1) – GARCH(1,1) regressions on the daily basis points changes in the 10-year bond spread. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Intercept and ARMA(1,1) are included but not reported. Robust standard errors are used (reported in parenthesis).

Table 3.6: Parameter estimates, French Stock exchange returns

	2020-03/2020-12		2021-01/2021-12	
	CAC_40	CAC_All	CAC_40	CAC_All
Mean equation				
$Announcement_news$	-0.38^{***}	-0.28^{**}	0.56^{***}	0.34^{***}
	(.32)	(0.12)	(0.00)	(0.00)
$Announcement_{t-1}$	-0.31	-0.17	0.21^{***}	0.26^{*}
	(1.47)	(0.32)	(0.00)	(0.18)
$Announcement_t$	0.16	0.10	-0.22^{***}	-0.24^{***}
	(0.40)	(0.10)	(0.00)	(0.09)
$Announcement_{t+1}$	-0.19	-0.10	-0.25^{***}	-0.23^{***}
	(0.19)	(0.16)	(0.03)	(0.00)
$Monetary$	-0.95^{***}	-0.44^{***}	-0.44^{***}	-0.39^{*}
	(0.35)	(0.16)	(0.00)	(0.16)
$\Delta VSTOXX$	-0.52^{***}	-0.56^{***}	0.04^{***}	0.04^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
$Stringency_index$	0.01	0.02	0.02^{***}	0.02^{***}
	(0.08)	(0.04)	(0.00)	(0.00)
$Mobility_index$	0.00^{***}	0.02^{***}	0.00^{***}	0.02^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Conditionnal variance				
$omega$	0.24	0.01	-0.35^{**}	-0.36^{**}
	(2.05)	(0.03)	(0.12)	(0.15)
$alpha$	0.10	-0.04	-0.14^{***}	-0.17^{***}
	(0.21)	(0.14)	(0.00)	(0.00)
$beta$	0.76^{***}	0.94^{***}	0.81^{***}	0.84^{***}
	(0.12)	(0.08)	(0.05)	(0.09)
$gamma$	0.28	0.24	-0.55^{***}	-0.51^{***}
	(0.23)	(0.30)	(0.04)	(0.24)
$Announcement_news$	-1.12^{*}	-0.88^{***}	-2.69^{***}	-1.38^{***}
	(0.63)	(0.00)	(0.50)	(0.54)
$Announcement_{t-1}$	0.33	0.80	0.15^{***}	0.07^{***}
	(0.51)	(2.29)	(0.82)	(0.46)
$Announcement_t$	2.04	-0.18	-1.39	-1.49
	(28.21)	(6.17)	(2.97)	(1.67)
$Announcement_{t+1}$	1.25	-1.20	-0.71	-0.65
	(100.20)	(7.16)	(0.87)	(0.77)
$Monetary$	0.34	0.21	0.36	0.62^{*}
	(1.46)	(0.99)	(0.54)	(0.39)
$\Delta VSTOXX$	-0.03	-0.02^{***}	0.01^{***}	0.01^{***}
	(0.05)	(0.00)	(0.00)	(0.01)
$Stringency_index$	0.67	0.07	0.07^{***}	0.05^{***}
	(3.12)	(0.07)	(0.00)	(0.00)
$Mobility_index$	-0.09	-0.02	0.05^{***}	0.10^{***}
	(0.07)	(0.03)	(0.00)	(0.00)
Log likelihood	-740.29	-308.77	-129.52	-106.41
AIC	7.15	3.10	1.16	0.98
BIC	7.48	3.43	1.45	1.27
Q(5)	0.59	0.46	0.53	0.51
Q(10)	0.88	0.56	0.69	0.67
$Q^2(5)$	0.92	0.90	0.75	0.79
$Q^2(10)$	0.79	0.84	0.42	0.45

Note: ARMA(1,1) – GARCH(1,1) regressions on the daily returns of CAC stock indexes. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Intercept and ARMA(1,1) are included but not reported. Robust standard errors are used (reported in parenthesis)

Conclusion Générale

"Il buon si perda talor, cercando il meglio"
Pietro Metastasio – *Ipermestra*, 1744

"Dans ses écrits un sage Italien
Dit que le mieux est l'ennemi du bien"
Voltaire – *Les Contes en vers*, 1772

Cette thèse comporte trois chapitres empiriques contribuant au champ de l'économie bancaire et financière internationale. Après avoir résumé le contenu et les apports de ces chapitres nous en discuterons les limites et présenterons des pistes de recherche futures, pensées comme des extensions de nos contributions.

Dans notre premier chapitre, nous documentons d'abord le processus de mondialisation du secteur bancaire en mettant en évidence l'envol des activités bancaires transfrontières depuis les années 1980. Nous montrons ensuite que les OFC, qui représentent une part négligeable du PIB mondial, détiennent plus de 20 % des actifs bancaires transfrontaliers, ce qui fait d'eux le plus large système bancaire au monde. En mobilisant, pour la première fois, des données internationales sur ces territoires, nous sommes en mesure de montrer combien la localisation géographique des encours intragroupes transfrontaliers n'est ni aléatoire, ni fondée sur les échanges économiques sous-jacents. Nous présentons notamment des éléments indiquant le poids disproportionné de quelques juridictions dans la localisation des encours intragroupes transfrontaliers des grands systèmes bancaires : cette disproportion se mesure en comparant la distribution des encours intragroupes par quintiles de taux de taxation du créditeur avec la distribution des encours intergroupes. Nous dégageons ainsi la spécificité des activités bancaires vis-à-vis de ces territoires, à savoir le recours important aux dettes internes, et ce particulièrement quand le débiteur est fortement taxé.

Plusieurs extensions peuvent être proposées concernant ce chapitre. La première concerne les données mobilisées qui ne nous permettent pas, pour l'instant, de dégager un mécanisme précis de *profit shifting*. En complément des instruments mentionnés, il est en effet possible pour les banques de jouer sur le différentiel de taux entre des prêts internes artificiels symétriques, à travers le mécanisme du transfert de prix : faisons l'hypothèse qu'une banque A résidant dans un pays i à

fort taux de taxation s'endette auprès d'une filiale B dans un pays j – dont le taux d'imposition est plus faible – à un taux d'intérêt r_A. De manière symétrique, la filiale B s'endette auprès de A à un taux r_B. Si $r_A > r_B$, alors la banque B est capable de transférer du revenu à destination du pays j. Afin de réellement identifier ce phénomène, il serait nécessaire de mobiliser des données de taux d'intérêt pratiqués en interne par les groupes bancaires, qui sont, pour l'instant, soit inexistantes, soit d'une qualité qui ne permet pas l'identification causale. Parmi les perspectives futures de recherche, il serait par ailleurs possible de mesurer l'impact d'au moins deux réformes fiscales qui, à ce jour, sont encore au stade des négociations. La première réforme est la normalisation des règles de rapatriement des bénéfices au sein de la zone euro. De manière générale, un investisseur transfrontalier (par exemple une banque) doit s'acquitter d'un impôt sur les intérêts ou les dividendes perçus dans un autre État membre. Afin de se prémunir contre un phénomène de double taxation, la plupart des pays ont signé des conventions qui permettent d'éviter qu'une société soit imposée deux fois. Ces nombreuses règles (plus de 450 recensées dans l'UE) sont aussi source d'abus : les scandales Cum/Ex et Cum/Cum ont ainsi mis en évidence la manière dont ces procédures peuvent être utilisées abusivement[1]. Une amélioration de ces procédures de retenue à la source (*witholding taxes)* pourrait avoir des effets imprévus et indésirables, ce qui justifie que l'on puisse analyser leurs impacts : en réduisant les opportunités d'évitement au sein de la zone euro, la réforme pourrait renforcer l'incitation à transférer des profits hors de l'UE. Enfin, la seconde réforme concerne l'application d'un impôt minimum global qui pourrait avoir d'importantes implications sur les stratégies d'évitement, en faisant peut-être disparaître certains arbitrages. Ces développement futurs peuvent être étudiés dans le cadre d'analyse présenté dans le premier chapitre, en se concentrant notamment sur les pays dont les taux effectifs dévient le plus par rapport au seuil des 15 %.

Le deuxième chapitre propose quant à lui, une étude de la transmission de la politique monétaire de la Chine à un des plus grands OFC, Hong Kong. La question de savoir si ce nouvel 'hégémon' est capable d'influencer les encours bancaires hongkongais est traitée à l'aide d'un grand nombre d'instruments (taux de refinancement de marché, taux de réserves obligatoires, taux des prêts bancaires régulés) afin de prendre en compte la complexité de la conduite de la politique monétaire chinoise. En mobilisant la méthode des projections locales, nous estimons l'amplitude de la réponse des montants d'actifs internationaux à des chocs de politique monétaire chinoise et étasunienne, en distinguant entre les contreparties bancaires et non-bancaires de ces actifs. Nos résultats indiquent que les montants de crédits hongkongais vers la Chine (respectivement vers le reste du monde) sont positivement (respectivement négativement) associés au resserrement de la politique monétaire chinoise. Nous montrons ainsi que l'influence de la Banque Populaire de Chine sur ces positions

[1]Les pertes fiscales liées à ces pratiques ont été estimées à 150 milliards d'euros pour la période 2000-2020. Source : Commission Européenne.

est forte, plus que celle de la Fed.

Cette étude se concentre uniquement sur un pays mais des travaux futurs pourraient entreprendre d'analyser les effets internationaux, en incluant d'abord les centres régionaux (Corée du Sud, Japon, Singapour, etc.), puis dans un second temps, les autres grands pays bancaires (Royaume-Uni, États-Uni, France, etc.). La question de la transmission du cycle monétaire chinois est encore peu traitée (Miranda-Agrippino et al., 2020), alors qu'elle est amenée à se poser de manière accrue étant donnée la stratégie d'ouverture aux capitaux étrangers de la Chine. La dette extérieure chinoise a ainsi continué d'augmenter entre 2017 et 2021, passant de 1758 milliards de dollars US à 2747 milliards[2]. De plus, l'accroissement de l'endettement de l'État chinois (que ce soit les gouvernements locaux ou le gouvernement central[3]) reflète son besoin grandissant de financement, qui pourrait notamment conduire la Chine à se tourner vers l'endettement extérieur.

Dans une autre perspective nous pourrions par ailleurs confronter les problématiques de recherche de nos deux premiers chapitres et étudier l'effet des politiques monétaires sur les positions internationales vis-à-vis des OFC. Comme nous l'avons souligné, ce sont des territoires qui, en raison de l'ancrage de leur monnaie, n'ont pour la plupart, pas de politique monétaire indépendante[4] ce qui les rend, en principe, particulièrement sensibles aux cycles monétaires, alors même qu'ils enregistrent des positions financières importantes. Ces territoires ne servent pas que de conduit à l'investissement ou à l'enregistrement d'actifs, ils ont pour certains une activité financière qui est importante. La transmission des cycles monétaires de la Fed, de la BCE ou de la Banque Populaire de Chine peut donc avoir des conséquences sur les variations du niveau des encours, une question que nous avons exclue de notre premier chapitre pour nous concentrer sur le déterminant de long terme principal que constitue leur fiscalité.

Notre troisième chapitre s'attache à montrer comment les allocutions présidentielles d'Emmanuel Macron ont été reçues par les marchés financiers français pendant la crise du COVID-19. En associant la méthode des études d'évènements à des modèles économétriques adaptés aux séries financières analysées (GARCH et E-GARCH), nous montrons que les annonces ont eu un effet positif sur le CAC 40 et ont permis de réduire l'écart des taux souverains France-Allemagne. Nos résultats indiquent un faible effet sur la volatilité de ces deux séries, ce qui permet d'affirmer que les annonces n'ont pas accru l'incertitude sur les marchés financiers français. Nous tenons aussi compte de l'effet de l'annonce de ces allocutions dans la presse sur les anticipations des agents

[2] FMI, Chine Article IV consultation 2022

[3] Le ratio de dette/PIB du gouvernement chinois est ainsi passé de 36 % en 2017 pour atteindre 56 % en 2023 (prévision) pour la dette n'incluant pas les fonds communs de créances et de 78 % à 110 % pour la dette au sens large. Source : FMI, Chine Article IV consultation 2022

[4] Ce phénomène est aussi dû au fait qu'institutionnellement, ces banques centrales n'ont pas les moyens humains et techniques de mener à bien des politiques monétaires indépendantes.

économiques. Nous sommes ainsi en mesure de montrer que la majeure partie de l'effet est liée à l'annonce des allocutions, et non aux allocutions elles-mêmes.

Une extension naturelle à notre étude consisterait à étudier la réception par les marchés financiers des annonces du plan de relance européen faites par la Commission Européenne (*Next Generation EU*). Dans cette perspective, il serait possible de questionner l'idée d'une *forward guidance* européenne. La réaction aux annonces du Conseil Européen et de la Commission Européenne a cependant déjà fait l'objet de nombreuses recherches (Delatte and Guillaume, 2020, Fendel et al., 2021, Havlik et al., 2022), qui ne concluent toutefois pas toutes en faveur d'un impact positif : en raison du grand nombre d'annonces et des divers commentaires donnés par les leaders nationaux il est difficile d'isoler un effet causal unique. D'un point de vue théorique, Havlik et al. (2022) vont jusqu'à mettre en garde contre une potentielle prépondérance fiscale (*fiscal dominance*) qui se serait développée à la faveur de la pandémie. Dans le cadre d'une crise, si les autorités budgétaires de la zone euro (nationales, ou supra-nationales) opèrent une politique de guidage des anticipations, en annonçant de manière ciblée des objectifs de dépense qui auront pour conséquence une dégradation des finances publiques, alors la BCE pourrait être contrainte de financer les États membres, afin d'éviter une désintégration de la zone (qui passerait en premier lieu par les écarts de taux souverains), même si cela s'oppose à son mandat de stabilité des prix. Le déroulé de la crise du COVID-19 ne contredit pas cette explication. Les premières mesures de soutien à l'économie de la zone ont été annoncées en Italie par le gouvernement Conte le 11 mars 2020, d'une ampleur de 25 milliards d'euros dont 20 milliards financés par l'endettement, soit 1,1 % du PIB italien[5]. Ces annonces italiennes et la conférence de presse du 12 mars 2020 où Christine Lagarde déclare que le rôle de la BCE n'est pas de réduire les écarts de taux souverains de la zone, conduisent à une forte augmentation de ces écarts – l'écart entre les taux italiens et les taux allemands à 10 ans étant le plus élevé durant cette période, derrière l'écart des taux grecs. Les annonces françaises des 12 et 16 mars 2020 poussent ensuite la BCE à annoncer en urgence le 18 mars, le programme lié à la pandémie d'achat d'actifs (PSPP), dont le but affiché est justement de réduire le risque de fragmentation de la zone. La question de la *fiscal dominance* se pose donc d'ores et déjà, notamment lors de chocs symétriques sur les économies des pays membres. Les récentes innovations fiscales européennes qui permettent l'émission d'une dette commune, par le biais de la Commission Européenne[6], pourraient renforcer le rôle de la politique budgétaire au détriment de la banque centrale et ainsi rééquilibrer le *policy mix* européen.

[5]Source : La Republica, 11 mars 2020

[6]La facilité pour la reprise et la résilience (*The Recovery and Resilience Facility - RRF*) permet l'émission d'obligations au nom de l'UE.

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Résumé en français

Cette thèse s'inscrit dans le champ général de la macroéconomie financière internationale et plus spécifiquement de l'économie bancaire et financière internationale. Son objectif est d'analyser l'allocation des dettes et actifs bancaires en accordant une attention toute particulière à la politique monétaire. Les chapitres 1 et 2 s'insèrent dans le domaine de l'économie bancaire internationale et analysent l'allocation des encours bancaires sous deux angles différents : le premier étudie la localisation stratégique des dettes bancaires internes à des fins d'évitement fiscal (*profit shifting*); le second, l'allocation des actifs bancaires hongkongais en réponse aux chocs de politique monétaire chinoise. Le dernier chapitre propose de tester empiriquement le cadre théorique de la *forward guidance* appliqué aux politiques budgétaires françaises pendant la pandémie de COVID-19.

Dans notre premier chapitre, nous documentons d'abord le processus de mondialisation du secteur bancaire en mettant en évidence l'envol des activités bancaires transfrontières depuis les années 1980. Nous montrons ensuite que les OFC, qui représentent une part négligeable du PIB mondial, détiennent plus de 20 % des actifs bancaires transfrontaliers, ce qui fait d'eux le plus large système bancaire au monde. En mobilisant, pour la première fois, des données internationales sur ces territoires, nous sommes en mesure de montrer combien la localisation géographique des encours intragroupes transfrontaliers n'est ni aléatoire, ni fondée sur les échanges économiques sous-jacents. Nous présentons notamment des éléments indiquant le poids disproportionné de quelques juridictions dans la localisation des encours intragroupes transfrontaliers des grands systèmes bancaires: cette disproportion se mesure en comparant la distribution des encours intragroupes par quintiles de taux de taxation du créditeur à la distribution des encours intergroupes. Nous dégageons ainsi la spécificité des activités bancaires vis-à-vis de ces territoires, à savoir le recours important aux dettes internes, et ce particulièrement quand le débiteur est fortement taxé.

Notre deuxième chapitre se propose de documenter l'évolution des encours internationaux entre la Chine et Hong Kong, témoins de leur intégration bancaire. À travers une variété de variables de politique monétaire, nous évaluons l'impact des chocs monétaires chinois sur les prêts transfrontaliers hongkongais. Nos résultats indiquent qu'une grande partie de la baisse du niveau d'encours, observée dès 2015, peut être attribuée à la politique monétaire accommodante de la Banque Popu-

laire de Chine et à sa conséquence directe : la réduction de l'écart entre les taux chinois et ceux des pays avancés. Nous expliquons cette évolution par un comportement de recherche de rendement de la part des banques internationales résidant à Hong Kong. Par ailleurs, en accord avec la littérature récente sur la transmission de la politique monétaire chinoise, nous montrons que cette dernière opère désormais pleinement dans une logique de taux d'intérêt de marché et non plus à travers des instruments purement quantitatifs (quotas, contrôle du crédit et quantité de réserves obligatoires), qui étaient sa marque de fabrique dans les années 1990 et le début des années 2000. Enfin, par souci d'exhaustivité, nous comparons ces résultats à la transmission de la politique monétaire de l'hégémon, les États-Unis. Ces derniers indiquent que l'effet de la politique monétaire chinoise sur les actifs bancaires internationaux hongkongais est plus fort que celui de la politique de la Fed.

Dans notre troisième chapitre, nous nous proposons d'appliquer l'idée de la *forward guidance* budgétaire au cadre français et de mesurer l'effet des annonces du président Emmanuel Macron pendant la crise du COVID sur les marchés financiers français. En distinguant l'effet des communiqués ou des fuites dans la presse à propos de futures annonces et les effets propres aux annonces elles-mêmes, nous montrons comment chacune impacte i) le marché des actions français et ii) l'écart de taux souverains entre la France et l'Allemagne. Nous montrons aussi que les adresses et l'annonce de ces adresses ont des effets mixtes sur la volatilité de nos deux indicateurs. Nos résultats suggèrent que la communication des décideurs de la politique budgétaire a un effet globalement positif et peut aider à rassurer les marchés financiers, tout en favorisant des politiques fortes de soutien fiscal en période d'incertitude.

English Summary

This thesis is part of the general field of international financial macroeconomics, and more specifically of international banking and financial economics. Its aim is to analyze the allocation of bank debt and assets, with a particular focus on monetary policy. In this way, we highlight the specific nature of banking activities in these territories, namely the extensive use of internal debt, particularly when the debtor is highly taxed.

In our first chapter, we first document the process of banking globalization, highlighting the surge in cross-border banking activities since the 1980s. We then show that OFCs, which account for a negligible share of global GDP, hold over 20% of cross-border banking assets, making them the largest banking system in the world. By mobilizing international data on these territories for the first time, we are able to show how the geographical location of cross-border intra-group outstandings is neither random, nor based on underlying economic exchanges. In particular, we present evidence of the disproportionate weight of certain jurisdictions in the location of cross-border intra-group outstandings of major banking systems: this disproportion is measured by comparing the distribution of intra-group outstandings by creditor tax rate quintiles with the distribution of inter-group outstandings.

Our second chapter documents the evolution of international amounts outstanding between China and Hong Kong, reflecting their banking integration. Through a variety of monetary policy variables, we assess the impact of Chinese monetary shocks on Hong Kong cross-border create loans. Our results indicate that a large part of the decline in the level of outstandings, observed as early as 2015, can be attributed to the People's Bank of China's accommodative monetary policy and its direct consequence: the narrowing of the spread between Chinese rates and those of advanced countries. We explain this development by yield-seeking behavior on the part of international banks resident in Hong Kong. Furthermore, in line with recent literature on the transmission of Chinese monetary policy, we show that the latter now operates fully within a market interest rate logic and no longer through purely quantitative instruments (quotas, credit control and reserve requirements), which were its hallmark in the 1990s and early 2000s. Finally, we compare these results with the monetary policy transmission of the hegemon, the United States. The latter

indicate that the effect of Chinese monetary policy on Hong Kong's international banking assets is stronger than that of Fed policy.

In our third chapter, we propose to apply the idea of fiscal forward guidance to the French framework and measure the effect of President Emmanuel Macron's announcements during the COVID crisis on French financial markets. Distinguishing between the effect of press releases or leaks about future announcements and the effects specific to the announcements themselves, we show how each impacts i) the French equity market and ii) the sovereign spreads between France and Germany. We also show that the addresses and the announcement of those addresses have mixed effects on the volatility of our two indicators. Our results suggest that communication by fiscal policy-makers has an overall positive effect and can help reassure financial markets, while promoting strong fiscal support policies in times of uncertainty.