167
Septembre 2020

Revue de l'OFCE

VARIA

DOSSIER: **EUROFRAME 2019 CONFERENCE**

SciencesPo

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Dépôt légal : septembre 2020 ISBN : 979-10-90994-19-5
N° ISSN 1265-9576 – ISSN en ligne 1777-5647 – © OFCE 2020

Sommaire

QUI DÉCROCHE DE L'UNIVERSITÉ ?
Mise en perspective nationale et analyse d'une enquête en région Aquitaine

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La lutte contre le décrochage à l'université recueille un large consensus auprès des différents acteurs politiques et universitaires. Quelles que soient les représentations du problème, la nécessité d'un changement des conditions d'accompagnement des étudiants est souvent rappelée, avec à l'appui le faible taux de réussite en fin de première année de licence et l'importance des abandons d'études. Or la manière de construire le référentiel, de se représenter le problème en fonction des croyances de base ainsi que des normes sanctionnant des conduites, ensuite de le présenter publiquement, mélange les situations d'abandon définitif des études, de réorientation et d'interruption provisoire des études. Dans ce cas, qui décroche vraiment à l'université ? Considérant que la publicisation d'un problème ne dépend en aucun cas de sa nature intrinsèque, mais des représentations portées par les acteurs, l'objet de l'article est double. Il retrace d'abord le travail cognitif et narratif de construction du problème dans sa dimension collective. Après avoir défini les critères de quantification du problème, il présente ensuite les résultats d'une enquête par questionnaire menée dans la région Aquitaine auprès des étudiants en général et des sortants sans diplôme en particulier. L'enquête donne lieu à deux résultats. Le premier relativise l'ampleur du problème. Le second souligne la nature processuelle du problème.

Mots clés : université, décrochage, disqualification publique, inégalités.

La lutte contre le décrochage[1] à l'université recueille un large consensus auprès des différents acteurs politiques et universitaires. Personne ne conteste la nécessité, voire l'urgence, de juguler un problème qui semble être de grande ampleur si l'on en juge par la dramaturgie avec laquelle les gouvernements l'entourent. Le plan *Pour la réussite en licence* porté par Valérie Pécresse en 2007, les Assises de l'enseignement supérieur et de la recherche lancées en 2012 par Geneviève Fioraso, le *Plan étudiants* lancé par Dominique Vidal en 2017 sont autant de prescriptions alimentant un programme politique visant la réduction de l'échec en licence. Loin d'être liée à la nature intrinsèque du phénomène, la mise à l'agenda du décrochage à l'université résulte tout à la fois d'un processus cognitif permettant de comprendre le réel en limitant sa complexité et d'un processus prescriptif permettant d'agir sur le réel. Ce programme et les logiques connexes d'attribution, de cognition et de prescription constituent ce que Muller (2006) nomme un référentiel global d'action publique de nature à allouer des financements à des dispositifs spécifiques au problème posé. Un référentiel est une manière de construire un problème en fonction de sa représentation générale qui articule des croyances de base avec des valeurs fondamentales et des normes sanctionnant des conduites à tenir. Il délimite un espace de sens qui exacerbe la nécessité d'un changement d'autant plus impérieux que les constats sont lourds : le taux de réussite en fin de première année de licence reste insuffisant et les abandons sont en nombre important.

L'enquête Génération menée par le Céreq évalue à 87 000 le nombre d'étudiants[2] sortis de l'enseignement supérieur sans diplôme en 2010, soit environ 23 % de l'ensemble des sortants (Calmand, Ménard et Mora, 2015). Une décennie plus tard, un entrant sur dix se réoriente vers une autre filière, tandis que plus de deux étudiants sur dix interrompent vraisemblablement leurs études de manière provisoire ou définitive[3]. Nonobstant l'importance des chiffres, les taux d'abandon semblent ne pas évoluer depuis plusieurs décennies[4]. Cependant, cette stabilité apparente ne doit pas faire oublier la diversité des situations agrégées par l'indicateur retenu, les taux d'abandon

1. Nous n'utilisons pas de guillemets bien que cette notion doit être manipulée avec prudence du fait des usages scolaires et politiques auxquels elle renvoie.
2. Source : Céreq, Enquête génération 2010 interrogée en 2013.
3. Voir Repères et références statistiques sur les enseignements, la formation et la recherche, 2019.

énoncés pouvant recouvrir à la fois des sorties définitives ou provisoires ainsi que des réorientations (Bodin et Orange, 2013). De fait, selon les techniques de quantification utilisées pour mesurer ces abandons et les usages auxquels sont destinées les données recueillies (administratif, politique ou académique), la délimitation du problème et des publics concernés varie. La perception du phénomène s'avère également dépendante de son acceptabilité sociale. Longtemps perçu comme acceptable, voire comme un gage d'excellence du diplôme délivré (Pérennès et Pinte, 2012), le décrochage à l'université est devenu insupportable. Désormais, il fait l'objet d'une *panique morale* (Cohen, 2002 et 2011). En tant que tel, le décrochage à l'université constitue un problème dont s'emparent des *claims makers* pris dans un cadre d'interprétation qui tout en servant de guide à l'action publique, mélange les fausses prédictions et les mauvais chiffres. Pour prendre un exemple, les chiffres annoncés par le gouvernement au moment de l'élaboration de la loi relative à l'orientation et la réussite des étudiants (Loi ORE votée en mars 2018) font état de « *près des deux tiers des étudiants quittant l'université sans diplôme* » et de « *60 % d'échecs au bout de quatre ans à l'université !* ». Et le Premier ministre de préciser son effarement devant cette « *terrible sélection par l'échec* », et d'ajouter que « *ce chiffre a de quoi vous glacer le sang* »[5]. En somme, la *panique morale* qui entoure le phénomène procède d'une construction statistique par un indicateur alarmiste faisant écran à une bonne compréhension du phénomène (Bodin, Millet, 2011). Dans ce cas, qui sont les décrocheurs et leur nombre est-il aussi élevé que pourraient le faire croire les entrepreneurs de la cause sur la scène publique ? C'est la question de départ de l'article.

Considérant que la publicisation d'un problème ne dépend pas de sa nature intrinsèque mais des représentations portées par les acteurs, l'objet de l'article est double. Dans une première partie, il retrace la construction cognitive et narrative du problème (Hassenteufel, 2011) à partir de l'importance accrue donnée à la notion d'employabilité au

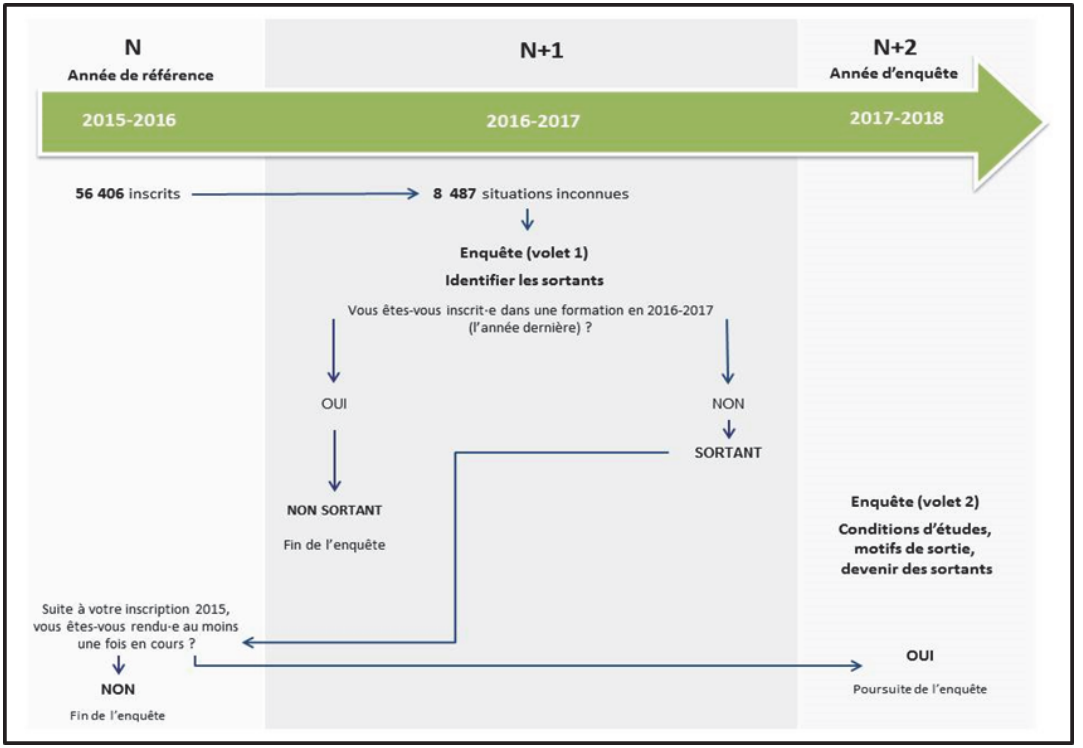
4. Dans leur ouvrage *L'université n'est pas en crise,* Bodin et Orange montrent qu'en France le taux d'abandon (non-réinscription à l'université et réorientation) en première année de licence est stable de 1996 à 2011, et qu'il oscille autour de 25 %. En s'appuyant sur les archives de la Sous-Direction des Systèmes d'information et des études statistiques (SDSIES) du ministère de l'Enseignement supérieur et de la Recherche, ils constatent par ailleurs que des taux comparables étaient déjà relevés dans les années 1960 et 1970. Autrement dit, l'« abandon » en première année de licence est un *phénomène constant et très ancien, dont les taux restent relativement indépendants des événements qui marquent la période* (2013, p. 114-116).

5. Voir « Les 60 % d'échecs à la fac masquent une réalité plus complexe », *Le Monde*, 31 août 2017.

sein de la sphère éducative. La mise en exergue de ce cadre normatif permet de se distancier des catégories de classement produites par les politiques publiques, et ce faisant d'élaborer une méthode rigoureuse de quantification de l'abandon des études universitaires. Le cadrage de l'enquête et sa plus-value par rapport aux données disponibles sont exposés dans une seconde partie, en particulier l'importance d'ouvrir l'observation aux trajectoires des inscrits en master qui font office d'angles morts de l'action publique actuelle, essentiellement centrée sur les nouveaux entrants à l'université. Dans une troisième partie, l'article présente les résultats de l'enquête par questionnaire menée en région Aquitaine auprès des étudiants en général et des sortants sans diplôme en particulier. L'enquête permet trois choses : elle relativise l'ampleur du problème ; elle pointe les facteurs explicatifs de l'abandon précoce des études supérieures ; elle insiste sur la dimension processuelle du phénomène.

Sur le plan méthodologique, le champ de l'enquête est constitué de l'ensemble des inscrits des trois universités membres de la ComUE d'Aquitaine, en DUT, licence et master, d'une année N, n'ayant pas obtenu le diplôme préparé au terme de l'année et ne s'étant pas réinscrit l'année N+1. Pour être plus précis, notre échantillon est constitué par des étudiants n'ayant pas obtenu le diplôme du cursus d'inscription. Il comprend les étudiants inscrits en master diplômés du premier cycle mais n'ayant pas obtenu un titre de second cycle ainsi que les étudiants de licence 1, licence 2 et DUT 1 qui ont validé leur année sans avoir obtenu le diplôme du cycle en question. Cette définition exclut du champ d'observation une large partie des interruptions d'études en cours de formation, à savoir toutes les interruptions ne se soldant pas l'année suivante par une sortie du système éducatif. De sorte que l'échantillon ne retient pas les étudiants qui redoublent ou se réorientent mais ceux qui abandonnent leurs études sans les reprendre, d'une manière ou d'une autre, l'année suivante. Par ailleurs, l'enquête permet de connaître le devenir des étudiants à N+1 (année 2016-2017) et à N+2 (année 2017-2018). Ainsi, nous pouvons estimer la part de sortant en N+1 parmi l'ensemble des inscrits mais également la part des reprises d'étude en N+2 parmi l'ensemble des sortants. Pour le dire autrement, l'échantillon concerne les sorties « sèches » de l'université (*cf*. Figure 1).

Figure 1. **Schéma du dispositif de l'enquête**



Source : Enquête Sortants – ComUE d'Aquitaine.

L'échantillon est construit par appariement de trois fichiers administratifs : les données Apogée et SISE des trois universités membres de la ComUE d'Aquitaine (l'université de Bordeaux, l'université de Bordeaux-Montaigne et l'université de Pau et des Pays de l'Adour ainsi que les données SCOLARITE (soit les inscrits de BTS et CPGE) du Rectorat. L'appariement a permis d'identifier les étudiants inscrits en 2015-2016 qui sont non diplômés à l'issue de cette même année et non retrouvés l'année suivante dans les fichiers SISE et SCOLARITÉ. En conséquence de quoi, ce sont 8 487 étudiants inscrits en 2015-2016 en cursus DUT, licence et master, non diplômés et non retrouvés dans les fichiers Apogée, SISE et SCOLARITÉ l'année suivante qui furent interrogés de septembre à décembre 2017. Parmi eux, 4 918 ont répondu à l'enquête, soit un taux de retour de 58 %. Ce taux est très satisfaisant compte tenu de la difficulté à approcher ce public. Cela a été possible grâce à des relances téléphoniques et une équipe dédiée au sein de chaque observatoire des parcours étudiants de chaque université. Au moment de lancer l'enquête, tous les établissements membres de la ComUE ont été sollicités. Trois universités ont accepté de participer à l'enquête, les autres établissements (deux écoles et un institut) estimant que le décrochage n'est pas un problème majeur. Leur refus est une première limite méthodologique puisqu'il restreint le champ d'observation au cadre universitaire et qu'il ne permet pas de retracer le parcours des étudiants dans les établissements sélectifs.

1. Le cadre cognitif et normatif du problème

La sortie sans diplôme de l'université est un problème parce qu'il existe des critères politiques et sociaux qui la désignent comme tel. Cela ne signifie pas que le phénomène n'existe pas, mais qu'il ne devient un problème que s'il existe une idée du problème et un secteur concerné par celui-ci, ensuite que cette idée et ce secteur s'ajustent à une théorie du changement social (Muller et *al.,* 1996). De sorte que l'inscription à l'agenda public des sorties sans diplôme de l'université n'est pas envisageable sans une idée, un secteur et une théorisation du problème qui permettent en définitive de faire des sortants précoces une population à risque. En France, les sorties sans diplôme de l'université entrent dans le cadre plus large du décrochage scolaire sous l'impulsion de directives européennes (Stratégie « Europe 2020 »). Cela explique en partie que le problème dans l'enseignement secondaire ou à l'université correspond souvent à l'image d'une interruption brutale des études constituant une menace potentielle pour la société (Sarfati, 2013).

Pourtant, contrairement à l'enseignement secondaire qui impose une obligation de scolarisation jusqu'à 16 ans, aucune obligation légale n'encadre la sortie précoce de l'enseignement supérieur. De ce fait, elle n'est pas illégale. Par ailleurs, l'enseignement supérieur est un droit pour tous les titulaires d'un baccalauréat, et très peu de dispositions réglementaires en conditionnent l'accès[6]. Les politiques publiques de lutte contre le décrochage à l'université se fondent donc plus sur des normes sociales que des normes juridiques, ce qui a des conséquences sur la manière dont le problème est construit par les acteurs publics. Initialement cantonnée aux sortants sans diplôme du système scolaire, la notion de décrocheurs s'étend aujourd'hui aux sortants non diplômés de l'enseignement supérieur. La raison de ce « débordement » s'éclaire en partie à la lumière de la stratégie européenne de valorisation du capital humain dont l'un des enjeux repose sur la gestion des effets des modèles économiques sur les Neets, c'est-à-dire les jeunes sans diplômes qui ne sont ni dans le système éducatif, ni en formation, ni en emploi (*Not in Education, Employement or Training)*. Si rien ne permet de dire que la stratégie européenne est la cause directe de la mise à l'agenda du décrochage à l'université en France (d'autant que l'objectif en France de mener 80 % d'une génération au bac est lancé en 1985 soit bien avant le cadrage européen), les objectifs fixés dans le cadre supranational, en particulier ceux concernant la réduction des Neets, constituent un cadre propice à la publicisation du problème.

Les politiques européennes, et par incidence les politiques nationales, sont définies à partir des coûts économiques et sociaux associés à la faible qualification et au chômage des jeunes (Mascherini et *al.*, 2012). Les Neets interrogent le potentiel productif d'individus alors qu'ils restent sans qualifications reconnues et de ce fait sont susceptibles de peser sur les politiques sociales. Ces critères de production et de charges expliquent la place donnée à l'emploi et la formation des jeunes dans les stratégies européennes, en particulier dans la stratégie de formation et d'insertion économique des publics vulnérables adoptée par l'Union européenne en 2000 et dans le projet Éducation et Europe 2020. Dans le premier, la stratégie se fonde sur une coordination et une harmonisation entre les pays pour faire de l'Europe « *l'économie de la connaissance la plus compétitive et la plus dynamique du monde, capable d'une croissance économique durable accompagnée*

6. Depuis le 10 mars 2018, ce droit peut être subordonné à l'acceptation par l'étudiant du suivi de dispositifs pédagogiques (Article L612-3, version en vigueur au 10 mars 2018).

d'une amélioration quantitative et qualitative de l'emploi et d'une plus grande cohésion sociale » (Conseil européen, 2000). Le second insiste sur le caractère fondamental de l'investissement éducatif pour stimuler la croissance et répondre aux enjeux européens de productivité. Il rappelle que « *ces objectifs sont indissociables de la nécessité de renforcer les compétences pertinentes pour l'employabilité, dans un contexte de croissance molle et de contraction de la main-d'œuvre du fait du vieillissement de la population, les enjeux les plus pressants pour les États membres sont de répondre aux besoins de l'économie et de trouver des solutions à la hausse rapide du chômage des jeunes* » (Commission européenne, 2012). À ce titre, et dans la lignée de la Stratégie européenne de Lisbonne, la Stratégie « Europe 2020 » porte à 40 % la part de 30-34 ans diplômés de l'enseignement supérieur dans l'Union européenne. En France, le rapport *Pour une société apprenante. Propositions pour une stratégie nationale de l'enseignement supérieur* (STraNES, 2015) suggère d'élever cet objectif à 60 %.

Outre les enjeux économiques de la mesure des Neets, leur recensement recèle une valeur sociale (Ogien, 2010) au sens où il institue en creux une norme d'occupation de la jeunesse. L'injonction à être occupé enjoint les jeunes qui ne sont pas sur le marché du travail à rester sur les rails de la formation (Van de Velde, 2016), et ce faisant soumet à la désapprobation collective les sortants non diplômés de l'université puisque leur situation est en contradiction avec cette norme. Dès lors, il revient à l'université de retenir les étudiants et de leur délivrer les compétences utiles à leur insertion professionnelle. C'est la raison pour laquelle des trois fonctions classiquement attribuées à l'université – la fonction de socialisation, de création intellectuelle critique et d'adaptation au marché des qualifications (Touraine, 1972 ; Dubet, 1994) –, la dernière prend le pas sur les deux autres. L'insertion professionnelle est le principe organisateur de l'enseignement supérieur (Laval, 2009), faisant de la prévention et la lutte contre les abandons précoces le ferment de mesures en amont du problème (éducation à l'orientation, aides et accompagnement, *etc.*) et des dispositifs en aval (retour en formation, préparation et aide à l'insertion professionnelle par les leviers de l'orientation et de la formation). Sur ce plan, la France se caractérise par une perception des sorties sans diplôme de l'université comme une *déviance* que les rapports officiels et les plans d'action consacrés à l'enseignement supérieur n'ont de cesse de conforter par deux arguments. Le premier est le faible taux d'emploi des sortants non diplômés, le second son impact social. À ce titre, le rapport Hetzel

(2006) insiste sur « *une probabilité de connaître une période longue de chômage qui est sans commune mesure avec celles que peuvent connaître des diplômés de l'enseignement professionnel court* » quand le rapport Demuynck (2011) souligne les « *effets psychologiques* » de l'abandon précoce qui s'ajoutent aux « *conséquences « matérielles » (difficultés à intégrer le monde professionnel, rémunération souvent moins importante qu'un diplômé…)* ». À une échelle régionale, le *Schéma Régional de l'Enseignement Supérieur et de la Recherche et de l'Innovation* de l'ancienne région Aquitaine (2012) dénonce l'« *effet potentiellement destructeur avéré […] des passages ratés dans le système d'enseignement supérieur* ». Il est certain que le diplôme est un marqueur social. Les données de l'enquête Génération de 2010 suivie sur 7 années du Centre d'études et de recherches sur les qualifications (CEREQ)[7] montrent que les trajectoires d'accès immédiat et durable à l'emploi[8] prédominent nettement chez les diplômés de l'enseignement supérieur comparativement aux sortants non diplômés (Calmand, Ménard, Mora, 2015). Par ailleurs, et comme cela est indiqué dans le tableau 1, le niveau de diplôme est discriminant. Parmi les diplômés du supérieur, la part des stabilisés dans l'emploi est de 76 % alors qu'elle n'est que de

Tableau 1. **Trajectoires types à 7 ans des jeunes sortis de formation initiale en 2010**

En %

	Non diplômés	Diplômés du secondaire	Diplômés du supérieur	Ensemble
Stabilisation en emploi à durée indéterminée	21	49	76	55
Emploi à durée déterminée durable	24	21	14	19
Chômage persistant ou récurrent	34	13	4	13
En formation ou reprise d'études	10	13	4	9
Inactivité durable	11	4	2	4

Source : Céreq, enquête 2017 auprès de la Génération 2010.

7. Il s'agit du suivi sur 7 années d'un échantillon représentatif des jeunes sortis de formation initiale en 2010.
8. Pour analyser le parcours des sortants du système éducatif durant les 3 premières années de vie active, le Céreq propose une typologie des trajectoires en 6 classes : 1/accès immédiat et durable à l'emploi, 2/accès rapide et durable à l'emploi, 3/accès progressif à l'emploi après chômage ou inactivité, 4/sortie d'emploi vers chômage ou inactivité, 5/périodes importantes ou récurrentes de reprise d'études et formations en cours de parcours, 6/chômage ou inactivité durable.

49 % parmi les diplômés du secondaire. Cette part décroît plus vite encore parmi les non diplômés (21 %). Par ailleurs, le chômage persistant est moins marqué parmi les diplômés du supérieur (4 % seulement) que les diplômés du secondaire (21 %), ces derniers affichant un taux à peu près similaire au taux des non diplômés.

Le tableau 1 indique donc qu'une sortie précoce de l'université heurte les trajectoires d'insertion et affecte durablement le parcours professionnel. L'idée selon laquelle ces sorties brutales constituent une menace pour l'ordre établi est confortée par les difficultés objectives d'insertion sur le marché du travail des jeunes, variables selon la période considérée (l'abandon des études n'est pas un problème si le marché du travail est dynamique) et selon le niveau de formation. Un jeune sans diplôme a plus de difficultés à obtenir un emploi qu'un jeune titulaire d'un diplôme de l'enseignement secondaire, qui lui-même a plus difficultés qu'un jeune titulaire d'un diplôme de l'enseignement supérieur (Zaffran, 2015). La *panique morale* autour des sorties précoces se nourrit donc de la crainte des *surnuméraires*, c'est-à-dire des jeunes que l'absence de place dans le système social rendrait « inutiles au monde » (Castel, 1995). Cette crainte conduit les acteurs publics à les ranger dans la catégorie des jeunes à risque justifiables d'actions ciblées (Geay et Proteau, 2002) figurant dans des rapports et des plans successifs. En 2006, le rapport Hetzel (qui fait suite au débat national Université-Emploi) se préoccupe du « taux d'échec dans le premier cycle universitaire », expression qui englobe les sorties précoces puisque dans le cas présent l'échec en premier cycle est assimilé au fait d'être sorti de l'enseignement supérieur sans diplôme. Outre la qualification de « *gâchis humain* », le rapport fait aussi de l'échec à l'université le vecteur d'un désordre social, et d'une fragilisation de l'ensemble du système d'enseignement supérieur :

> « *cet échec comporte deux réalités qui se juxtaposent : la première concerne 20 % d'entre eux, soit plus de 80 000 bacheliers et 10 % d'une génération dont les espoirs sont très fortement déçus tous les ans car ils quittent l'enseignement supérieur sans en être diplômés et la seconde tient au fait qu'un tiers des étudiants inscrits en première année de l'enseignement supérieur redoublent cette première année. Or, les jeunes qui sortent de l'enseignement supérieur sans en être diplômés après une ou deux années universitaires et qui se présentent sur le marché du travail, vont avoir une probabilité de connaître une période longue de chômage qui est sans commune mesure à celle des diplômés de l'enseignement professionnel court (CAP,*

> *BEP, Baccalauréats professionnels) dont les qualifications et les compétences sont reconnues par le marché de l'emploi* » (Hetzel, 2006, p. 9).

En 2007, le ministère de l'Enseignement supérieur initie un *Plan pour la réussite en licence* qui vise à diviser par deux, en cinq ans, le taux d'échec en première année de licence. Ce plan est suivi en 2009 par la mise en place d'un programme national en faveur des jeunes par le Fonds d'Expérimentation pour la Jeunesse (FEJ), dont l'un des axes porte précisément sur la réduction du décrochage à l'université. En 2011, le rapport Demuynck se donne dix années pour « *réduire de moitié le décrochage universitaire* ». Cet objectif est soutenu deux ans plus tard par la loi de juillet 2013 qui met l'accent sur la transition du lycée à l'université. Le continuum Bac-3/Bac+3 devient le cadre de référence d'actions visant à sécuriser les parcours de l'enseignement secondaire à l'enseignement supérieur. Le dispositif *Les cordées de la réussite*, créé en 2008, répond à ce principe d'articulation des maillons du système scolaire et universitaire, qui s'incarne dans des actions de tutorat et d'accompagnement scolaire d'étudiants à destination de collégiens et lycéens. La préoccupation des pouvoirs publics pour le décrochage à l'université se prolonge dans le *Plan Étudiants* de 2017, dont la traduction législative est la loi votée en 2018 sur l'orientation et la réussite des étudiants.

Parler de *panique morale* ne consiste pas à nier les conséquences néfastes des sorties non diplômées sur les parcours individuels. Il s'agit plutôt de souligner la manière avec laquelle les acteurs politiques opèrent la transition du phénomène d'abandon précoce des études supérieures en un problème de société, puis le transforment en une prophétie de malheur (le décrochage est annonciateur de risques personnels et sociaux) symbolisant un fléau moral (le décrocheur reproduit l'image du « démon populaire »). Cela fait dire à Sarfati (2013) qu'« à l'université, l'intérêt pour la question du décrochage provient donc moins de la peur que ces jeunes inspirent que de la crainte de les voir devenir chômeurs ». Perçus comme une population à risque, les « étudiants-décrocheurs » pourraient être réduits à l'image du chômeur qui se superpose à celle de l'étudiant en échec, formant ainsi le portrait d'un individu dont la valeur est indexée sur sa capacité à prendre sa vie en main dès lors que des moyens institutionnels lui sont donnés. Dans un cas, il s'agit de faire accompagner les chômeurs par des conseillers du service public de l'emploi pour leur permettre de faire valoir d'éventuels droits à indemnisation en contrepartie des

conditions effectives de retour à l'emploi par les chômeurs eux-mêmes (Demazière, 2013), dans un autre cas, des dispositifs pédagogiques innovants sont proposés aux étudiants pour qu'ils réussissent. L'analogie du chômeur et du décrocheur provient du devoir moral de travailler et d'étudier. Plus largement, elle évoque le principe moderne de l'individu autonomisé et responsabilisé, sommé d'être le décideur de sa vie une fois qu'il aura été convenablement accompagné par des *médiateurs* des politiques publiques, en l'espèce soit des conseillers soit des tuteurs ou des enseignants qui lui auront délivré les informations pour s'orienter correctement. En d'autres termes, « l'étudiant-décrocheur » n'échappe pas à la logique de l'État social actif qui élabore une action publique ciblée en échange des efforts personnels des bénéficiaires pour ne plus dépendre des mesures et des dispositifs qui leur sont destinés.

Alors même que les acteurs publics dénoncent le problème du décrochage et tandis qu'ils en font l'objet d'une lutte légitime et peu contestable tout en passant l'« étudiant-décrocheur » au crible du risque et de la responsabilité individuelle, il importe de s'interroger sur la consistance des chiffres et de proposer une lecture critique du problème. Cela se fera d'abord par le recours à un dispositif d'enquête permettant d'accéder à une nouvelle échelle d'observation du phénomène (partie 2), ensuite par l'analyse des facteurs explicatifs de l'abandon des études supérieures qui questionnent la nature et la finalité des dispositifs de lutte contre le décrochage à l'université (partie 3).

2. Partir et revenir : la question du retour aux études des « abandonnistes »

De nombreux travaux ont interrogé le sens de l'échec à l'université. Ils montrent que l'absence de réussite et l'abandon des études supérieures sont des conséquences de l'organisation universitaire (Tinto, 1975 ; Félouzis, 2001), des difficultés d'affiliation à un nouvel environnement (Coulon,1993) voire l'effet d'une stratégie d'attente des étudiants de licence. Dans ce cas, le premier cycle universitaire est conçu comme l'antichambre d'une future formation hors d'un cadre universitaire au sein duquel il est possible de s'épanouir autrement. Les étudiants qui échouent aux examens ne peuvent pas être mis sur le même plan que les étudiants qui quittent l'université sans diplôme pour s'inscrire dans l'école de leur choix (Ménard, 2017). De même, ce

qui est vu comme un abandon des études pourrait n'être qu'une parenthèse dans le parcours du jeune. Celui-ci peut interrompre ses études une année et les reprendre, sous la même forme ou pas, l'année suivante. D'une certaine façon, les étudiants qui sortent de l'université sans diplôme ne cessent pas d'être des étudiants pour autant puisque le retour en formation est possible.

La présentation du taux élevé de sortants non diplômés de l'université, qui s'accompagne d'une mise en scène dramatique des taux d'échec, notamment en L1, mérite donc d'être revue à l'aune des parcours des étudiants. En l'espèce, les données du système d'information sur le suivi des étudiants (SISE) du ministère de l'Éducation nationale ouvrent une première piste[9]. Elles montrent que sur les 165 987 néo-bacheliers inscrits en L1 en 2015, 41,6 % accèdent en L2 l'année suivante. Elles montrent aussi que le taux de 60 % d'échec est l'agrégation du redoublement (28,3% des néo-bacheliers redoublent leur L1), d'un changement d'orientation (2,3 %) et de sortie de l'université (27,8 %). À cela s'ajoute un taux de passage en L2 qui dépend de l'origine sociale. Tandis que 51,3 % des étudiants « très favorisés » (au sens du SISE) accèdent au niveau supérieur l'année suivante, ils ne sont que 32,5 % parmi les étudiants considérés comme « défavorisés ». Si les taux d'échec font problème, la nature socialement déterminée de l'échec devrait l'être aussi puisque les étudiants n'ont pas la même probabilité de réussir ou d'échouer selon leur origine sociale (Romainville, Michaut, 2012). Outre l'origine sociale, le type de baccalauréat a un effet sur les parcours post-bac. Dans une étude portant sur le panel de bacheliers ayant obtenu leur baccalauréat en 2002 (panel entré en 6e en 1995), Lemaire (2005) met en évidence les caractéristiques spécifiques des bacheliers ne poursuivant pas leurs études dans l'enseignement supérieur. Les deux tiers sont titulaires d'un baccalauréat professionnel, et une large majorité accuse un retard dans leur parcours scolaire. L'exploitation des enquêtes *Génération* du Céreq met aussi en évidence l'impact du parcours scolaire sur la sortie sans diplôme de l'enseignement supérieur. Un redoublement avant l'entrée dans le supérieur expose au risque de sortie sans diplôme (Gury et Moullet, 2007 ; Calmand, Ménard et Mora, 2015). Enfin, les motifs de sortie évoqués par les sortants non diplômés de l'enseignement supérieur sont, outre les choix d'orientation et les problèmes

9. Champ : Universités et établissements assimilés, France entière hors Nouvelle Calédonie. Source: MESR-DGESIP-DGRI-SIES.

de santé, les conditions de vie. L'abandon précoce peut avoir des causes financières ou être lié à une activité concurrente menée en parallèle des études (Galland et Houzel, 2009 ; Observatoire de la vie étudiante, 2016).

Cependant, et comme on vient de l'indiquer, parmi les néo-bacheliers ayant quitté l'université, tous n'ont pas abandonné les études. Certains ont pu s'inscrire dans une formation paramédicale et sociale, une école de commerce ou une formation relevant d'une autre tutelle ministérielle que l'Enseignement supérieur. Or, le SISE ne permet pas d'identifier ces parcours. On ne sait donc pas avec précision qui parmi les étudiants qui interrompent leurs études sont ceux qui quittent définitivement l'enseignement supérieur et ceux qui y retournent immédiatement après en être sortis[10]. Cette méconnaissance est d'autant plus problématique que l'attribution des dotations financières aux universités se fonde, entre autres critères, sur le taux de réussite en licence. Depuis 2009, le SYMPA (Système de répartition des moyens à la performance et à l'activité) indexe l'attribution des crédits aux universités à leurs résultats pédagogiques et académiques (Aschieri, 2012). Outre le nombre de masters délivrés et la qualité des unités de recherche, le taux de réussite en licence sert au calcul de la dotation des établissements. De sorte que c'est la rétention des effectifs dans les filières qu'il importe de parfaire plutôt que la sécurisation du parcours de l'étudiant sortant (Millet, 2012 ; Bodin et Orange, 2013), alors même que parmi les 60 % d'étudiants considérés en échec, ils sont peu à ne pas poursuivre leurs études l'année suivante. Dans ce cas, qui sont les « abandonnistes » et comment se poursuit leur parcours d'études ? Tandis que le problème du décrochage universitaire se cristallise sur l'échec et la sortie sans diplôme, cette interrogation articule deux aspects du phénomène, en l'occurrence le départ et le retour aux études universitaires, y compris dans un établissement non recensé par le ministère de l'Enseignement supérieur. Elle repose sur l'hypothèse d'une cohérence biographique derrière les changements survenant au cours du parcours de formation.

Bien que notre approche soit quantitative, cette hypothèse s'inspire des travaux qui déconstruisent la réussite en introduisant l'idée que les bacheliers, toujours plus nombreux à s'inscrire à l'université, ne poursuivent pas tous les mêmes buts et ne sont pas réductibles à un profil.

10. Ce critère d'immédiateté permet de ne pas inclure les adultes en reprise d'études, qui renvoient à une autre catégorie d'étudiants.

Alors que l'association de la réussite au diplôme tend à figer l'indicateur des sortants non diplômés, les logiques qui sous-tendent l'expérience étudiante le nuancent fortement. Ainsi, la typologie construite par Beaupère et Boudesseul (2009) à partir du rapport de l'étudiant à la formation initiale et de son rapport au marché de l'emploi présente quatre profils de décrocheurs. La plus ou moins grande importance accordée au diplôme croisée avec le degré d'anticipation de l'insertion professionnelle peut conduire l'étudiant à sortir de l'université sans qu'il envisage son départ comme un problème. L'abandon est plutôt vu comme un moyen de parvenir à une fin différente des finalités propres à l'université. L'obtention du diplôme au sein de l'établissement d'inscription n'est pas pour eux une priorité, soit qu'ils cherchent à s'insérer rapidement dans la vie active soit qu'ils envisagent une réorientation vers une autre formation. Les étudiants qui établissent un lien fort entre la réussite académique et l'insertion professionnelle n'envisagent pas leur abandon comme une rupture définitive. Au contraire, ils ont un objectif de retour rapide en formation soutenu par leur croyance forte en la valeur du diplôme comme sésame sur le marché du travail. Le décrochage renvoie aussi à une démobilisation dont la source est la tension entre le projet d'avenir, le projet d'apprendre et la socialisation. L'enquête menée par Jellab (2011) auprès d'étudiants en L1 montre bien qu'il suffit que la sociabilité l'emporte sur l'investissement scolaire ou que le projet professionnel apparaisse en décalage avec les études poursuivies pour que le processus d'abandon se mette en œuvre. Par ailleurs, l'inscription à l'université ne relève pas seulement d'une démarche visant à obtenir un diplôme, mais procède aussi d'une stratégie visant à se libérer pour un temps des contraintes sociales (David, Melnik-Olive, 2014) et, comme cela est plus particulièrement le cas des bacheliers professionnels, se soustraire aux exigences du monde professionnel en différant l'entrée sur le marché du travail pour goûter à un monde dont l'accès leur semblait interdit (Beaud et Pialoux, 2001).

Pour ces raisons, l'analyse doit prendre en compte le parcours d'accès, de sortie et de retour aux études supérieures. Sur un plan méthodologique, il s'agira de compléter les nombreuses approches qualitatives par une approche quantitative des facteurs explicatifs d'une part de l'abandon des études universitaires d'autre part du retour en formation des étudiants ayant dans un premier temps renoncé aux études. On distingue donc parmi les étudiants qui sortent sans diplôme de l'enseignement supérieur ceux qui y retournent dans

un délai inférieur à 24 mois[11] de ceux qui n'y retournent pas après avoir passé une année au moins en dehors de tout système de formation. Le terrain est constitué par les trois universités membres de la ComUE d'Aquitaine, ce qui permet de porter l'analyse du devenir de 56 046 étudiants inscrits en 2015-2016 dans l'une d'elles. Le choix est fait de suivre les parcours en licence et en master puisque l'abandon précoce évoque l'idée d'une sortie des études sans obtenir le diplôme visé au moment de l'inscription, quand bien même les conséquences de la sortie sont sans doute différentes selon le niveau (L1, L2 ou L3) et la nature du diplôme (licence ou master). Par ailleurs, l'analyse préalable des données administratives SISE laissait entrevoir une forte propension des inscrits en cursus master à interrompre leur formation avant l'obtention du diplôme préparé. Ce premier constat a conforté le choix d'inclure les masters dans l'analyse.

Avant de s'attacher à identifier les trajectoires étudiantes, il convient de décrire les caractéristiques de notre échantillon. En 2015-2016, 56 406 étudiants sont inscrits dans les trois universités membres de la ComUE d'Aquitaine, en cursus DUT, licence et master. Les filles y sont plus nombreuses (57,5 % des inscrits) et un tiers des inscrits (33 %) est enfant de cadres ou de professions intellectuelles supérieures tandis que 17 % sont des enfants d'employés et 10 % enfants d'ouvriers. Outre l'inégale répartition des inscrits selon l'origine sociale, on note que les origines sociales les plus représentées sur les bancs de l'université sont encore aujourd'hui[12] les moins présentes dans la population en âge d'être active. Les enfants d'artisans, commerçants et chefs d'entreprise ainsi que ceux de cadres et professions intellectuelles supérieures sont fortement surreprésentés à l'université comparativement au poids de ces catégories socioprofessionnelles dans la population française. Ces deux catégories représentent respectivement 9,5 % et 33 % des inscrits contre seulement 3,5 % et 9,2 % de la population (+6 et +24 points). Les enfants d'agriculteurs exploitants, de professions intermédiaires et d'employés sont également légèrement surreprésentés parmi les inscrits, respectivement 2,3 %, 15,7 % et 17,1 % des inscrits contre 0,8 %, 14,1 % et 16,3 % de la population française (+1,5, +1,6 et +0,8 points). À l'inverse, les enfants d'ouvriers sont sous-représentés à l'université. Ils représentent 9,8 % des inscrits contre 12,4 % de la

11. Bien qu'arbitraire, ce délai englobe les réorientations après le premier semestre et les réinscriptions après deux semestres.
12. Ce constat a déjà été pointé en 1964 par Pierre Bourdieu et Jean-Claude Passeron dans *Les héritiers*.

population (-2,6 points). C'est également le cas des enfants de retraités et des autres inactifs, qui représentent respectivement 7,1 % et 5,6 % des inscrits contre 26,9 % et 16,7 % de la population française[13]. Par ailleurs, il s'agit d'une population relativement jeune puisque trois

Tableau 2. **Caractéristiques sociodémographiques des inscrits en 2015-2016 et répartition par cursus**

				Répartition par cursus en %			
		Effectifs	% dans la population*	Cursus licence	Cursus master	Cursus DUT	CPGE
Ensemble des inscrits		56 406	100	63,4	25,2	9,1	2,3
Sexe	**Hommes**	24 000	42,5	61,2	23,8	12,2	2,7
	Femmes	32 406	57,5	65,0	26,2	6,7	2,0
Nationalité	**Français**	52 469	93,0	64,0	24,1	9,5	2,4
	Étrangers	3 937	7,0	55,5	39,8	3,9	0,8
PCS	**Agriculteur exploitant**	1 216	2,3	60,2	26,3	10,9	2,5
	Artisan, commer., chef d'entreprise	5 007	9,5	65,7	22,4	9,0	2,9
	Cadre et prof. int. sup.	17 317	33,0	62,3	23,8	10,0	3,8
	Prof. intermédiaire	8 239	15,7	66,4	21,1	10,4	2,1
	Employé	8 990	17,1	68,8	19,5	10,2	1,5
	Ouvrier	5 123	9,8	68,5	21,6	8,8	1,1
	Inactif	2 924	5,6	70,1	22,2	6,8	0,9
	Retraité	3 726	7,1	53,4	39,7	5,6	1,3
	Non renseigné	3 864	–	–	–	–	–
Académie d'obtention du baccalauréat	**Bordeaux**	36 737	65,8	69,0	18,5	10,0	2,5
	France métro. (hors Bordeaux)	14 431	25,8	51,5	37,4	8,8	2,3
	DROM COM	1 996	3,6	66,3	27,8	4,5	1,5
	Étranger	2 709	4,8	51,3	44,3	3,8	0,7
	Non renseigné	533	–	–	–	–	–
Type de bac	**Général**	45 949	81,5	63,6	25,6	8,1	2,7
	Technologique	6 291	11,2	62,7	17,3	19,2	0,8
	Professionnel	1 784	3,2	85,7	7,7	6,7	0,0
	Dispense	2 382	4,2	45,7	51,2	3,0	0,0

** % calculés à partir des observations valides.*
Lecture : parmi les 56 406 étudiants inscrits en 2015-2016 dans l'une des trois universités de la ComUE, 63,4 % sont en cursus Licence.
Sources : SISE 2015-2016.

13. Source : *POP6 V2 – Population de 15 ans ou plus par sexe, âge et catégorie socioprofessionnelle en 2016*, France entière, Insee, RP2016 exploitation complémentaire, géographie au 01/01/2019.

étudiants sur quatre ont moins de 25 ans et seuls 5,6 % des inscrits sont âgés de 30 ans et plus. Enfin, 66 % des inscrits ont obtenu leur baccalauréat dans l'académie de Bordeaux et 7 % sont de nationalité étrangère (tableau 2).

3. Parcours d'étudiants et causes de l'abandon

Le tableau 2 atteste de l'hétérogénéité des publics à l'université. Même si cette hétérogénéité est documentée par ailleurs, il n'est pas inutile d'en dessiner les grands traits, d'autant qu'ils serviront à construire le tableau 3 ci-dessous. La lecture du tableau 2 par niveau et filière fait remarquer que la répartition des inscrits n'est pas indépendante de trois facteurs. En premier lieu, l'orientation genrée des publics est particulièrement marquée. Les femmes sont surreprésentées en licence et en master alors qu'elles sont sous-représentées dans les cursus DUT et CPGE. En outre, d'importants écarts sont à noter entre disciplines. Tandis que les femmes sont nombreuses en lettres et sciences humaines, elles le sont nettement moins en sciences fondamentales et appliquées. En deuxième lieu, les enfants de cadres et des professions intellectuelles supérieures sont très majoritaires parmi le public étudiant (33 %). En troisième lieu, l'origine scolaire permet de pointer une autre différence remarquable : 81,5 % des inscrits sont titulaires d'un baccalauréat général alors qu'ils ne sont que 3,2 % diplômés d'un baccalauréat professionnel. Considérés ensemble, ces facteurs nuancent l'image d'une université que la massification aurait diversifiée. Le tableau 2 rappelle que l'université est un espace sélectif et hiérarchisé.

Les données de l'enquête permettent de connaître le devenir des étudiants en 2016-2017[14]. Leur parcours décrit plusieurs situations : une poursuite d'études, un redoublement, une réorientation, une sortie diplômée, une sortie avant l'obtention du diplôme préparé lors de l'inscription en 2015-2016 (tableau 3).

14. Pour des raisons de suivi et d'attrition, l'effectif total passe à 52 839 individus donnant lieu à la construction d'une seconde base représentant 94 % de la base initiale. De plus, 3 569 situations sont inconnues dans notre étude, soit environ 6,3% de l'effectif total. Ces cas sont exclus de l'ensemble de nos calculs. Il peut toutefois être intéressant de poser certaines hypothèses sur ces cas afin de tester la variabilité de nos résultats. Une première hypothèse peut consister à supposer que 100 % des non-répondants sont sortis sans diplôme (exclusion totale tant d'un point de vue universitaire que statistique). Dans ce cas, l'estimation du taux de sortie sans diplôme serait plus que doublé par rapport à celui calculé tableau 2, soit 11,1 %. Si on retient, une hypothèse intermédiaire de 50 %, le taux de sortie est d'environ 8 %. Enfin, si on retient une hypothèse basse de 25 %, le taux est seulement de 6,3 %.

Tableau 3. **Devenir en 2016-2017 des étudiants inscrits en 2015-2016**

	Effectifs	%
Poursuite d'études	26 384	49,9
Redoublement	9 754	18,5
Réorientation	6 058	11,5
Sortie diplômée	7 933	15
Sortie sans diplôme	2 710	5,1
Total	**52 839**	**100**

Lecture : 5,1 % des étudiants inscrits en 2015-2016 dans l'un des trois universités de la ComUE sont en sortie sans diplôme en 2016-2017.
Sources : SISE 2015-2016, SISE 2016-2017, Enquête sortants (ComUE d'Aquitaine).

Parmi les étudiants dont la situation est connue en 2016-2017, la moitié est réinscrite dans une formation de niveau supérieur. Parmi les réinscrits, 12 % ont changé de champ disciplinaire une année après leur première inscription[15]. Les étudiants réinscrits dans une formation de niveau identique à celle suivie en 2015-2016 sont des redoublants. Ils représentent 18,5 % des situations connues, et certains ne se sont pas réinscrits dans la même filière : 14 % ont changé de discipline. La « réorientation » concerne les étudiants réinscrits dans une formation de niveau inférieur à celle suivie en 2015-2016 et les étudiants réinscrits dans une formation conduisant à un autre type de diplôme (BTS, écoles sélectives). Elle concerne 11,5 % des inscrits[16]. Les étudiants diplômés non réinscrits en formation l'année suivante[17] représentent 15,1% des inscrits de 2015-2016. Au regard de notre objet, la dernière situation est la plus intéressante : parmi l'ensemble des inscrits en 2015-2016, peu ont quitté l'université avant d'avoir obtenu le diplôme associé à leur inscription. Les abandons purs ne représentent que 5,1 % de l'ensemble des inscrits, soit 2 710 individus. De toute évidence, ce

15. Le secteur disciplinaire est la variable la plus agrégée de la nomenclature SISE. Elle comporte 7 disciplines : Sciences, Staps, Droit, Économie-Aes, Iut secondaire, Iut tertiaire, Lettres, Sciences humaines, Santé.
16. Parmi eux, 21 % se sont inscrits dans une école sélective (IEP, ingénieur, commerce), 18 % en BTS, 16 % dans une année de préparation aux concours, 13 % dans une formation LMD de niveau inférieur au niveau atteint, 8 % dans une école du secteur social ou paramédical, 5 % en DUT, 4 % dans une formation professionnelle et un peu moins de 2 % dans une formation de l'enseignement secondaire.
17. Cette catégorie regroupe les étudiants diplômés en 2015-2016, non retrouvés dans les fichiers SISE l'année suivante. Cela ne signifie pas que tous auraient quitté le système de formation, mais que certains auraient poursuivi leurs études dans des établissements non recensés par le SISE. Dans la mesure où l'enquête porte principalement sur les sortants non-diplômés, le devenir des sortants diplômés est hors champ. Il se peut donc que la part des sortants diplômés soit surévaluée au regard de la part des poursuites d'études et des réorientations.

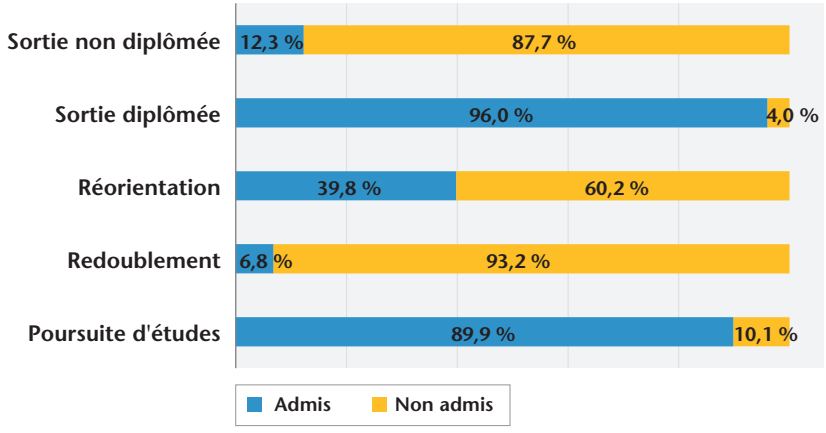
taux nuance la théâtralisation du drame de l'échec à l'université et de l'abandon des études puisque la proportion d'étudiants quittant l'université avant l'obtention du diplôme préparé et ne se réinscrivant dans aucune formation l'année suivante est minime au regard de l'ensemble des inscrits. Cela confirme aussi l'intérêt de proposer une photographie du phénomène à un instant T, là où d'ordinaire les instruments de mesure se fondent sur des suivis de cohorte d'une partie des étudiants. Or, l'importance donnée au phénomène varie nécessairement selon la population de référence retenue. Ramenées à l'ensemble de la population sortante (10 643 inscrits), les sorties anticipées représentent un quart des sorties (25,4 %), c'est-à-dire une part comparable aux données produites par l'enquête *Génération* du Céreq. Rapportée à l'ensemble des inscrits (sortants et non sortants), la part des étudiants n'ayant pas obtenu le diplôme préparé et non réinscrits en formation est marginale. Par ailleurs, l'abandon ne va pas de pair obligatoirement avec une absence de réussite aux examens puisque sur 100 sorties non diplômées, 12 environ interviennent malgré la validation de l'année[18] (graphique 1).

De façon logique, les étudiants ayant validé leur année sont surreprésentés parmi ceux engagés dans une poursuite d'études tandis que les non-admis (au sens administratif du terme)[19] sont surreprésentés parmi les redoublements, les réorientations et les sorties anticipées. Toutefois, des comportements atypiques invitent à nuancer cette relation. En effet, 10 % des étudiants n'ayant pas validé leurs examens poursuivent leurs études l'année suivante dans un niveau supérieur tandis que 39 % des admis se réorientent, que 7 % environ redoublent et surtout que 12 % des étudiants qui interrompent leurs études avant l'obtention du diplôme préparé ont validé leurs examens. Autrement dit, des étudiants en réussite sont susceptibles d'arrêter leurs études. Cela plaide en faveur du constat dressé par Orange et Bodin (*ibid.*) selon lequel l'importance des circulations entre cursus casse la représentation tubulaire traditionnellement associée aux filières universitaires.

18. On voit que 7 % environ des redoublants sont des admis. Cela s'explique par la stratégie d'étudiants visant des masters sélectifs (comme c'est le cas en psychologie) et qui préfèrent redoubler malgré leur admission aux examens pour présenter un meilleur dossier l'année suivante. Par ailleurs, 4 % des sortants diplômés n'ont pas été admis aux examens, mais ils sont titulaires d'un autre diplôme. C'est le cas des étudiants d'une licence professionnelle par exemple qui échouent à leur master.

19. Il est à noter qu'être non admis n'est pas imputable directement à un échec, certains étudiants ayant décidé de ne pas passer tout ou une partie de leurs examens pour différentes raisons qu'il n'a pas été possible de connaître.

Graphique 1. **Trajectoires en 2016-2017 des inscrits en 2015-2016 selon leur réussite aux examens**



Lecture : Sur 100 admis à l'issue des épreuves d'examen de la filière d'inscription, 90 poursuivent leurs études dans cette filière.
Source : SISE 2015-2016, SISE 2016-2017. Champ : inscrits 2015-2016 des trois universités membres de la ComUE d'Aquitaine, dut, licence, master (52 839 observations valides).

Le caractère marginal du problème ne doit pas priver l'analyse d'une observation plus fine de l'abandon précoce des études supérieures, d'autant qu'une première analyse de l'échantillon démontre que loin de constituer un public homogène, les caractéristiques et parcours des individus agrégés dans cette catégorie varient fortement. Outre les interruptions d'étude liées au décès de l'étudiant (10 observations), les sortants sont à part plus ou moins égale des inscrits à l'université n'ayant jamais assister à aucun cours (ce sont les « étudiants fantômes »), des persévérants qui finissent par interrompre leurs études au cours du second cycle, des sortants au cours du premier cycle mais déjà diplômés de l'enseignement supérieur ou des sortants au cours du premier cycle sans diplôme de l'enseignement supérieur. Ces derniers sont des décrocheurs proprement dit. Parmi les 2 710 sortants, 8 % déclarent n'avoir jamais assisté à aucun cours. Soulignons ici le faible poids sur les sorties de ces « étudiants fantômes », dont la présence à l'université est uniquement administrative, dont seulement 13 % d'entre eux déclarent s'être inscrits pour les avantages pécuniaires et sociaux du statut étudiant. Pour les autres, leur absence relève davantage d'un empêchement lié à des contraintes professionnelles, matérielles ou personnelles (tableau 4).

Tableau 4. **Motifs exprimés par les étudiants n'ayant suivi aucun cours après leur inscription en 2015-2016 (en %)**

Mon activité professionnelle ne me permettait pas de suivre la formation	34,9
Une autre raison a modifié mon projet d'études	22,9
J'ai été reçu·e dans une autre formation	15,6
Je me suis inscrit·e pour bénéficier du statut étudiant	13,3
La formation était trop éloignée de mon lieu de résidence	7,3
Mon état de santé ne m'a pas permis de suivre la formation	3,7
Les frais de la vie étudiante (logement, repas, *etc.*) étaient trop élevés	1,4
L'état de santé d'une personne de mon entourage ne m'a pas permis de suivre la formation	0,9
Total	**100**

Lecture : parmi les étudiants n'ayant suivi aucun cours après leur inscription en 2015-2016, 35 % justifient leur absence aux cours par une activité professionnelle menée en parallèle.
Source : Enquête ComUE, population de référence : 218 répondants). La question est : « Pour quelle raison principale n'êtes-vous jamais allé·e en cours ? ».

L'échantillon permet aussi d'identifier comme sortants, 1 010 étudiants déjà titulaires d'un diplôme d'enseignement supérieur, soit plus d'un sortant sur trois. Parmi eux, 274 étaient pourtant inscrits en premier cycle (cursus DUT ou licence). Il s'agit donc de « cumulards » puisqu'ils sont déjà détenteurs d'un titre universitaire et qu'ils se réinscrivent dans une formation de niveau inférieur au diplôme dont ils sont déjà titulaires. Plus de la moitié d'entre eux déclare être diplômée d'un BTS ou d'un DUT, un quart est titulaire d'une licence générale ou professionnelle et 9 % sont diplômés d'un niveau supérieur (master ou doctorat). Les « sortants persévérants », à savoir les inscrits en second cycle ayant interrompu leurs études avant l'obtention du master représentent quant à eux 27,1 % des sorties (736 sortants). Au total, parmi les 2 710 étudiants en abandon des études, seuls 1 472 (soit 54 %) répondent à l'ensemble des critères communément admis du décrochage, à savoir quitter l'enseignement supérieur sans n'y avoir obtenu aucun diplôme malgré une présence aux cours. Ces décrocheurs sortis non diplômés en 2015-2016 représentent 3,8 % de l'ensemble des inscrits en cursus DUT et licence la même année.

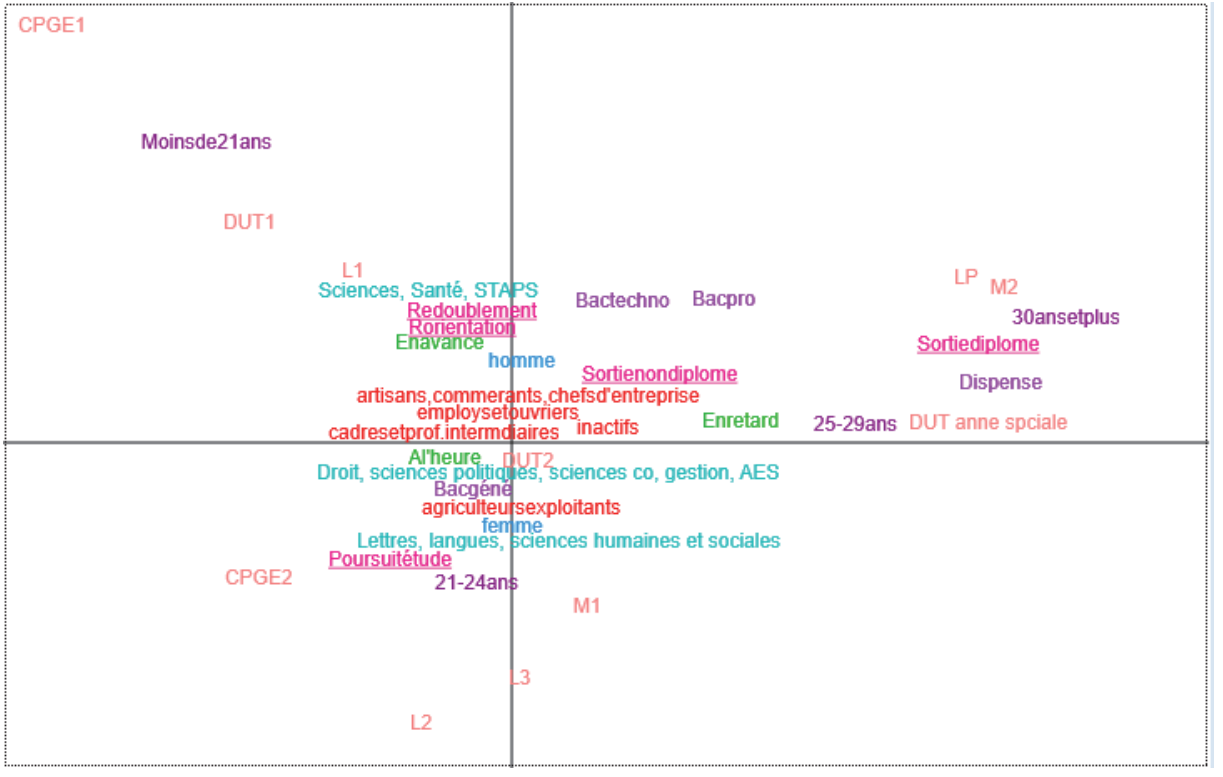
Cette première approche quantitative des sorties sans diplôme pointe d'abord la diversité des trajectoires menant à une interruption anticipée des études supérieures, interruption non réductible au premier cycle universitaire (plus d'un quart des sorties intervient en master). Elle permet ensuite de relativiser l'ampleur du problème. Elle

questionne enfin la pertinence des critères retenus par l'action publique pour cibler les publics. En effet, ce n'est sans doute pas tant la proportion de sortants, somme toute faible, qui fait problème que le parcours des étudiants dans l'espace universitaire. Il s'avère que les parcours des étudiants en poursuite ou en arrêt des études varient en fonction d'une part des cursus et des filières, d'autre part des caractéristiques des étudiants. De ce point de vue, l'analyse des correspondances multiples construites à partir de plusieurs variables socio-démographiques, scolaires et universitaires pointe dès l'abord des différences importantes selon le critère retenu (graphique 2).

Ce plan factoriel, dont le premier axe (horizontal) apporte 15,20 % de l'information et le deuxième axe (vertical) 8,1 %, livre plusieurs renseignements. Le premier est la présence d'un *effet Guttman* révélé par la lecture globale du plan factoriel. Cet effet est représenté par la trajectoire parabolique des niveaux d'études (depuis la CPGE1 aux M2 et LP). Il est dû à l'opposition sur l'axe horizontal des individus extrêmes alors que l'axe vertical oppose les individus moyens aux deux extrêmes. S'il s'avère que cet effet est habituel dans le cas de variables temporelles (ici le niveau des études), il demeure intéressant dans l'étude des parcours d'études puisqu'il oppose sur l'axe horizontal la première année de licence et de CPGE aux dernières années d'études, tandis que l'axe vertical oppose les groupes de niveau d'études extrêmes (première et dernière année) aux groupes d'années intermédiaires. Outre ce résultat, cinq éléments placés le long de la parabole méritent une attention particulière.

Le premier est la proportion initialement assez importante des étudiants parmi les moins âgés qui se réorientent ou redoublent. Cette proportion décroît à mesure que les étudiants sont plus âgés (21-24 ans). À cet âge, il s'agit d'étudiants en poursuite des études. La courbe croît à nouveau, exprimant l'importance des étudiants parmi les plus âgés qui sortent diplômés de l'enseignement supérieur. Le deuxième est la place particulière des étudiants en CPGE de première année et qui sont parmi les étudiants les moins âgés. On suppose que cela est dû à l'excellence de leur parcours scolaire, au même titre d'ailleurs que les étudiants en DUT de première année. On les retrouve ensuite en poursuite d'études la deuxième année, à l'instar des étudiants en L2, L3 et M1 des Sciences humaines et sociales, Droit, Sciences politiques et Sciences économiques. Le troisième concerne les redoublements et les réorientations qui d'abord interviennent plutôt en L1 dans les filières Sciences, Santé (Paces) et Staps, ensuite sont plutôt le fait d'étudiants

Graphique 2. **Analyse des correspondances multiples des parcours en 2016-2017 (inscrits 2015-2016)**



Source : Enquête Sortants – ComUE d'Aquitaine.

par le passé en réussite scolaire. Ayant obtenu leur baccalauréat avant l'heure, ce temps gagné est un atout pour rejouer un parcours universitaire sans accuser un retard sur l'agenda universitaire. Le quatrième est la réussite en master 2e année et en licence professionnelle des étudiants plus âgés. On suppose ici qu'il s'agit plutôt d'étudiants étrangers majoritairement dispensés du baccalauréat ainsi que d'étudiants en reprise d'études. Le quatrième renseignement est le poids des conditions économiques et du passé scolaire sur la sortie sans diplôme. Celle-ci semble concerner plutôt des hommes, titulaires d'un baccalauréat professionnel ou technologique, qui ont redoublé durant leur scolarité, dont les parents sont d'une catégorie sociale défavorisée. De ce point de vue, cette information conforte les enquêtes sur l'échec à l'université. Enfin, le cinquième est la distinction entre les individus qui restent dans l'enseignement supérieur (poursuite d'études, redoublement, réorientation) et les individus qui sortent (diplômés ou non). Les premiers sont les plus jeunes (moins de 21 ans ; 21 24 ans), dans les premiers niveaux de licence ou DUT, qui sont « à l'heure » et titulaires d'un bac général, restent dans l'enseignement. Les seconds sont titulaires d'un bac technologique ou professionnel. Ils sont parmi les plus âgés et « en retard » sur leur parcours scolaire antérieur.

Cette description interroge la figure du décrocheur mise en scène dans le débat public, à savoir celle d'un nouvel entrant à l'université, peinant à s'affilier, sorte de passager clandestin sans projet qui quitterait l'université par défaut d'investissement. Au contraire, les sorties sans diplôme apparaissent davantage comme le fait d'étudiants ayant déjà passé plusieurs années au sein du cursus universitaire. Plus largement, ces éléments confirment que la sortie sans diplôme de l'enseignement supérieur varie selon les facteurs sociodémographiques et scolaires des étudiants ainsi que la filière et l'année d'études. En conséquence de quoi, il importe d'affiner l'analyse en observant la part explicative de chaque variable sur le phénomène. À cette fin, un modèle de régression logistique permettant d'observer *toute chose égale par ailleurs* l'effet des facteurs sur la sortie sans diplôme a été construit par introduction de plusieurs variables dans le modèle (tableau 5). Le modèle ajoute aux caractéristiques sociodémographiques (le sexe, l'âge, la PCS du parent de référence, et la nationalité) le type de bac, l'âge à l'obtention du bac, le niveau et la filière d'inscription au moment de la sortie.

Tableau 5. **Probabilité des étudiants inscrits en 2015-2016 d'être en sortie anticipée en 2017-2018**

		Sig.	Exp(B)	IC 95 % Inférieur Supérieur
Discipline	**Droit**	***	1,8	1,5
	Aes	***	2,5	1,9
	Langues	***	3	2,4
	Lettres et arts	***	2,5	1,9
	Staps	***	2,2	1,6
	Sciences fondamentales	**	1,4	1,1
	SHS	***	2,5	2,0
	Éco et gestion	***	2	1,5
	SVT	***	1,8	1,4
	Santé (réf.)			
Niveau	**L1**	***	7,6	6,2
	L2	***	2,5	2,0
	L3	**	1,3	1,0
	LP	**	1,5	1,1
	DUT1	***	2,8	2,0
	DUT2	ns		
	M1	***	3,8	3,1
	M2 (réf.)			
PCS	**Agriculteur exploitant**	ns		
	Artisan, commerçant, chef d'ent.	ns		
	Cadre et PI	***	0,8	0,7
	Inactif	ns		
	Employé Ouvrier (réf.)			
Type de bac	**Bac général**	***	0,3	0,3
	Bac techno	***	0,6	0,5
	Dispense	***	0,3	0,2
	Bac Pro (réf.)			

Tableau 5(suite). **Probabilité des étudiants inscrits en 2015-2016 d'être en sortie anticipée en 2017-2018**

		Sig.	Exp(B)	IC 95 % Inférieur Supérieur
Âge	***Moins de 21 (réf.)***			
	21-24	***	2,0	1,8
	25-29	***	4,6	3,8
	30 et +	***	7,0	5,5
Parcours	**En avance**	ns		
	À l'heure	***	0,8	0,8
	En retard (réf.)			
Nationalité	***Français (réf.)***			
	Étranger	***	0,7	0,6
Sexe	***Femme (réf.)***			
	Homme	***	1,2	1,1

Seuils de significativité : *** <.000, ** <.05. Validité du test de Hosmer-Lemeshow. 3 % de résidus (positifs ou négatifs) supérieurs à 2 écarts-types, 0 % de résidus supérieurs à 3 écarts-types. Indicateur de la qualité du modèle par la courbe ROC : supérieur à 0.7.
Champ : Ensemble des inscrits 2015-2016 en licence, DUT et master, hors CPGE et l'année spéciale de DUT (50 129 observations valides). Source : Enquête sortants (ComUE d'Aquitaine)
Lecture : Un étudiant inscrit en Langues a 3 fois plus de risque d'être en sortie anticipée qu'un étudiant inscrit en Santé.

Trois résultats ressortent de ce modèle. Le premier résultat est la confirmation de la faible probabilité d'être en sortie précoce des enfants dont le parent de référence a une position de cadre ou de profession intellectuelle. Comparativement aux enfants d'origine sociale défavorisée (c'est-à-dire des enfants d'employés ou d'ouvriers), l'origine sociale favorisée protège du risque de sortie précoce. En outre, le fait d'être titulaire d'un bac général comparativement à un bac professionnel protège d'une sortie précoce, tout comme le fait de n'avoir jamais redoublé. Somme toute, ces constats vont dans le sens des conclusions des recherches en France sur la meilleure réussite dans l'enseignement secondaire et l'enseignement supérieur selon l'environnement familial et la trajectoire scolaire. Le deuxième résultat est l'effet de la nationalité sur la sortie précoce. On note que les étudiants étrangers, comparativement aux étudiants de nationalité française, ont un risque de 30 % moins élevé de quitter précocement l'enseignement supérieur. Ce résultat mériterait d'être approfondi, car il va à rebours des conclusions des recherches en France qui mettent en évidence

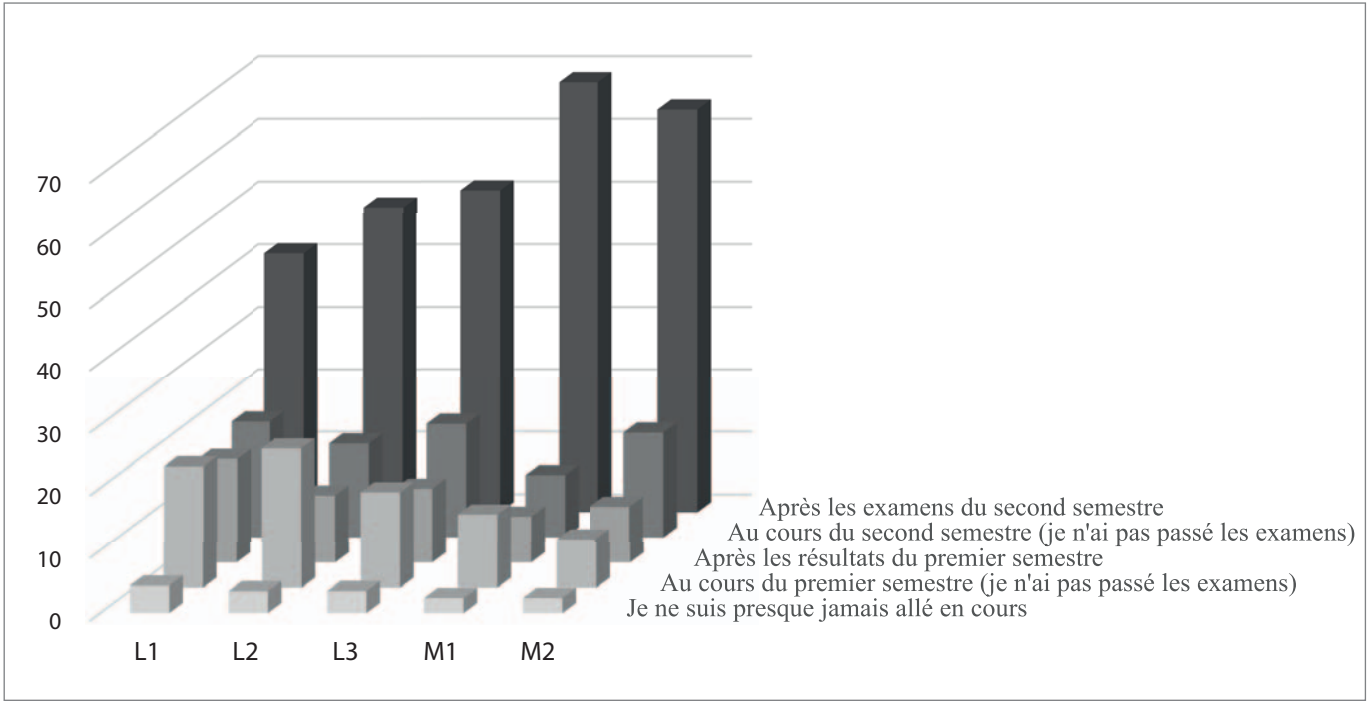
l'absence d'effet significatif de la nationalité sur la réussite étudiante (Duguet, Lambert-Le Mener, Morlaix, 2016). Sur ce plan, notre résultat réclamerait une analyse des parcours des étudiants étrangers dans l'enseignement supérieur à partir de leur origine sociale, leur origine géographique et le niveau d'éducation de leurs parents (Ichou, 2018). Il invite également à observer ces parcours à la lumière des obligations légales conditionnant les cursus de ces étudiants dans l'enseignement supérieur français (conditions de renouvellement des titres de séjour, législation récente relative aux frais différenciés de scolarité, *etc.*). Le troisième résultat concerne la filière et le niveau des études. Le détail des odds ratios montre d'abord la surexposition des étudiants de L1 au risque de sortie anticipée. Le fait d'être en première année de licence multiplie environ par 8 le risque de sortie précoce plutôt que d'être inscrit en M2. De ce point de vue, le consensus sur la lutte contre le décrochage à l'université et l'urgence de traiter le problème au niveau de la licence sont pertinents. Cependant, l'attention portée sur la licence, en particulier la première année, ne doit pas occulter l'importance du risque de décrochage en première année de master. Il s'avère qu'après la première année de licence, la première année de master représente un risque élevé de sortie précoce. Celle-ci multiplie le risque d'une sortie anticipée par 4 environ par rapport à la deuxième année de master qui est l'année de référence. Cela signifie que le traitement du décrochage n'est pas réductible à l'entrée à l'université, et qu'il s'agit d'un problème plus large d'accès aux diplômes universitaires. Autrement dit, les sorties anticipées de formation relèvent moins d'une spécificité du premier cycle universitaire que d'un effet de seuil indissociable de la temporalité d'études puisque le risque en licence diminue entre la première et la troisième année et qu'il remonte en première année de master. De ce point de vue, l'inscription en master représenterait pour certains une façon de conserver une inscription en attendant de trouver un emploi, à l'instar de l'effet d'une stratégie d'attente évoquée *supra* au sujet des étudiants des inscrits en Licence.

La sortie précoce a donc un double étalement dans le temps. D'abord important la première année, le risque perdure les deux années suivantes puis reprend de la vigueur en master (tableau 5). L'observation de la temporalité dans laquelle surviennent ces sorties (graphique 4) permet de déconstruire un peu plus la représentation du décrochage en tant que phénomène concentré sur la première année de licence, en particulier sur les premiers mois suivant la rentrée universitaire. Parmi les 2 388 sortants déclarant être allé au moins une

fois en cours et ayant précisé la période de leur sortie, un peu plus de la moitié (50,8 %) a suivi la totalité de l'année universitaire avant d'interrompre sa formation. Les abandons en cours de premier semestre ne représentent « que » 16 ,8 % de l'ensemble des sortants (on compte aussi 12,9 % de sortants après les examens du premier semestre). Cette proportion varie significativement en fonction du niveau d'études. En effet, le taux de sortie au cours du premier semestre passe à 19,4 % chez les étudiants de L1 et 22,2 % chez les étudiants de L2, puis retombe à 15,3 % en troisième année de licence et à 11,7 % en master 1. À l'inverse, les sorties qui surviennent après le passage des examens du second semestre sont davantage le fait des sortants de master 1. Parmi les sorties anticipées enregistrées en master 1, 68,7 % surviennent après les examens du second semestre, contre 51,4 % en L3, 48,7 % en L2 et 41,4 % en L1. Quoi qu'il en soit, ces résultats sont loin d'abonder dans le sens d'un abandon massif au cours des premiers mois succédant l'entrée à l'université. Ainsi, les 273 étudiants inscrits en L1 et ayant déclaré avoir interrompu leur formation au cours du premier semestre représentent 11,4 % de l'ensemble des 2 388 sortants.

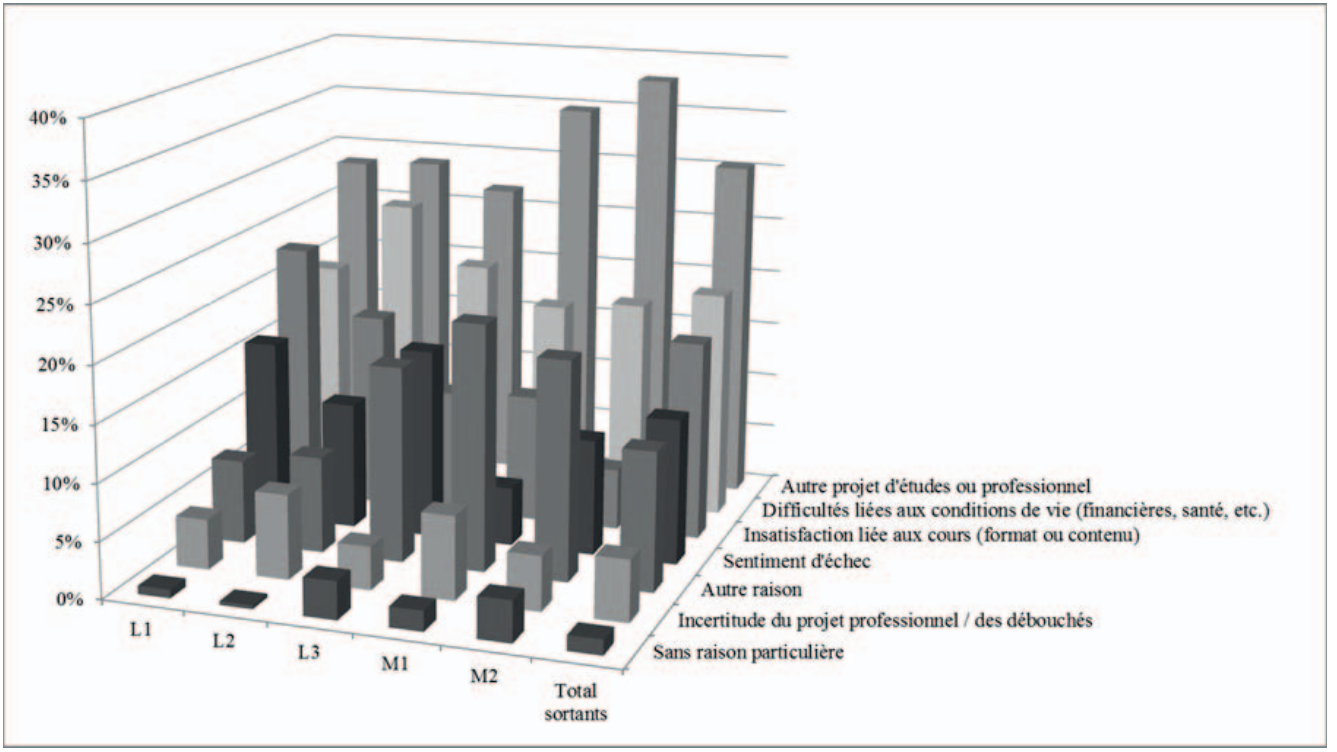
Si la sortie précoce est irréductible au premier cycle universitaire (rappelons que les inscrits de master représentent plus d'un sortant sur quatre), la temporalité différenciée dans laquelle surviennent ces sorties en fonction des niveaux d'études suggère que les parcours ne s'en trouvent pas affectés de la même manière, ni pour les mêmes raisons. Quel que soit le niveau d'études considéré, le premier motif d'interruption exprimé par les sortants est la poursuite d'un nouveau projet d'études ou professionnel (graphique 4). Ce motif est davantage mobilisé par les sortants de master 1 (34,8 %) et de master 2 (38 %) que par les sortants de licence (28,5 % des L1). Le second motif de sortie le plus exprimé varie en fonction des niveaux d'études. L'insatisfaction liée aux contenus ou aux formats des cours est la cause de 23,1 % des sorties chez les étudiants de L1 quand les conditions de vie semblent davantage affecter le parcours des L2 (26,2 %) et des L3 (21,1 %). Pour les masters 1, l'item « autre raison » recueille 21,7% des réponses, et correspond dans la majorité des cas à l'échec des candidatures pour intégrer un master 2. Bien que plus élevé chez les étudiants de licence, le sentiment d'échec arrive en quatrième position des motifs ayant conduit à l'interruption d'études, derrière l'engagement dans un nouveau projet, les difficultés liées aux conditions matérielles d'existence et l'insatisfaction liée aux contenus ou aux

Graphique 3. **Moment de survenue de la sortie sans diplôme (en %)**



Champ : Ensemble des sortants 2015-2016 déclarant être allé au moins une fois en cours (hors CPGE).
Lecture : Parmi les étudiants non diplômés inscrit en L1 en 2015-2016 et non réinscrits en 2016-2017, 4,3 % ont interrompu leurs études avant d'avoir passé les examens de fin du premier semestre.
Source : Enquête sortants (ComUE d'Aquitaine).

Graphique 4. **Premier motif de sortie exprimé selon le niveau d'étude (en %)**



Champ : Ensemble des sortants 2015-2016 déclarant être allé au moins une fois en cours (hors CPGE).
Lecture : Parmi les étudiants non diplômés inscrit en L1 en 2015-2016 et non réinscrits en 2016-2017, 28,5 % ont interrompu leurs études pour un autre projet d'études ou professionnel.
Source : Enquête sortants (ComUE d'Aquitaine).

formats d'enseignement. De même, l'incertitude liée au projet professionnel ou au débouché de la formation s'avère un motif peu exprimé par les sortants (5,4 % en moyenne). Ces données font apparaître des divergences dans les motifs pouvant conduire à une interruption des cursus en fonction des niveaux d'études. Pourtant, des mécanismes similaires sont notables, en particulier la propension à interrompre son cursus pour s'engager dans une nouvelle voie. Ce constat s'oppose un peu plus à l'image répandue de l'étudiant décrocheur sans projet, égaré et désaffilié. Ces résultats indiquent également que la sortie sans diplôme est un processus qui s'étale de la licence jusqu'au master, et qu'elle intervient avant ou après les examens du premier et du second semestre. De sorte que la croyance selon laquelle un abandon massif interviendrait les premiers temps de l'entrée à l'université doit être revue à l'aune des sorties sans diplôme et non suivies d'une réinscription qui surviennent davantage dans un temps long et de façon silencieuse, en particulier après les examens du second semestre (graphique 3 et graphique 4).

* * *

Depuis une lecture cognitive et normative du décrochage universitaire en France jusqu'aux résultats de notre enquête, un écart est creusé entre la dramatisation du problème et les facteurs qui l'objectivent. De ce point de vue, deux résultats principaux ressortent de notre enquête en région Aquitaine. Le premier est que les sorties sans diplôme de l'enseignement supérieur sont marginales au regard de l'ensemble des étudiants poursuivant un cursus universitaire. Le deuxième est que le décrochage à l'université est un processus qui s'étale du premier cycle au deuxième cycle, et qu'à ce titre il est irréductible à la première année de Licence. Des analyses similaires à la nôtre mériteraient d'être conduites dans l'ensemble des régions françaises à des fins de comparaison et d'estimation exhaustive au niveau national. La comparaison permettrait de vérifier si toute spectaculaire que paraisse la désertion des amphithéâtres au cours du premier semestre universitaire, la majorité des sortants non réinscrits l'année suivante ont quitté l'enseignement supérieur soit après le premier semestre, soit après avoir effectué la totalité de l'année universitaire. De plus, elle permettrait de confirmer ce dont témoigne notre enquête, en l'occurrence que le risque de sortie sans diplôme est irréductible à un public d'étudiants égarés et désaffiliés, mais aussi que tous niveaux

confondus l'interruption de formation reste largement motivée par la volonté de s'engager dans un nouveau projet. Bien que nos résultats confirment le risque de sortie sans diplôme plus important la première année universitaire, ils nuancent l'idée d'une spécificité propre aux nouveaux entrants puisque les étudiants inscrits en première année de master connaissent aussi un risque élevé de sortie anticipée. Par ailleurs, le processus varie dans le temps sans disparaître pour autant, ce qui casse l'image construite par les politiques publiques du décrochage comme un problème spécifique à la première année de licence, en particulier les premiers mois suivant l'entrée à l'université lorsque le processus de désaffiliation battrait son plein (Coulon, *ibid.*). Les sorties n'intervenant pas uniquement les premiers mois suivants la rentrée universitaire, cela vient nuancer, sans les contredire, la nature et la cible des dispositifs de lutte contre le décrochage à l'université ciblant spécifiquement les étudiants en première année.

Plus avant, nos résultats posent la question de la nature des interventions pédagogiques dans la construction des parcours d'études des étudiants. Il s'avère que le critère d'efficacité des dispositifs de lutte contre le décrochage à l'université se fonde sur la diminution du taux d'échec aux examens de première année. Or, l'échec peut conduire à une réorientation, à la suite de quoi il n'est plus un échec si elle est potentiellement bénéfique à l'étudiant. En outre, la sortie sans diplôme est un processus qui s'étale sur plusieurs années et qui varie en fonction de la discipline ainsi que des caractéristiques des étudiants et étudiantes. En conséquence, et comme le pointe Garcia (2009, 2010), le rôle des dispositifs est de garantir une offre de formation suffisamment large et des prestations suffisamment souples pour permettre les conditions de la réussite, quelles que soient l'année d'études et la filière. En dépit de l'ensemble des mesures prises pour éviter les ruptures de parcours d'études supérieures, deux questions connexes restent centrales : celle des inégalités sociales et celle d'une inflation de dispositifs qui ratent leur cible.

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BREXIT: WHAT ECONOMIC IMPACTS DOES THE LITERATURE ANTICIPATE?

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The results of the June 2016 referendum in favour of the UK leaving the EU opened a period of huge economic and political uncertainty in the UK, and in the EU27. A large number of official and academic analyses have been published that address the economic impact of different modalities of Brexit. Section 1 analyses possible models for the future UK-EU relationship, from remaining in the single market and in the customs union, to a Free Trade Agreement (FTA) or world trade organization (WTO) rules. Section 1 also discusses the future of UK trade regulations (tariff and non-tariff barriers, trade agreements) and the various channels through which Brexit could have an impact on the UK economy (trade, foreign direct investment (FDI), migration, productivity, fiscal policy). The UK must make a trade-off between ensuring access to the EU market and increasing its regulatory autonomy. Section 2 surveys studies released on the impacts of Brexit, over short- and long-term horizons, under different scenarios, from a soft Brexit to a hard Brexit and a no deal scenario. These studies provide very different results depending on the methods they use and the assumptions they adopt on the future relationship between the UK and the EU27, mainly on how they view the effects of trade openness and regulations on productivity, in level as in growth rate. Studies using gravity models and computable general equilibrium models generally find negative but small effects on UK GDP. Some studies increase these effects by adding the negative impact of a less open UK economy on labour productivity growth, even if Brexiteers want to open the UK to non-EU economies. Others believe that a liberalisation shock could boost output growth, but the UK is already a very liberal economy. The impact of Brexit on the GDP of the EU27 countries is on average 4 to 5 times smaller than on UK GDP, although some countries (Ireland in particular) are more affected. In the shorter term, uncertainty about Brexit has a negative effect on investment and exports, which is partly offset by lower interest rates and exchange rates.

Keywords: Brexit, UK economy, EU membership, Trade agreements.

1. The author would like to thank Henri Sterdyniak for very fruitful discussions, and Sandrine Levasseur and two anonymous referees for their comments. The paper embeds the literature released until July 2019.

The results of the June 2016 referendum in favour of the UK leaving the EU opened a period of huge economic and political uncertainty in the UK, but also in the EU27.

The vote for Brexit was primarily due to political reasons, to the desire to regain national sovereignty, notably not to be subject to the decisions of European institutions or of the European Court of Justice (ECJ), and to be able to control EU workers' inflows. But the vote for Brexit paradoxically brought together the victims of globalisation (workers, fishermen, people living in regions hit by deindustrialisation) wanting more protection and supporters of a liberalisation shock that the EU would have prevented.

Nevertheless, the debate on Brexit, both before the referendum and during the lengthy exit negotiations, focused mostly on economic aspects. For some people, Brexit would have disastrous consequences for the British economy, as it would be deprived of the benefits of single market membership and forced to become less open, leading in the short-term to lower productivity growth and even to lower potential growth. For others, the impact of leaving the single market would be very limited and would be offset both by more openness with non-EU economies and by a liberalisation shock. This article intends to provide a critical review of the various economic analyses published in this debate.[2]

The UK was expected to leave the EU on 29 March 2019, two years after the UK government officially notified its decision to leave. Negotiations were painful, as the UK government had conflicting requirements: taking back control on several issues, such as getting free from EU rules and the jurisdiction of the ECJ, being free to sign trade deals with non-EU countries, and controlling EU workers' inflows into the UK, all while keeping free access to the EU single market. Some British politicians wanted the UK to remain in the single market and the customs union, while others wanted a clear break with the EU27; the UK government had to make a trade-off between keeping access to EU markets and its desire for autonomy in terms of economic standards, social regulations and trade agreements with non-EU countries. EU27 negotiators adopted tough guidelines, stating as a red line that the UK

2. This article focuses on macroeconomic analyses and does not review studies dealing with sector or regional aspects of Brexit.

could not stay in the single market or in the customs union without complying with the four "freedoms" of movement for goods, services, capital and labour. The need to avoid erecting a physical border in Ireland in order to safeguard the Belfast agreement further complicated the negotiations (for a discussion on UK-EU negotiations, see for instance, Mathieu and Sterdyniak, 2017, 2018a,b). In view of the difficulties of these negotiations, an exit without agreement (a "no deal Brexit") appeared possible.

On 14 November 2018, the UK government and EU negotiators agreed on a withdrawal agreement and a political declaration on the future relationship between the UK and the EU27. This included a "backstop" clause: the UK will remain in the customs union until an agreement is reached that avoids a physical border in Ireland. The UK Parliament rejected the two texts, although the political declaration left open several possibilities for the future relationship. The UK Parliament voted against the agreement, against a new referendum on UK membership in the EU, against a no deal Brexit, and against new negotiations where the UK would ask to remain in the customs union. This led Theresa May to resign as leader of the Conservative Party and as Prime Minister. Boris Johnson, her successor since 24 July 2019, succeeded to reopen the negotiations with the EU27. The backstop has been excluded from the new agreement reached by the EU27 and the UK on 17 October 2019. Northern Ireland will be in a complex situation; it will remain in the UK customs union, but will have to remain aligned with a set of EU single market rules. The agreement stipulates that the EU27 and the UK will sign a free trade agreement (FTA) with zero tariffs and quotas, that "robust commitments on a level playing field should ensure open and fair competition". But Boris Johnson failed when he tried to have the agreement approved by the British Parliament. With a view to ending the impasse on Brexit, the Parliament agreed to hold general elections on December 12. Depending on the outcome, the October 2019 agreement would come into force (if the Conservative Party has a majority of seats), new negotiations would be initiated and a referendum would be held to ask voters if they are in favour of the new agreement or of remaining in the EU (if the Labour Party won a majority of seats), or to revoke article 50 (Liberal Democrat proposal), meaning the UK would remain in the EU.

Section 1 analyses possible models for the future UK-EU relationship, ranging from staying in the EU single market and customs union to a Free Trade Agreement (FTA) or a (World Trade Organization) WTO regime. It discusses the future of UK trade regulations (tariffs, non-tariff barriers, trade agreements) and the various channels (trade, FDI, migration, productivity, fiscal policy) through which Brexit could affect the UK economy. Section 2 presents a survey of the studies released on the impact of Brexit, over short- and long-term horizons, under different scenarios, from a soft Brexit to a hard Brexit and a no deal scenario. These studies have very different results depending on the methods they use, on the assumptions they make on the future relationship between the UK and the EU27, and mainly on their view on the impact of trade openness and regulations on productivity, in level as in growth rate. Studies based on gravity models and computable general equilibrium (CGE) models generally find negative but weak effects on UK GDP. In some studies, the effects are amplified by adding the effects of a less open UK economy on labour productivity growth, even if Brexiteers want to open the UK more to non-European economies. Others believe that a liberalisation shock could boost growth, but the UK is already a very liberal economy. The impact on EU27 countries' GDP is on average 4 to 5 times lower than on the UK, although some countries (Ireland in particular) are more affected. In the shorter term, uncertainty about Brexit has a negative effect on investment and exports, which is partly offset by lower interest rates and exchange rates.

1. What model for the future UK-EU relationship?

As an EU member, the UK is part of the single market and hence of the customs union (no intra-EU trade tariffs, extra-EU common tariffs or trade agreements), and the UK also complies with common EU standards and regulations; it respects the four freedoms of movement (goods, services, capital and labour), recognizes the ECJ's jurisprudence, contributes to the EU budget, and takes part in decision-making within the Union.

The prospect of Brexit has opened a wide range of scenarios. However, the UK cannot remain in the single market if it wants to control workers' inflows from the EU into the UK, to no longer be subject to ECJ rulings, to be able to change its regulations and to sign bilateral trade agreements with third countries.

The scenario closest to remaining in the EU would be one where the UK joins the European economic area (EEA), like Norway. In intermediate scenarios, the EU would sign a free trade agreement with the UK, a deeper agreement than the one signed with Canada (Table 1). In case of no deal, the default scenario would be implementing World Trade Organization (WTO) rules, which would restrict access to EU markets for UK goods and services, but would give the UK more leeway to change its regulations and sign agreements with third countries. The UK must make a trade-off between keeping full access to the EU markets and having more regulatory autonomy.

Theresa May had said, already in her Lancaster House speech in January 2017, that none of the existing on-the-shelf models would be suitable for the UK and that a specific model needed to be found, taking into account the 46 years of ties with EU countries since the UK had joined. But the EU cannot "reward" a Member State (MS) for leaving the EU by granting a too privileged status to the UK in comparison with the EEA countries.

EFTA and EEA

The EEA brings together the EU MS, and three countries (Norway, Iceland and Liechtenstein), which are European Free Trade Association (EFTA) members. Switzerland is a member of EFTA, but not of the EEA. EEA countries guarantee the four "freedoms" (although Liechtenstein has been allowed to keep a quota system for immigration). They ensure free trade of industrial goods. The EEA agreement does not cover raw agricultural products and fishery products; these countries participate neither in the Common Agricultural Policy (CAP) nor in the Common Fisheries Policy (CFP). They are not members of the customs union and may have specific tariffs with third countries. Their financial institutions benefit from EU passporting rights. They contribute to EU budgets, in particular to cohesion policy (0.16% of GDP for Norway, Darvas 2016). They automatically apply EU directives, single market legislation, environmental, social policy and consumer protections, but have only an advisory role. In case of conflict, an EFTA Court of Justice has jurisdiction, but it cannot depart from the ECJ's judgments.

Switzerland refused by referendum to join the EEA in 1992. Switzerland is linked to the EU by a set of 120 bilateral agreements, signed in 1999 and 2004; new agreements are submitted to a popular referendum. The EU wants these agreements to be renegotiated to

form a coherent whole. In 2014, however, a popular referendum restricted EU citizens' freedom to settle in Switzerland. In return, the EU blocked Swiss participation in EU programmes (such as Erasmus). A framework agreement could not be signed because Switzerland refused ECJ control over its implementation. Switzerland contributes sporadically to the EU budget (less than 0.1% of its GDP, Darvas, 2016). It takes part in the single market for goods, but its participation in the services market is limited. Swiss financial institutions do not have the passporting rights of the EEA.

A scenario for UK membership in EFTA, even extended to a full customs union, is not credible. The UK would have to continue to ensure freedom of installation for workers, to recognize the ECJ's authority, to apply EU directives, to contribute to the EU budget, without having any voice in the matter. The UK would not be free to conclude trade agreements with third countries. On the other hand, European institutions have until now refused to give more powers to an EFTA redesigned as a third circle of member states of the customs union and the single market, with a deliberative voice for directives concerning the single market, with an autonomous Court of Justice, but having neither to respect the freedom of installation of persons, nor to be part of a political integration project. They consider that such a circle would reduce EU autonomy and would increase the risk of EU disruption.

A customs union

Turkey is in a customs union with the EU (for industrial goods). But the relationship is asymmetric, as Turkey must align its trade policies with EU trade policy. Turkey is a rule-taker (Felbermayr *et al.*, 2019). FTAs signed by the EU do not automatically apply to Turkish exports, but they are binding for Turkish imports. For the UK also, the customs union could be limited to goods. But the EU27 refuses for the UK to remain in the customs union if it no longer respects the "four freedoms", if it does not recognize the ECJ's jurisdiction, and if it does not comply with EU standards in terms of labour laws and industrial and services regulations, which, according to the EU27, would allow the UK to practice unfair competition. Either the UK should meet standards agreed unilaterally by the EU, or the EU should commit to negotiate its standards with the UK (and other partner countries), which is problematic. Being in the customs union would prevent the UK from concluding trade agreements with third countries.

The WTO rules

If the UK left the EU without a deal, WTO rules would apply, implying introducing customs duties on merchandise imports (tariffs). Under WTO rules, countries must apply the so-called most-favoured-nation (MFN) clause, that is to say, apply to merchandise imports from each country the lowest tariff they apply vis-à-vis one country, except for the least developed countries or for countries which have signed a free trade agreement. The UK should then renegotiate all its trade agreements, not only with the EU, but also with third countries. This could take several years; the UK would be in a difficult position in the negotiations.

Given the MFN rule, neither the EU nor the UK would significantly increase their tariffs. The EU would apply MFN tariffs to imports from the UK. The UK could either apply the MFN tariffs to imports from the EU or, unilaterally, opt for lower tariffs for all its trading partners. This could lead to an asymmetric situation with no barriers for EU exports to the UK and barriers for UK exports to the EU.

In fact, it would seem difficult for the EU27 to introduce trade barriers with the UK while it signs FTA with many countries and areas in the world. This would be even more difficult if the UK introduces no tariffs and non-tariff barriers.

A Canada^{++} free trade agreement?

The median solution is a free trade agreement with a content remaining to be defined. At minimum, this could be a trade agreement similar to the one signed by the EU with Canada. This agreement would probably include no tariffs for goods, limited agreements for services, including financial services (free access to EU markets being conditional on complying with EU regulations), mutual recognition of diplomas and qualifications, respect for protected geographical indications, participation in some European programmes or agencies, joint committees for the harmonisation and mutual recognition of standards, a permanent joint arbitration court, and a certain level of commitment to avoid tax and regulatory competition. The UK would not have to contribute to the EU budget, nor would it have to respect people's freedom of movement. The UK would be allowed to negotiate bilateral agreements with third countries, but a rule of origin would probably have to be introduced, which is costly.

As noted by Emerson *et al.* (2017), the agreements signed by the EU with Ukraine, Georgia and Moldova go further than the one with Canada. Moreover, these agreements contain only three of the four freedoms, as the EU did not wish to open its labour markets to workers from these countries. But these countries have unilaterally agreed to apply EU regulations, while in the case of the agreement with Canada both parties must symmetrically ensure that their regulations are equivalent.

Table 1. **Main agreements that could be considered between the UK and the EU**

	EEA	Customs union	FTA	WTO
Free trade with the EU	Yes, for industrial goods and services	Yes, for goods with possible exception for agricultural products. No, for services	Depending on the extent of the agreement	MFN rules
Customs union with the EU	No	Yes	No	No
Workers free movement	Yes	No	No	No
Contribution to the EU budget	Yes	No	No	No
Autonomous trade policy	Yes, in principle	No	Yes	Yes
Regulations	Set by the EU	Set by the EU	Negotiated	No
Conflict resolution	EFTA Court of justice, then ECJ	No or ECJ	Bilateral mechanisms	WTO mechanisms

Tariff and non-tariff barriers issues

In the absence of a customs and a single market agreement, issues would arise about tariff barriers (TBs) and non-tariff barriers (NTBs).

Tariff barriers

After Brexit, tariff rates could remain nil in a comprehensive FTA. In the WTO regime, they would at maximum be the MFN tariff rates currently applied by the EU (and the UK) to third countries. These rates are currently very low on average.

According to estimates by Dhingra *et al.* (2017), tariff rates for trade in goods between the UK and non-EU countries are currently 3% on average. They range from 0% for mining products, 2.5% for chemicals and electrical equipment, 6% for transport equipment and 10% for textiles (Table 2). According to estimates by the UK Office for Budget Responsibility (OBR, 2018b), MFN rates (weighted by the trade struc-

ture) would be 3.3% for UK exports to the EU and 4.4% for UK imports from the EU (Table 3). Emerson *et al.* (2017) estimate that average tariffs for UK exports to the EU would be 3.8%, but point out that these tariffs would range from 0 (for pharmaceutical products) to 9% (cars), 12% (clothes), 45% (cereals), and 50% (meat). According to estimates by the Institute for Fiscal Studies (Levell, 2018), average tariffs implemented between the UK and the EU would be around 2.4% for UK exports, although significantly higher for textile-clothing (8%), agricultural products (7%), and food products (22%). Tariffs would therefore have very heterogeneous impacts depending on the sector. As concerns agriculture (30% of food consumption in the UK is imported), these rates could raise consumer prices, but they could also lead to an increase in domestic output (IFS, 2018).

According to Clarke *et al.* (2017), introducing tariffs could raise UK consumer prices by 1%, but could raise prices of some food products like meat or dairy products by 8%. Conversely, according to the IFS (Levell, 2018), if the UK no longer applied any tariffs, this would reduce UK consumer prices by 0.7 to 1.2%, but only by 0.4% if the UK maintains its tariffs on imports for goods that the UK also produces.

Table 2. **UK MFN tariffs with non-EU countries**

	UK Imports*	UK Exports*
Agriculture, hunting, forestry and fishing	1.07	4.02
Mining and quarrying	0.00	0.00
Food, beverages and tobacco	6.19	2.08
Textiles and textile products; leather	10.7	8.73
Wood and products of wood and cork	2.74	3.16
Pulp, paper, printing and publishing	0.07	0.06
Coke, petroleum and nuclear fuel	2.51	3.36
Chemicals and chemical products	2.47	1.89
Rubber and plastics	5.25	5.28
Other non-metallic minerals	4.80	3.49
Basic metals and fabricated metal	1.47	1.00
Machinery, not elsewhere classified (nec)	2.34	2.00
Electrical and optical equipment	1.83	1.70
Transport equipment	5.55	6.26
Manufacturing, nec; recycling	1.44	1.76
Weighted average	2.94	2.86

*Actual applied MFN tariff for HS6 industries are aggregated to WIOD sectors using the trade between UK and non-EU countries as weights.
Source: Dhingra *et al.*, 2017.

Table 3. **EU MFN tariffs by sector for UK trade**

	UK Imports	UK Exports
Agriculture, hunting, forestry and fishing	5.9	5.6
Mining and quarrying	0.0	0.0
Food, beverage and tobacco	7.3	5.0
Textiles and textile products; leather	9.6	9.7
Wood and products of wood and cork	2.4	3.6
Pulp, paper, printing and publishing	0.0	0.1
Coke, petroleum and nuclear fuel	2.7	2.8
Chemicals and chemical products	2.7	2.2
Rubber and plastics	5.4	5.1
Other non-metallic minerals	3.8	3.3
Basic metals and fabricated metal	2.1	1.9
Machines, etc.	2.1	2.1
Electrical and optical equipment	2.0	1.6
Transport equipment	8.1	7,2
Manufacturing, etc.	1.7	1.7
Weighted average (by UK-EU Trade)	4.4	3.3

Source: OBR (2018b).

It seems unlikely that the EU27 would change its tariff rates after Brexit, which means that UK exports will be more expensive on EU27 markets (although Sterling may fall, see Bank of England 2018), with an MFN tariff rate of 3.3% on average. UK exports may also become more expensive in some countries, such as Japan or Canada, which will not accept maintaining with the UK their current FTA with the EU27.

Conversely, the UK may choose between two strategies to comply with WTO rules: to introduce MFN tariff rates on imports from the EU27, which may increase UK consumer prices, but the tax revenues from the tariffs could be used to cut other indirect taxes; or to lower most tariffs on imports from non-EU countries down to zero and introduce tariffs only on imports of goods such as in agriculture, where UK producers could raise their output.

Non-tariff barriers

Non-tariff barriers (NTBs) are inherently more difficult to assess. They will arise as soon as the UK leaves the single market due to administrative costs, tax issues, customs formalities, and checks on product origins. They will increase if EU and UK standards deviate. NTBs are

crucial to estimate the impact of Brexit in an FTA or a WTO regime. NTBs may be estimated by two methods, both unsatisfactory.

A first method is to set rather arbitrarily a tariff equivalent of these non-tariff-barriers. In the OBR overview (OBR, 2018b), NTBs are estimated to be on average equivalent to a 10% tariff barrier in a WTO regime (within a range of 6.5% to 12.9%); 6.5% following an FTA (with a range of 5.9% to 7%); or 3.4% in an EEA-type agreement (with a range of 2.8% to 4%). The IFS (2018) estimates, respectively, 11%, 7% and 4%. Besides, the IMF (2018b) chooses to consider higher levels: 20% for a WTO regime and 10% for an FTA.

A second method is to use a gravity model to evaluate the single market's impact on bilateral trade as compared to an FTA or to a WTO regime (as in Egger *et al.*, 1995). This requires being able to account for all other factors, such as geographical proximity, common language, common currency, and tariff barriers. This assumes that there is no hysteresis effect, that EU membership had the same impact for the UK as for the average of member states, and also that a standard FTA may be defined.

The soft Brexit scenario

At the beginning of 2019, the most likely scenario was that the 14 December 2018 withdrawal agreement would finally be approved by the UK Parliament. In that scenario, the UK would leave the EU on 31 October 2019, but a transition period would start and last until the end of December 2020. The transition period could be prolonged. The political declaration on the future economic relationship between the UK and the EU27 was rather vague. It remained a "Blind Brexit". After the 17 October 2019 agreement, a "soft" Brexit became again the most likely result. The UK would leave the EU on 31 January 2020, the transition period would last until the end of December 2020, but could be prolonged by an agreement. The new political declaration announces: "an ambitious, broad, deep and flexible partnership across trade and economic cooperation with a comprehensive and balanced Free Trade Agreement". As negotiations on future economic relationships could last for a long time, the divorce could be very gradual.

The UK would remain in the customs union, at least until the end of 2020; thereafter, relations between the UK and the EU27 would be governed by a free trade agreement, the content of which remains to be clarified. The EU27 would give UK goods access to the EU market provided that the UK commits to comply with technical and health

standards, intellectual property rules, and rules for appellations of origin. Similarly, the UK would commit to financial and banking standards so that its financial institutions benefit from equivalence. It would be a "deep and special partnership".

This does not preclude that once the UK has left the customs union, it would have to renegotiate bilateral agreements with third countries. One may expect that countries having signed a free trade agreement with the EU (like South Korea, Mexico, Canada, Japan, or Singapore) will have the conciliatory position of merely duplicating the agreement with the EU. The UK also plans to sign free trade agreements with non-EU countries, including the US, China, India, Australia, New Zealand, the members of the Asian Trans-Pacific Partnership, and the Association of Southeast Asian Nations (ASEAN), but this will take several years. Trade with these countries is relatively limited because of both geographical and industrial specialisation reasons. The UK will have to make concessions, which will not be so easy. For instance, as concerns trade with the US, the UK could be requested to decrease its tariff rates on food, to reduce its sanitary standards, and to increase the prices of pharmaceutical products.[3]

In this scenario, obstacles to UK-EU relations would be rather limited. Currently, UK standards are in line with the single market rules. The UK withdrawal act from the EU has transposed all EU legislation into UK law. The UK government said it would maintain all rules needed for trade in goods with the EU. The UK (and the EU27) would have to choose between three positions: the UK continues to comply unilaterally with these standards; the evolution of standards is negotiated between the UK and the EU27; or the UK can unilaterally change its standards or refuse to follow changes in EU27 standards (implying UK standards may no longer be compatible with EU27 standards). The latter case would necessarily entail limitations on the access of UK products to the single market.

With regard to immigration, after Brexit, the UK would apply to immigration applicants from the EEA and Switzerland the same criteria as those currently applied to people coming from third countries,[4]

3. On 4 December 2019, the UK signed the Trade Agreement Continuity, with countries representing 22% of its trade with non-EU countries (https://www.gov.uk/government/publications/uk-trade-agreement-continuity-statistics-and-analysis/uk-trade-with-trade-agreement-continuity-tac-countries-statistical-ad-hoc-release).

4. Based on the Migration Advisory Committee's recommendations (Migration Advisory Committee, 2018).

allowing in mainly higher and medium-skilled workers earning at least 30,000 pounds per year (unless there is a lack of labour force in a given sector). EU immigration could be reduced by half (85,000 per year), which could reduce the labour force by 2.5% by 2030.

In the short run, the agreement would signal the end of uncertainty. It would put an end to the fears of a no deal exit, but also to the hopes that Brexit will finally not take place, so that its immediate macroeconomic impact will probably be limited. The appreciation of the British pound would be limited because of the UK's current account deficit and fears about the City's position; trade barriers created by the transition from the single market to an FTA would hamper exports, investments, and FDI. A significant rebound in GDP would be unlikely.

In the long run, one cannot rule out an adverse effect on the UK economy. This is at least what some studies' models describe. They consider that even a free trade agreement would restrict trade and FDI relative to single market membership. However, the size of trade barriers is difficult to predict accurately as the "deep and special partnership" project remains vague.

This scenario faces three problems: it is incompatible with the wishes of many Brexiteers, since the UK will have to make many commitments in fields where it will no longer have any say; and it dismisses the scenario where the UK would become a regulatory and tax haven. It assumes that standards and regulations remain the same in the UK and the EU, either because the UK implements EU27 decisions or because changes are agreed in common (but why would the EU give this specific power to the UK?). It assumes that the rules of origin will be applied smoothly, and that the UK will not soften its standards; if not, EU countries would be led to introduce physical border controls (with the specific Irish border issue).

The no deal scenario

Leaving the EU without a deal would be a huge break. It could have occurred on 31 March or 31 October 2019. A no deal is the first choice of hard Brexiteers so that the UK can recover a maximum of autonomy. Until now, the UK government, the UK parliament and EU institutions have tried to avoid this scenario. There is some consensus in the Member States to avoid a no deal and to give as much delay to the UK as necessary. So, a no deal scenario has now become very unlikely.

Before 17 October 2019, some commentators had been considering a sudden and chaotic exit. Overnight, UK citizens living in the EU27 would be deprived of all their rights, as would EU citizens living in the UK. Airline companies would lose their flight rights; UK lorries would no longer be allowed on continental European roads; diplomas, driving licences, and technical and food standards would lose mutual recognition. Trade between the UK and the EU27 would be more or less paralyzed by customs formalities, harming companies operating with just-in-time processes. According to some estimates, a 2-minute check for each lorry would increase waiting times at customs check points in Dover or Calais by 5 hours. If tariffs are introduced, all long-term contracts between UK and EU companies would have to be renegotiated. Judgments in courts would no longer benefit from reciprocal recognition. The UK could refuse to honour the financial commitments agreed in the withdrawal agreement, and the dispute could be brought before an international court. UK residents in the EU and EU27 residents in the UK would be in a legal vacuum. Such a chaotic Brexit would induce an immediate strong negative output shock (i.e. in the fourth quarter of 2019, if the UK had left without a deal on 31 October). But such a scenario is unlikely, because it would be harmful for both parties. In the months prior to March 2019, a number of contingency measures were enacted in the UK and in the EU27 countries to limit the short-term effects of no deal: planes will continue to fly, trains will be allowed to cross the Channel, etc. One may assume that there would be some sort of agreements in a no deal Brexit so as to limit the disruptive effects. These agreements would be more or less permanent. Contrary to what some fear, there is no reason why shortages (medicines, agricultural products) would occur in the UK, as neither the UK nor the EU have any reason to introduce barriers on EU exports into the UK. As concerns the Irish border, the UK will not erect a physical border. Will the Republic of Ireland take the responsibility of erecting one?

In the medium term, the UK would benefit only from the minimum terms of WTO rules, both for its relations with the EU27 and with countries covered by agreements with the EU (such as Canada or Korea), meaning that tariffs and non-tariff barriers would be introduced between the UK and the EU27. The UK would be able to sign free trade agreements with non-EU countries. However, given the geographical distances and specialisation of the UK economy, these agreements would be unlikely to raise significantly UK exports. And the

negotiations of these agreements would take time. The UK economy would inevitably suffer from lower exports to the EU; at the same time, imports would be reduced, which could have a positive impact on UK output (substitution effect), but negative impacts in terms of price increases and restrictions in the variety of products offered to consumers and for intermediate consumption. As concerns imports from the EU, the UK could choose between two strategies: responding by introducing non-trade barriers (which seems unlikely) or increasing openness (abolishing tariffs and limiting non-tariff barriers), which would limit the inflationary effects and disruption in production chains. But the absence of tariffs would also have to apply to third countries. The EU27 could choose between an openness strategy (avoiding to raise non-tariff barriers, quickly signing an FTA, accepting a non-physical barrier in Ireland with document checks only) and a strict strategy (with checkpoints at the UK-EU27 borders), which would be difficult to introduce unilaterally.

In case of a no deal Brexit, there is a big risk that multinational companies would relocate their factories and headquarters into the EU27 and that a substantial share of euro area banking and financial activities would leave London. The UK could however play the card of tax competition (in particular through cuts in corporate tax rates) and of a regulatory haven, especially in the financial sector. Brexit would allow the UK to strengthen its neoliberal model (see Labour Leave, Leave means Leave, and Economists for Free Trade, 2017). However, it is unlikely that the UK, already having very liberal legislation, would benefit from a significant growth shock induced by even more liberal reforms. Moreover, the UK can hardly avoid complying with international commitments (COP21 agreement, fight against tax optimisation, agreements on the exchange of information on tax and banking matters, Basel III agreement). The pound could fall. The revenues from the new tariffs could be recycled into lower VAT or indirect taxes, which would reduce the inflationary effect. A fall in the pound and lower tariffs on products from third countries could make EU products less competitive in the UK, while UK products exported to the EU would suffer from tariffs and non-tariff barriers, but would benefit from a lower exchange rate, so that the costs of a no deal would be shared between the EU27 and the UK.

2. The impact of Brexit according to macroeconomic studies

Economic reasons were not the main reason behind the Brexit vote. Nevertheless, it is part of the economists' job to try and evaluate the economic consequences of Brexit, even if this task is difficult for three reasons: first, nobody knows (even in November 2019) what Brexit will look like (soft or hard Brexit, with or without a deal, with or without a liberal deregulation policy shock, without tariffs or with MFN tariffs, with an FTA with non-EU countries); second, huge uncertainties remain on several economic channels such as labour and capital flexibility, as well as the impact of trade openness and FDI on productivity growth; and third, there is some doubt about the relevant economic tool: long-term equilibrium models or short-term macroeconomic ones? It should also be recalled that comparing papers is not straightforward, for two main reasons. First, papers were produced at different dates, and UK government plans have evolved over time. Second, some papers are presented as academic papers, while others are from official institutions (UK Treasury, OECD, etc.), most of them expecting Brexit to have negative economic impacts. Other papers are produced by fundamentally pro- or anti-European think tanks. However, all papers claim to provide an objective analysis. Brexit will have economic impacts through several channels that not all studies consider. We will mainly focus below on studies on the long-term impacts of Brexit (Tables 4 and 5).

Trade issues

All studies have to estimate the impact of Brexit on UK-EU27 trade flows. According to gravity models, trade between two countries can be predicted by using variables such as the size of the two countries considered, their geographical distance, a common language, historical links and variables such as membership in the same free trade area. Usually, a gravity model is used to estimate the fall in trade (and sometimes in FDI) that would result from the UK leaving the single market, accounting for the specific effects of single market membership as compared to an FTA or WTO regime. Some studies directly use these estimates to evaluate the whole reduction of trade between the UK and EU27; some embed a negative effect of NTBs similar to the average increase in trade resulting from joining the single market. Other studies set rather arbitrarily the NTBs which would result from leaving the single market for an FTA or WTO regime. The fall in trade is often estimated by inversing the past positive impact of single market

membership on trade flows. It may be argued that these estimates overvalue the impact of Brexit, as they imply a full symmetry (losses from leaving the single market are valued from gains from joining the single market) and do not account for hysteresis effects. It may also be argued that estimates are overvalued, as the impact of the single market has been weaker for the UK than for the average of other EU members (Coutts *et al.*, 2018). Some studies account also for the gains from potential free trade agreements with third countries. The estimations can be done at the global level, or at a sector level, and can incorporate intermediate goods flows, which is more accurate but requires being able to estimate NTBs from sector flows. In gravity models, the effect of Brexit on trade flows does not depend on estimates of foreign trade price elasticities; these are black boxes, although the effects depend heavily on these estimates in models estimating TBs and NTBs.

In gravity models, the issue of "trade diversion" is often poorly taken into account. If trade decreases between the UK and the EU27, it may increase between EU27 countries and with non-EU countries. From a European global perspective, in each market, the impact of tariffs and non-tariff barriers should be analysed precisely: for instance, on the UK market, French products will lose competitiveness vis-à-vis UK domestic products and non-EU products, but not with other EU MS. On the French market, the loss of competitiveness of UK products will benefit French and other EU products.

Efficiency effects

In a second phase, most studies use a CGE model[5] to evaluate the efficiency losses resulting from these barriers, from lower trade, from smaller sectoral production which induces losses of economies of scale, and from smaller trade intensity of exchanges. With lower competition on markets, firms can increase their margins. The UK economy must produce goods to substitute imports and reduce its production of exported goods, which induces losses of efficiency, and consequently GDP or welfare losses. In general, the static effects obtained with a CGE model, even with a strong reduction of trade, are relatively small, since

5. In principle, a CGE model describes the functioning of the national economy from a neo-classical framework. Agents (households or businesses) optimize a utility function with perfect rationality and knowledge; prices equilibrate the different markets (goods, labour, financial markets); and the economy is in equilibrium (static or dynamic). Some CGE models deviate from this framework (taking into account the rigidity of prices and wages or imperfect information).

these models assume that full employment will be maintained with a high degree of capital and labour mobility between economic sectors.

Productivity effects

Some influential studies add dynamic effects: lower economic openness (in terms of trade or FDI) would reduce innovation incentives, the ability to import technological innovations, and competition pressure, and hence would result in a lower productivity growth in the UK economy. So these effects would play not only on the GDP level, but also on the GDP growth rate.

In these studies, the dynamic effects are very strong, but they have little empirical basis: the slowdown in productivity growth in advanced countries in recent years makes a strong impact of economic openness on productivity gains scarcely credible. The UK economy's openness has been increasing with large FDI inflows, but the impact on productivity growth has not shown up. Even if FDI inflows decrease after Brexit, they will remain relatively high. Above all, Brexiteers do not plan to close but, on the contrary, to open the UK economy more to the open sea, especially to the United States, China and Commonwealth countries, to increase market competition and encourage technological innovations.

Short-term issues

Some studies use macroeconomic models, where output is demand-driven. Trade barriers lead to a decrease in export and import volumes. Thus, the impact on output is uncertain, as UK imports from the EU exceed UK exports to the EU. The increase in import prices may induce a fall in UK households' incomes, and it will take time for UK producers to build production capacity to replace imports. The final results depend also on exchange rate developments: a weaker pound improves British competitiveness but reduces households' real incomes. In fact, the strong negative effects are often obtained via two assumptions: expectations of a strong long-run negative effect on GDP will induce a fall in equity prices and will immediately reduce households' consumption; and the uncertainty about trade conditions will reduce firms' investments.

Migration issues

EU immigration could be reduced, which may shrink the labour force, and also GDP, as full employment is assumed for the long term

(see above). Some studies predict that restricting immigration will have a negative effect on productivity if companies do not find the skilled labour they need. They also estimate that restrictions on unskilled labour immigration will oblige firms to invest in more productive equipment, but other studies consider that this will reduce incentives to increase UK workers' skills.

Fiscal issues

Brexit will allow the UK to save net transfers with the EU of around £9 billion (0.5% of GDP, OBR, 2018a). If the UK introduces MFN tariffs on imports from the EU27, the UK budget may gain £13 billion (own calculation according to Clarke *et al.,* 2017). If, on the contrary, the UK decides to cut all tariffs to zero, the loss will be around £13 billion (own calculation according to Levell, 2018). In March 2019, the general government deficit was only 1.2% of GDP. But if Brexit has a strong negative impact on UK GDP, the public deficit may widen. Thus, some studies anticipate that an expansionary fiscal policy will be run to support output after Brexit, while other studies consider that a restrictive fiscal policy will be necessary.

Exchanges rate issues

If tariff barriers and NTBs are raised, UK exports will be less competitive, but UK producers will be more competitive relatively to foreign importers, even if intermediate goods prices increase. The depreciation of Sterling will improve UK competitiveness. Most CGE models assume that, in the long run, external current accounts should be in balance. So, lower imports should be offset by lower exports, implying less efficient production.

Regulation issues

For most liberal economists, EU regulations are an obstacle to efficiency and growth. They are not adapted to the UK economy. So these economists consider that leaving the EU will allow a deregulation shock that will boost UK growth. But they forget that rules and norms have their justifications, many of them enshrined in international treaties that the UK should continue to comply with. The UK is already one of the less regulated OECD countries. The OECD product market regulation indicator was 0.79 for the UK in 2018, as compared to 1.4 for the OECD average, 1.11 for Germany, 1.22 for the Netherlands, and 1.55 for France. The OECD employment protection legislation indicator was

1.59 for the UK, as compared to 1.17 for the US, but 2.82 for France, 2.84 for Germany, and 2.94 for the Netherlands. Hence the gains from further deregulation could only be small for the UK. The corporate tax rate is already a low 19%, and was targeted for being cut to 17% in 2020 even before Boris Johnson became Prime Minister. It could be cut further to 12.5% (the current Irish rate, as was proposed by Jeremy Hunt in the race for the Conservative Party leadership in 2019). But large tax cuts would imply public and social spending cuts of the same magnitude, which is not in the Conservative Party's current programme, and would hit the poorest.

Studies on Brexit's impacts on the UK economy

Before the referendum, in April 2016, the UK Government (HM Treasury, 2016a) published an evaluation of the impact of Brexit on the UK economy. The study used a gravity model, an empirical relation between economic openness and labour productivity, and the NiGEM model of the NIESR. According to the evaluation, a WTO scenario would reduce UK trade by 17 to 24%, and FDI by 18 to 26%; this restricted openness would reduce labour productivity (in level) by 3.7 to 7.7%; increased uncertainty would reduce physical and human capital formation in the short term, with persistent effects of 1% of GDP. The analysis did not incorporate deregulation effects or migration effects (it estimated that fewer EU citizens would work in the UK, but fewer British citizens would work in the EU). In the WTO scenario, after 15 years, UK GDP is smaller by 7.5% (between -5.4% and -9.5%); by 6.2% with a negotiated agreement like the one signed with Canada; and by 3.8% if the UK joined the EEA with an agreement like Norway. The study adds that if the UK remains in the EU, it will benefit from economic reforms in the EU, such as those included in the February 2016 agreement between the UK and the EU, from single market developments, and from new FTAs. These could increase UK GDP by up to a further 4%.

Table 4. **Brexit: The channels of the long-term impacts (WTO regime)**

	Trade	UK imports	FDI	Productivity level	Productivity growth	Migration	Fiscal policy	Deregulation
Oxford Economics (2016)	TB and NTB	MFN, NTB	No	No	Yes	Yes	Yes	Yes
HM Treasury (2016a)	Gravity model	Gravity model	Gravity model	Yes	No	Nil	Nil	Nil
OECD (2016)	Gravity model	Gravity model	Gravity model	Yes	Yes	Yes	Nil	Yes
NIESR (2016)	Econometric, estimation, TB	MFN, NTB	Yes	No	No	No	Yes	No
Rojas-Romagosa (2016)	Gravity model	Gravity model	No	CGE model	As a variant	No	No	No
Dhingra *et al.* (2017)	TB and NTB	TB and NTB	No	CGE model	As a variant	No	Yes	No
Leave Means Leave (2017)	?	0 tariff, 0 NTB	No	?	Positive	Yes	Yes	Yes
Vandenbussche *et al.* (2017)	TB and NTB	TB and NTB	No	No	No	No	No	No
Felbermayr *et al.* (2017,18,19)	Gravity model	0 barrier as variant	No	CGE model	No	No	No	No
CEPII (2018)	Gravity model	Gravity model	No	CGE model	No	No		No
Open Economy (2018)	TB and NTB	0 barrier as variant	No	No	No	No	Yes	Yes
Cambridge Econometrics (2018)	TB and NTB	TB and NTB	Yes	No	No	Yes	No	No
IMF (2018a)	TB and NTB	TB and NTB	No	CGE model	No	No	No	No
NIESR (2018)	TB and NTB	TB and NTB	Yes	No	Yes	Yes	Yes	No
IMF (2018b)	TB and NTB	TB and NTB	Yes	CGE model	No	Yes	No	No
HM Government (2018b)	TB and NTB	0 barrier as a variant	No	No	No	No	Yes	Yes
Bank of England (2018)	Gravity model	Gravity model	Yes	Yes	No	Yes	Yes	No

Source: Own compilation.

In a companion paper, in May 2016, the UK Government (HM Treasury, 2016b) studied the immediate economic impacts of a vote for leaving the EU. The study considers three key factors: 1) the "transition effect": firms and households will anticipate a strong negative impact on GDP in the long term; they will immediately reduce their investment and their spending. 2) the "uncertainty effect": the rise in uncertainty following the referendum will induce lower private spending. 3) the "financial conditions effect": higher financial market volatility will induce a rise in all risk premia and a fall in the pound. The UK economy will immediately fall into recession. After two years, in the less pessimistic scenario, housing prices will be 10% lower; Sterling 12% lower; GDP 3.6% lower; and the unemployment rate will be 1.6 percentage points higher. These two publications have an ambiguous status, as they were presented by George Osborne, Chancellor of the Exchequer, as part of the UK government's Remain campaign.

Similarly, in April 2016, the OECD (Kierzenkowski *et al.*, 2016) considered, strangely, that Brexit is "akin to be a tax, imposing a persistent and rising cost on the economy over time". For the near term, the OECD estimated that a vote for Brexit would generate a strong uncertainty, increasing risk premia and hurting confidence. The financial market shocks were assumed to be of a similar magnitude as those observed in the 2011-12 euro zone crisis, with the corporate bonds rate rising by 150 basis points, Sterling falling by 10%, households' saving rate rising by 1 percentage point, and UK exports falling by 8%. UK real GDP would be reduced by 0.5% in 2017 and 2018, and by 1.5% in 2019, when Brexit was to take place. By 2020, UK GDP would be reduced by 3.2% (and EU27 GDP by 0.9%).

For the longer term, the OECD study uses a CGE trade model with 57 sectors and the NiGEM model. It assumes that UK withdrawal from the EU would strongly reduce trade openness (15% in the central scenario) and FDI stocks (30% in the central scenario). This would induce a fall in productivity (as a result of reduced competition), a decline in the ability to import technical innovations, a reduction in the quality of firms' governance, a slowdown in the goods market reforms, a fall in R&D, with all these factors inducing a slowdown in technical progress. Restrictions on immigration would reduce the quantity and skills diversity of workers. In the central scenario, Brexit would cost 5.1% of UK GDP (between 2.7 and 7.7%).

Many of the channels mentioned by the OECD are debatable. Despite its openness, UK productivity growth is already low. It has not accelerated in recent years despite the high level of FDI inflows. The UK plans to continue to attract FDI through tax and regulatory competition. The UK also expects to increase its trade with the US, China and emerging countries, which may be beneficial in terms of importing innovations. The "Global Britain" project does not plan to isolate the UK. According to the OECD, the UK would be better off staying in the EU, participating in deepening the single market and benefiting from the free trade agreements the EU is expected to sign in the coming years, which would increase growth in all EU countries. But one may question the credibility of this last statement, given the risk that these trade agreements are not signed (in particular the TTIP) and the problems they raise in terms of economic and social cohesion (generating winners and losers in signatory countries). The OECD does not ask the question of principle: should a country abandon its political sovereignty to benefit from the possibly positive effects of trade liberalisation?

In February 2016, the CBI (2016) reviewed the literature on the impact of EU membership on the UK economy. 12 studies were reviewed, covering 14 estimations, 7 of which were considered as serious by the CBI. For these 7 studies, the impact varied from -2.5% to +9.5% of GDP. The two most credible studies estimated a cumulated gain of 1% of GDP from trade tariff and NTB reductions, and the UK fiscal contribution, but the CBI adds 1.75% for FDI effects and 1.75% for increased competition effects due to the single market membership, to obtain a global effect of 5%. If one accepts some negative impacts of EU regulation and red tape, the gain is reduced to 4%, which is supposed to disappear with Brexit.

In March 2016, Oxford Economics (2016) used the Oxford Economics Global Model (GEM) to analyse the impact of Brexit. It considered 4 trade arrangements (MFN, FTA, BILateral Accord, CUStoms Union) and 3 economic policies (Populist, Moderate and Liberal). The negative effects of Brexit are higher in MFN, and progressively decrease in FTA, then BIL, and finally CUS, as trade reductions have an impact on productivity growth. The populist policy reduces migration and increases the size of the State. The liberal policy reduces the tax burden for business, eliminates all tariffs on third-country imports and implements "an aggressive set of deregulations".

Strangely, Sterling remains at the same level in each scenario as in the baseline. The impact on GDP varies between -3.9% in the worst case (MFN and Populist) and +0.1 in the better case (CUS and Liberal); the strict impact of Brexit on UK GDP with an MFN scenario (without considering the other aspect of economic policies) seems to be only around 2 percentage points. The impact on trade is relatively weak (-9% in the worst case), and the methodology is rather vague.

In April 2016, Busch and Matthes (2016) released a Meta-Analysis of the economic impact of Brexit. They recognize that the more reliable studies estimate that the economic cost will remain moderate (1 to 5% of UK GDP), but they consider that these studies underestimate the risks, underestimate the effects on trade, and do not account for the dynamic effects on productivity, such that a UK GDP loss of 10% or more cannot be ruled out.

In May, an NIESR study (Ebell and Warren, 2016) incorporated in the NiGEM model a reduction in trade with EU countries with an econometric estimation of the impact of EU membership on trade, a modest increase in tariff barriers, a fall in foreign direct investment by 24% that induces a fall in private investment by about 0.5% of GDP, a lower UK net fiscal contribution to the EU, without dynamic effects on productivity and without migration effects. The effects on UK GDP appear weak by 2030: -1.8% in the EEA scenario; -2.1% in the FTA scenario; and -3.2% in the WTO scenario.

In June, a study by CPB (Rojas-Romagosa, 2016) considers two scenarios: the WTO option (with MFN tariffs and NTBs of 12.9%, taken from Egger *et al.,* 2015) and the FTA scenario (with NTBs of 6.4%). Using a CGE model for the world economy, the author evaluates that, in the long run, a WTO regime would induce a GDP loss of 4.1% for the UK (0.8% for the EU27, but 3.7% for Ireland and 1.2% for Netherlands), with a fall by 23% of UK exports and imports. The author multiplies this effect by approximately 2 to integrate an "empirical relationship between opening to trade and productivity". Hence, the GDP loss would be 8.7% (1.5% for the EU27). An FTA would induce a 3.4% loss (0.6% for the EU27) in static, which becomes 5.9% in dynamics (1.1% for the EU27).

Dhingra *et al.* (2017) use a CGE model. They consider a scenario where the UK remains in the single market as an EEA member with no new tariffs and an increase by 2.77 percentage points of NTBs for UK-EU27 trade, and a WTO regime scenario, where MFN tariffs apply for

trade between the UK and EU 27, with NTBs increasing by 8.31%. NTBs are assumed to be a quarter or three-quarters of NTBs between the US and the EU according to previous estimations. In the long term, the UK would lose 2.66% of GDP equivalent in the WTO regime (1.34% in the EEA). Of these 2.66 percentage points, 0.13 percentage point would come from the rise in tariffs, 1.31 percentage point from the rise in NTB, and 1.61 from the exclusion of the UK from future barriers reductions in EU integration. The trade effects would be high: UK exports to the EU would fall by 43%; UK imports from the EU would fall by 38%. The authors also estimate that Brexit would reduce FDI inflows into the UK by 22%. A simple econometric relationship between productivity, trade and FDI leads the authors to increase the loss up to 13.3% (up to 6.3% in the EEA case).

Table 5. **Long-term impact of Brexit on UK GDP (in 2030, in GDP percentage point)**

	Free Trade Agreement	WTO regime
Oxford Economics (2016)	-0.8/-3.1	-1.5/-3.9
HM Treasury (2016a)	-6.2 (EEA: -3.8)	-7.5
OECD (2016)		-5.1
NIESR (2016)	-2.1 (EEA: -1.8)	-3.2
Rojas-Romagosa, static/dynamic (2016)	-3.4/-5.9	-4.1/-8.7
Dhingra *et al.* (2017)	-1.3/-6.3	-2.7/-13.3
Leave Means Leave (2017)		+7.0
Vandenbussche *et al.* (2017)	-1.2	-4.5
Felbermayr *et al.* (2017)	-0.6	-1.4/-1.1**
Felbermayr *et al.* (2018a)*	-1.8	-3.2/-2.2**
Felbermayr *et al.* (2018b, 2019)*	-0.9	-2.8/-1.4**/-0.5***
Open Economy (2018)		-2.2
Cambridge Econometrics (2018)	-1.0/-1.6	-2.7/-3.0
IMF (2018a)	-2.5	-4.0
NIESR (2018)	-3.9	-5.5
IMF (2018b)	-3.1	-6.2
HM Government (2018b)	-6.7 (EEA: -1.4)	-9.3

*On real consumption; **Global Britain scenario; ***Hard-but-Smart Brexit.
Source: Own compilation.

Vandenbussche *et al.* (2017) use the World-Input-Output-Database to extend the traditional gravity model by including sector-level input-output linkages in production and by analysing trade in value added. They consider indirect effects (for instance: Hungary suffers from the

fall in German exports to the UK, as these exports include intermediate goods produced in Hungary). They do not take into account FDI, migration, productivity effects, or trade diversion. They assume that with a soft Brexit, tariffs will remain nil and non-tariff barriers will be 2.77% (in tariff equivalent, as in Dhingra *et al.*, 2017). With a hard Brexit, tariffs will be the MFN ones and non-tariff barriers will be 8.31%. The authors do not incorporate any macroeconomic equilibrium. So the effects are relatively weak: -1.2% for the soft Brexit; and -4.5% for the WTO scenario.

In November 2017, Felbermayr *et al.* (2017) evaluated three scenarios: a WTO scenario with MFN tariffs and NTB effects estimated by gravity equations; a Global Britain scenario with the WTO scenario and an FTA between the UK and US, Canada and Japan; and an FTA scenario with no customs tariffs and NTBs estimated as the cost-reduction of the EU-Korea FTA. The effects are huge on trade (in the WTO scenario, UK exports to Germany fall by 50%), but small on real consumption: 1.4% in the WTO scenario, 1.1% in the Global Britain one, and 0.6% in the FTA one. A second estimation in March 2018 (Felbermayr *et al.*, 2018a) gives higher effects on real consumption: 3.2% in the WTO scenario, 2.2% in the Global Britain one, and 1.8% in the FTA one. A third one in November 2018 (Felbermayr *et al.*, 2018b) gives intermediate effects: 2.76% in the WTO scenario, 1.4% in the Global Britain one, and 0.9% in the FTA one. The numbers are low, as other channels are not taken in account (such as migration, FDI or dynamic effects).

Sampson (2017) reviewed the literature on the economic impacts of Brexit. The author notes that most analyses conclude that in the long run Brexit will make the UK poorer, with considerable uncertainty on the size of the effects, and costs ranging between 1 and 10 per cent of UK per capita income. The author also notes that the effects are 2-3 times larger for models incorporating effects of trade barriers on productivity than for pure trade models (with technologies fixed). The author considers that many studies underestimate the effects of Brexit, as they do not account for all channels (such as the effects of less competition on goods markets, on firms' margins, on consumer choices, on innovation incentives; the effects of restricted immigration; and the specific impact on financial markets, etc.). The author recalls the economic arguments in favour of Brexit: the possibility to sign new trade agreements with non-EU countries and to deregulate the economy, but he estimates that they are not convincing.

For hard Brexiteers (Labour Leave, Leave Means Leave, and Economists for Free Trade, 2017), a net break with the EU could increase UK GDP by 7%. Leaving the EU would allow the UK to engage in a liberalisation shock – EU rules would be abolished for energy, finance, industrial and agricultural standards, medical and agronomy research – and in a strategy of opening its borders, possibly unilaterally, based on the theory according to which tariff or non-tariff trade barriers mainly harm the country introducing them. The immigration of unskilled workers would be strictly controlled, prompting British companies to upgrade production processes. The UK would leave the Common Agricultural Policy (CAP), which would allow lower food prices, and the Common Fisheries Policy (CFP), which would restore control of its territorial waters. The money saved from contributions to the EU budget would be reinvested to cut taxes and to help the productive sector. Finally, the British economy's competitiveness would be maintained by the fall in the Sterling exchange rate. GDP would be 7% higher, of which 4 percentage points would result from free trade (opening borders), 2 percentage points from deregulation, 0.2 percentage point from halting EU unskilled immigration, and 0.6 percentage point from ending UK contributions to the EU budget. It would benefit the poorest, currently victims of competition from migrant workers, of high housing prices (due to immigration) and of high food products prices (because of the CAP).

This assessment is questionable. It omits to consider that a fall in the Sterling exchange rate would raise prices in the UK, that rules and norms have their justifications, many of them enshrined in international treaties that the UK should continue to comply with, and that the UK is already one of the less regulated OECD countries. In the 17 October 2019 Revised Political Declaration, the UK accepts that: "the future relationship must ensure open and fair competition, encompassing robust commitments to ensure a level playing field. ... These commitments should prevent distortions of trade and unfair competitive advantages. To that end, the Parties should uphold the common high standards applicable in the Union and the United Kingdom at the end of the transition period in the areas of state aid, competition, social and employment standards, environment, climate change, and relevant tax matters. The Parties should in particular maintain environmental, social and employment standards at the current high levels provided by the existing common standards ... The future relationship should also promote adherence to and effective imple-

mentation of relevant internationally agreed principles and rules in these domains, including the Paris Agreement."

Open Europe (Booth and Shankar, 2018) use a CGE model: they evaluate that a WTO regime will introduce border costs of 3.26% of goods prices and NTBs equivalent to NTBs between the US and Canada. They do not introduce any impact on productivity. The long-term impact of a no deal would be only 2.2% of GDP by 2030, which the authors translate into 0.17% per year for 13 years, without any analysis of how this would evolve until 2030. The long-term impact would be reduced to 0.5% if the UK embarks on unilateral trade liberalisation with third countries. The authors suggest offsetting this loss by various measures (boosting housing construction, reforming corporate taxation, boosting R&D, increasing female employment, maintaining an open immigration system, and especially developing artificial intelligence).

In January 2018, Cambridge Economics (2018) evaluated four Brexit scenarios: a Norwegian one (in the single market, but not in the customs union), a Turkish one (in the customs union, but not in the single market), an orderly move to WTO rules, and a no deal Brexit. It accounts for trade effects, impacts on investment, FDI and migration. The impact is negative but small. On GDP in 2030, it would be: -1% in the Norwegian scenario, -1.6% in the Turkish one; -2.7% in an orderly move to WTO; and -3% in the no deal Brexit (but, as the population is 2.2% lower due to lower migration, GDP per capita declines by only 0.5%).

In January 2018, Coutts *et al.* (2018) undertook a critical analysis of previous estimates of Brexit impacts. They note that there is no evidence that joining the EU has increased UK economic growth. They point out that most studies had overestimated the impact of the Brexit announcement. Finally, they estimate that gravity models are fragile, as the estimations are affected by trade with small emerging countries, as many studies do not take into consideration that the impact of EU membership is much smaller for the UK than for the EU MS as a whole, as one cannot assume that the benefits of trade with EU member countries would be fully reversed when leaving the EU. They notice that many studies forget about the impact of the fall in Sterling. They recall that most FDI involve mergers and acquisitions rather than physical investment. They observe that the results of most studies finding a link between trade, FDI and productivity are dominated by emerging economies and special cases like Ireland. They estimate that CGE models are

not based on any empirical evidence. As a conclusion, they present their own estimation, with the CBR macro-econometric model of the UK economy in the case of a Brexit scenario, with a 2-year transition to an FTA and an increase in trade with non-EU countries. In 2030, UK GDP will be 2% below the baseline, but GDP per capita will return to the baseline level.

In October 2018, the OBR (2018b) published a detailed description of the channels through which Brexit could affect the UK economy and a summary of previous studies. Also in October 2018, the Institute for Government (Tetlow and Stojanovic, 2018) published a study for a non-technical audience.

In November 2018, the IMF (2018b) added effects from higher trade barriers, lower migration and reduced inward FDI and incorporated adverse effects from a fall in FDI on innovation and on firms' governance. It assumes that labour reallocation will be easy in the UK. So, the IMF estimates that UK GDP will fall by 3.2% (2.6/3.9) in an FTA scenario and by 6.5% (5.2/7.8) in a WTO scenario. In the WTO scenario, 4.8 percentage points come from trade barriers, 1 percentage point from migration, and 0.4 percentage point from lower FDI. The IMF considers that these effects could be reduced by an active labour market policy.

In November 2018, the NIESR (Hantzsche *et al.*, 2018) used the NiGEM macroeconomic model to evaluate the impact of Brexit. In case of a no deal exit, EU/UK trade would decrease by 56% in the medium term (half of it immediately). Migration flows would fall from 200 000 to 100 000 a year. FDI would be reduced by 24%. Sterling would fall by 13.5%. Total factor productivity would decrease by 1.4% in the long term. UK potential growth is currently 1.9% per annum (1.45% productivity and 0.45% employment); it would fall to 1.3% (1.2% productivity and 0.1% employment). The GDP loss would be 5.5% in 10 years, of which 1.8 percentage points due to lower trade, 1.7 percentage point due to less net migration, 1.4 percentage point due to a productivity effect, and 0.4 percentage point due to lower FDI. In the case of a deal with a comprehensive FTA, the GDP loss would be 3.9% in 10 years.

In November 2018, the UK government (HM Government, 2018b) evaluated the increases in trade costs (tariffs and non-tariff barriers) and the impact of migration policy and introduced them in a macroeconomic model. Four scenarios are addressed. The first one

corresponds to the HM Government's White paper (HM Government, 2018a); an exit with a comprehensive agreement (free trade for goods, no tariffs, customs agreement, frictionless trade outside the customs union and the single market, and restriction of migration, which may be unacceptable for the EU27); for UK-EU trade, tariffs are nil; NTBs are 0.5 per cent for goods, and 6 per cent for services. The second scenario corresponds to an EEA-type agreement (with automatic implementation of EU legislation and no restriction of migration, which does not deliver the Government objectives), tariffs are nil; and NTBs are 5 per cent for goods, and 2 per cent for services. The third scenario corresponds to an average FTA agreement (zero tariffs but non-tariff barriers of 8 per cent for goods and 8.5 per cent for services). The fourth scenario corresponds to a no deal (MFN tariffs and NTBs of 10.5% for goods; 11% for services). Immigration barriers reduce UK GDP by 1.8%. The flexibility of regulatory policy increases GDP by an illustrative 0.1%. Relative to a base scenario, the GDP loss in the long term would be respectively -2.5, -1.4, -6.7 or -9.3%. In the no deal case, UK-EU trade decreases by 37% and UK-non EU countries trade increases by 6%. Due to the fall in GDP, public sector borrowing increases by 2.4% percentage points of GDP in the no deal scenario. Exchange rate developments are not discussed. In a sensitivity analysis, the study estimates that, in the no deal scenario, the negative impact could be 2.3 percentage points higher if private investment falls due to a lower rate of return, but the impact could be 0.8 percentage point lower under unilateral trade liberalization.

In November 2018, also, the Bank of England (Bank of England, 2018) used a gravity model to evaluate the impact of Brexit on total trade and FDI, and then introduced the impact of trade openness and FDI on productivity. It considers a fall in the UK exchange rate to equilibrate the current account and an increase in uncertainty, which decreases private spending. It presents five scenarios. In no deal scenarios, the UK applies the MFN tariff (3.2% in weighted average); the UK recognises EU product standards, but the EU does not reciprocate. In an Economic Partnership scenario, which corresponds to the November 2018 Political Declaration, the GDP level, relative to a trend scenario,[6] increases by 1.75% in a close partnership, and decreases by 0.75% in a less close partnership. Inflation remains near 2%; and Ster-

6. According to the Bank of England, the November 2018 baseline scenario is already 3% lower than the May 2016 baseline scenario.

ling appreciates by 5% (close partnership) or by 2% (less close partnership). In a "Disruptive no deal Brexit", GDP falls by 3%, Sterling depreciates by 15%, house prices fall by 14%, inflation accelerates to 4.25%, and the Bank rate increases to 1.75%. In a "Disorderly no deal Brexit", GDP falls by 8%, Sterling depreciates by 25%, house prices fall by 30%, the inflation rate increases up to 6.5%, and the Bank rate increases to 5.5%. The Bank of England estimated that UK banks will be able to support such a shock, because it is smaller than the last stress tests the BoE imposed. In a scenario of transition to a WTO regime, the GDP impact will range between -2.5% (prepared transition) and -5.5% (unprepared transition), with Sterling depreciating by 8%.

In May 2019, Felbermayr (Felbermayr, 2019) suggested that in the event of a no deal Brexit the UK may decide not to increase its tariffs and NTBs, but, on the contrary, in what the author names a "Hard-but-Smart Brexit", to cut all its tariffs for non-EU producers to the current level for EU producers, i.e. zero, and not to introduce more border controls. UK exporters would however suffer from tariffs and NTBs from EU27 countries, and some sectors (like agriculture and food products) would suffer from non-EU producers' competition, but UK producers would benefit from lower prices for their intermediate goods, and UK consumers would benefit from the fall in prices of imported goods. According to a simulation, the Hard-but-Smart Brexit would induce a loss of real consumption of 0.5% in the UK and 0.6% in the EU27. From a political point of view, this strategy would induce an asymmetrical situation where EU27 countries would have to introduce physical controls and barriers, whereas the UK would appear as an open country, which may reinforce the UK position in the negotiations.

The most recent survey by Campos (2019) deals with political and economic aspects. The author estimates that the net benefits for the UK of EU membership would be 8.6% of GDP. The author discusses the motivation of the vote for Brexit between economic factors and sovereignty issues; he stresses the effects of the "China shock" on regions that voted for Brexit; he recalls that Ireland, the UK and Sweden were the first to be opened to workers from the New Member States in 2004, with large inflows from 2004 to 2016; he estimates that both trade with advanced countries and FDI increase productivity. Thus, the author recognizes that canonical, static models indicate a loss of only 2% to 3% of UK GDP, but the loss rises to 8% for an exit with WTO rules, although with fragile models. He recalls the UK productivity

paradox. He recalls also that the single market has allowed the UK to develop financial services and the automobile and pharmaceutical industries.

The impact on the EU27

Some studies give estimates of the impact of Brexit for the EU27. In a first analysis, as the UK-EU trade ratio to GDP is 4.65 times higher for the UK than for the EU, the impact should be 4.65 times larger for the UK than for the EU27, but this depends on trade structure; one may think that there is a non-linearity, as less competitiveness from British firms is less important on EU markets than less competitiveness from EU firms on UK markets; the UK may benefit from ending its transfers to the EU27, which would hit EU MS; the UK may choose to not increase the barriers on EU27 exports; the UK may choose to sign FTA with non-EU countries; but on the contrary, some migration flows, some multinational firms, and some FDI will move from the UK to the EU27. The depreciation of Sterling could spread the loss between the UK and the EU27.

The impact differs among EU MS according to the importance of their trade, direct and indirect (by intermediate consumption included in UK imports, etc.), and to the trade structure. Ireland is the most affected country, due to the size of its trade with the UK, in particular for agricultural products, but the impact will depend on the status of the Irish border.

In "gravity plus CGE" models, the impact is always large on trade but relatively small on GDP. For instance, in Mayer *et al.* (2018), the single market membership doubles trade in goods between MS, but increases their GDP by 4.4% only (and by 2.3% for the UK).

Felbermayr *et al.* (2018b) use a model with a multi-sector input-output analysis and a precise evaluation of the impact of EU membership for the UK. They find that UK manufacturing exports to the EU27 would fall by 32%, while EU27 manufacturing exports to the UK would fall by 31%. In the long term, the loss in real consumption would be relatively small, as long-run productivity effects are not considered: 2.76% for the UK, 0.78% for the EU27, Ireland being the most affected country (8.16%), and then Luxembourg (due to the financial links) and Malta (Table 6). The impact on the UK is 3.5 times the impact on the EU27. More openness from the UK towards non-EU countries ("A Global Britain") would significantly reduce the cost for the UK and

slightly increase the costs for EU27 MS. A deep and comprehensive free trade agreement copied on that of the EU with Korea would substantially limit the negative impact of Brexit. In the case of a Hard-but-Smart Brexit (where the UK decreases all its tariffs and does not introduce NTBs), the impact on the EU27 will even be similar to the impact on the UK.

Table 6. **The impact of Brexit on real consumption (in %)**

	Hard Brexit	Global Britain	FTA	Hard-but-Smart
UK	-2.76	-1.43	-0.93	-0.50
EU27	-0.78	-0.83	-0.20	-0.60
Germany	-0.72	-0.80	-0.20	-0.48
France	-0.52	-0.54	-0.10	-0.40
Italy	-0.40	-0.43	-0.09	-0.31
Spain	-0.39	-0.42	-0.13	-0.29
Belgium	-1.40	-1.46	-0.29	-0.96
Netherlands	-1.64	-1.71	-0.37	-1.06
Ireland	-8.16	-8.22	-3.08	-5.39
Malta	-5.19	-5.16	-0.76	-3.36
Luxembourg	-5.23	-5.46	-2.15	-3.15

Source: Felbermayr *et al.* (2018b); Felbermayr (2019).

The CEPII produced similar estimates (Vicard, 2017; Mayer *et al.*, 2018). The authors first evaluate the impact of Brexit on UK trade, then the impact of lower trade on GDP. The evaluation gives high numbers for the trade impacts, but low numbers for the GDP impact. Even more striking, in the case of a trade agreement, trade between the UK and the EU would be reduced by 36%, but trade between the UK and non-EU countries would increase by 12%. In the case of a trade agreement, long-term GDP losses would be 2.4% for the UK and 0.4% for the EU27. In a relationship under WTO rules, the loss would be 2.9% for the UK and 0.5% for the EU27. For the UK, an FTA with Canada, the USA and Australia could reduce the loss by 0.5% of GDP. Losses would be very uneven among EU27 MS, and would be similar for Ireland and the UK. The study assumes that the UK will apply MFN tariffs and NTBs, while the UK may prefer to apply lower tariffs and to avoid NTBs.

Table 7. **Impacts of a WTO scenario on EU and selected EU MS GDP (in %)**

	Rojas-Romagosa (2016)	Vandenbussche *et al.* (2017)	Mayer *et al.* (2018)
UK	-4.1	-4.47	-2.9
EU27	-0.8	-1.54	-0.6
Germany	-0.6	-1.76	-0.4
France	-0.6	-1.25	-0.3
Italy	-0.5	-1.23	-0.2
Spain	-0.9	-0.91	-0.3
Belgium	-2.1*	-2.35	-0.8
Netherlands	-1.2	-2.59	-0.8
Ireland	-3.7	-5.74	-3.2
Luxembourg	—	-1.51	-1.9

*Belgium and Luxembourg.
Source: Rojas-Romagosa (2016), Vandenbussche *et al.* (2017), Mayer *et al.* (2018).

According to the IMF (2018a), the output loss would be 2.5% for the UK with an FTA, and 4% in the no deal case. For the EU27, the loss would be respectively 0.8% and 1.5% of GDP, but Ireland would be particularly hit, followed by the Netherlands, Denmark and Belgium. However, Ireland could attract some FDI currently located in the UK.

Bisciari (2019) averages six studies on the long-term impacts on GDP in a WTO scenario. The negative impact would be 3.2% of GDP for the UK; it would be larger for Ireland (3.6%) and Malta (3.4%); and the negative impact would be 0.6% for the EU27 (1% for the Netherlands, 0.85% for Belgium, 0.35% for Germany, 0.3% for France and 0.2% for Italy).

In fact, according to the studies considered, the ratio between the impact on UK and EU27 GDP ranges from 2.7 to 7.6 (table 8).

Table 8. **Long-term effects of a WTO regime on EU27 and UK GDP (in percentage points of GDP)**

	EU27	UK	UK/EU27 Ratio
Rojas-Romagosa (2016)	-0.8/-1.5	-4.1/-8.7	5.1/5.8
Dhingra *et al.* (2017)	-0.35	-2.65	7.6
Mayer *et al.* (2018)	-0.5	-2.9	5.8
Vandenbussche *et al.* (2017)	-1.54	-4.47	2.9
Felbermayr *et al.* (2018, b)	-0.78	-2.76	3.5
IMF (2018a)	-1.5	-4.0	2.7
Bisciari (2019)	-0.6	-3.2	5.3

Source: Own compilation.

The short-term impacts of Brexit

It is difficult to assess the short-term impacts of a no deal exit, which could have occurred on 31 October 2019. It would probably lead the pound and business investment to fall, but also to stock-building for precautionary reasons at the household and firm level. The largest uncertainty lies in foreign trade. The UK could decide not to introduce tariffs (except for agricultural products) or non-tariff barriers. But the EU27 would feel obliged to do so, with the difficult issue of the Irish border. Countries linked by an FTA with the EU may consider that these agreements are extended to the UK, or that they are obsolete. In November 2019, among the 36 FTA that the UK is part as an EU member, 13 have already been replicated (see note 3), but problems remain with Japan, Canada, Egypt and Turkey. The biggest risk, which is difficult to assess, is a disruption of production chains, but firms probably will have taken measures to avoid this. Conversely, there is no risk of a financial crisis, as the UK has kept its monetary power and since the UK banking system is strong enough (see Bank of England, 2018). The Bank of England only announced that it will act "to bring inflation sustainably back to 2% while supporting jobs and activity". The UK government could run an expansionary fiscal policy (as the budget deficit planned for 2019 is only 1.3% of GDP). The effect on equity prices and on business investment will depend on the ability of the Government to define a new growth strategy for the UK.

Events since 2016 make unlikely developments such as those presented by Standard & Poor's (S&P Global, 2018), where a no deal would cause heavy drops in housing prices (-15%) and equity prices (-14.5%), inducing a fall in household consumption (-7% after 2 years), i.e. a fall in GDP by 5.6% in 2020. Similarly, the scenarios (stress tests) by Bank of England in September 2018 of a fall by about 35% of house prices and of a financial crisis like in 2008 seem now a bit exaggerated.

According to the NIESR's October 2018 forecast (Hantzsche *et al.,* 2018), after a no deal the pound would fall again by 10%. The government would recycle half of UK net contributions into public spending (i.e. 0.25 point of GDP). The induced decline in GDP would be 2.9% in 2020, of which 2.2 percentage points from investment, 1.3 percentage point from private consumption, 0.4 percentage point from public consumption, and a 1.0 percentage point positive effect from trade.

According to the last IMF scenarios (IMF, 2019), a no deal scenario would induce, after 2 years, a negative effect of about 3.5% of UK GDP and about 0.5% of EU27 GDP. The IMF assumes that UK exports to the EU27 will be subject to MFN rules, while the UK will set tariffs unilaterally to zero for 87% of its imports; NTBs will be increased by an additional 14 per cent (in tariff equivalent terms); net immigration flows from the EU27 will be reduced by 25 000 people per year; financial conditions will be slightly tightened (+20 basis points for the UK corporate bonds spread); and the fall in the pound will be weak. In the long term, potential output would decline by 3% in the UK (as trade barriers decrease the returns on capital, hence the capital stock, while the size of the labour force would diminish under immigration restrictions) and by 0.3% for the EU27. For the longer term, this evaluation appears low relative to other studies.

A moderate estimate can lead to the assumption that Sterling could fall by around 10% (the same order of magnitude as in 2016) and temporary agreements would limit supply chain disruptions, so that the foreign trade contribution could be slightly positive (on the order of 0.2 percentage point of GDP); economic policy would be slightly expansionary (on the order of 0.2 percentage point of GDP); the inflationary effect of the depreciation would be on the order of 1.5%, which would induce consumption to fall by around 0.8 percentage point of GDP; finally, an 8% fall in business investment (i.e. 0.8% of GDP) could be limited by a credible pro-business policy. In these conditions, the negative impact on UK output would be limited to 1.4% of GDP in 2020. But this is an optimistic scenario.

3. Conclusion

The economic literature gives diverging assessments of the impact of Brexit, depending on scenarios and assumptions. In a WTO scenario, the impacts on UK GDP range from -13.3% to +7% in the long run. The median is on the order of -4.5%. Many studies overestimate, sometimes for political reasons, either the negative impact of Brexit on future productivity growth in the British economy, or the positive impact of further deregulation. The slowdown in the British economy following the referendum was much weaker than announced by some analyses. So far, Brexit has not allowed economists to restore a reputation that has been somewhat tarnished by their blindness before the financial crisis.

The accumulation of bilateral trade agreements would create a more and more complicated world trade system; one may advocate the return of unified rules under WTO supervision, which should consider labour rights, social protection, health and ecological standards and the fight against climate change.

Although some degree of harmonization is needed for standards and taxation, a country should not be obliged to abandon its domestic sovereignty in order to benefit from free trade advantages. This advocates for a third circle around the EU.

Initially, it could have been feared that the prospect of Brexit would weaken the EU, by showing that a country could decide to leave it. But the EU27 has shown unity in the negotiations on tough and uncompromising positions. It became clear that it was politically difficult and economically hazardous to leave. The EU is more or less like a golden cage, from which it is difficult, if not impossible, to get out.

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EUROFRAME 2019 CONFERENCE

GREATER COHESION IN AN INCREASINGLY FRACTURED WORLD: WHERE NOW FOR THE EUROPEAN PROJECT?

Report on the EUROFRAME 2019 Conference

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"Greater cohesion in an increasingly fractured world: Where now for the European project?". This was the theme of the 16th EUROFRAME Conference on economic policy issues in the European Union, which was held on 7 June 2019 in Dublin. EUROFRAME is a network of European economic institutes that includes: DIW Berlin and IfW Kiel (Germany), WIFO (Austria), ETLA (Finland), OFCE (France), ESRI (Ireland), PROMETEIA (Italy), CPB (Netherlands), CASE (Poland) and the NIESR (United Kingdom). Since 2004, EUROFRAME has organized an annual conference on an important subject for Europe's economies. In 2019, 27 researchers made presentations, most of which are available on the conference website. This article provides a summary of the work presented and discussed during the conference.

As the title of the conference emphasizes, the year 2019 has been marked by the risk of fractures in the world economy. Donald Trump has launched a trade war against China and Europe. He is challenging the Paris agreement on the fight against climate change. The European Union (EU) is facing the threat of Brexit at a time when problems about migration and the function of democracy find Western and Eastern European countries at odds. Bilateral trade agreements seem to be making progress but at the same time call into question the usefulness of the World Trade Organization (WTO). Negotiations on the taxation of multinational corporations are now underway, but are stalling due to national interests. In this context, the euro zone has made institutional progress, but this is difficult to implement, and has remained limited. Europe has a crucial role to play in putting in place the instruments that are indispensable for managing globalization, in ecological, commercial, fiscal and financial matters, but

achieving this requires unity and a political impetus that are lacking today. How can the European project be relaunched?

Karl Whelan's introductory presentation focused on issues specific to the euro. The single currency appears to be a success: it has survived, it enjoys popular support, it has ensured price stability, it has put an end to exchange rate instability between the Member States, and a banking union is almost in place. Monetary policy has managed to be responsive. However, there have been widening imbalances between the Member States, a risk of default on public debts has emerged, and there is a growing risk of bank failures. Progress needs to continue: to rethink the fiscal policy rules, to create a capacity for fiscal intervention at the euro zone level, to provide a mechanism for restructuring public debt, to encourage banks to hold less of their own country's public debt by treating it as risky, to create a European deposit insurance scheme, and to clarify the ECB's function as lender of last resort vis-à-vis banks and governments. The case of Brexit shows that European integration is still at the mercy of nationalist movements.

Marek Dabrowski sketched an overview of the euro's history over the past 20 years. He welcomes the success of the single currency, but is concerned about the reluctance of certain countries to undertake the necessary reforms. He proposes deepening political integration, increasing the size of Europe's budget for financing joint projects, tightening market discipline to control fiscal policies, and simplifying and strengthening the application of fiscal rules. He considers that central and eastern European countries who are EU members but have not adopted the euro should set themselves the objective of doing so in the near future, which would simplify the EU's institutional architecture.

Several different viewpoints came out during the course of the discussion. According to Klaus-Jürgen Gern, the EU must choose between two paradigms. A fiscal union, with greater harmonization, coordination and risk-sharing, would, in this author's opinion, require fiscal restrictions in many countries, the strict application of fiscal rules, and structural reforms of the markets for goods and labour, which would need to be implemented at the country level. Maastricht 2.0 would be based on the diversity, competition and responsibility of each country. The non-assistance clause should be strengthened; its credibility would be enhanced by a stronger Banking Union with a European safety net, by breaking the link between the banks and the debt of their country of origin, and by creating a mechanism for the restructuring of public debts.

We ourselves are concerned about proposals that would weaken the economic policies of the Member States, decided democratically, to the benefit of European technocratic institutions, far removed from national

realities. We recalled the example of the inappropriate fiscal policies imposed after the financial crisis. We believe it is dangerous to weaken the ability of governments to finance themselves and to rely on the financial markets to enforce sound fiscal policy. Some have argued that any project must take into account the existing political and economic disparities and differences between EU countries.

1. Brexit

Catherine Mathieu and Henri Sterdyniak presented an overview of the issues raised by Brexit. They analyse the positions of the European institutions and of the political forces in the United Kingdom, between the partisans of remaining in the EU, the partisans of a close partnership, and the partisans of a sharp break, possibly even without an agreement, a position that leads to a dead-end. So far, the results of the referendum have not resulted in the recession foretold, but to a slight slowdown in growth. The article presents various macroeconomic studies that assess Brexit's long-term impact on the British economy. The impact would be very negative if Brexit results in the closure of the UK, which would have lasting effects on the growth of labour productivity.

Given current events and the location of the conference, three presentations focused on Brexit's impact on Ireland. Martina Lawless analysed in detail the economic sectors and counties that would be hit by Brexit, in particular by a no-deal Brexit. There is extensive trade between the two parts of the island, which is local, rather than international. Small businesses and the agricultural sector (dairy, meat) face the greatest risk. The decrease in trade cannot be offset by an increase in foreign direct investment (FDI). Overall, the shock could lead to a 4-6% drop in GDP for the Republic of Ireland.

The study by Christine Arriola *et al.* stressed that the Republic of Ireland is the EU country with the most extensive economic ties with the UK; in particular, the agricultural sector exports a lot to the UK; many of the intermediate goods used by Irish companies come from the UK, meaning that the production chains will have to be restructured; and the impact of relocating FDI would be positive, but weak. All in all, the long-term impact would only be a 2.3% drop in GDP.

Adele Bergin *et al.* compared three scenarios: an exit with a deal; an orderly exit without a deal; and a disorderly exit without a deal. In all three cases, the negative effect on trade is somewhat offset by a positive effect via FDI. Overall, the 10-year impact on the Republic of Ireland's GDP would be 2.6%, 4.8% or 5%, depending on the scenario.

2. Monetary issues

Rachel Slaymaker *et al.* analysed the arrears on mortgage payments in Ireland. They show that these depend on a household's income and level of debt, but that they are higher for variable rate loans and following a rise in interest rates, which will be problematic when the period of low interest rates comes to an end.

Roberto Pancrazi and Luca Zavalloni show that a country in difficulty may find itself faced with excessively high interest rates that cause it to go bankrupt at the expense of its creditors. This could justify public intervention (or international aid) to reduce the cost of the new debt it takes on. The article shows that this policy can be Pareto-improving, thus justifying the intervention of the International Monetary Fund (IMF) or the European Stability Mechanism (ESM) or the issue of senior debt securities.

Jérôme Creel and Mehdi El Herradi used a VAR model to analyse the link between monetary policy and income inequality. They find that a restrictive monetary policy tends to increase income inequality, with an effect that is especially significant for the peripheral countries (Spain, Greece, Italy, Portugal).

3. Banking

Ray Barrell and Dilruba Karim analysed the determinants of financial crises. Two variables play a central role: the current account deficit and the increase in property prices; and two variables play a stabilizing role: bank capital and bank liquidity. On the other hand, the role of an increase in bank credit is not highlighted. Some crises also remain unexplained. The authors assess that capital ratio requirements are the best tool for macroprudential policy, along with the control of credit quality, rather than quantity.

Hiona Balfoussia *et al.* analysed the relationship between the risk of default by the State and the risk of default by the banks. The fragility of public finances reinforces the impact of economic shocks through the channel of credit. This fragility can be avoided if capital requirements for banks are optimally adjusted. Applied to the Banking Union, the analysis shows that fragile countries may have an interest in a union, while countries with healthy public finances may suffer.

José Carrasco-Gallego used a DSGE model to compare the stabilizing properties of two instruments of macroprudential policy, the loan-to-value ratio (LTV) and the countercyclical capital buffer (CCB). He shows that each of these ratios can lead to inappropriate reactions for certain types of shocks and that what they indicate may be contradictory.

Elizabeth Jane Casabianca *et al.* compared two methods for predicting banking crises: a logit econometric model and a machine-learning algorithm. It appears that the relevant variables are the external debt-to-GDP ratio, the credit-to-GDP ratio, inflation, and the 10-year US rate. Strong global growth increases the risk of a banking crisis. The public debt-to-GDP ratio has no predictive value. For developed countries, the algorithm predicts 53 crises out of 128 and gives 40 false alarms for 785 situations. In 2006, the risk of a crisis exceeded 50% for 25 countries; in 2017, it reached 40% for 9 countries (including the United Kingdom, Italy, the Netherlands and Switzerland).

4. Finance

Amat Adarov identified the financial cycles in 20 European countries from 1960 to 2015. These cycles are characterized by periods of expansion where imbalances are formed, followed by sharp contractions. These cycles are particularly important and synchronized for the countries in the core of the euro zone. They must be taken into account in analysing business cycles and the dynamics of public debt, but also in the organisation of the Banking Union and the Capital Markets Union and in relation to the objectives of monetary policy.

Robert Unger discussed the link between growth and development. According to an empirical analysis based on 34 developed countries from 1995 to 2014, it is household debt, rather than corporate debt, that plays a crucial role, initially promoting growth and then turning harmful beyond a certain threshold. The study does not show any difference between financing through bank credit or through the financial markets.

5. Fiscal policy

Beau Soederhuizen *et al.* used a VAR model to assess the fiscal multiplier based on the state of the financial cycle. The multiplier of government investment would be negative in times of rising financial stress, and positive, above 1, in times of falling stress. Taking into account the business cycle, it appears that these effects are amplified during recessions and weakened during expansions. The multiplier for government consumption is lower and less dependent on the financial cycle.

Pedro Gomes and Felix Wellschmied analysed the functioning of the labour market in the public and private sectors in the United States, the United Kingdom, France and Spain. Workers make different job choices between the two sectors over the life cycle based on their risk aversion, their assets and the importance they attribute to job security and the differential in pensions.

Harris Dellas *et al.* constructed a computable general equilibrium (CGE) model of the Greek economy, which incorporates an informal sector whose size varies according to tax rates and controls on financial flows. They show that fiscal consolidation has resulted in 50% growth in the informal sector, so even as official GDP has fallen by 26% (instead of the 18% initially envisaged), output has fallen by only 17%.

Salvador Barrios *et al.* proposed an analysis of tax policy measures using a database on income tax reforms. These are described in detail in a micro-simulation model; their macroeconomic impact is assessed using a VAR model, whose results are incorporated into a macroeconomic model. It appears that income tax cuts do have a positive effect on output and employment, but the increases in government revenue are insufficient to reverse the negative impact of lower taxes on the public purse.

Sebastian Weiske and Mustafa Yeter compared different mechanisms for fiscal transfers between Member States. These should make it possible to stabilize their economies, without inducing permanent transfers, without leading to the accumulation of debt, and without encouraging behaviour associated with moral hazard. There is a delicate trade-off between stabilization and the accumulation of debt. The authors propose introducing a cap on the net transfers received (or paid) by each country.

6. Trade and external balances

Kieran McQuinn and Petros Varthalitis show that the growth of the Irish economy, initially driven by the export sector, was spurred from 2004 to 2007 by a property bubble. The financial crisis has helped rebalance the economy in favour of the industrial sector. The recovery of the Irish economy is due not to structural reforms, but to the development of exports.

Cian Allen conducted an empirical study for the period from 1995 to 2015 that analyses the impact on current account fluctuations of changes in the financial balance of the government, the household sector, the corporate sector and the financial sector in the G20 countries. He shows that it is fluctuations in the public balance and the corporate balance (rather than in the household balance) that play a crucial role.

Pascal Jacquinot *et al.* used a dynamic general equilibrium model, with friction on the labour market, to analyse the impact of protectionist measures. These measures undermine employment both in the country implementing them as well as in the target country; third countries can benefit from a slight positive effect. On the other hand, measures hitting one of the euro zone countries have recessionary effects on the whole of the zone.

John Lewis and Matt Swannell used a gravity model to analyse migration flows. They highlight the impact of the variables of distance, historic links, a common language, and the number of migrants already settled, but also macroeconomic variables, such as expected growth both in the country of origin (with a negative impact) and in the destination country (with a positive impact) and the flexibility of the labour market.

Tatiana Cesaroni *et al.* explain trends in inequality in European countries by separating the countries in the core from those in the periphery. Higher unemployment contributes to an increase in inequality in the two areas. An increase in GDP per capita reduces inequality in the core countries, but increases it in the peripheral countries. Trade and financial openness and taxation reduce inequalities in the peripheral countries. They have little impact in the core countries. The authors conclude that redistributive policies must be thought out at the national level.

Angelos Angelopoulos *et al.* analysed the impact of rent-seeking on economic activity and growth. Rent-seeking can be a stimulus to accumulating wealth and protecting against income shocks; however, it diverts productive activity, it immobilizes capital, and ultimately it leads to an increase in income inequality.

Tryfon Christou *et al.* consider that in countries with poor-quality institutions individuals devote part of their working time to rent-seeking. By distinguishing countries according to the quality of their institutions, they conclude that countries with better quality institutions have suffered less from the crisis and that it has led to a deterioration in the quality of their institutions.

List of presentations

Karl Whelan (University College, Dublin): The euro at 20: Successes, problems, progress and threats

Marek Dabrowski (CASE, Warsaw): The Economic and Monetary Union: Past, present and future

Catherine Mathieu and Henri Sterdyniak (OFCE, Paris): Brexit: Why, how, and when?

Martina Lawless (ESRI): Brexit and trade on the island of Ireland

Christine Arriola, Caitlyn Carrico, David Haugh, Nigel Pain, Elena Rusticelli, Donal Smith, Frank van Tongeren and Ben Westmore (OECD): The potential macroeconomic and sectoral consequences of Brexit on Ireland

Adele Bergin (ESRI), Philip Economides (ESRI), Abian Garcia-Rodriguez (ESRI and Trinity College Dublin) and Gavin Murphy (Department of

Finance, Ireland): Ireland and Brexit: Modelling the impact of deal and no-deal scenarios

Rachel Slaymaker, Conor O'Toole, Kieran McQuinn (ESRI) and Mike Fahy (Trinity College Dublin, Department of Finance, Government of Ireland): Policy normalisation and mortgage arrears in a recovering economy: The case of the Irish residential market

Roberto Pancrazi (Warwick University) and Luca Zavalloni (Central bank of Ireland): Interest overhang: A rationale for the existence of sovereign lending mechanisms

Jérôme Creel (OFCE and ESCP Europe) and Mehdi El Herradi (University of Bordeaux-LAREFI): Shocking aspects of monetary policy on income inequality in the euro area

Ray Barrell and Dilruba Karim (LSE and Brunel University, London): Bank capital, excess credit and crisis incidence

Hiona Balfoussia (Bank of Greece), Harris Dellas (University of Bern and CEPR) and Dimitris Papageorgiou (Bank of Greece): Fiscal distress and banking performance: The role of macroprudential regulation

José A. Carrasco-Gallego (King Juan Carlos University, Madrid): Effectiveness of new macrofinancial policies

Elizabeth Jane Casabianca (Prometeia Associazione and Polytechnic University of Marche), Michele Catalano (Prometeia Associazione), Lorenzo Forni (Prometeia Associazione and University of Padua), Elena Giarda (Prometeia Associazione and University of Modena and Reggio Emilia) and Simone Passeri (Prometeia Associazione): An early warning system for banking crises: From regression-based analysis to machine-learning techniques

Amat Adarov (Vienna Institute for International Economic Studies): Financial cycles in Europe: Dynamics, synchronicity and implications for business cycles and macroeconomic imbalances

Robert Unger (Deutsche Bundesbank): Revisiting the finance and growth nexus – A deeper look at sectors and instruments

Beau Soederhuizen, Rutger Teulings and Rob Luginbuhl (CPB): Estimating the impact of the financial cycle on fiscal policy

Pedro Gomes (Birkbeck and University of London) and Felix Wellschmied (University Carlos III Madrid): Public-sector employment over the life

Harris Dellas (University of Bern), Dimitris Malliaropulos (Bank of Greece and University of Piraeus), Dimitris Papageorgiou (Bank of Greece) and Evangelia Vourvachaki (Bank of Greece): Fiscal multipliers with an informal sector

Salvador Barrios (European Commission, Joint Research Centre), Adriana Reut (European Commission, DG ECFIN), Sara Riscado (European Commission, Joint Research Centre and Portuguese Ministry of

Finance) and Wouter van der Wielen (European Commission, Joint Research Centre): Dynamic scoring of tax reforms in real time

Sebastian Weiske and Mustafa Yeter (German Council of Economic Experts): An evaluation of different proposals for a European fiscal capacity

Kieran McQuinn and Petros Varthalitis (ESRI and Trinity College, Dublin): How openness to trade rescued the Irish economy

Cian Allen (Trinity College, Dublin): Revisiting external imbalances: Insights from sectoral accounts

Pascal Jacquinot (European Central Bank), Matija Losej (Central Bank of Ireland) and Massimiliano Pisani (Bank of Italy): Nobody wins: Protectionism and (un)employment in a model-based analysis

John Lewis and Matt Swannell (Bank of England): The macroeconomic determinants of migration

Tatiana Cesaroni (Ministry of Economics and Finance of Italy, MEF-DT), Enrico D'Elia (Ministry of Economics and Finance of Italy, MEF-DF) and Roberta De Santis (Istat and LUISS): Inequality in EMU: Is there a core-periphery dualism?

Angelos Angelopoulos (Athens University of Economics and Business and Greek Open University), Konstantinos Angelopoulos (University of Glasgow and CESifo), Spyridon Lazarakis (University of Glasgow), Apostolis Philippopoulos (Athens University of Economics and Business and CESifo): Rent-seeking worsens economic outcomes and increases wealth inequality

Tryfon Christou (Athens University of Economics and Business), Apostolis Philippopoulos (Athens University of Economics and Business and CESifo) and Vanghelis Vassilatos (Athens University of Economics and Business): Modelling rent-seeking activities: Quality of institutions, macroeconomic performance and the economic crisis

BREXIT AND TRADE ON THE ISLAND OF IRELAND

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After decades of expansion and deepening integration in Europe, the referendum in the United Kingdom in June 2016 to leave the European Union was an unprecedented event. Amongst the many issues to be negotiated in unravelling membership, the withdrawal process has been dominated by the implications for the island of Ireland. Northern Ireland has been to the forefront as the location of the new border between the EU and a non-member state. While much of the focus has been on the political implications, this paper looks at the potential effects of Brexit on Ireland and Northern Ireland from an economic perspective. The current patterns of cross-border trade are examined and the potential impacts of Brexit discussed, depending on the extent to which it changes the economic relationship between the UK and EU and hence in the immediate neighbourhood of Ireland and Northern Ireland.

Keywords: Brexit, Free trade agreements, Irish border.

1. Introduction

From its initial inception as the European Coal and Steel Community with a group of six countries co-ordinating a limited range of industrial activities, the supra-national organisation that is now the European Union (EU) has grown for almost seventy years both in terms of the breadth of membership and the depth of coordination amongst member states. The expansion and deepening have tended to come in waves interspersed with periods of consolidation. How far membership

1. Thanks to all participants of the EUROFRAME conference and two anonymous referees for comments and discussion on the earlier version of this paper.

could be extended and how close the relationship between members could become have been debated since the earliest days of the European project. The decision by the United Kingdom (UK) in a referendum in June 2016 was a watershed moment as the first time a member state of the EU decided to leave the organisation.[2] The process of negotiating exit, commonly referred to as "Brexit", is still underway with further negotiations on the future relationship between the UK and EU set to follow. While the referendum decision to exit naturally focused on the UK-EU relationship, the withdrawal process has been dominated by the implications for the island of Ireland as the location of the new border between the EU and a non-member state. This paper looks at the potential effects of Brexit on Ireland and Northern Ireland from an economic perspective, documenting existing patterns of cross-border trade in particular and the challenges that changing the economic relationship between the two parts of the island could pose.

It should be emphasised at outset that the economic angle is a subsidiary factor in placing the status of post-Brexit Northern Ireland as one of the key issues to be determined in the exit stage of the Brexit process with implications for peace being the dominant consideration. The border between Ireland and Northern Ireland, one of the constituent countries of the UK, has a long and fraught history. Emerging in parallel with nationalist movements across many parts of Europe in the late nineteenth century, the campaign for Irish independence (or more limited devolved autonomy in the form of "home rule") was resisted from its early stages by Unionists who felt that Ireland should remain an integral part of the UK. As the Unionist movement was a minority in the country overall but formed a majority in the north-eastern six counties, the outcome of the treaty negotiations of 1921 to end the Irish War of Independence was to partition the island into an independent Ireland but to have Northern Ireland remain part of the UK.[3] Resistance to partition erupted in violence in the 1970s with over 3,000 deaths in the following thirty years, a period known as the "Troubles". The Good Friday Agreement to restore peace and establish new democratic institutions with cross-community sharing of power

2. While Greenland technically exited the European Economic Community in 1985 following its autonomy from Denmark, it continued to maintain close links (via Denmark) as one of the Overseas Countries and Territories of the EU.

3. Initially Ireland was known as the Irish Free State with the King of England remaining as head of state. It became a republic in 1949.

was signed at Easter 1998. Although this was primarily a political process, the removal of customs checkpoints at the border between Ireland and Northern Ireland with the completion of the European Single Market in 1993 played a supporting role. As a physical demonstration of the border, customs posts had been subject to attack throughout the period of the Troubles and the distinction between customs checks and security checks could become blurred.[4] The Good Friday Agreement also allowed a unique sharing of citizenship entitlements with anyone born in Northern Ireland entitled to apply for either Irish or British (or both) passports.

With the peace process well established and with free trade in goods and services as members of the EU along with free movement of people, the border between Ireland and Northern Ireland is today frequently characterised as being a "soft" border, close to being inconspicuous and putting essentially no frictions on cross-border activity. If Brexit results in the UK no longer being a member of the Single Market and Customs Union as at the moment, then a return to economic checks on goods crossing the Irish border (in one or both directions) becomes a strong possibility, perhaps an inevitability. Hence the description of Brexit as "hardening" the Irish border.

This paper begins by looking at the different layers of economic integration and the extent to which Brexit can be made compatible with maintaining the free economic flows in place across the Irish border today (Section 2). It then moves on in Section 3 to look at estimates for how Brexit, particularly one without agreement of a withdrawal treaty, might impact the Irish economy. Section 4 looks more closely at the intensity and composition of cross-border trade with a focus on the potential distribution of changes in trade costs that may result from Brexit. The final section concludes with some comments on the current mitigation measures being put in place and the extent of uncertainty that still surrounds the final outcome.

2. Layers of integration

The extent to which economic and political sovereignty can be pooled across countries can vary in many dimensions. Within the EU, there are subgroups of countries where deeper integration has

4. A full chronology of the Troubles is maintained by the University of Ulster on its CAIN (Conflict Archive on the INternet) web site: https://cain.ulster.ac.uk/index.html

occurred than across the Union as whole – the sharing of monetary policy by the countries of the euro area being the most obvious example. The greatest focus of the Brexit negotiation process and of internal debates in the UK on Brexit have tended to be on how close future trade relationships will be between the UK and EU. This is a key aspect of the implications of Brexit for the island of Ireland as, in general, the closer the trade relationship remains then the more open and frictionless the border can be.

The range of options are illustrated in Figure 1 which gives some (non-exhaustive) examples of how trade policy between EU members and other countries is structured.[5] At the centre are euro area countries where trade integration is supplemented by sharing of a common currency and monetary policy. For the EU as a whole, trade is governed by free circulation of goods with mutual recognition of standards and a common external tariff. It is worth distinguishing the two separate elements of this arrangement: the first is the Customs Union, which removed all tariffs and charges from goods circulating between EU member states with the tariffs applied to goods entering the EU from other countries set at EU level and having no variation across member states. Once a good enters any EU country therefore, it pays the tariff due at this point (which can vary depending on the origin country and product in question) and can then be moved and sold on in any EU country. However, this means that there is no possibility for EU countries to have an independent trade policy. The second, related but distinct, element underpinning the free movement of goods is the Single Market which entails common recognition of standards and also broadens the freedom of movement beyond goods to apply also to services, capital and workers.

As we move away from the centre of the tightly integrated EU, we find that the distinction between customs and the other freedoms of the Single Market can result in different degrees of trade relationship with the EU. Members of the European Economic Association (EEA – Iceland, Liechtenstein and Norway) are in the Single Market, recognising and applying EU regulations with generally free movement of goods, services and people between each of them and the EU but they are not part of the Customs Union. Some exceptions do apply, such as

5. A comprehensive list of countries with which the EU has trade agreements (or is in the process of negotiating one) and the details of each agreement is available at https://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements/

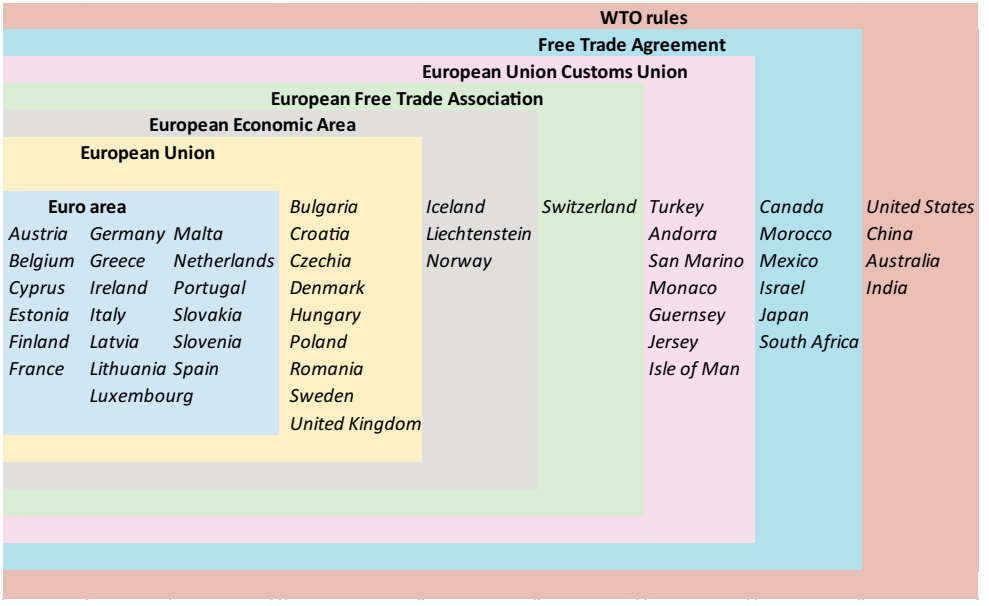
Liechtenstein retaining rights to restrict access of workers from the EU. They can therefore run a separate trade policy and charge their own tariffs on trade coming from third countries. This does however require that some checks are in place between the EU and EEA members in order to establish that goods coming from any third countries meet EU standards and for tariffs due to the EU to be collected. The situation for goods trade in the case of the European Free Trade Agreement with Switzerland is similar built up in a different manner through a series of bilateral treaties and is slightly less comprehensive as it excludes some trade in services.

Conversely, the next set of countries including Turkey are members of a custom union with the EU but one which is somewhat less comprehensive than *the* Custom Union amongst member states and is not a member of the Single Market. This means most manufactured goods from Turkey enter the EU without tariffs or other restrictions although there are some limits on trade in agricultural products and it does not extend to services. Customs union membership means that Turkey applies the same external tariff as the EU to other countries, thereby restricting its ability to negotiate separate trade deals. Despite the Customs Union membership applying to bilateral trade, there remain checks at the EU-Turkey border to inspect documentation and goods not covered by the customs agreement.

That physical checks remain on the border between the EU and Turkey (customs union but not the Single Market) and the borders of the EU and Switzerland or Norway (Single Market but not customs union) shows that completely frictionless trade flows require a high degree of integration and alignment and while either one of the Single Market or customs union can reduce trade costs, some restrictions remain unless both are in place.

The EU also has a large number of countries that it has signed free trade agreements with, most recently Canada (2017) and Japan (2019). These deals come close to eliminating tariffs on bilateral trade as well as covering a range of issues related to mutual recognition of standards. Even in the case of tariff elimination, these more standard free trade agreements require checks on goods crossing between markets largely to ensure that the goods do indeed originate in the market that the free trade deal is with and that standards are fully documented.

Figure 1. **Layers of integration of European countries**



Source: European Commission trade policy https://ec.europa.eu/trade/

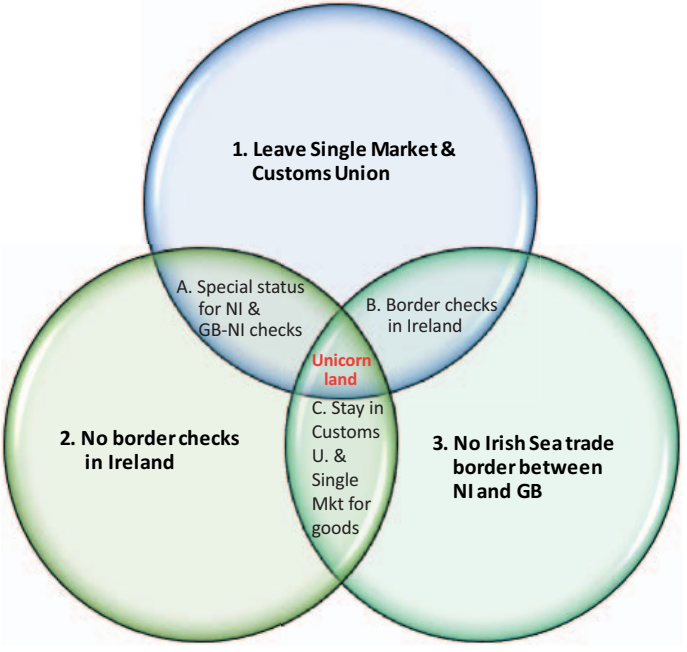
Finally countries with which the EU has no trade deal agreement are traded with on the basis of World Trade Organisation (WTO) rules, whereby a country can set maximum non-discriminatory tariffs that are applied to all countries.

These different levels of trade integration, and the extent to which most require checks on movement of goods, are central to how Brexit could impact on the island of Ireland. With both the UK and Ireland being members of the EU Single Market and Customs Union, all trade between the two countries flows freely with no checks for tariffs, regulatory inspections, or to establish the origin of inputs. Hence the stated Brexit aim of the UK government, first announced in Prime Minister May's speech at Lancaster House on 17th January 2017, that it would leave the Single Market and Custom Union in order to pursue a separate trade policy and not be bound by EU regulations raised an immediate issue for how this would impact the Irish border.[6] In relation to Northern Ireland, the speech also said that "Nobody wants to return

6. Full text of speech https://static.rasset.ie/documents/news/theresa-may-speech.pdf

to the borders of the past". A further commitment was added later that the entire UK would leave the EU on the same terms and that there would be no separate treatment for Northern Ireland.

Figure 2. **Brexit trilemma**



Source: Based on R. Daniel Keleman, Rutgers University

The difficulty in delivering on these three commitments – sometimes referred to as the "red lines" of the UK negotiating position – is illustrated in Figure 2, based on the identification of the incompatibility of the different elements and summed up as being a Brexit trilemma by R. Daniel Keleman. As shown in the description of how trade operates with countries such as Norway and Turkey, leaving the Single Market and Customs Union leads to a need for checks on goods moving between the UK and EU. Even in the event of a comprehensive trade deal between the two resulting in no tariffs or quantitative restrictions to trade, a range of other checks on regulatory alignment and proof of origin would be required. This last would be particularly relevant if the UK went on to sign trade deals with other countries on different terms than the EU. For example, if the UK were to sign a free trade deal with China that had substantially lower tariffs applied on Chinese goods

coming into the UK than those applied on Chinese goods imported into the EU, without border checks between the UK and EU there would be an incentive for Chinese goods destined for the EU to be routed through the UK in an attempt to avoid tariffs. Similarly if the UK signed trade deals allowing products to be sold in the UK that do not meet EU regulations (chlorine-washed chicken from the US has become the short-hand example of where standards might diverge) it would be difficult to prevent goods initially delivered to the UK from being sold on into the EU market unless product checks are carried out at the UK-EU border.

This first priority of the UK government, leaving the EU Single Market and Customs Union, therefore requires checks somewhere to prevent goods entering the EU that avoid tariffs or regulations. In most international trade structures, the obvious place would be at the relevant border (or in a convenient location nearby depending on the geography). However, the history of checks on the Irish border, both customs and security, has led to considerable resistance to this idea and avoidance of border checks in Ireland has been promised both by the UK and Irish governments. A proposal for squaring this circle emerged in negotiations in 2017 as the Northern Ireland "backstop". This would entail a special economic zone in Northern Ireland that would keep it in the EU Single Market and Customs Union after Brexit (and following any UK-wide transition period) unless and until some alternative mechanism or technological approach could be developed that would enable it to leave these structures while maintaining a free flow of goods across the Irish border.

In order for the Northern Ireland backstop to operate, however, the EU required that goods entering Northern Ireland from Great Britain (i.e. the UK excluding Northern Ireland) would need to in compliance with EU regulations and pay EU tariffs (if needed). This was the reason for the rejection of the backstop offer by the Democratic Unionist Party (DUP) who objected that this instituted a sea border between Northern Ireland and Great Britain which treated Northern Ireland differently and would tie it to future developments in EU regulation into which they would have no input. Given these objections, a new version of a Withdrawal Agreement was reached between the UK and EU that would keep all of the UK in the Customs Union and Single Market until alternative arrangements could be negotiated. This was however rejected (three times) by the House of Commons.

The compromise deal reached at the European Council Summit on 17th October 2019 tries to resolve the impasse created by the unavoidable reality that the Venn diagram in Figure 2 does not have an intersection that does not involve compromising one of these aims. Effectively it does so with an arrangement that is closest to the intersection zone A by treating Northern Ireland differently from the rest of the UK in terms of its trade relationship with the EU post-Brexit. Unlike the original backstop, which if it had been put into effect would have treated Northern Ireland as entirely within the EU Customs Union and Single Market, the October 2019 deal includes some additional features that allow Northern Ireland firms to import goods from Great Britain without any tariffs provided that they can demonstrate that these goods will not pass into the EU. This removes one stumbling block of the backstop arrangement, which meant that Northern Ireland firms and consumers would not form part of any new free trade deals that the UK struck with other countries.

The key features of the deal are that EU regulations will apply to all goods in Northern Ireland which means checks will be required on goods entering from Great Britain to maintain the integrity of the Single Market. While precise details on implementation are still unclear at this time, it appears that in terms of the customs arrangements, Northern Ireland will officially remain within the UK customs area but firms will have to pay EU level tariffs on goods entering Northern Ireland if these goods are deemed to be at risk of entering the EU market – if the goods can be shown to be sold in Northern Ireland, these tariff payments can be refunded. This allows Northern Ireland to avail of both the UK and EU trade arrangements in many ways, although the administrative cost of this somewhat complex system remains to be seen. As Northern Ireland will not be represented at the EU and, hence, not have a voice in determining any new regulations, a consent mechanism is included in the deal with a review and vote on the continuation of this dual arrangement to be held by the Northern Ireland assembly after four years.

3. Estimating the impact on Ireland

Although Ireland is one of the most internationally open countries in the world, the UK remains an important economic partner. While diversification has reduced the share of the UK in Irish exports and imports substantially since both joined the EU in 1973, the UK is the

destination for approximately 13% of Irish goods exports and accounts for over a quarter of goods imports. It is a particularly important trade partner for domestically owned small and medium enterprises, which tend to be less internationally diversified than the foreign-owned multinationals which make up the majority of aggregate Irish exports (Lawless, Siedschlag and Studnicka, 2017). Changes to this trade relationship and potential increases in trade costs or competitive environment meant that Brexit could result in a negative economic shock to Irish performance. This risk was recognised by the Irish government even before the result of the Brexit referendum with an assessment of the main sources of risk undertaken by the ESRI as part of a research programme with the Department of Finance (Barrett *et al.*, 2015). While this included an overview of several issues, ranging from migration to the all-island electricity market, trade disruption was highlighted as the main channel through which Brexit was likely to have an economic impact on Ireland (the political impacts and border arrangements were beyond the scope of the study).

Since the referendum, a range of studies have been published estimating the impacts on the long-term performance of the Irish economy. A sample of their main estimates as a percentage of GDP over a ten-year horizon are shown in Table 1. The range of estimates is fairly wide, with the scenario being modelled one of the main major judgements that had to be made by anyone approaching the topic. In other words, to get an answer to how Brexit would impact Ireland, one first has to define what Brexit might look like. This is quite problematic as considerable uncertainty remains on both the process of exit and, even more so, on how close the post-Brexit relationship between the EU and UK will be.

Bergin *et al.* (2019) use a structural model of the Irish economy (COSMO) to generate its estimates of the impact of Brexit, drawing on estimates of the overall impact of Brexit on the UK from the NiGEM model and also incorporating evidence from micro-founded work on the specific impact on UK-Irish trade such as Lawless and Morgenroth (2019). The estimates by the Central Bank of Ireland (2019) take a similar approach using COSMO but have a somewhat larger effect of a disorderly scenario. Arriola *et al.* (2018) also use NiGEM, incorporating estimates from a general equilibrium trade model to quantify the tariff and non-tariff barrier impacts on trade flows under a WTO scenario.

The analysis by Copenhagen Economics (2016) and Vandenbussche *et al.* (2019) is undertaken at a more disaggregated sector

level (using a CGE trade model and a network input-output model respectively) so that both incorporate more detail on supply chain structures than the macroeconomic papers. This is likely a key source of their rather higher estimates of the negative effects. The IMF (2018) also uses a CGE approach.

Table 1. **Estimates of economic impact on the Republic of Ireland**

Study	Scenario	% Reduction in long-run GDP
Bergin *et al.* (2019)	Deal	-2.6
	No deal	-4.8
	"Disorderly" no deal	-5.0
Arriola *et al.* (2018)	No deal	-2.3
Copenhagen Economics (2016)	EEA (Norway deal)	-2.8
	FTA (Canada deal)	-4.3
	No deal	-7.0
Central Bank of Ireland (2019)	"Disorderly" no deal	-6.0
IMF (2018)	FTA (Canada deal)	-2.5
	No deal	-4.0
Vandenbussche *et al.* (2019)	EEA (Norway deal)	-1.3
	No deal	-5.7

Sources: As referenced in table.

Bergin *et al.* (2019) point to two fundamental sources of this uncertainty. The first is the political uncertainty as the rejection of the Withdrawal Bill three times in the UK in 2019 means the form and timing of EU exit remained unknown as did the shape of final trade agreement. The modellers therefore in the main took existing trade arrangements between the EU and other countries as the basis of their scenarios particularly in the earlier estimates (EEA membership, Canada-style free trade agreement) with the more extreme disorderly exit without a deal added as possible out by later work as political uncertainty increased.

The second source of uncertainty in taking these alternative trading relationships as the basis of Brexit scenarios is economic uncertainty. There is no precedent of a country leaving a major trading block such as EU so most estimates based on estimates of the impact of EU membership and an assumption of symmetry that gains from membership would be reversed on exit. However, this symmetry assumption could be inaccurate for a number of reasons – gains built up over many years against a backdrop of global technological developments and

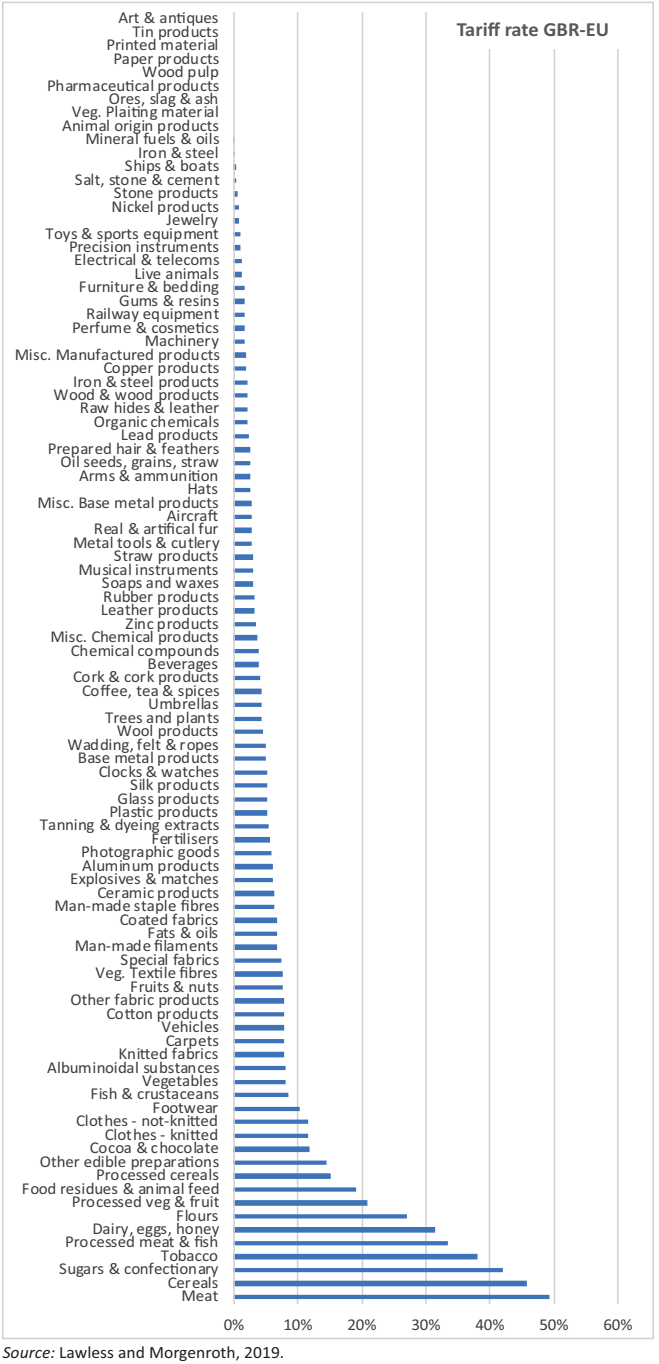
supply chain integration may simply not be a good basis for estimating a sudden change to trade costs. Secondly, most estimates apply to the long run; they compare a pre-Brexit trading world to a post-Brexit world with new trade arrangements in place. Even if these estimates turn out to be extremely accurate, they do not tell us much about the transition process from one scenario to the other so the shorter run uncertainty about the adjustment path is considerable.

While the range of estimates does vary, there is general agreement on the direction with Brexit having a negative effect in all cases. Output falls both because the introduction of trade barriers reduces the level of trade and also because this further leads to a reallocation of resources away from their current use to sectors where they are less productive. In addition, a further impact for the UK is the possible outward relocation of activity currently serving the Single Market although this may result in some offsetting increase in FDI for Ireland and other EU member states. Work by the UK Government estimating the impact of Brexit on the UK economy itself finds potentially negative impacts in the order of a 7.7 per cent reduction in GDP in a no deal scenario and a 4.9 per cent reduction in an average free trade agreement scenario (HM Government, 2018). These effects could be further exacerbated (by approximately 1.5 further per centage points in each scenario) by a negative labour market effect if an assumption of zero net inflows of EEA workers is included.[7]

While the estimates of GDP reduction over the longer run are reasonably substantial, the distribution of the impact of Brexit across sectors and regions has also been the subject of research. Lawless and Morgenroth (2019) take the EU most-favoured nation tariffs registered with the WTO as the "hard" Brexit default where no trade deal is agreed. These tariffs are matched at a 6-digit product level to patterns of both exports from the UK to other EU members and exports from EU members to the UK. This covers 5205 product types and hence accounts for the differences in trade patterns across countries as well as differences in tariffs across products. They take into account both tariffs that are applied as a percentage of the value of good traded (ad valorem tariffs) and also fixed tariff charges by unit of weight (e.g. chilled boneless bovine meat is subject to a tariff of 12.8% of the value of the product plus €303 per 100 kg).

7. These numbers are the central ranges of a wide set of estimates summarised in Table 4.10 of HM Government (2018).

Figure 3. **WTO implied tariffs on UK to EU exports by product**

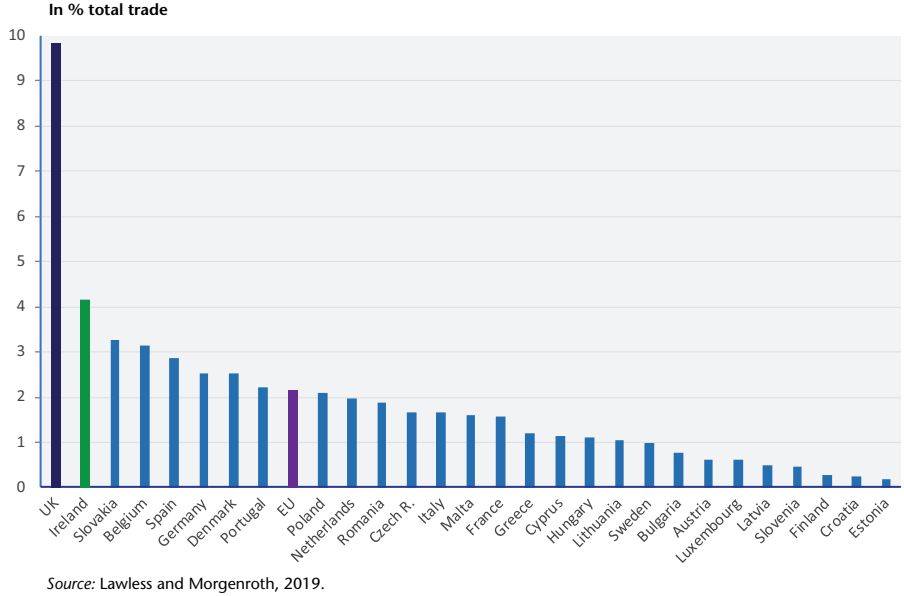


Source: Lawless and Morgenroth, 2019.

Aggregated to sector level, Figure 3 shows the extent to which these EU external tariffs can vary. For most manufactured goods, the tariffs average around 4% with higher rates of up to 8% on vehicles. A step change at the lower portion of the figure shows that a very different pattern applies to agricultural and food products which account for almost all of the highest tariff bands. The highest sectoral average is just under 50% for meat but behind this also lies considerable variation with rates on some beef products reaching over 80%.

As EU member states vary not just in terms of how much they trade with the UK but also in the composition of that trade, the impact of Brexit across countries was estimated by Lawless and Morgenroth (2019) to range from relatively negligible for some such as Croatia and Estonia to more considerable impacts of up to a 4% reduction in total trade flows for Ireland followed by falls in the region of 3% for Slovakia and Belgium. As shown in Figure 4, the average fall in overall EU trade was estimated to be just over 2%. The negative impact on the UK is much greater at just under 10% as the UK faces reductions in trade across a much larger trade partner when all 27 members of the EU are considered jointly. Ireland's high impact comes partially because it

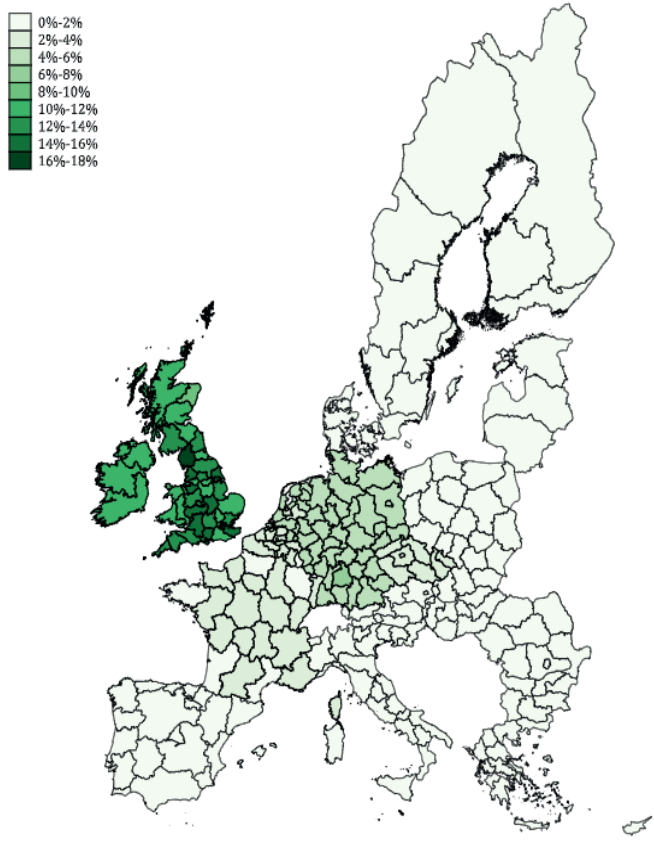
Figure 4. **Estimated impact of WTO tariffs**



Source: Lawless and Morgenroth, 2019.

trades more with the UK (as a share of overall trade) but also because the composition of that trade includes more of the agricultural and food products that would face higher than average tariffs if the UK mirrored the EU tariff schedule for third countries. These effects are based on the application of tariffs with no other changes in trading costs considered. Later in this section, we discuss other potential increases in costs from non-tariff barriers which, as they are generally approximately the same size as tariffs themselves, might be expected to almost double these falls in trade.

Figure 5. **Potential impact of Brexit on regional GDP across EU**



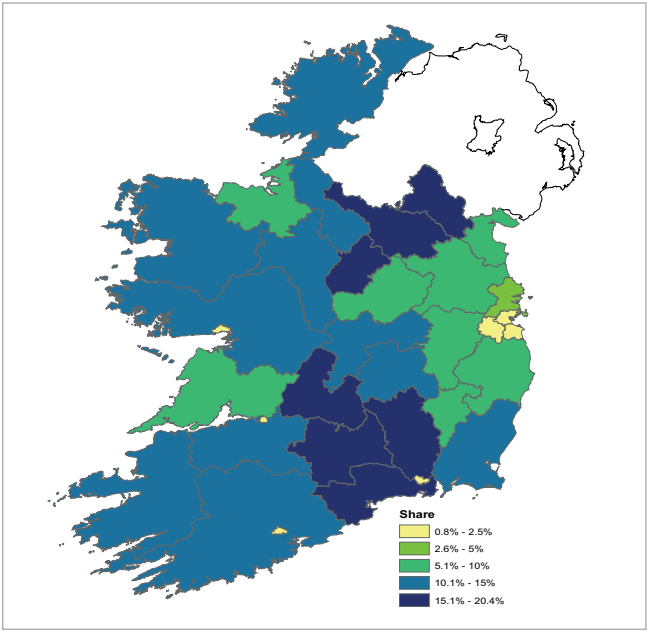
Source: Chen *et al.* (2018).

Along with this uneven impact at sector level comes uneven impact at regional level for largely the same reasons. Chen *et al.* (2018) mapped this regional spread of Brexit (reproduced as Figure 5)

showing relatively little impact across the countries of southern and eastern EU with most of the impact concentrated in Ireland, followed by the trading hubs of Belgium and Netherlands and areas of Germany and Slovakia where the car industry is concentrated. They used a regional extension of the World Input-Output Database to develop an indicator of sector and region level exposure to Brexit. The approach therefore takes account of more supply chain reliance than the work of Lawless and Morgenroth but is at a higher level of aggregation (sector rather than product). Despite these quite different methodologies, both Chen *et al* (2018) and Lawless and Morgenroth (2019) come to a similar conclusion that the most negative impacts of Brexit are likely to be on the UK itself and its regions.

Morgenroth (2018) also looked at potential regional variation in Ireland by examining where the agri-food industry plays the most substantial role in local labour markets (Figure 6). As this is the sector most at risk of negative impacts from Brexit, its regional distribution is likely to be a good proxy for the overall exposure of each county.

Figure 6. **Potential regional impact of Brexit within Ireland: Share of agri-Food in total employment**



Source: Morgenroth, 2018.

This map shows the Dublin relatively little affected and moderate exposure of the broader eastern region. Counties across the west and, in particular, those bordering Northern Ireland tend to have the greatest share of agri-food jobs in total employment and hence would be most vulnerable to shifts in trade patterns for these goods.

Direct tariff costs are of course just one element in which trade barriers can be imposed. As noted in the discussion above on the role of regulatory alignment in facilitating trade, many other types of barrier were removed by the EU integration process to reach the current form of Single Market with complete free circulation of goods (and other factors of production) between countries. Even with a comprehensive free trade agreement being signed by the UK and EU to minimise tariffs, trade costs could still increase after Brexit if non-tariff barriers are put in place. Non-tariff barriers are anything that is not a tariff but that acts to restrict or inhibit international trade flows such as:

— Quantity limits (quotas)

— Subsidies to domestic production

— Technical requirements - licensing, labelling, standards

— Sanitary and phyto-sanitary rules (food and plant health rules).

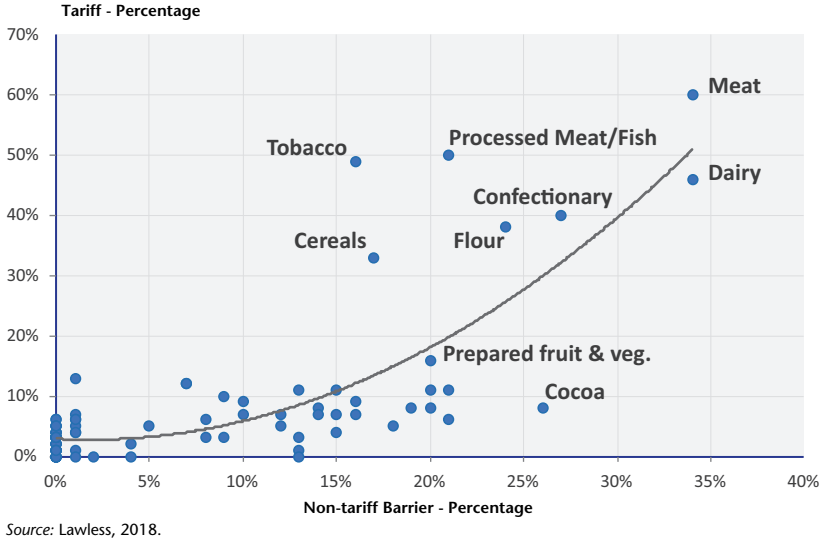
— Customs inspections and documentation

Some of these costs such as customs procedures have been shown to have a large negative effect on export participation although relatively little on average trade values per firm as they operate as fixed costs which imply larger impacts on small firms (Lawless, 2010). Although it is more difficult to estimate the impacts of non-tariff barriers in advance, as many of the costs will depend on the extent to which regulatory standards diverge post-Brexit, Lawless (2018) showed that the distribution of the impact of tariffs and non-tariff barriers tend to be similar in terms of the sectors that they impact with international measures of non-tariff barriers highly correlated with tariffs (Figure 7). This is driven mainly by the costs associated with validating standards of food products which, as shown in Figure 3, are where tariffs also fall most heavily.

One potential off-setting factor to the negative impact of Brexit on Ireland through the trade channel could be an increase in FDI. This could arise FDI that might otherwise have been destined for UK gets diverted to other EU countries, including Ireland. This could occur if access to the broader EU market is one of the factors being considered

by investors, particularly by those from outside the EU. Existing literature suggests that EU membership increases FDI from outside the EU by 28% (Dhingra *et al.* 2016). Lawless and Morgenroth (2016) assumed leaving the EU has the opposite effect and Ireland attracts a share of diverted FDI. This results in a reduction in negative impact of Brexit on Ireland but one that is not nearly large enough to offset trade reductions.

Figure 7. **Correlation between tariffs and non-tariff barriers**

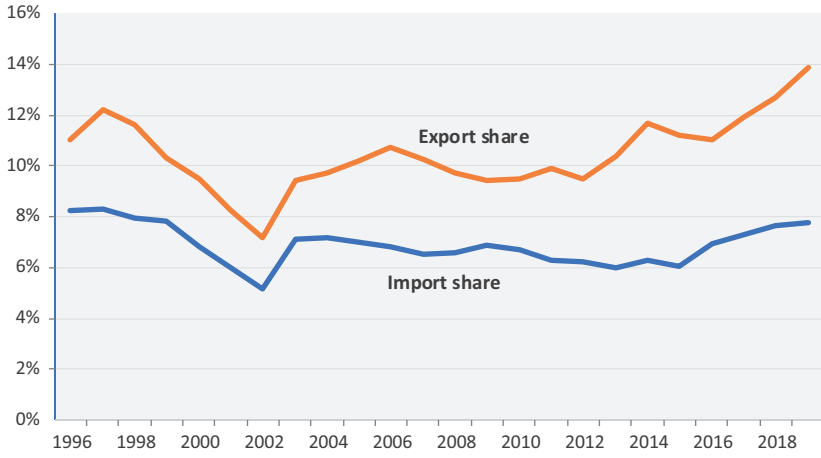


Source: Lawless, 2018.

4. Northern Ireland exposure to Brexit

While Northern Ireland has been to the forefront of the withdrawal discussions, these have tended to focus on political and peace concerns as well as the logistical challenges of implementing any checks on the long, meandering border if such checks were ever required. This sections examines how the current structure of cross-border trade also places Northern Ireland at the forefront of risks to changes in the cost of trading between the UK and EU from a purely economic perspective. Northern Ireland accounts for in the region of 11% of Irish exports to the UK and roughly 8% of imports (Figure 8). Given that the Northern Ireland population makes up 3% of the UK total, this shows a markedly close trading relationship.

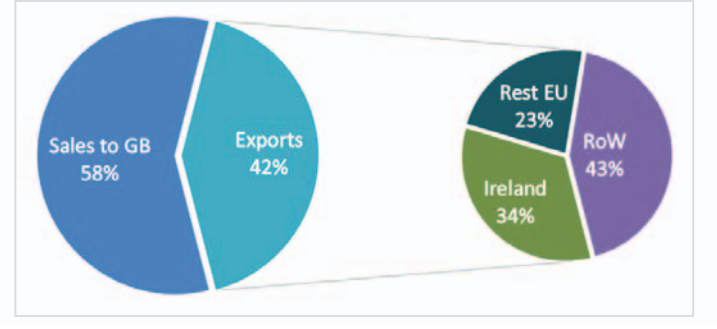
Figure 8. **Share of NI in Irish goods trade with UK**



Sources: CSO 2016 and InterTradeIreland 2018.

The importance of Ireland as a trading partner for Northern Ireland is even more notable. Figure 9 shows the structure of sales outside Northern Ireland, distinguishing between external sales to the rest of Great Britain and international exports. A reasonably substantial majority of external sales (58%) are to the British market with the remainder sold to other markets. Of these exports, over one-third are sold to Ireland and a further 23% to other EU countries.

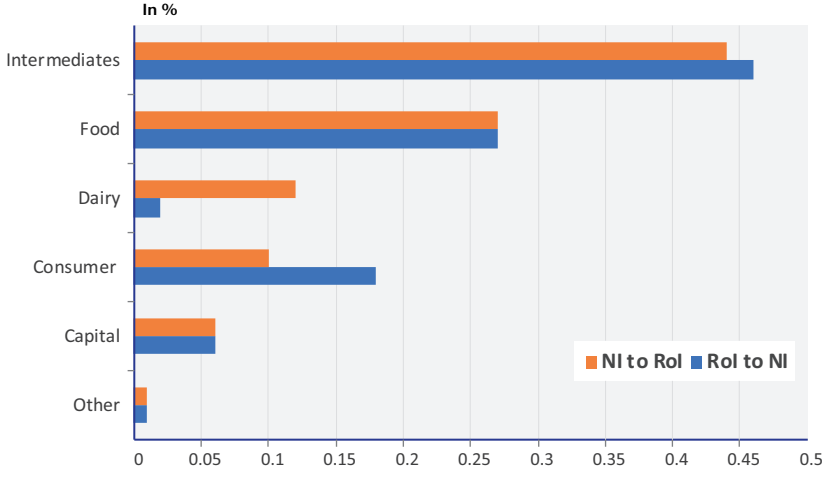
Figure 9. **Northern Ireland external trade structure**



Source: NISRA (2018a).

Cross-border trade is particularly notable for the important share of intermediate inputs in the trade composition, indicating close supply chain linkages across the island. Figure 10 shows that around 45% of trade in each direction is in products identified as intermediates based on the United Nations Broad Economic Categories (BEC) classification of products. This is likely to be something of an underestimate, however, as NISRA (2018b) shows that much of Northern Ireland's cross-border trade in food products, especially dairy products, is undertaken by firms moving products for processing purposes whereas the BEC system regards all food products as being final consumption. Food makes up almost one-quarter of trade across the border and the dairy sector is a particularly important contributor to exports from Northern Ireland to Ireland, accounting for around 13% of the total.

Figure 10. **Cross-border trade structure**



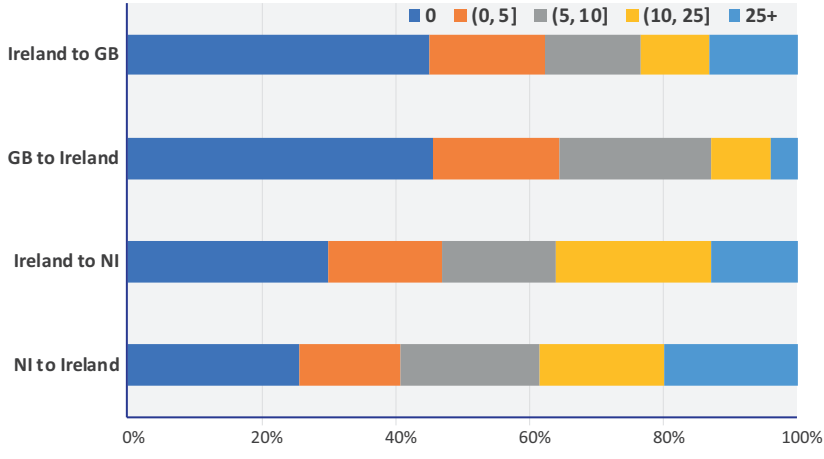
Source: CSO 2016 and InterTradeIreland 2018.

Figure 11 maps the external EU tariff rates charged on third countries shown in Figure 3 onto the current structure of cross-border trade assuming that the same tariffs would be applied in both directions. This shows that a sizeable percent of trade would be unaffected by tariffs as they are in sectors with rates set at or very close to zero: these include paper products, pharmaceuticals, iron and steel. These tariff-free products make up a reasonable substantial proportion 45% of trade in each direction of trade between Ireland and Britain but the tariff-free share of trade is considerably lower for cross-border trade. This suggests that

30% of trade from Ireland to Northern Ireland would be unaffected by tariffs and just 26% of trade from Northern Ireland to Ireland.

As noted in the discussion of Figure 3, food accounts for most of sectors with the highest tariffs and meat and dairy in particular are sectors where high tariff rates are imposed under the current EU WTO schedule. This variation across products is very important as these high-tariff products make up a substantial share of cross-border trade flows. This results in 39% of trade from Northern Ireland that could have been faced with tariffs above 10% in this hard Brexit scenario, 19% of which would be impacted by tariffs of over 25%. From Ireland to Northern Ireland, a similar 36% of trade would fall into the over-10% tariff range, although the share impacted by the very highest tariff rates is slightly lower at 13%.

Figure 11. **Share of trade by potential WTO-level tariff level**

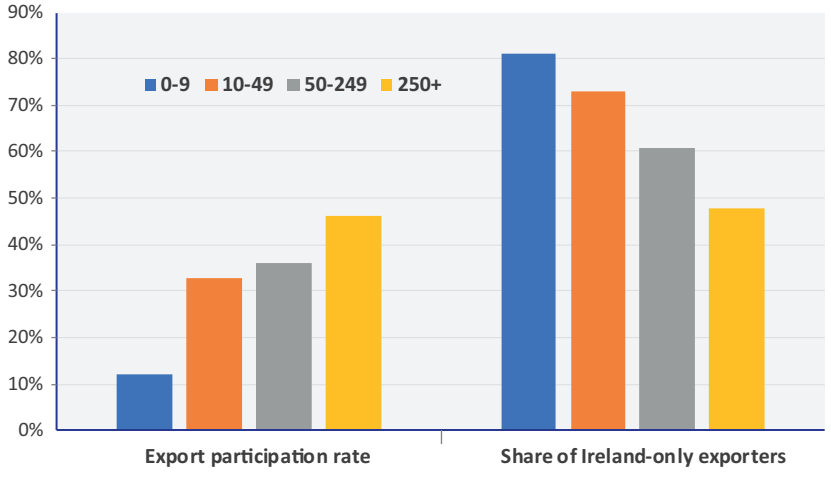


Sources: CSO 2016 and InterTradeIreland 2018.

Along with the exposure to Brexit by sector, there is variation across firm types. This comes about as smaller firms are much more likely to be less diversified and to export only to Ireland when they export at all than bigger firms. Figure 12 shows how export participation rates in Northern Ireland vary by firm size, dividing firms into micro (0 to 9 employees), small (10 to 49 employees), medium (50 to 249 employees) and large firms (250 or more employees). In line with international evidence, the likelihood of a firm being an exporter increases substantially as we move up the size categories with around 12% of micro

firms exporting compared to 46% of large firms (left-panel). When smaller firms do export, they tend to overwhelmingly export only to Ireland (right-panel) with over 80% of micro firms and over 70% of small firms concentrating all of their export activity in Ireland. This is the case even amongst the largest firms where almost half of exporters sell only to Ireland.

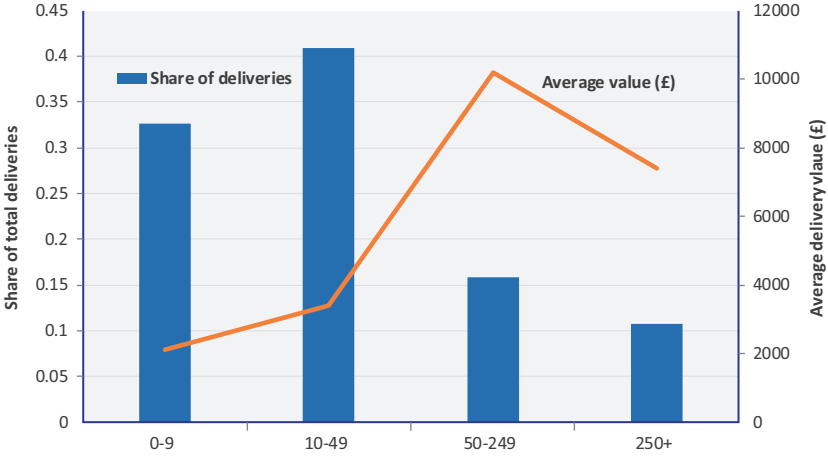
Figure 12. **Which firms export from Northern Ireland?**



Sources: CSO 2016 and InterTradeIreland 2018.

Cross-border trade is also characterised by very high frequency, relatively low value deliveries as shown in Figure 13. One-third of all cross-border deliveries are made by micro firms with 41% made by small firms. Together these two groups of firms account for around 74% of cross-border movements but, in terms of value, these deliveries are less than one-fifth of cross-border goods trade. The smaller number of higher value deliveries account for the majority of trade value despite accounting for just 25% of the trips. This small but frequent pattern of deliveries would be disproportionately hit by changes in customs procedures, which tend to require similar levels of documentation on every consignment regardless of size.

Figure 13. **Cross-border deliveries by firm size**



Source: NISRA (2018b).

5. Impact summary

While the final shape of Brexit and the closeness of the following economic relationship between the UK and EU remains to be determined, this paper shows how maintaining the closest possible links are of importance to trade on the island of Ireland. Moves away from the current joint membership of the Single Market and Customs Union opens up many complications in terms of requirements for checks on what is moving across the border, unless a special status is finally agreed for Northern Ireland (as seems reasonably likely at the time of writing).

The particularly high exposure to Brexit for cross-border trade between Northern Ireland and Ireland comes partly because in many dimensions it is more like local trade than international export activity with a high frequency of low value deliveries for small firms. Furthermore, almost all exporting firms in Northern Ireland include Ireland as one of their destination markets and over 80% of the smallest firms that export from Northern Ireland have all of their export sales in Ireland. We also noted a high degree of cross-border integration through supply chains. Given the estimated negative effects on trade from the presence of an international border from a wide range of gravity-style studies (Head and Mayer, 2014), it is clear that a new border would be likely to be highly disruptive. Putting all of this

together suggests that the impacts of any changes in the cost of trading post-Brexit would be liable to be felt most particularly by very small firms trading across the border.

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BANK CAPITAL: EXCESS CREDIT AND CRISIS INCIDENCE

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There are large and long-lasting negative effects on output from recurrent financial crises in market economies. Policy makers need to know if these financial crises are endogenous and subject to policy interventions or are exogenous events like earthquakes. We survey the literature about the links between credit growth and crises over the last 130 years. We then go on to look at the determinants of financial crises both narrowly and broadly defined in market economies, stressing the roles of bank capital, available on book liquidity, property price bubbles and current account deficits. We look at the role of credit growth, which is often seen as the main link between the macroeconomy and crises, and stress that it is largely absent. We look at the role of the core factors discussed above in market economies from 1980 to 2017. We suggest that crises are largely unrelated to credit developments but are influenced by banking sector behaviour. We conclude that policy makers need to contain banking excesses, not constrain the macroeconomy by directly reducing bank lending.

Keywords: Financial Stability; Banking Crises; Macroprudential Policy.

1. Introduction

The financial crises in 2007 and 2008 have left a long and depressing shadow over the North Atlantic economies. Not only did output fall sharply after those crises, but output growth has also been slow since 2009. It has been common to link this crisis, and others to the twin problems of excessive credit growth and the subsequent unsustainable

1. We would like to thank the referees for this journal and conference participants in Santiago de Chile, Dublin and New York for useful comments on this paper. All errors remain ours.

growth of asset prices, and, particularly, property prices. The link between credit growth and bank based financial crises has been emphasised in a series of papers covering a period of over 130 years of history in 17 developed economies by Schularick and Taylor (2012), Jordà, Schularick and Taylor (2011) and Jordà, Richter, Schularick and Taylor (2017) and has been supported by the views and the publications of the Bank for International Settlements (BIS).[2] The evidence to link crisis incidence to credit growth over the last forty years is, however, weak, and evidence of the link from earlier periods may not be relevant for the analysis of policy problems in a set of financially liberalised advanced economies. The prevailing view in the economics profession, and the policy community, is that constraining credit growth is essential for preventing a new round of financial crises. In this paper we evaluate this proposition and attempt to understand the causes of financial crises in advanced economies over the last forty years.

We look at the role of the defences against systemic bank failure, capital and liquidity as well as at the role of property prices and of credit growth as the potential problems driving crises. We argue that rejecting a role for capital adequacy in explaining financial crises is misjudged. In the financially liberalising world that followed on from the collapse of Bretton Woods system in the early 1970s it is clear that capital has been an important defence against the risk of crises, even if it was not significant in earlier historical periods. We conclude that the emphasis on credit growth and its control is misjudged and reduces the chances of preventing a new wave of damaging crises.

In the next section of the paper we review the related literature on the factors driving crises over the last 130 years, and we re-emphasise the conclusion of Bordo (2018) that there is little evidence to support the importance of credit growth over this period. House price bubbles have been commonly linked to crises as well, and we look at these in the third section, building on a sequence of papers by Barrell and Karim (eg Barrell *et al.* 2010, Karim *et al.* 2013). In this section we discuss logit models of financial crises over the period 1980 to 2017 using published data from international organisations on capital, liquidity, current accounts and real house price growth for 14 countries. We also investigate the evidence that the growth of lending, or credit, fuelled crises. Our basic models work well, catching two thirds

2. This paper and those mentioned in this paragraph focus on banking crises, not foreign exchange driven financial crises. The causes of such crises would not be the same as those studied here.

of crises, whilst adding various excess credit indicators does not enhance them. In the fourth section we stress the relevance of the Laeven and Valencia (2018) crisis definition, which is tighter than the one used in the earlier sections, and we demonstrate that our conclusions on the roles of house prices and credit also hold in this tighter framework, even when we add data five extra countries for the last 20 years of our data. In section five we use our results to calibrate macroprudential policy responses. In our last section we draw conclusions for policy and for research. In addition, the importance of the defences against crises, capital and liquidity, is discussed.

2. Defining and explaining crises

There has been an extensive technical and historical literature on the causes and consequences of crises, and it has expanded rapidly since 2007. For the sake of brevity, we do not discuss the consequences of crises, but rather focus on their causes and policy responses to them. The literature on the causes of crises is summarised in Bordo and Meissner (2016) and they bring out several strands, ranging from narrative accounts such as in and Reinhart and Rogoff (2009) and Bordo (2018) through simple univariate early warning indicators used by Kaminsky and Reinhart (1999) and by the Bank for International Settlements in a sequence of staff papers by Borio and Drehmann (2009) and others in subsequent papers, to more sophisticated logit based models as in Barrell *et al.* (2010) and Schularick and Taylor (2012). These approaches are compared in Davis and Karim (2008) and they come down firmly in favour of the last method. The causes of banking crises remain disputed with Borio (2014) and Jordà, Schularick and Taylor (2011, 2013) and Jordà *et al.* (2018) strongly supporting the view that excess credit growth is a major factor in driving banking crises. Bordo (2018) disputes this and suggests that only the 1929-1933 crisis and the 2007-8 crises showing links to credit growth, and this view is also advanced by Kiley (2018) who shows that credit has contributed little to the explanation of the crises Jordà, Schularick and Taylor examine, even if it is statistically significant. We study only the post Bretton Woods era in similar countries, and we draw the conclusion that credit (no longer) matters (much) in driving financial crises.

Research by Barrell *et al.* (2010) and Karim *et al.* (2013) suggested that house price growth and current account deficits affected crisis incidence, but credit growth did not. These papers also found a role for

bank capital and for liquidity, and we describe these two as the defences against the excesses associated with the problem indicators, housing and current accounts. However, Jordà *et al.* (2018) in a long historical study find a limited role for bank capital as a precursor for crises either in the post 1870 world or in the post World War II world in 17 advanced countries. The crises they choose are different from those in Barrell *et al.* (2010), but they overlap, and for our countries their crises and those in the Laeven and Valencia (2018) study are essentially the same. Contrary to their findings we demonstrate that in the post 1980 world capital has a major role to play in the determination of crisis probabilities.

Crises have been endemic in market based, or capitalist, economies, and they became increasingly common in OECD countries after the ending of the crisis free period of financial repression between 1940 and 1972. The Bretton Woods system was crisis free in part because financial systems were tightly controlled, and the liberalisation of controls has been seen as a major factor affecting crisis incidence. However not all crises in the last 40 years have followed on directly from specific liberalisation measures, and some forms of liberalisation such as the removal of interest rate caps may have reduced crisis incidence, as Barrell *et al.* (2018) show.

Financial crises happen when it becomes clear that a reasonable proportion of the banking system cannot meet their obligations, either because they are short on liquidity, or because they do not have enough capital to cover their short-term losses and they are potentially insolvent. We use the book based equity value of the banking system which is essentially the difference between their loans, or assets, and their liabilities or deposits, and hence it is the sum that is available to cover losses on assets whilst still being able to pay back all non-equity liabilities. As such our measure of bank capital relative to liabilities is not risk weighted, as a risk weighted measure does not indicate the ability to repay debts. Definitions on how many banks, and what proportion of loans are non-performing vary, and a number of definitions of crises have emerged. The most widely used have been those from the World Bank (Caprio *et al.*, 2005) and those from the IMF in Laeven and Valencia (2018)[3] who use a much more restrictive set of criteria. The timings of crises differ in these databases, and between vintages of them.

3. The post Great Financial Crisis study of this topic has benefitted from a sequence of papers from Laeven and Valencia on crisis dating, starting in 2008. Inevitably the timing of crises changed as new information on past events became available.

We have complete, published data for 14 countries from 1980, Belgium, Canada, Germany, Denmark, Spain, Finland, France, the UK, Italy, Japan, the Netherlands, Norway, Sweden and the US. When we add data for the post 1996 period, we include five more countries Australia, Ireland, New Zealand, Portugal, and Switzerland. A statistical appendix details our sources.

3. Simple models of financial crises

We model OECD 14 countries from 1980 to 2017 using logits, and we base our results on Barrell *et al.* (2010). We use data published by the OECD on the consolidated banking systems of our countries (no others are available from this source) on non-risk-weighted capital in the banking system and IMF data on narrow liquidity in the system. Karim *et al.* (2013) and Kiley (2018) emphasise the role of current accounts and of real house price growth rates in leading to crises, as these are associated with poorly considered lending by banks to companies and individuals respectively. We look at relatively parsimonious logit models to explain crises and include standard significant variables from studies such as Barrell *et al.* (2010, 2018) and Karim *et al.* (2013). We exclude variables that are shown to be insignificant in Barrell *et al.* (2010) and a range of other studies. These are the growth of real GDP, the real interest rate, the rate of inflation, the fiscal surplus (or deficit) as a percent of GDP and the money stock relative to foreign exchange reserves. The first four may be thought relevant for OECD banking crises, but they are not significant in studies of our period. The last variable may be more relevant to exchange rate crises which we do not analyse.

We start with the Caprio *et al.* (2005) description of crises used by Barrell *et al.* (2010), and they identify them in Canada (1983), Denmark (1987), the US (1984), Norway (1987), Sweden and Finland and Japan (1991), France (1994) and marginally the UK (1984, 1991, 1995). In Barrell *et al.* (2018) we added crises in the UK and US in 2007 and had crises in 2008 in Belgium, Denmark (and 2009), France, Germany (and 2009), Italy the Netherlands, Spain (and 2011), the UK, the US and Sweden[4].

4. The crises in Spain (2011), and Germany and Denmark (2009) do not appear in Laeven and Valencia (2018), although they show in earlier online versions. Their deletion would raise our hit rate to 20 of 24 and leave the model essentially unchanged. We keep them here to make our results comparable with Barrell *et al.* (2018).

We use the cumulative logistic distribution which relates the probability that the dummy for crises takes a value of one to the logit of the vector of n explanatory variables:

$$Prob\ (Y_{it} = 1) = F(\beta X_{it}) = \frac{e^{\beta' X_{it}}}{1+e^{\beta' X_{it}}} \quad (1)$$

where Y_{it} is the banking crisis dummy for country i at time t, β is the vector of coefficients X_{it}, is the vector of explanatory variables and $F(\beta X_{it})$ is the cumulative logistic distribution. The log likelihood function which is used to obtain actual parameter estimates is given by:

$$\mathrm{Log}_e L = \Sigma_{i=1}^{n} \Sigma_{t=1}^{T} [(Y_{it} \log_e F(\beta' X_{it})) + (1 - Y_{it}) \log_e (1 - F(\beta' X_{it}))] \quad (2)$$

Our results are reported in Table 1 below. The first column repeats the basic analysis in the early warning systems in of Barrell *et al.* (2010) and Karim *et al.* (2013) over a longer period, and the results remain robust. As we have the intention to construct a warning signal, or Early Warning System (EWS) we use only lagged variables to explain crisis incidence. This is also necessary as capital and liquidity are balance sheet variables, reported at end of year, and hence are probably endogenously determined, and affected by crises within the year.

The most significant variable is capital, with crises probabilities being reduced when banks have more capital. The other defence, liquidity, is also significant, reducing crisis probabilities noticeably. The causes of problems are current accounts and the growth of house prices. A deterioration of the current account increases crisis probabilities significantly, suggesting that lower quality lending increases. Kiley (2018) uses only deficits, but we consider that both sides of zero matter. If there are good structural reasons for a surplus (or a deficit) in a country, then a deterioration in the surplus may involve a resort to more risky lending as patterns of finance change. We include the third lag in real house price growth as this was preferred in earlier work, and it remains significant in the longer sample. We posit that when house prices are rising most rapidly banks are more willing to lend to more risky borrowers, and at some time in the future their mistakes will be uncovered by defaults on loans in excess of the rate they had built into the mark-up over the deposit rate. We have no empirical reason to assume that bad loans only turn up when house prices fall after the boom, although this may happen, and hence we do not describe this variable as picking up the housing cycle.

Table 1. **Basic models of crises**

	Base	Total Credit	Cons Credit	BIS Credit Gap
		1981-2016		
Current account (-1)	-0.1303	-0.1281	-0.1122	-0.1146
	0.018	*0.020*	*0.042*	*0.033*
Capital(-1)	-0.3205	-0.3113	-0.3600	-0.3531
	0.000	*0.000*	*0.000*	*0.000*
Real House Price Growth(-3)	0.0786	0.0754	0.0584	0.0591
	0.005	*0.022*	*0.101*	*0.048*
Liquidity(-1)	-0.1272	-0.1285	-0.1491	-0.1233
	0.000	*0.000*	*0.000*	*0.000*
test(-1)		0.0551	0.0073	0.0367
		0.445	*0.927*	*0.493*
test(-2)		0.0409	0.0535	-0.0102
		0.641	*0.641*	*0.908*
test(-3)		-0.1108	-0.0002	0.0077
		0.135	*0.998*	*0.892*
Area Under Curve (AUC)	0.669	0.676	0.671	0.671
Direct Call Ratio (DCR)	21/27	19/27	21/25	22/27
False Call Ratio % (FCR)	33.01	32.24	31.17	30.25

Notes: Probabilities under coefficients Cols 1, 2 and 4, 27 crises with 504 obs., prob 0.0536.

As one focus of this paper is the role of credit in driving crisis incidence, in Columns 2 to 4 we add a set of variables associated with lending growth. All are derived from BIS data, as are our real house prices. We first add annual data on the growth in real total credit in column 2, with three lags, and then in column 3 we add the growth in real consumer credit again with three lags, and finally we add the BIS estimate of the gap between credit to GDP and trend credit to GDP which is based on data for real total credit and uses a Hodrick Prescott filter to estimate the gap. The gap uses a great deal of past information on both credit and on GDP. The role of the gap is investigated further in Barrell *et al.* (2018).

There are a number of ways to evaluate logit models, and the simplest are probably the hit and miss ratios, which we denote Direct Calls and False Calls. A Call is when the projected probability for a time period exceeds the sample average, which in columns 1, 2 and 4 is the sample average proportion of crises in our data set of 5.212 percent. Our basic model hits 21 out of 27 crises in our 36-year data set, and hence is giving a reasonable warning. The crises in Denmark in 1987,

Germany in 2008/9, Italy in 1990 and 2008 and Spain in 2011 are not picked out by the basic model, whilst all others have predicted probabilities in excess of the sample average. However, the basic model also has 33 percent of its calls in excess of the sample average, and we describe this as the False Call (or False Positive) ratio. Up to half the false calls are in the three years before a crisis or the three years after, and hence prompt corrective action would have been appropriate or unnecessary in these cases, and only about one sixth of our time periods are covered by genuine false calls. These also tend to be concentrated in crisis prone countries such as the UK, and hence we can see them as useful indicators rather than pure false calls.

Evaluating whether a model is good depends upon the weights one puts on making correct calls for actions as against the number of times action is called for when it is not necessary. If crises are expensive but prompt corrective action is cheap and effective then the Direct Call and False Call rates will have different weights, which we would expect them to have. However, it is useful to have a statistic that builds in a simple trade-off between Direct and False Calls, and to do so we also report the widely used Area Under the Curve (AUC) indicator. This is derived from signal extraction problems in the use of radar, and an AUC of 0.5 is as good as tossing a coin, and anything above 0.85 is excellent discrimination. The AUCs in Table 1 are significant.

When we add three lags in the BIS credit indicators the AUC improves marginally, but not significantly, and in each case the real house price growth indicator becomes less significant. We can jointly eliminate the three real total credit growth variables in column 2, as a Wald deletion test of Chi2 of 2.972 is accepted with a probability of 0.395. When we include real total credit growth the model makes two fewer Direct Hits. The Direct Hit ratio is higher for real consumer credit, at 21 out of 25 crises. The real consumer credit data is more limited than that for real total credit, and we have two fewer crises to explain. A Wald deletion test of the three consumer credit variables in column 3 is passed with a Chi2 of 1.189 and a probability of 0.756. The Direct Hit ratio is higher than in our base case when we add the BIS credit gap, but the Gap is not close to significant at any lag. A Wald deletion test of the three BIS credit gap variables is passed with a Chi2 of 2.906 and a probability of 0.406.

The links between real house price growth and crisis incidence are clear, and when in column 3 we add real consumer credit growth to a

model with capital, liquidity, current accounts and house prices, the latter variable becomes insignificant. The growth rates of real house prices and real consumer credit are not orthogonal, as the coefficient on the former changes when we add the latter, and hence it is possible that house prices are picking up some of the relationship between credit growth and crisis incidence. We would judge that there is a little evidence linking consumer credit, house prices and financial crises, with house prices acting as the intermediary. In none of our experiments do we find a convincing case for adding BIS based credit variables, but in all of them (a shortage of adequate) capital and liquidity remain significant determinants of crises.

4. Robustness to crisis definitions, coverage and timeframe

Financial stress is common if not endemic, as Romer and Romer (2017) show, but not all periods of stress turn in to periods of rupture. As noted above, we start with the Caprio *et al.* (2005) definition of a financial crisis, which was that the proportion of non-performing loans to total banking system assets was greater than 10%, or the public bailout cost exceeded 2 percent of GDP, or systemic crisis caused large scale bank nationalisation, and if not, emergency government intervention was sustained. Crises could also occur when bank runs were observed, but these have been rare in our set of countries since 1980. The definitions were tightened and updated by Laeven and Valencia (2018), who stressed the role of public sector interventions, and they revised and extended the dataset. The Laeven and Valencia revision raised the threshold bailout cost to 3 percent of GDP and focused on crises that Caprio *et al.* (2005) had noted as systemic. The crises in in 2007-8 that we and they include can all be described as systemic. In this section we study the Laeven and Valencia (2018) crises in the UK and the US in 2007 as well as Belgium, Denmark, France, Germany, Italy the Netherlands, Spain, and Sweden in 2008. They have pre 2007 crises only in Japan (1997) and Finland, Norway and Sweden (1991).

In the first two columns of Table 2 we evaluate our model over our full time period using the Laeven and Valencia definitions of crises. We repeat a regression from Table 1 in the first column, and then add three lags in the BIS Credit Gap in column 2. The pattern is the same as in Table 1. Column 2 has a higher AUC than column 1, and the same hit ratio and a higher False Calls ratio, but the AUC gain is not particularly

large. The common coefficients are essentially the same, whilst the credit gap contributes nothing to the explanation. In the equation with the BIS Credit Gap for the full period in column 2 the credit gap contributes little to the explanation, and a Wald exclusion test is passed with a Chi2 of 0.473 with a probability of 0.924.

Table 2. **Testing for changes in definition and scope**

	Fourteen countries		Nineteen Countries			
	Base	With Gap	Base	With Gap	Short	with Gap
	1981-2016		1997-2016		2004=2016	
Current account (-1)	-0.0738	-0.0717	0.0038	0.0044	0.0044	0.0069
	0.290	*0.300*	*0.928*	*0.916*	*0.911*	*0.863*
Capital(-1)	-0.4896	-0.5102	-0.5160	-0.5225	-0.4907	-0.4814
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Real House Price Growth(-3)	0.1068	0.1014	0.0816	0.0715	0.1040	0.0942
	0.004	*0.014*	*0.062*	*0.127*	*0.027*	*0.067*
Liquidity(-1)	-0.1344	-0.1308	-0.0848	-0.0830	-0.0681	-0.0687
	0.000	*0.001*	*0.058*	*0.065*	*0.161*	*0.161*
test(-1)		0.0083		-0.0089		0.0039
		0.913		*0.852*		*0.940*
test(-2)		-0.0172		0.0427		0.0302
		0.888		*0.593*		*0.728*
test(-3)		0.0264		-0.0258		-0.0368
		0.728		*0.644*		*0.532*
Area Under Curve (AUC)	0.7441	0.7485	0.722	0.716	0.703	0.708
Direct Call Ratio (DCR)	10/14	10/14	9/14	10/14	9/13	9/13
False Call Ratio (FCR)	31.43	32.04	37.16	37.16	39.68	38.06

Notes: Probabilities under coefficients, crisis probabilities in cols 1,2 is 2.78%, cols 3,4 is 3.68%, cols 5,6 5.26%.

We should note that capital and liquidity are significant in our full period experiments, even those with the more restricted crisis definition in Table 2. This is contrary to the post 1945 results in Jordà *et al.* (2017) and would lead us to very different policy conclusions from theirs for the current, post Bretton Woods, period. If we added the 35 years between the end of the Second World War to the start of our data, we would add no crises until after 1972, and then only crises in the UK and Spain. The pre-1972 period was one where real credit growth was very stable because of financial repression, and so were real house prices in most countries. Over the same period capital varied across time and countries, much in the same way as it did from

1980, at least as far as estimates in Jordà *et al.* (2017) suggest. Hence it would not surprise us if capital became insignificant if we added those observations to our data, and the lack of growth in credit up until 1972 meant that it seemed to explain (the lack of) banking crises. However, we think the liberalised post-Bretton Woods era should be explained by different factors than the repressed 1940s to early 1970s, and it does not surprise us that our results differ from those of Jordà *et al.* (2017) and hence so do our policy conclusions.

We also look at the incidence of financial crises in 19 OECD countries over the last 20 years. Adding five countries, Ireland, Portugal, Switzerland, Australia and New Zealand using published data shortens the timeframe for our experiments. We have crises in Japan (1997), the UK and the US in 2007 as well as Belgium, Denmark, France, Germany, Ireland, Italy the Netherlands, Portugal, Spain, Sweden and Switzerland in 2008. We argue that in the liberalised 21st century bank capital ratios have mattered, even when there was regulatory arbitrage especially after the beginning of the implementation of Basel II from 2004. This was undertaken by banks in order to reduce the total amount of capital held by large banks and has often been seen as one cause of the crisis in 2007-2008.

In columns 3 and 4 of Table 2 we report on logits for the 20 year period from 1997 for these 19 countries, and in column 3 we repeat our baseline model over the shorter but wider sample, and it has a strong and significant role for capital and for lagged real house price growth. However, as in our previous regressions on the restricted Laeven and Valencia definition of crises we find no role for the current account deficit in these advanced economies. More significantly, it is not clear that liquidity, as measured here is significant. This may reflect the growth of reliance on effective off balance sheet provision of liquidity in the interbank market. In column 4 we add three lags in the BIS Credit Gap indicator and they are not significant, much as in the 14 country sample above over a longer period. A deletion test on the three gap indicators is passed with a Chi2 of 0.673 with a probability of 0.879.

The regulatory regime changed during this time period, with the full introduction of Basel II at the start of 2008. However, many banks began to change their capital standards in advance of this tightening of regulation, in part because of pressure from domestic regulators, but also as a display of their strength to the market and their preparedness

for the new regulatory regime. We would judge that the new regulations were having some impact from 2004, and we repeat our analysis from that date in columns 5 and 6 of Table 2. The results are little changed by starting one or two years later. Once again capital standards are significant determinants of crisis probabilities, with countries that had banking systems with higher levels of capital being less likely to experience crises. Real house price growth lagged three periods remain very significant, whilst the current account is not. Liquidity levels become less significant over this period than in the longer data set from 1997, perhaps because wholesale markets became more prominent as a provider of liquidity, or perhaps because central banks were providing it 'without stint' from early 2009 onwards. A deletion test on the three gap indicators is passed with a Chi2 of 0.553 with a probability of 0.907.

The overall performance of these models is good, with an AUC that is highest for the longer sample. However, some crises are missed. In particular we sometimes find it difficult to explain the crises in Germany, Portugal, Spain, the US and Italy in 2008. The US crisis may be better explained by the securitisation of complex assets rather than simple housing market factors, and the crises Spain and Portugal we linked, and were driven by factors associated with post EMU membership booms in those countries.

5. Calibrating macro prudential policy

In our analysis we have a target variable, the probability of a crisis, two variables we might describe as tools, the capital ratio and the liquidity ratio, and a number of driving variables. In our last section we argued that after 2004, at least, liquidity no longer acted as a tool as it had been substituted for by market and government provided liquidity. However, capital still mattered, and we can use our results to calibrate the level of capital (that would have been) required to keep the probability of a crisis down to 1 percent over our whole sample periods, starting in 1981and in 1997 to calibrate what level of capital would be required to offset the impact of bad lending associated with house price increases. In order to do these calculations for each of the set of results using the Laeven and Valencia definition of a crisis we must invert the logit model described in Equation (1) above using the parameters from the first and third columns of Table 2. We should note

that this model can be written as a log odds relationship, with p representing the probability

$$\text{Log}\,(p_{it} / (1 - p_{it})) = \beta' X_{it} \tag{3.1}$$

Where β' is the vector of coefficients and X_{it} is a matrix of driving variables by time (t) for all countries (i). For our purposes we can separate out capital (Cap_{it}) and its coefficient β_c from the vector of coefficient and matrix of variables, leaving $\beta 1$ as the other coefficients and $X1$ as the rest of the matrix

$$\text{Log}\,(p_{it} / (1\text{-}p_{it})) = \beta 1' X1_{it} + \beta_c\, Cap_{it} \tag{3.2}$$

We may solve this for capital as the target variable, fixing the probability of a crisis, as we can see in Equation (4). We can set a target for the probability, and then calculate the capital required to achieve that either period by period or on average over the whole time period given the values of the other variables in our logit. Of course, these variables may be themselves affected by the level of capital, but our results above do not suggest that this is likely.

$$Cap_{it} = \log\,(p_{it}/(1 - p_{it}))/\,\beta_c - \beta 1' \text{X1}_{\text{it}} / \beta_{\text{c}} \tag{4}$$

Over our whole period the capital ratio across our 14 country sample averaged 5.5 percentage points, and an increase of 2.0 percentage point would have reduced the probability of a crisis from the sample average of 2.78 percent to 1 percent. Our more limited time periods would have required higher increases in capital ratios, although the period from 1997 to 2016 has a higher capital ratio (5.9 percentage points) than the whole period, reflecting the significant increase in capital ratios after the financial crisis. In order to get the crisis probability down from 3.7 percent to 1 percent over the 1997 to 2016 period capital would have had to increase by 2.3 percentage points on average, and hence probably by 4.6 percentage points in the 10 year run up to 2008 and not thereafter.

Increases in bank equity capital on this scale would inevitably have had macroeconomic consequences. Equity capital costs significantly more than the interest rate paid on bank deposits or on corporate bonds issued by banks. A proportionate shift from these sources of borrowing by banks to equity funding of their lending portfolio would have increased borrowing costs for their customers. This would have reduced the level of bank lending as a percent of GDP and raised the cost of capital to firms wishing to make investments. Output in the

economy would then have been marginally lower than it would otherwise have been, but the chances of destructive crises would also have been lower as banks would have had a stronger buffer to absorb mistakes.

6. Conclusions

Our results suggest that crisis probabilities are driven by variations in capital and liquidity –the defences – as well as by the current account and house prices – the problem lending indicators. There appears to be no role for any overall lending or credit indicator in any crisis model in the post 1980 OECD. This does not mean we have an excellent understanding of the factors driving crises, and we would not expect one, as Caprio and Honahan (2015) discuss. Crises are difficult to explain, and even in our best models some countries remain difficult to evaluate. In no case do we have an explanation of the crisis in Italy in 1990 or Germany and Italy in 2008. The first is not included in Laeven and Valencia but is in our base model. The German crisis in 2008 was the result of over-ambitious involvement in the US sub-prime market by small and medium sized banks, many of them in public ownership. They were perhaps misled on the risks in the US mortgage backed securities market because there had been a thriving market in such securities in Germany since 1919. It is hard to model lack of wisdom in poorly regulated banks.

There are other causes of crises that are even harder to model. The collapse of Continental Illinois, the seventh largest bank in the US, in 1984 was the result of internal fraud rather than general bad lending. The bank had been involved in commercial and industrial lending, especially in energy, and one member of staff took on significant, but faulty, assets in return for a side payment. It is hard to catch that with a general macro model. The two Italian crises in 1990 and 2008 are perhaps even harder to explain, but they bring to mind an in interchange on page 215 in Donna Leon's 2015 Venice based crime novel "By its Cover" concerning a call from police Commissario Brunetti to the Venice Casino Director: "Ah, Dottor Brunetti" he heard the Director say in his friendliest tones, "how may I be of service?" "Dottor Alvino," Brunetti responded, honey in his voice, "I hope things are fine down there" "Ah," came the drawn out sigh, "as well as can be" "Still losing money?" Brunetti asked, using his best bedside manner. "Unfortu-

nately, yes. No one can explain it." Brunetti could, but this was a friendly call.

When we are modelling crises, it is important to look at evidence, and not assume we know answers. Logit models allow for numbers of factors and allow testing and also allows us to look at causes of problems and defences against them. We would conclude that capital requirements are the best macroprudential tool, and that some concern should be shown for liquidity, but that this is a complex issue. Obviously, policy should respond to imbalances, but there are few reasons for constraining credit growth. Policy should respond to any macro factors affecting crisis incidence, but our evidence suggests that it will be limited to trying to deal with excess house price growth, and if such bubbles cannot be contained, strengthening defences against a collapse in loan quality.

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DATA APPENDIX

- Real House Prices: Nominal house prices from BIS online database, quarterly 1974q1 to 2017q1, divided by OECD online database consumer prices for the same period, to convert to real and then annual averages taken before growth rates are calculated.
- Real Total Credit: Credit from banks to private non-financials from BIS online database quarterly 1974q1 to 2017q2, divided by OECD online database consumer prices for the same period, to convert to real and then annual averages taken before growth rates are calculated.
- Real Total Consumer Credit: Credit from banks to households and NPISHs from BIS online database quarterly 1974q1 to 2017q2, converted to real and to growth rates in the same way as real house prices. Start dates vary by country, with Spain, Sweden and Belgium starting in 1982, whilst Netherlands starts in 1992 and Denmark in 1996.
- Real Credit Gaps BIS online database with additions for 1980 from Barrell, Karim and Macchiarelli (2018) for Canada and Finland using BIS data on total credit and GDP in an equivalent filter.
- The annual current account to GDP data are taken from the OECD online database
- The unweighted bank capital variable comes from the OECD Consolidated Banking Statistics Database for data before 1995 and from the World Bank Global Financial Stability Indicators online database, as well as Norwegian and Swedish Central Bank sources.
- Liquidity data are sourced from the IMF and calculated as the ratio of liquid assets to total assets: [reserves + claims on central government]/ [reserves + claims on central government + foreign assets + claims on private sector]
- Post 2006 Canadian liquidity is calculated using Statistics Canada Data using:

  [Canadian dollar cash and cash equivalent + Canadian dollar total securities issued or guaranteed by Canada, Canadian province, Canadian municipal or school corporations]/ Total Assets
- Post 2012 Norwegian data is calculated from Statistics Norway using:

  [Notes, coins and deposits] / Total Assets

Achevé de rédiger en France
Dépôt légal : septembre 2020
Directeur de la Publication : Xavier Ragot
Publié par les Éditions du Net SAS 93400 Saint-Ouen

Réalisation, composition : Najette Moummi