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Clustering, international networks and performance of firms: some complement approaches for MENA's convergence"

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Résumé

Notre premier objectif est d'étudier si les réseaux contribuent de manière efficace à améliorer la Productivité Totale des Facteurs (PTF) des entreprises et de comparer les réseaux internationaux (les importations de biens intermédiaires et d'équipement, coopération verticale ou horizontale) **et les réseaux locaux** (expérience d'exportation et de production d'autres entreprises au niveau régional)**.** Étant donné que ces phénomènes sont microéconomiques en substance, les bases de données au niveau des entreprises offrent une très bonne occasion d'approfondir leur analyse. Notre analyse est basée sur un échantillon de firmes espagnoles et turques et étudie leur réaction à l'agglomération au niveau régional. Nous utilisons une version modifiée de la méthode Olley et Pakes afin de contrôler un possible biais d'endogénéité et nous considérons différents indicateurs d'agglomération comme un input endogène de la fonction de production.

Une contribution importante de cette étude est de montrer que les entreprises espagnoles et turques partagent des caractéristiques importantes. Les entreprises internationalisées sont différentes des autres entreprises dans le sens où elles sont plus grandes et ont une productivité plus élevée. Les petites entreprises internationalisées ont une productivité plus élevée que les grandes qui n'importent pas ni exportent. Les entreprises étrangères sont plus productives, plus grandes et commercent plus que les entreprises nationales. Nous observons que les entreprises situées dans des régions à haute intensité sont, en moyenne, plus productives, mais l'écart avec d'autres entreprises n'est pas très grand. La région où se localise l'entreprise ne fait pas de distinction claire entre les entreprises, en tous les cas la localisation a une influence moins claire sur la productivité que l'internationalisation de l'entreprise.

Dans le cas turc, on obtient plus de preuves qu'il existe des problèmes de congestion que de preuve en faveur des externalités positives de l'agglomération. En Espagne, on obtient plus de preuves sur l'effet positif que les entreprises peuvent obtenir de leur localisation en termes de PTF, mais quelques problèmes de congestion sont également mis en évidence. Contrairement à la Turquie, les entreprises manufacturières espagnoles bénéficient de retombées positives de la concentration des travailleurs et des importateurs et du déroulement d'activités similaires aux leurs dans leur voisinage. Les preuves concernant les liens verticaux sont plus mitigées. La production dans d'autres industries a un impact négatif et les heures travaillées dans les autres industries n'ont pas d'incidence sur la PTF. Toutefois, une augmentation des importations et des exportations dans d'autres secteurs bénéficierait sans aucun doute à la PTF des entreprises opérant dans d'autres activités. Les petites usines sont les entreprises qui apprennent davantage des autres entreprises en Espagne, ou sont moins affectés par les coûts de congestion en Turquie. Dans les deux pays, l'importance des importations au niveau régional, quelle que soit l'activité a un effet positif sur la capacité de gestion des petites entreprises.

Le deuxième objectif de ce rapport est de vérifier si la proximité d'autres entreprises exportatrices augmente la probabilité d'une entreprise de devenir un exportateur. Dans ce but, nous utilisons une immense base de données pour les entreprises manufacturières du Maroc et estimons un modèle de décision d'exportation qui tient compte de variables d'agglomération. Le document montre que l'agglomération des entreprises d'un même secteur exerce une grande influence sur la décision d'exporter. Cette étude corrobore ainsi l'hypothèse selon laquelle l'agglomération offre des opportunités pour les entreprises d'interagir et d'échanger des informations et des connaissances concernant les marchés étrangers et ces externalités sont d'autant plus importantes si les entreprises appartiennent au même secteur.

Dans la troisième partie de cette étude, nous utilisons la technique expérimentale économiques pour étudier comment la confiance entre les partenaires d'affaires est affecté par les informations sur le pays de la résidence du partenaire. L'expérience porte sur une version modifiée du jeu de confiance où les joueurs proviennent de quatre pays: la Turquie, le Maroc, la France et l'Espagne. Nos résultats montrent que marocains sont beaucoup plus confiants que les joueurs d'autres pays, sauf envers l'Espagne. Ils obtiennent peu de réciprocité en retour. Dans l'ensemble, les participants montrent un niveau faible de réciprocité, mais ce comportement ne semble pas être en fonction du pays du récepteur. La seule exception st celle du Maroc qui est plus égoïste avec l'Espagne. La méfiance entre espagnols et marocains semblent donc mutuelle.

Synthèse non-technique

Objectifs de l'étude

Les politiques de clustering et d'internationalisation ont été traditionnellement au cœur des politiques économiques et en particulier des politiques régionales bien qu'elles aient été systématiquement traitées séparément. Par conséquent, l'amélioration de la productivité au niveau de l'entreprise semble être au cœur du débat puisque les gains de productivité sont indispensables pour l'exportation. Les gains de productivité peuvent provenir d'un large éventail de processus tels que l'expérience, l'innovation technique par le biais des importations de biens intermédiaires et l'organisation par exemple. La localisation stratégique peut également contribuer à améliorer la productivité. En se situant à proximité d'autres entreprises de la même activité, dans une région avec une activité dense ou à proximité des clients et les fournisseurs, les entreprises peuvent bénéficier d'externalités sur les intrants, les marchés du travail ou d'externalités de connaissances qui améliorent leur productivité et en particulier leurs capacités de gestion.

Notre premier objectif est d'étudier si les réseaux contribuent de manière efficace à améliorer la Productivité Totale des Facteurs (PTF) des entreprises et de comparer les réseaux internationaux (les importations de biens intermédiaires et d'équipement, coopération verticale ou horizontale) et les réseaux locaux (expérience d'exportation et de production d'autres entreprises au niveau régional). Dans ce but, nous utilisons des données d'entreprises espagnoles et turques et réalisons une étude microéconométrique.

En raison de la présence de coûts irrécupérables à l'exportation, la nouvelle théorie du commerce a mis en évidence que les entreprises les plus productives réussissent à exporter parce qu'elles sont plus susceptibles de faire face aux coûts irrécupérables d'entrée et de survivre sur le marché international (auto-sélection). En ce sens, l'agglomération pourrait améliorer la productivité et pourrait également promouvoir les exportations. En outre, les coûts irrécupérables à l'exportation sont principalement dus aux barrières au commerce et à l'information imparfaite sur les marchés internationaux. Par conséquent, l'agglomération de producteurs dans les mêmes régions, partageant une expérience d'exportation pourrait réduire ces asymétries d'information et promouvoir les exportations.

Le deuxième objectif de ce rapport est de vérifier si la proximité d'autres entreprises exportatrices augmente la probabilité d'une entreprise de devenir un exportateur. Cet effet pourrait se traduire par des interactions hors marchés, comme l'échange de connaissances sur les transactions internationales, techniques et normes administratives, caractéristiques de la demande étrangère, etc et les interactions ayant un impact sur le coût de la vente à l'étranger (l'accès au crédit, l'information sur les coûts de transport, les coûts administratifs, etc.). Dans ce but, nous utilisons une immense base de données pour les entreprises manufacturières du Maroc et estimons un modèle de décision d'exportation qui tient compte de variables d'agglomération.

Comme mentionné ci-dessus, une conclusion commune de la littérature empirique récente sur le commerce est la supériorité, à tout point de vue, des exportateurs (soit des usines ou des entreprises) vis-à vis des non-exportateurs en ce qui concerne la productivité. Ce fait semble être principalement expliqué par l'existence de coûts irrécupérables à l'exportation. Étant donné que chaque marché a ses propres spécificités en ce qui concerne les normes administratives et techniques ainsi que d'autres codes non formels pour les entreprises, les barrières à l'exportation

peuvent différer d'un marché à l'autre. Une hypothèse complémentaire qui n'a pas été explorée dans la littérature est le fait que les asymétries d'information auxquelles sont confrontées les exportateurs sur un marché spécifique ne sont pas les mêmes pour tous les pays. La littérature concernant l'équation de gravité appliquée au commerce internationale a montré que le commerce bilatéral est largement influencé par des liens historiques, géographiques ou culturelles. Cela suggère également que les coûts des échanges bilatéraux (à la fois les coûts irrécupérables et les coûts variables) diffèrent d'un couple de partenaires commerciaux à l'autre. En somme, tous les partenaires commerciaux n'ont pas les mêmes connaissances sur les spécificités des consommateurs, les normes administratives et des codes d'affaires des autres pays. En ce sens, il existe probablement une certaine distance immatérielle entre les cultures qui les empêche ou leur permet de commercer les uns avec les autres.

Pour explorer cette hypothèse, **dans la troisième partie de cette étude, nous utilisons une technique d'économie expérimentale pour étudier comment la confiance affecte les partenaires commerciaux à travers les frontières.** Concrètement, nous utilisons des méthodes expérimentales pour déterminer si l'origine (française, espagnole, turque ou marocaine) des partenaires a une influence sur la confiance octroyée par les partenaires ou reçue des partenaires.

I Impact des réseaux nationaux et internationaux sur la productivité des entreprises turques et espagnoles.

Introduction

De nombreuses collectivités locales ont développé des politiques de clusters motivées par l'idée que la productivité d'une entreprise augmente lorsque d'autres entreprises localisées à proximité conduisent des activités similaires. Or, un obstacle important pour les entreprises

lorsqu'elles envisagent une activité internationale est la faible productivité et le manque d'information concernant les marchés étrangers. Ainsi, l'agglomération pourrait également favoriser indirectement l'internationalisation par une productivité accrue. L'internationalisation pourrait à son tour apporter des gains de productivité supplémentaires.

Si de nombreuses études ont souligné l'existence de certaines retombées positives qui pourraient émerger de la concentration géographique de l'activité, l'effet global de l'agglomération n'a pas été pleinement exploré. En particulier, les gains susceptibles d'être obtenus à partir de la concentration des activités pourraient être annulées par les coûts de congestion que l'agglomération pourrait entrainer. Lorsque l'on quantifie les gains potentiels de l'agglomération en termes de productivité, on doit faire face à un problème de causalité. Les entreprises qui décident de se regrouper pourraient être celles qui disposent d'une meilleure productivité ou, à l'inverse, certaines régions seraient susceptibles d'attirer des entreprises plus productives ce qui conduirait à surestimer les gains d'agglomération. Enfin, un biais de sélection peut se produire puisque la plupart des entreprises sont susceptibles de résister à une forte concurrence dans les grappes et de trouver plus productive pour trouver à proximité d'autres producteurs ou de participer de liens verticaux. Les clusters pourraient être composés d'entreprises qui sont plus productives grâce à des caractéristiques autres que celles de la région.

Étant donné que ces phénomènes sont microéconomiques en substance, les bases de données au niveau des entreprises offrent une très bonne occasion d'approfondir leur analyse. Notre analyse est basée sur un échantillon de firmes espagnoles et turques et étudie leur réaction à l'agglomération au niveau régional. Notre contribution consiste à comparer plusieurs mesures de l'agglomération et de corriger les biais d'endogénéité possible. En fait, on compare l'impact de la concentration de la production, l'emploi, l'exportation et l'importation sur la productivité totale

des facteurs des entreprises espagnoles et turques en utilisant une version modifiée de la méthode Olley et Pakes.

Caractéristiques des entreprises espagnoles et turques

Dans les deux pays, nous avons confirmé que les entreprises internationalisées (les entreprises qui exportent et / ou importent) sont des cas particuliers. Les entreprises internationalisées sont différentes des autres entreprises dans le sens où elles sont plus grandes et ont une productivité plus élevée. Les entreprises qui importent et exportent ont également des taux supérieurs d'exportation et d'importation que celles qui exportent ou importent seulement. Nous observons également que les petites entreprises ont une plus faible productivité du travail que les grandes entreprises, comme attendu, parce que les dernières sont plus susceptibles d'opérer en rendements croissants. Néanmoins, les petites entreprises internationalisées ont une productivité plus élevée que les grandes qui n'importent pas ni exportent, et ceci autant en Espagne qu'en Turquie. Ce fait souligne l'importance des activités internationales des entreprises comme une caractéristique distinctive claire pour leur fonctionnement en ce qui concerne les capacités de gestion et d'organisation. Nous observons également un clivage entre les entreprises étrangères et nationales dans les deux études de cas. Les entreprises étrangères sont plus productives, plus grandes et commercent plus que les entreprises nationales, à la fois en Espagne et en Turquie. Enfin, nous avons comparé les caractéristiques des entreprises situées dans des régions à haute densité ou faible. Nous observons que les entreprises situées dans des régions à haute intensité sont, en moyenne, plus productives, mais l'écart avec d'autres entreprises n'est pas très grand. L'impact de la localisation sur la productivité n'est pas aussi déterminant que l'importance des activités d'internationalisation. Une contribution importante de cette étude est de

montrer que ces faits stylisés sont communs à deux pays très différents comme la Turquie et l'Espagne.

Méthodologie

Nous cherchons à évaluer l'impact de différents types de mesures d'agglomération sur la PTF. Le défi consiste à mesurer l'effet de l'agglomération en tenant compte des possibles biais de sélection et de simultanéité. En effet, les entreprises pouvaient choisir leur emplacement en fonction du rendement que cet emplacement pourrait leur apporter en termes de productivité : un "bon emplacement" rend les entreprises meilleures et celles-ci vont en tenir compte. D'autre part, les «meilleures entreprises» peuvent choisir de s'agglomérer, et l'emplacement choisi peut apparaître a posteriori comme un «bon emplacement».

Pour traiter avec précision ces questions, l'agglomération ne doit pas être considérée comme un déterminant strictement exogène de la PTF. Nous modifions l'approche de Olley et Pakes (1996) pour contrôler les biais d'endogénéité et considérons la distribution de différents indicateurs d'agglomération que nous considérons endogènes dans la fonction de production.

Nous mesurons l'agglomération de plusieurs manières. La production (et la densité de la production) est l'indicateur le plus général de la source potentielle d'externalité qui peut émerger de l'expérience de production d'autres entreprises. Les externalités peuvent provenir de la spécialisation des marchés du travail et du partage des connaissances avec d'autres employés et gestionnaires, c'est pourquoi nous utilisons aussi le nombre d'heures travaillées comme un indicateur complémentaire. Les capacités de gestion pourraient également être améliorées en contact avec les fournisseurs et de clients étrangers. En particulier, les entreprises situées à proximité peuvent partager des informations concernant leur expérience internationale qui

pourrait bénéficier aux autres entreprises. Pour capter cette source potentielle de transfert de connaissances, nous considérons également le montant des importations et des exportations au niveau de la région, toutes industries confondues et au niveau régional dans le même secteur d'activité. Chaque indicateur est susceptible d'apporter un éclairage sur les différentes hypothèses concernant les avantages que les entreprises sont susceptibles d'obtenir des sociétés situées dans le voisinage. Ces externalités peuvent fonctionner grâce à des liens verticaux (entre les entreprises opérant en amont et en aval) ou à des liens horizontaux (entre les entreprises situées dans les mêmes secteurs). Chacun des indicateurs mentionnés sont calculés à la fois pour l'Espagne et la Turquie à l'échelon régional ou pour la même industrie dans la région pour saisir l'influence des deux types d'externalités.

Principaux résultats et implications politiques

Nous utilisons la même approche pour l'Espagne et la Turquie, mais les résultats obtenus sont très différents entre les deux pays concernant l'impact d'agglomération en termes de PTF. Ces différences peuvent être dues au fait que la répartition des activités sont très différentes dans les deux pays. En Turquie, la région de Marmara (l'une des sept régions considérées) représente plus de la moitié de la production manufacturière nationale. En Espagne, les régions les plus productives sont Madrid et la Catalogne, qui représentent respectivement 27 et 13% de la production manufacturière nationale. Ces différences ne sont pas seulement dues au fait que la taille des régions espagnoles est plus petite (nous avons des données pour 17 régions), car ces différences persistent lorsque l'on considère la densité de la production par kilomètre carré. La concentration de l'activité turque est très élevée à Istanbul et Kocaeli, les grandes villes de la région de Marmara.

Dans le cas turc, on obtient plus de preuves des problèmes de congestion que d'évidence à faveur de l'agglomération. La concentration de la production au niveau régionale et au niveau sectorielles ont un impact négatif sur la productivité. La même chose s'applique pour la concentration d'heures travaillées. Les résultats concernant les exportations et les importations au niveau de l'industrie ne sont pas interprétables car ils conduisent à des effets négatifs du capital sur la fonction de production, qui est théoriquement inexplicable. Une activité d'importation intense a également un impact négatif sur la productivité, même si l'ampleur est plus faible que pour la concentration de la production et des heures travaillées. La concentration des exportateurs, peu importe les secteurs d'activité, apparaît comme la seule source d'externalités positives pour la productivité des entreprises situées à proximité.

Dans le cas turc, on obtient plus de preuves des problèmes de congestion que d'évidence à faveur de l'agglomération. Dans le cas turc, on obtient plus de preuves des problèmes de congestion que d'évidence à faveur de l'agglomération. En Espagne, on obtient plus de preuves sur l'effet positif que les entreprises peuvent obtenir de leur localisation en termes de PTF, mais quelques problèmes de congestion sont également mis en évidence. Contrairement à la Turquie, les entreprises manufacturières espagnoles bénéficient de retombées positives de la concentration des travailleurs et des importateurs et du déroulement d'activités similaires aux leurs dans leur voisinage.

Nous montrons aussi pour les deux pays que toutes les entreprises ne bénéficient pas de la même manière de l'expérience d'autres entreprises situées à proximité, sans doute parce qu'elles n'ont pas les mêmes capacités d'absorption. En particulier, les entreprises internationalisées et les grandes entreprises partagent des caractéristiques et se comportent différemment de leurs petites

entreprises et de leurs concurrents non-internationalisés. Les différences entre les entreprises étrangères et nationales sont très grandes.

En dehors de ces caractéristiques communes, les entreprises espagnoles et turques ont une sensibilité très différente aux différents indicateurs, sauf pour les petites entreprises. Les petites usines sont les entreprises qui apprennent davantage des autres entreprises en Espagne, ou sont moins affectés par les coûts de congestion en Turquie. Dans les deux pays, l'importance des importations au niveau régional, quelle que soit l'activité a un effet positif sur la capacité de gestion des petites entreprises. Etant donné que celles-ci fonctionnent à une échelle inférieure et se spécialisent davantage, elles doivent être insérées dans la chaîne verticale de la production et obtenir leurs biens intermédiaires d'autres entreprises, pour garantir leur succès. Les petites structures améliorent leur gestion au contact des autres entreprises et notamment des importateurs dans le cas de la Turquie et des exportateurs dans le cas de l'Espagne. Par conséquent, les politiques gouvernementales régionales devraient encourager en particulier l'agglomération de petites entreprises, leur possibilité de croître et leur lien avec les entreprises ayant une dimension internationale et opérant dans d'autres industries.

Les entreprises étrangères se comportent différemment des entreprises nationales en ce qui concerne leur réponse à l'activité d'autres entreprises situées à proximité. En Espagne, elles ne sont sensibles à aucun des indicateurs d'agglomération calculés au niveau de l'industrie. La PTF des entreprises étrangères bénéficie de l'expérience de la région en général, tant en Turquie comme en Espagne, tandis que les grandes entreprises turques souffrent systématiquement de coûts de congestion. Notre interprétation est que les entreprises étrangères sont plus concernées par l'expérience et l'activité de la région en général, alors que l'expérience des entreprises qui leur

font concurrence au niveau de l'industrie est déjà pris en compte lors du choix de l'emplacement et le niveau d'intrants ou n'affectent pas leurs capacités de gestion.

Une caractéristique commune à toutes les entreprises espagnoles, est que le montant des importations en général, et au niveau de l'industrie en particulier, affecte toutes les entreprises de manière positive (sauf pour les entreprises étrangères espagnoles). En Turquie, l'effet positif des importateurs est clair pour les entreprises étrangères et les petites entreprises. La promotion de la connexion internationale au niveau de l'industrie tant pour l'accès aux fournisseurs étrangers d'intrants et biens d'équipement, mais aussi l'entrée des produits similaires à ceux produits localement, ont des effets positifs sur la PTF. Ce genre de politique est un complément naturel de tous les efforts qui devraient être effectués pour encourager la spécialisation dans certaines activités spécifiques, ou des efforts de formation et politiques de R&D qui affectent la productivité plus directement.

Dans notre étude, l'unité géographique utilisée est ample et le niveau d'agrégation sectorielle est lui aussi grand. Nous ne sommes pas en mesure de conclure quant à l'exactitude des politiques de clusters qui agissent à un niveau très spécialisé et pour les petites unités géographiques. Cependant, nos résultats offrent des preuves de certaines retombées positives au niveau indiqué et impliquent que la spécialisation dans certaines industries, sans dépasser un seuil crucial en termes de densité de la concentration de l'activité, pourrait avoir des effets positifs pour la PTF des entreprises dans cette activité.

Promouvoir l'agglomération n'est pas une condition suffisante pour promouvoir la productivité, mais nos résultats confirment que les entreprises (surtout les petites) ont beaucoup à apprendre les unes des autres. Les résultats dépendent en grande partie de l'internationalisation de

la région et de l'entreprise, la taille de la production du secteur, de la région et de l'entreprise. Il semble que les régions qui exportent beaucoup, mais dans l'ensemble celles qui importent beaucoup obtiennent des gains de productivité considérables. Ensuite, une politique efficace et bon marché pourrait consister à réduire les entreprises formelles et informelles face à des obstacles lors de l'exportation ou l'importation.

Notre étude a porté sur la PTF car elle constitue un important moteur de croissance de la production à moyen terme et de la productivité du travail. Mais évidemment, la croissance de la PTF ne se traduit pas automatiquement en croissance de l'emploi. L'étude de ces liens devrait susciter une attention accrue. Une autre question complémentaire de notre étude est le rôle joué par l'innovation de produits, le nombre de produits exportés ou produits par les entreprises et par régions. En fait, la qualité et la diversification peuvent jouer un rôle important dans la création d'externalités entre les entreprises. Dans la même lignée, il serait important d'étudier l'effet du nombre de producteurs, importateurs et exportateurs (en complément des indicateurs de quantité que nous avons utilisés dans cette étude), mais ces indicateurs ne sont pas disponibles au niveau régional dans le cas de l'Espagne .

II Impact de réseaux nationaux et internationaux sur la productivité des entreprises marocaines à l'exportation

Introduction

La concentration au niveau local de producteurs, des exportateurs et des multinationales peut améliorer la productivité des entreprises et la propension à exporter à travers différents canaux. L'agglomération permet de réduire les coûts de transport et de stockage et réduit les coûts d'approvisionnement et de commercialisation. Elle offre des possibilités d'interaction entre les

agents qui peuvent mettre en place des réseaux formels ou informels de relations d'affaires et échanger des informations concernant leurs partenaires, les marchés, et les questions administratives liées à leurs activités.

Nous utilisons une approche microéconométrique basée sur des enquêtes réalisées auprès d'entreprises manufacturières marocaines pour traiter deux questions. Premièrement, le document examine l'impact de l'agglomération sur les exportations en testant si la proximité géographique d'autres entreprises exportatrices augmente la probabilité d'une entreprise à exporter. Des études antérieures ont abordées cette question. Cependant, à notre connaissance, la plupart des études se sont concentrées sur les pays développés. Deuxièmement, le document examine l'effet de l'agglomération sur les exportations tout en tenant compte de la productivité des entreprises. En plus des réseaux locaux, nous considérons l'impact des réseaux internationaux tels que la présence de la propriété étrangère dans le capital des entreprises manufacturières.

Les résultats contribuent à la recherche académique concernant les effets de l'agglomération sur la performance des entreprises et, en particulier, leurs comportements d'exportation dans le contexte spécifique d'un pays sud-méditerranéen: le Maroc. La disponibilité des données est très souvent le facteur qui limite la recherche empirique, en particulier lorsqu'il s'agit d'utiliser des données au niveau des entreprises dans les pays en développement. Pour cette étude, nous avons bénéficié d'un accès privilégié à une grande base de données du secteur manufacturier au Maroc qui s'étend sur la période 1995-2006.

Principaux résultats

Le document révèle que la concentration régionale des exportations, soit dans la même industrie ou dans toutes les industries exerce un effet positif et statistiquement significatif sur la

décision de l'entreprise à exporter. De même, l'agglomération d'un grand nombre d'entreprises engagées dans la vente sur les marchés étrangers produit un effet positif et significatif sur la probabilité des entreprises à exporter. Des estimations économétriques montrent que ces résultats ne sont pas motivés par la présence d'un biais d'endogénéité. Ils sont également robustes à la prise en compte de la productivité des entreprises dans le modèle économétrique. Au-delà de l'impact de la productivité sur la décision des entreprises à l'exportation que d'autres études ont montré, il existe un impact supplémentaire qui provient de l'agglomération. Le document montre également que la probabilité d'exporter est beaucoup plus élevée lorsque les entreprises du même secteur d'activité sont agglomérées. Cette constatation peut être interprétée comme suit. En plus de l'effet d'agglomération traditionnelle en raison de la présence d'une infrastructure logistique qui facilitera l'accès aux marchés étrangers, il existe un effet d'agglomération spécifique au secteur.

Cette constatation corrobore l'hypothèse que l'agglomération offre des opportunités pour les entreprises d'interagir et d'échanger des informations et des connaissances concernant les marchés étrangers, et que cet échange est beaucoup plus productif, au sens où il augmente les chances de succès à l'exportation lorsque les entreprises qui interagissent appartiennent au même secteur. Des données agrégées par région indiquent, pour le secteur de l'habillement par exemple (la branche manufacturière la plus orientée vers l'exportation au Maroc), que les entreprises d'exportation de la région de Casablanca exportent plus vers la France, ceux de la région de Rabat-Salé vers le Royaume-Uni et celles de Tanger vers l'Espagne. Malheureusement les données d'export par destination ne sont pas disponibles dans l'enquête et cette dimension n'a pas été intégrée dans l'analyse économétrique.

Du point de vue de la politique économique, les pays de la région de la Méditerranée font de leur mieux pour accroître leurs exportations et se procurer des devises dont ils ont besoin pour

leurs importations. Comprendre le rôle de l'agglomération et de son impact sur le comportement des entreprises est extrêmement important à des fins de politique économique.

La création de zones industrielles modernes, surnommées plates-formes industrielles Intégrées (P2I), reliées à l'infrastructure de transport et de télécommunication et équipées de divers services administratifs représentent l'un des piliers principaux de la récente politique industrielle au Maroc. L'objectif des autorités est d'utiliser les plates-formes industrielles et leurs effets d'agglomération pour stimuler les exportations et attirer les investisseurs directs étrangers. Il existe actuellement neuf plates-formes en construction dont cinq sont spécialisées dans un secteur.

La création de plates-formes industrielles pour encourager les entreprises à se regrouper représente un changement dans l'approche des autorités marocaines. Par le passé, le code des investissements privilégiait une répartition territoriale équilibrée des entreprises et des secteurs plus que leur performance effective. À cette fin, le code offrait des allégements fiscaux et autres incitations au crédit bancaire pour les entreprises qui s'établissaient dans des zones moins agglomérées. La libéralisation des échanges et une concurrence féroce sur les marchés traditionnels d'exportation des fabricants marocains ont poussé les autorités à revoir leur politique industrielle et à mettre en place de nouveaux outils pour soutenir les exportations manufacturières. Les conclusions de ce document peuvent, par conséquent, orienter ce processus de décisions concernant le développement territorial en prenant en compte la nature des secteurs et la direction des échanges pour renforcer les effets potentiels de l'agglomération sur la performance industrielle.

Conclusions

La création de zones industrielles modernes, surnommées plates-formes industrielles Intégrées (P2I), reliées à l'infrastructure de transport et de télécommunication et équipées de divers services administratifs représentent l'un des piliers principaux de la récente politique industrielle au Maroc. L'objectif des autorités est d'utiliser les plates-formes industrielles et leurs effets d'agglomération pour stimuler les exportations et attirer les investisseurs directs étrangers. Il existe actuellement neuf plates-formes en construction dont cinq sont spécialisées dans un secteur. Ce document fournit des preuves empiriques qui confirment la forte relation entre l'agglomération spatiale des firmes et leur probabilité de s'engager sur les marchés étrangers. Nos résultats ne sont ni influencés par un biais d'endogénéité, ni par l'omission de variables.

L'agglomération des entreprises d'un même secteur exerce une grande influence sur la décision d'exporter. Un tel résultat révèle qu'au-delà de l'effet d'agglomération traditionnelle en raison de la présence d'infrastructures logistiques, l'accès aux marchés étrangers peut lui aussi être facilité en raison d'un effet positif d'agglomération au niveau des exportateurs d'un même secteur.

Cette étude corrobore ainsi l'hypothèse selon laquelle l'agglomération offre des opportunités pour les entreprises d'interagir et d'échanger des informations et des connaissances concernant les marchés étrangers. Les données par région concernant les exportateurs de vêtement, le secteur manufacturier le plus orienté vers l'exportation au Maroc, indiquent que les entreprises implantées dans la même zone ont tendance à exporter vers le même marché étranger.

Les conclusions de ce document peuvent par conséquent, orienter ce processus de décisions concernant le développement territorial en prenant en compte la nature des secteurs et la direction

des échanges pour renforcer les effets potentiels de l'agglomération sur la performance industrielle.

III Relations commerciales interculturelles et confiance: une approche expérimentale

Introduction

Comme mentionné ci-dessus, une conclusion de la littérature empirique récente sur le commerce est la supériorité, à tout moment, des exportateurs sur les non-exportateurs en ce qui concerne la productivité. Ce fait semble être principalement expliqué par l'existence de coûts irrécupérables à l'exportation. Étant donné que chaque marché a ses propres spécificités en ce qui concerne les normes administratives et techniques ainsi que d'autres codes non formels pour les entreprises, les barrières à l'exportation peuvent différer d'un marché à l'autre. Au niveau macroéconomique, la littérature concernant l'explication du commerce international par l'équation de gravité a montré que le commerce bilatéral est largement influencé par des liens historiques, géographiques ou culturelles. En somme, tous les partenaires commerciaux n'ont pas les mêmes connaissances sur les spécificités des consommateurs, les normes administratives et les codes d'affaires des autres pays. Au niveau microéconomique, la décision d'exporter ou d'échanger avec certains pays partenaires dépend également de l'estimation ex ante de ces coûts. Dans cette lignée, il existe probablement une certaine distance immatérielle entre les cultures qui empêchent ou permettent aux pays de commercer les uns avec les autres.

Pour explorer cette hypothèse, dans la troisième partie de cette étude, nous utilisons une technique d'économie expérimentale pour étudier comment la confiance entre les partenaires d'affaires est affectée par les informations concernant le pays de résidence du partenaire.

Concrètement, nous utilisons des méthodes expérimentales pour déterminer si l'origine du partenaire a une influence sur les décisions prises par les agents concernant ces transactions économiques. La confiance est un élément à part entière dans les transactions économiques entre les pays, les entreprises, les consommateurs et les détaillants, ainsi comme un déterminant clé de la performance économique. Concrètement, l'expérience a été réalisée dans quatre pays: France, Espagne, Maroc et Turquie.

Méthodologie

Nous avons sélectionné des pays relativement hétérogènes en ce qui concerne leurs les PIB par habitant, liens historiques et culturels, religions, intensité du commerce afin d'avoir une diversité de comportements et d'obtenir des estimations robustes. Un total de 240 participants ont participé à cette expérience: 60 élèves de chaque pays (Université de Grenade, en Espagne, à l'Université de Rabat, au Maroc, Université de Paris, France; Université d'Istanbul, Turquie).

Nous fournissons au joueur A l'information concernant la nationalité du joueur B. Nous donnons au joueur A un choix pour obtenir une certaine somme d'argent (10 euros) pour lui-mêmes et pour le joueur B sans risque. L'alternative est risquée et désignée comme l'option de «confiance». Dans ce cas, le joueur A peut choisir de laisser le joueur B décider entre deux options possibles. L'une des deux options du joueur B est égalitaire (15 euros pour chaque joueur) et une autre est nettement meilleure pour le joueur B (8 euros pour le joueur A et 22 euros pour le joueur B). L'option égalitaire du joueur B est appelée option «réciproque».

Nous comparons les résultats concernant les joueurs en fonction du lieu de résidence du joueur A (comparaison inter-sujets). Cela nous permet de détecter s'il y a un pays plus confiant qu'un autre. Pour un pays en particulier, nous comparons les choix des joueurs A en fonction des

informations concernant le lieu de résidence des joueurs B (comparaison intra-sujets). Ces comparaisons permettent de déterminer s'il y a des pays qui inspirent plus confiance que d'autres. De la même façon, on compare les réponses des joueurs B selon la résidence de ces joueurs, nous devons répondre à la question: Y a t-il des pays plus fiable que d'autres? C'est-à-dire nous nous demandons si les joueurs B de ce pays choisissent plus souvent l'option de réciprocité que les joueurs d'une autre provenance. En complément, nous comparons les différentes options prises par les joueurs B du même endroit en fonction du pays de résidence pour savoir s'il ya des cas de discrimination contre un pays en particulier au sens ou les joueurs B seraient nettement moins réciproques envers les sujets A originaires de ce pays.

Principaux résultats et implications

Les liens historiques, géographiques et culturels sont des déterminants importants des relations commerciales et d'investissement entre les pays. La confiance, l'altruisme, la réciprocité configurent des normes et des opinions entre les partenaires concernant chacun d'eux. Les attentes de leurs partenaires sur la façon dont ils agissent peuvent être influencées par des intuitions vraies ou fausses. Le laboratoire expérimental nous permet d'identifier ces "a priori" et de vérifier s'ils sont fondés en les isolant d'autres facteurs qui influencent les relations économiques inter-pays. Évidemment, si l'intuition sur la façon dont les habitants d'un pays peuvent agir n'était pas confirmée par les faits, un préjudice clair pourraît être commis.

Les principaux résultats sont les suivants:

1. Les pays moins développés de notre échantillon (Turquie et Maroc) présentent un niveau de confiance plus élevé.

2. En particulier, les marocains sont beaucoup plus confiants que les joueurs d'autres pays, tant envers leur propre pays qu'envers les autres en général. L'exception concerne leur attitude envers l'Espagne. Autant les marocains que les espagnols présentent un faible niveau de confiance lorsque le partenaire est espagnol. La méfiance entre espagnols et marocains semblent donc mutuelle.

3. Les Français présentent des niveaux similaires de confiance quelle que soit la nationalité du partenaire.

4. On observe une discrimination positive des turques envers les joueurs espagnols.

5. Les joueurs marocains confient plus que la moyenne et nous observons maintenant qu'ils obtiennent à leur tour moins de réciprocité, il semble que marocains soient victimes d'un préjudice évident.

6. Dans l'ensemble, les participants montrent un niveau faible de réciprocité, mais ce comportement ne semble pas être en fonction du pays du récepteur.

7. Encore une fois, il n'ya qu'une seule exception. Lorsque les marocains ont à choisir entre les options égoïstes et réciproques, ils sont beaucoup plus égoïstes avec les espagnols.

La confiance dépend à la fois du sujet qui éprouve ce sentiment et de l'objet qui inspire cette impression. La confiance est un sentiment bilatérale par essence. Mais certains faits stylisés sont observés concernant le Maroc comme objet et sujet de confiance, quel que soit le partenaire. Nos résultats montrent que le Maroc mérite la confiance de ses partenaires et que la confiance placée en les marocains par d'autres pays n'est pas en harmonie avec la générosité qu'ils démontrent. L'Espagne est le moins digne de confiance, et le pays qui reçoit une confiance plus démesurée de la par des autres pays.

Etablir une relation de causalité entre les résultats de notre expérience et les relations observées entre les pays de notre échantillon va au-delà de la prétention de cette étude. Néanmoins, il est intéressant de revenir sur les relations économiques en ayant nos résultats en tête. Le Maroc est plus confiant que les autres pays pensent, mais moins fidèle en ce qui concerne le peuple espagnol. L'Espagne est moins digne de confiance que les autres pays croient et discrimine entre les pays, en particulier contre le Maroc. Durant la dernière décennie, la relation commerciale entre le Maroc et l'Espagne s'est intensifié ce qui peut avoir donné l'occasion à ces partenaires de mieux se connaître les uns les autres et le Maroc a adopté un comportement moins confiant car il pourrait avoir observé la non-réciprocité des partenaires espagnols. Mais l'Espagne a un préjugé évident contre le Maroc qui n'a pas été nuancé par l'intensification du commerce, l'immigration et les relations d'investissement. Connaître parfaitement la personne peut être bon ou mauvais pour l'image que l'on se fait des autres. En comparaison, les relations économiques entre la Turquie et l'Espagne sont pauvres et la Turquie a clairement surestimée la confiance qu'elle peut placer dans le peuple espagnol. Bien que les relations économiques bilatérales entre l'Espagne et le Maroc se soient intensifiées, la méfiance réciproque persiste et suppose un risque potentiel pour leurs relations politiques et économiques.

Abstract

Our first objective is to study if networks effectively ameliorate the TFP of firms and to compare international networks (imports of intermediate and capital goods, vertical or horizontal cooperation) **and local networks** (experience at exporting and producing of other firms at the regional level). Since these phenomena are essentially microeconomic in essence, firm-level datasets offer a very good opportunity to deep in their analysis. Our analysis is based on a sample of Spanish and Turkish firms. We modify the Olley and Pakes (1996) approach to control for endogeneity bias and consider different agglomeration indicators as an endogenous input of the production function.

An important contribution of this study is to show that Spanish and Turkish firms share important characteristics. Namely, traders are bigger and more productive. Small plants that trade are more productive than large plants that do not trade. Foreign firms are larger and trade more than domestic firms in both countries. Regional location doesn't make a so clear distinction among firms than their international activities, in terms of productivity.

In the Turkish case, we obtain more evidence of congestion problems than evidence in favour of positive spillovers. Concentration of exporters, regardless to the sectors of activity, appears as the sole source of positive externalities for the productivity of firms located nearby. In Spain, we obtain more evidence about the positive effect that firms can obtained from their localisation in terms of TFP but some congestion's problems are also evidenced. There is a risk of congestion costs if the concentration of production sharing horizontal linkages is too dense. Unlike Turkey, Spanish manufacturing firms benefit from positive spillovers from concentration of workers and importers conducing similar activities in their vicinity. Small plants are the firms that learn more from other firms in Spain or are less affected by congestion costs in Turkey. Small plants in both countries productivity are positively impacted by the amount of import of the region.

The second objective of this report is to verify if the proximity of other exporting firms increases the probability of a firm to become an exporter. To this aim, we use a huge datasets for Moroccan manufacturing firms and estimate a model for the decision o export that takes into account agglomeration variables. The paper reveals that regional concentration of exports either in the same industry or in all industries exerts a positive and statistically significant effect on the firm's decision to export. This finding corroborates the hypothesis that agglomeration offers opportunities for firms to interact and exchange information and knowledge on foreign markets, and that such exchange is much more rewarding –in the sense of leading to export– when interacting firms belong to the same industry.

In the third part of this study, we use experimental economic technique to study how trust among business partners is affected by the information about the residence's country of the partner. The experiment examines a modified version of the Trust Game where players come from four countries: Turkey, Morocco, France and Spain. Our results show that Moroccan are significantly more trusting than players from other countries, except toward Spain. They obtain in turn less reciprocity. Overall, participants exhibit low level of reciprocity but this behavior does not discriminate according to the countries' receptor, except Morocco that is more selfish with Spanish people. Spanish and Moroccan seem to reflect a mutual distrust that could be dangerous for their economic and political relations.

Non technical synthesis

Objective of the study

Cluster policies and internationalisation have been traditionally at the heart of economic policies and in particular of regional policies while there have been systematically treated separately. Hence, productivity improvement at the firm level seems to be at the heart of the debate since productivity gains are crucial for exports. , Productivity gains may arise from a broad range of processes like learning-by-doing, technical innovation through imports of intermediate goods and managerial effort for instance. Strategic localisation may also contribute to improve productivity. By locating nearby other firms in the same activity, in region with dense activity or in the proximity of clients and suppliers, firms may benefit from externalities on inputs, labour markets and knowledge externalities that enhance their productivity and in particular managerial capacities.

Our first objective is to study if networks effectively ameliorate the TFP of firms and to compare international networks (imports of intermediate and capital goods, vertical or horizontal cooperation) **and local networks** (experience at exporting and producing of other firms at the regional level). To this end, we use micro data for Spain and Turkey and run a microeconometric study.

Due to the presence of sunk cost at exporting, the new new trade theory has evidenced that the most productive firms self select into the export markets because they are more likely to cope with the sunk costs of entry and survive in the international market (self selection). Since agglomeration could enhance productivity, it could also promote exports. Additionally, sunk costs at exporting are primary due to barriers to

trade and imperfect information concerning international markets. Then, the agglomeration of producers in the same regions that share experience at exporting could reduce these information asymmetries and promote exports.

The **second objective of this report is to verify if the proximity of other exporting firms increases the probability of a firm to become an exporter**. This effect could translate via non-market interactions as exchange of knowledge about international transactions, technical and administrative norms, foreign demand characteristics, etc. and marked-based interactions impacting on the cost of selling abroad (access to credit, information about transportation costs, administrative costs, etc.). To this aim, we use a huge datasets for Moroccan manufacturing firms and estimate a model for the decision o export that takes into account agglomeration variables.

As mentioned above, a common finding in the recent empirical literature on trade is the superiority, at any point in time, of exporters (either plants or firms) over non-exporters regarding productivity. This fact seems to be mainly explained by the existence of sunk costs at exporting. Since each market has its own specificities regarding administrative and technical norms as well as other nonformal codes for businesses, the barriers for exporting may differ from one market to another. A complementary hypothesis that hasn't been explored in the literature is the fact that asymmetries of information faced by exporters to a specific market are not the same for all countries. Gravity literature on trade has shown that bilateral trade is largely influenced by historical, geographical or cultural ties. This also suggests that bilateral trade costs (both sunk costs and variable costs) differs from one couple of trade partners to another. In sum, not all trade partners has the same knowledge about the specificities of consumers, administrative norms and business codes of the other countries. In this

line, it probably exists some intangible distance among cultures that prevent or enable them from trading with each other's.

To explore this hypothesis, in **the third part of this study we use experimental economic technique to study how trust affects business partners across borders**. Concretely, we use experimental methods to find out whether the origin (French, Spanish, Turkish or Moroccan) of people has an influence on trusting behavior.

I Impact of national and international networks on the productivity of Turkish and Spanish firms.

Introduction

Numerous local governments have developed cluster policies motivated by the thought that the productivity of a firm will increase when other firms that conduce similar activities locate nearby. Since an important barrier for firms to become international is the low productivity and the lack of information about foreign markets, agglomeration could also foster indirectly internationalization by improving productivity. Internationalisation could in turn bring some additional productivity gains.

If numerous studies have pointed out the existence of some positive spillovers that could emerge from concentration of activity in the same place, the overall effect of agglomeration hasn't been fully explored. In particular, gains to be obtained from concentration of activities could be overcome by congestion problems. When quantifying the potential gains of agglomeration in terms of productivity, one also faces a causality problem. Firms may agglomerate in areas with better endowments or some areas are susceptible to attract more productive firms what would lead to overestimate agglomeration gains. Lastly, a selection bias may occur since most productive firms are more likely to resist to higher competition in clusters and to find more productive to

locate nearby other producers or to take part of vertical linkages. Though, clusters could be composed of firms that are more productive thanks to other characteristics than the one of the region.

Since these phenomena are essentially microeconomic in essence, firm-level datasets offer a very good opportunity to deep in their analysis. Our analysis is based on a sample of Spanish and Turkish plants and study their reaction to agglomeration at the regional level. Our contribution consists in comparing several measures of agglomeration and to correct for possible endogeneity biases. Actually, we compare the impact of concentration of production, employment, export and import on the total factor productivity of Spanish and Turkish firms using a modified version of the Olley and Pakes method.

Characteristics of Spanish and Turkish firms

In both countries, we have confirmed that traders (firms that export and/or import) are special cases. Traders are different from other firms in the sense that they are bigger and have a higher productivity. Firms that both import and export have also greater export and import ratios that those that only export or only import. We also observe that small firms have a lower labour productivity than large firms as expected since the last ones are more likely to operate under increasing returns. Nevertheless, small traders have a higher productivity than large non-traders, both in Spain and Turkey. This fact points out the importance of international activities of the firms as a clear distinctive feature for the functioning of the firms regarding both managerial capacities, organisation and scale of production. We also observe a cleavage among foreign and domestic firms in both case studies. Foreign firms are more productive, large and trade more than domestic firms, both in Spain and Turkey. Finally, we have compared the

characteristics of firms located in regions with high versus low density. We observe that firms located in regions with high intensity are, on average more productive but the distance with other firms is not very large so the impact of localisation for productivity is not so straight that the importance of internationalisation activities as a distinctive feature. An important contribution of this study is to show that these stylised facts are common to two very different countries like Turkey and Spain.

Methodology

We seek to evaluate the impact of different type of agglomeration measures on TFP. The challenge consists in measuring the effect of agglomeration taking into account possible selection and simultaneity biases. In fact, firms could select their location according to the return this location could bring them in terms of productivity that is "good place" makes firms better and firms internalise it. On the other hand, "best firms" may choose to agglomerate, then the location they chose may appear as a "good place".

To deal accurately with these issues, agglomeration should not be considered as a strictly exogenous determinant of TFP. We modify the Olley and Pakes (1996) approach to control for endogeneity bias and consider different agglomeration indicators as an endogenous input of the production function.

We measure agglomeration in several manners. Production (and density of production) is the most general indicator of the potential source of spillover that can emerge from experience at producing from other firms. Externalities may arise from the specialization of labour markets and from sharing knowledge with other employees and managers, we also use the number of hours worked as a complementary indicator. Managerial capacities could also be improved in contact with foreign suppliers and

clients. In particular, firms located nearby could share information concerning their international experience that could benefit each other. To capture this potential source of technology transfer, we also consider the amount of imports and exports at the region level for all industries and at the regional level in the same industry the firm operates in. Each indicator is susceptible to shed some light on the different hypothesis concerning the benefits to be obtained from firms located in the vicinity. In turn, externalities can operate through vertical linkages (among firms operating in other industries) or horizontal linkages (among firms located in the same industries). Then, each of the mentioned indicators are calculated both for Spain and Turkey at the regional level or for the same industry in the region to capture the influence of the two types of externalities.

Main results and policy implications

We use the same approach for Spain and Turkey but results obtained are quite different among the two countries concerning agglomeration impact in terms of TFP. These differences may be due to the fact that the repartition of the activities are very different in the two countries. In Turkey, the Marmara region (one of the seven regions considered) accounts for more than half of the national manufacturing production. In Spain, the more productive regions are Madrid and Cataluña which respectively account for 27 and 13% of the national manufacturing production. This is not only due to the fact that the size of the Spanish regions is smaller (we have data for 17 regions) since these differences persist when considering the density of production per square kilometers. The concentration of Turkish activity is very high in Istambul and Kocaeli, the big cities of the Marmara region.

In the Turkish case, we obtain more evidence of congestion problems than evidence in favour of the benefits of agglomeration. Both the concentration of the production at the industry and at regional level have negative impact on productivity. The same applies for the concentration of hours worked. Results concerning exports and imports at the industry level are not interpretable since they lead to negative impact of capital on the production function, which is theoretically unexplainable. An intensive import activity has also a negative impact on productivity, though the magnitude is lower than for the concentration of production and hours worked. Concentration of exporters, regardless to the sectors of activity, appears as the sole source of positive externalities for the productivity of firms located nearby.

In Spain, we obtain more evidence about the positive effect that firms can obtained from their localisation in terms of TFP but some congestion's problems are also evidenced. Unlike Turkey, Spanish manufacturing firms benefit from positive spillovers from concentration of workers and importers conducing similar activities in their vicinity. Evidence concerning vertical linkages is more mixed. However, an increase of imports and exports in other sectors will clearly benefit to the TFP of firms operating in other activities.

Evidence concerning vertical linkages is more mixed. Production in other industries have a negative impact and hours worked in other industries do not affect TFP. However, an increase of imports and exports in other sectors will clearly benefit to the TFP of firms operating in other activities.

We also show for both countries that not all the firms benefit in the same way from the experience of other firms located nearby, probably because they have different absorptive capacities. In particular, traders and large firms share most features and

behave differently than their small firms and non-traders competitors. Differences among foreign and domestic firms are very large.

Apart from these features, Spanish and Turkish firms have very different sensitivity to the different indicators except for small firms. Small plants are the firms that learn more from other firms in Spain or are less affected by congestion costs in Turkey. In both countries, the importance of imports at the regional level, regardless the activity have important positive effect on the managerial capacity of small firms. Since they operate with lower scale and have to specialise more, they must be inserted in the vertical chain of production and obtain good intermediate inputs from otehr firms to guarantee their success. They learn from other firms and in particular from importers in the case of Turkey and exporters in the case of Spain how to make it better. Then, regional government policies should encourage in particular the agglomeration of small firms, their possibility to grow and their link with traders operating in other industries.

Foreign firms are the firms clearly behave differently from domestic firms regarding their response to the activity from other firms located nearby. In Spain, they are not sensible to any kind of agglomeration indicators calculated at the industry level. The TFP of foreign firms benefits positively from the experience of the region in general, both in Turkey and Spain while Turkish large firms suffer systematically from congestion costs. Our interpretation is that foreign firms are more concerned by the experience and activity of the region in general while the experience of firms competing with them at the industry level is already taken into account when choosing the location and the level of inputs or does not affect their managerial capacities.

A common feature to all Spanish firms is that the amount of imports in general, and at the industry level in particular affects all the firms positively (except for Spanish

foreign firms). In Turkey the positive effect from importers is clear for foreign and small firms. Promoting the international connection at the industry level both for access to foreign providers of inputs and capital goods but also the entry of products similar to the ones produced locally, have positive effect on TFP. This kind of policy is a natural complement of all the efforts that should be done to encourage specialization in some specific activities or training and I+D policies that affect productivity more directly.

In our study, the geographical unit used corresponds is rather large. Industry level used is also rather large. Then, we are not able to conclude concerning the accuracy of cluster policies which act as a very specialized level and for small geographical units. However, our results evidence some positive spillovers at the mentioned level and imply that encouraging specialization in some industries avoiding passing a crucial threshold in terms of density of concentration of the activity could have positive effects for TFP of firms in this activity.

Promoting agglomeration is not a sufficient condition to promote productivity but our results confirm that firms (especially the small ones) have a lot to learn from each other. Results largely depend on the internationalisation of the region and of the firm, size of the production at the industry and regional levels and scale of the firm. It seems that regions that export a lot, but overall those that import a lot will obtain considerable productivity gains. Then, a cheap and effective policy could consist in reducing the formal and informal barriers firms face when exporting or importing.

Our study has focused on TFP since it is an important engine for medium term growth production and labour productivity. But obviously TFP growth not automatically translates in employment growth. Studying this link should received further attention. Another complementary issue to study is the role played by the

innovation of products, the number of products exported or produced, by firms and by regions. Actually, quality and diversification may play an important role in generating spillover among firms. In the same line, it would be important to study the effect of the number of producers, importers and exporters (in complement of the indicators of quantity we used in this study) but these indicators were not available at the regional level in the Spanish case.

II Impact of national and international networks on the productivity of Moroccan firms to export

Introduction

Agglomeration at the local level of producers, exporters and multinationals can enhance firms' productivity and propensity to export through different channels. Agglomeration cuts down transportation and storage costs and reduces sourcing and marketing times. It offers interaction opportunities among agents that can set formal or informal networks of business relationships and exchange information on their partners, markets, and administrative issues related to their businesses.

We use micro econometric approach based on firm-level manufacturing surveys and addresses two issues. First, the paper examines the impact of agglomeration on exports by testing if geographical proximity of other exporting firms increases the probability of a firm to export. If such impact exists, it might be driven by interaction opportunities that agglomeration offers. Previous studies indicate that agglomeration of firms from the same industry in the same region or province increases the probability of firms to export. However, to our knowledge, most studies focused on developed countries. Second, the paper examines the effect of agglomeration on exports while taking into account firms' productivity. In addition to local networks, we consider the

impact of international networks such as the presence of foreign ownership in the capital of manufacturing firms.

The findings contribute to the academic research on the way the agglomeration factor affect performance of firms, and in particular their exporting behavior in the specific context of a southern Mediterranean country: Morocco. Data availability is very often the factor that constrains empirical research using firm level data in developing countries. For the purpose of this paper we benefited from privileged access to a large database of the manufacturing sector in Morocco that spans over the period 1995-2006.

Main results

The paper reveals that regional concentration of exports either in the same industry or in all industries exerts a positive and statistically significant effect on the firm's decision to export. Similarly, agglomeration a large number of firms engaged in selling on foreign markets produces a positive and substantially significant effect on firms' likelihood to export. Econometric estimates indicate that these results are not driven by the presence of endogeneity bias. They are also robust to the inclusion of firm's productivity in the econometric model. Beyond the productivity effect, which other studies have shown its impact on firms' decision to export, there is an extra impact explained by agglomeration. The paper also shows that the likelihood to export is much higher when firms from the same industry are agglomerated. This finding can be interpreted as follows. In addition to traditional agglomeration effect due to the presence of logistical infrastructure that ease access to foreign markets, there is an extra component that is industry-specific agglomeration effect.

This finding corroborates the hypothesis that agglomeration offers opportunities for firms to interact and exchange information and knowledge on foreign markets, and

that such exchange is much more rewarding –in the sense of leading to export– when interacting firms belong to the same industry. Aggregate level data by region indicate, for instance for the garment sector –the most export-oriented manufacturing industry in Morocco–; that firms in Casablanca region export more to France, those in Rabat-Salé region to UK and those in Tangier to Spain. As no data is available at the firm level data on exports by foreign market, this dimension have not been incorporated in our econometric analysis.

From policy-making point of view, countries in the Mediterranean region are doing their best to increase their exports and secure foreign exchange they need for they imports. Understanding the role of agglomeration and its impact of firms' behavior is extremely important for policy-purposes.

The creation of modern industrial zones, called Integrated Industrial Platforms (P2I), connected to transport and telecommunication infrastructure and equipped with various administrative departments represent one of the key pillars of the recent industrial policy in Morocco . The objective of the authorities is to use industrial platforms and their agglomeration effects to boost exports and attract foreign direct investors. About nine platforms are under construction among which five are industry-specific .

The creation of industrial platforms to encourage firms to cluster represents a shift in the Morocco's authorities approach. In the past, the investment code was concerned with a balanced territorial distribution of firms and industries than their effective performance per se. To this end, the code offered tax breaks and other banking credit incentives for firms that establish in less agglomerated zones. Trade liberalization and fierce competition on traditional exporting markets of Moroccan manufacturers pushed

the authorities to rethink their industrial policy and implement new tools to support manufacturing exports. The findings from the paper can, therefore, inform policy-makers in devising better territorial zoning policies taking into account the nature of industries and the direction of trade flows to strengthen the potential effects of agglomeration on industrial performance.

Conclusions

The creation of modern industrial zones, called Integrated Industrial Platforms (P2I), connected to transport and telecommunication infrastructure and equipped with various administrative departments represent one of the key pillars of the recent industrial policy in Morocco. The objective of the authorities is to use industrial platforms and their agglomeration effects to boost exports and attract foreign direct investors. About nine platforms are under construction among which five are industry-specific.

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This paper provides empirical evidence supporting the strong relationship between spatial agglomeration of firms and their likelihood to engage on foreign markets. Our findings are neither driven by an endogeneity bias nor by an omitting variable bias.

Agglomeration of firms from the same industries exerts a greater impact on the decision to export that agglomeration of firms from different sectors. Such result reveals that beyond the traditional agglomeration effect due to the presence of logistical infrastructure that ease access to foreign markets, there is an extra component that is industry-specific agglomeration effect.

This corroborates the hypothesis that agglomeration offers opportunities for firms to interact and exchange information and knowledge on foreign markets. Export data by region for the garment sector, which is the most export-oriented manufacturing industry in Morocco, indicate that firms in agglomerated in the same location tend to export towards the same foreign market.

The findings from the paper can, therefore, inform policy-makers in devising better territorial zoning policies taking into account the nature of industries and the direction of trade flows to strengthen the potential effects of agglomeration on industrial performance.

III Intercultural business and trust: an experimental approach

Introduction

As mentioned above, a common finding in the recent empirical literature on trade is the superiority, at any point in time, of exporters (either plants or firms) over non-exporters regarding productivity. This fact seems to be mainly explained by the existence of sunk costs at exporting. Since each market has its own specificities regarding administrative and technical norms as well as other nonformal codes for businesses, the barriers for exporting may differ from one market to another. At the macroeconomic level, gravity literature on trade has shown that bilateral trade is largely influenced by historical, geographical or cultural ties. In sum, not all the trade partners

have the same knowledge about the specificities of consumers, administrative norms and business codes of the other countries. At the microeconomic level, the decision to export or trade with some country partners from other countries also depend on the *ex-ante* estimation of these costs. In this line, it probably exists some intangible distance among cultures that prevent or enable them from trading with each other's.

To explore this hypothesis, in **the third part of this study we use experimental economic technique to study how trust among business partners is affected by the information about the residence's country of the partner.** Concretely, we use experimental methods to find out whether the origin of people has an influence on economic transactions. Trust is an integral element in economic transactions between countries, companies, consumers and retailers, as well as a key determinant of economic performance. Concretely, the experiment has been realized in four countries: France, Spain, Morocco and Turkey.

Our experiment has a twofold objective: 1) to find out whether the origin of people has an influence on trusting behavior; and 2) to explore the reputation for trustworthiness across these countries.

Methodology

We have selected countries that display a certain degree of heterogeneity concerning PIB per capita, historical and cultural ties, religions, intensities of trade to have diversity of behaviors and obtain robust estimates. A total of 240 participants participated in this experiment: 60 students from each country (University of Granada, Spain; University of Rabat, Morocco, University of Paris, France; University of Istanbul, Turkey).

We provide player A with the nationality of player B. We give players A the choice to obtain a certain amount of money for himself and for the player B (10 euros) without risk. The alternative is risky and denoted as the "trust" option. Players A can choose to let player B to decide between two possible options. One of the two options of player B is equalitarian (15 euros for each player) and another one is clearly better for player B (8 euros for player A and 22 euros for player B). The egalitarian option of player B is called "Reciprocity".

We compare the results concerning players A option depending on the origin of player A (comparison between subjects). This allows us to detect if there is some country more trusting than othe others. For a specific country, we compare the choices of players A depending on the information about the residence of players B (comparison within subjects). These comparisons allow us to determine if *there are countries which inspire more trusting than others*. In the same way, we compare responses of players B depending on residence of these players we ought to answer to the question: *Are there countries more trustworthy than others? That is are some players B from this country choosing more often the reciprocal option.* Alternatively we compare the different options taken by players B of the same place depending on A's country of residence to know if there are cases of discrimination against one particular country in the sense that the other are clearly less reciprocal with subjects from this country. .

Main results and implications

Economic determinants and historical, geographical and cultural ties are important determinants of trade and investment relations among countries. Trust, altruism, reciprocity shape some norms and opinions among partners about each other's. The expectations of their partners about how they act can be driven by true or false

intuitions. The experimental laboratory allows us to identify these "a priori" beliefs and to check if they are founded, isolating them from other determinants of inter-countries economic relations. Obviously, if the intuition concerning how people from a country may act is not confirmed by the fact, a clear prejudice could be commit.

Main results are as follow:

1. Less developed countries of our sample (Turkey and Morocco) exhibit a higher level of trusting.
2. In particular, Moroccan are significantly more trusting than players from other countries, both towards their own country and to other countries in general. The exception concerns their attitude toward Spain. Both Moroccan and Spanish demonstrates low level of trust when the partner is from Spain. Spanish and Moroccan seem to reflect a mutual distrust.
3. French people exhibit similar levels of trusting regardless the nationality of the partner.
4. We observe a positive discrimination from Turkish to Spanish players.
5. Moroccan players trust more than the average and we observe now that they obtain in turn less reciprocity, it seems that Moroccan are victims of a clear prejudice.
6. Overall, participants exhibit low level of reciprocity but this behavior does not discriminate according to the countries' receptor.
7. Again, there is only one exception. When Moroccan have to choose among the selfish and reciprocal options, they are significantly more selfish with Spanish people.

To trust depends both on the subject that experiment this feeling and on the object that inspires this impression. Then, it is bilateral in essence. But some stylised facts are observed concerning Morocco as an object and subject of trust, regardless to the bilateral partner. Our results show that Moroccan is the trustworthiest and that other countries do not place as much confidence in Moroccan as they should. Spain is the most untrustworthy, and overtrusted by most countries.

To establish a causal relation between the results of our experiment and the observed relations among the countries of our sample goes beyond the pretension of this study. Nevertheless, it is worth to come back to the observed relations with our results in mind. Morocco is trustier than the other countries think but less trusty regarding Spanish people. Spain is less trusty than the other countries believe and discriminates especially against Morocco. In last decade, the trade relation between Morocco and Spain has intensified which may have given them the opportunity to know better each other and Morocco have adopted a less trusty behaviour since they may have observed the non-reciprocity of Spanish partners. But Spain has a clear prejudice against Morocco that hasn't been nuanced by the intensification of the trade, immigration and investment relations. To know someone well may be good or bad for each other image. In comparison, Turkey and Spain have a poor economic relations and Turkey clearly over trusts Spanish people. Although, the bilateral economic relations between Spain and Morocco have intensified, the mutual distrust they display is a potential risk for their political and economic relations.

Key words Total factor productivity firm data, Spain, regional policies, cluster, internationalisation.

A. Introduction

Cluster policies and internationalisation have been traditionally at the heart of economic policies and in particular of regional policies while there have been systematically treated separately. On one hand, policy makers are concerned by increasing aggregate exports and FDI. On the other hand, policy makers engage sometimes in expensive cluster policies with the belief that the gains in terms of productivity, production and employment growth will offset the costs. Firm-level analysis allows for better understanding of these phenomena that may be useful for policymakers. Actually, the recent literature based on microeconometric studies tends to show that firms that become exporters are the most productive one, firms that import tend to be also more productive and agglomeration not always guarantees better productivity. Hence, productivity improvement at the firm level seems to be at the heart of the debate. In particular how agglomeration, internationalisation and productivity of firms interact remains an open question.

Productivity gains may arise from a broad range of processes like learning-by-doing, technical innovation through imports of intermediate goods and managerial effort for instance. Strategic localisation may also contribute to improve productivity. By locating nearby other firms in the same activity, in region with dense activity or in the proximity of clients and suppliers, firms may benefit from externalities on inputs, labour markets and knowledge externalities that enhance their productivity and in particular managerial capacities. With such ideas in mind, clusters policies appeared very attractive for policy makers.

Our first objective is to study if networks effectively ameliorate the TFP of firms and to compare international networks (imports of intermediate and capital goods, vertical or horizontal cooperation) **and local networks** (experience at exporting and producing of other firms at the regional level). To this end, we use micro data for Spain and Turkey and run a microeconometric study.

Due to the presence of sunk cost at exporting, the new new trade theory has evidenced that the most productive firms self select into the export markets because they are more likely to cope with the sunk costs of entry and survive in the international market (self selection). Since agglomeration could enhance productivity, it could also promote exports. Additionally, sunk costs at exporting are primary due to barriers to trade and imperfect information concerning international markets. Then, the agglomeration of producers in the same regions that share experience at exporting could reduce these information asymmetries and promote exports.

The **second objective of this report is to verify if the proximity of other exporting firms increases the probability of a firm to become an exporter**. This effect could translate via non-market interactions as exchange of knowledge about international transactions, technical and administrative norms, foreign demand characteristics, etc. and marked-based interactions impacting on the cost of selling abroad (access to credit, information about transportation costs, administrative costs, etc.). To this aim, we use a huge datasets for Moroccan manufacturing firms and estimate a model for the decision o export that takes into account agglomeration variables.

As mentioned above, a common finding in the recent empirical literature on trade is the superiority, at any point in time, of exporters (either plants or firms) over non-

exporters regarding productivity. This fact seems to be mainly explained by the existence of sunk costs at exporting. Since each market has its own specificities regarding administrative and technical norms as well as other nonformal codes for businesses, the barriers for exporting may differ from one market to another. A complementary hypothesis that hasn't been explored in the literature is the fact that asymmetries of information faced by exporters to a specific market are not the same for all countries. Gravity literature on trade has shown that bilateral trade is largely influenced by historical, geographical or cultural ties. This also suggests that bilateral trade costs (both sunk costs and variable costs) differs from one couple of trade partners to another. In sum, not all trade partners has the same knowledge about the specificities of consumers, administrative norms and business codes of the other countries. In this line, it probably exists some intangible distance among cultures that prevent or enable them from trading with each other's.

To explore this hypothesis, in **the third part of this study we use experimental economic technique to study how trust affects business partners across borders**. Concretely, we use experimental methods to find out whether the origin (French, Spanish, Turkish or Moroccan) of people has an influence on trusting behavior.

B The effect of agglomeration on productivity: The Spanish and Turkish cases

1. Introduction

Numerous studies have pointed out the existence of some positive spillovers emerging from teh concentration f activities in the same place. But the overall effect of agglomeration is not so straightforward. In particular, such gains could be overcome by

congestion problems. For instance, in the case of France, Martin et al. (2008) conclude that some clustering could generate substantial gains but the size of clusters should not be too large because congestions are likely to overcome the gains.

When quantifying the potential gains of agglomeration in terms of productivity, one also faces a causality problem. Firms may agglomerate in areas with better endowments or some areas are susceptible to attract more productive firms what would lead to overestimate agglomeration gains. Lastly, a selection bias may occur since most productive firms are more likely to resist to higher competition in clusters and to find more productive to locate nearby other producers or to take part of vertical linkages. Though, clusters could be composed of firms that are more productive thanks to other characteristics than the one of the region.

Since these phenomena are essentially microeconomic in essence, firm-level datasets offer a very good opportunity to deep in their analysis. Our analysis is based on a sample of Spanish single-plants and their reaction to agglomeration at the regional level. Our contribution consists in comparing several measures of agglomeration and to correct for possible endogeneity biases. Actually, we compare the impact of concentration of production, employment, export and import on the total factor productivity of Spanish firms using a modified version of the Olley and Pakes method.

Our results confirm that benefits to be obtained from localisation are, at least in part, internalised by the firm when choosing its location. But apart from these expected gains, there are some additional gains to obtain when located nearby other firms. At the regional level, increasing production of determined industry, and exports and imports in general, would increase TFP of firms located in this region. Though, some congestion economies could occur at the industry level. Small plants are the firms that benefit more

from the experience of other firms in the vicinity, especially from the one of exporters. It seems that regions that export a lot, but overall those that import a lot will obtain considerable productivity gains. Then, a cheap and effective policy could consist in reducing the formal and informal barriers firms face when exporting or importing. The localisation of small firms operating in these industries and in the others nearby firms which registers good performance in terms of productivity would contribute to develop their managerial capacities. Our results show that not only small firms and non-traders could benefit from an increase in the production and internationalisation of other firms but large firms and traders could also do. In particular, these total factor productivity of the largest firms benefit from the experience at producing, exporting and importing of other firms operating in the same industry as them. Then, to collaborate, sharing infrastructure, labour markets and information is to some extent fruitful for both type of firms.

The rest of the paper is organized as follows. In Section 2 we present the theoretical and empirical framework. In section 3 we describe the empirical strategy. Our findings concerning Spain are commented in Section 4 and for Turkey in section 5. Finally, Section 6 provides some conclusions and policy implications of our study.

2 Literature : Agglomeration and productivity

Theoretical models have highlighted different processes susceptible to improve productivity. We detail above the proposals of the theoretical literature and their empirical validations. The main channels are the following: openness to international trade, presence of foreign firms or joint ventures and agglomeration effects.

Concerning foreign exposure, Krugman (1979) and Helpman and Krugman (1985) suggested that openness ensures external and internal externalities (pro-competitive

effects) in a context of homogeneous firms; Leibenstein (1966) and Schmidt (1997) focussed on the reduction of X-inefficiency. Grossman and Helpman (1991), Ethier (1982), Markusen (1989) pointed that foreign competition may also affect the incentives to innovate; increases technology transfers or raises intra-firm productivity through an increase in the variety of intermediate inputs or capital goods due to higher quality and/or better technology. Openness can also foster technological spillovers through FDI (Coe and Helpman, 1995).

The theoretical predictions concerning how trade liberalisation affects domestic firms have been in general supported by empirical findings. Though, studies based on firms' data allow nuancing that conclusions and pointing that not all firms react in the same way. Pavcnik (2002) find robust evidence that foreign competition both reduces the market share of import-competing firms and reallocates from inefficient to efficient firms in Chile. She finds that these reallocations significantly contribute to productivity growth in the tradable sectors. For Columbia, Fernandes (2007) agrees that liberalisation raises productivity but this impact is more important for large firms and in sectors with less competition. This is mainly due to the increase in intermediary inputs. Studies of Schor, 2004; Topalova, 2004; Amiti and Konings, 2008; and Dovis and Milgram, 2009 found also evidence in the same sense. More mixed results are founded by Tybout and Westbrook (1995) in the case of Mexico and Driffield and Kambhampati (2003) point that the increase of Indian imports did not raise efficiency.

Another source of spillovers could arise from the presence (or joint venture) of foreign firms. On one hand, FDI may be an important source of technology transfer for local firms operating in the same industry that is, horizontal spillovers. On another hand, domestic firms that supply input to foreign firms can also benefit from vertical spillovers (see for instance Rodriguez-Claré (1996) and Markusen and Venables (1999)

for a theoretical approach). Several recent empirical studies using firm level data find positive productivity spillovers from FDI taking place through contacts between foreign affiliates and their local suppliers in upstream sectors (e.g., Javorcik, 2004; Gorodnichenko, 2007, Blalock and Gertler, 2008;). Barrios et al. (2009) find robust evidence of spillovers through backward linkages when taking into account that multinationals firms behave differently than domestic firms concerning their input sourcing behaviour. Chudnovsky et al., 2008 find evidence of positive spillovers from multinationals presence only on domestic firms with high absorptive capabilities.

Another source of productivity gains pointed earlier by the literature, concerns the benefits a firm can obtain by localising nearby other firms. The positive externalities that may emerge from localisation transit through different channels: sharing specialised labour market (Krugman, 1991), diffusion of information and technology (Glaeser et al. 1992), better matching of their needs concerning inputs (Ciccone &Hall, 1996), sharing infrastructures and reducing transport and transaction costs, knowledge spillovers in particular in R&D activities that may be facilitated by proximity (Bekes et al., 2008).

It is usual to distinguish urbanisation economies from localisation economies (Malmberg et al., 2000 for instance). The former relates to the spill over to be obtained from the local concentration of producers regardless of their activities (Jacobs, 1969) while the latter relate to spillover to be obtained from other firms conducing similar activities or interlinked activities (Marshall, 1920). Vertical versus horizontal spillover suggest different regional policies: the presence of localisation spillovers implies that policies should promote clusters (specialisation of a region in one or few industries), while the presence of urbanisation economies would indicate that access to larger variety of inputs should be favoured.

Bekes et al., 2008 also pointed that agglomeration economies can indirectly affect the possibility of firms to compete in foreign markets. First, interactions among agents may reduce sunk costs at exporting by sharing some valuable information about their trading partners, about the markets, functioning of consumers, administrative norms, standards, etc... Second, concentration of producers makes more profitable a vertical specialisation through input sharing and allows them to reach scale requirements needed to export or to compete in larger markets. Business relationships at the local level may constitute networks that foster productivity, export and overall managerial capacities[1].

Though agglomeration processes have been widely defined by theoretical models, empirical validations studying their effects on export and productivity performance are few. They have to overcome two important issues that arise from agglomeration process. First, firms located in region with dense activities could be more productive because the region has natural characteristics that favour productivity of firms. In this case, firms would be naturally attracted by this location and agglomerate in this region. This is known as the simultaneity problem or "spatial selection". Second, firms are not all the same and positive gains from agglomeration could reflect a self-selection process as described by Melitz and Ottaviano (2008) in a general context and Baldwin and Okubo (2006) in the context of an economic geography model. Indeed, firms that choose to agglomerate could be *ex ante* those that are already more productive and able to resist to the concurrence of other firms in a dense region or firms that have a good absorptive capacity in order to take benefit from the sharing of inputs, knowledge, etc..[2].

[1] Concerning the effect on export performance, there are several empirical articles as reviewed by Castillo and Requena (2006) and Greenaway and Kneller (2007) finding mixed results concerning the impact of agglomerations on export performance or probability to export.

[2] Guiiliani (2007) offers strong evidence that firm-specific characteristics should be considered to be central in the process of learning and innovation in clusters.

Ciccone and Hall (1996) proposed a method to correct for the possible endogeneity bias. Using macro-data, they study the relation between employment density and productivity of labour for the United States. Firms may choose their location based on unobserved characteristics of places that may enhance productivity. Then agglomeration can not be considered as strictly exogenous and OLS estimates may be spurious. After correcting for this endogeneity bias with instrumental variables, they still find a rather large and positive impact (elasticity of 5%) of employment density on productivity of labour. Brulhart et al. use a very different dataset and a System-GMM method but also focus on labour productivity using macro-data. They find that the dominant pattern is "urbanisation" economies and negative localisation economies that are "congestion costs" for manufacturing[3].

The availability of data at the firm level allows for a deeper understanding of agglomeration, a microeconomic phenomenon in essence and also allows taking into account heterogeneity of firms. Though, very recent studies try to tackle with the two issues at the same time. Cainelli (2008) shows that belonging to an industrial district and making product innovations are key factors in the productivity growth of firms. Békés et al. (2008) find the agglomeration premium measured as the elasticity of TFP to the number of employees for Hungarian firms is around 7%. They point that urbanisation economies play a similar and important role for traders and non traders (around 3%) while localisation seems to play a more obvious role for traders (3% against 1.6%). Martin et al. (2008) using a different methodology find for French firms, that there exist positive and significant localization economies measured by the number of workers of the industry (elasticity of 4-5%). The number of employees in the other

[3] Thus, it is important to recall that productivity of labour gains are not systematically associated with employment growth depending on the characteristics of the elasticity of demand.

sectors and same area has no significant impact. They show that agglomeration gains could be counteract by congestion costs since the relation between TFP gains and localisation is not linear and gains decrease after a certain level of concentration is overpassed.

3 Empirical Strategy

We seek to evaluate the impact of different type of agglomeration measures on TFP. The challenge consists in measuring the effect of agglomeration taking into account possible selection and simultaneity biases. In fact, firms could select their location according to the return this location could bring them in terms of productivity that is "good place" makes firms better and firms internalise it. On the other hand, "best firms" may choose to agglomerate, then the location they chose may appear as a "good place".

To deal accurately with these issues, agglomeration should not be considered as a strictly exogenous determinant of TFP. Ciccone and Hall (1996) using macro data correct for the possible endogeneity bias using instrumental variables. Békés et al. (2008) and Martin et al.(2008) that share part of the objective of the present studies and also use firm level data, use instrumented regressions and GMM regressions to deal with the simultaneity bias. We prefer to use direct approach as in Fernandes (2007) and Amiti and Koning (2007), where we take into account autocorrelation at the firm level to estimate TFP. These authors implement this method with another aim. They study the impact of import penetration rate on TFP. Since IPR may suffer from the same endogeneity bias, they modify the Olley and Pakes (1996) approach to control for endogeneity bias. Agglomeration may shift productivity but this externality may be internalised by the firm when choosing their technology and levels of input. In this case,

agglomeration should be considered as an endogenous input of the production function. Results are compared with plant fixed effects estimations and random effects estimations of the same production function. A problem with this last type of estimation arises if the contemporaneous level of TFP affect the current choice of variable input factors, in which case inputs would be correlated with the error term (e.g., Levisohn and Petrin, 2003).[4]

Let us suppose that the technology of firm *i* is well described by a Cobb-Douglas production function:

$$Y_{it} = A(Agglo)_{it} L_{it}^{\beta_l} M_{it}^{\beta_m} K_{it}^{\beta_k}$$

where Y_{it} is the firm's output, L_{it} the input labour, M_{it} the intermediary consumptions, K_{it} is the capital and $A(Agglo)_{it}$ is the total factor productivity of firms susceptible to depend on the concentration of activity in the region where the firms is located (Agglo).

$$y_{it} = \beta_0 + \beta_l l_{it} + \beta_m m_{it} + \beta_k k_{it} + \omega_{it} + \eta_{it} \qquad (1)$$

where y_{it} is the logarithm of the firm's output, l_{it} the logarithm of the input labour, m_{it} the logarithm of the intermediary consumptions and k_{it} is the logarithm of the capital. The error as two components, the plant-specific productivity component given as ω_{it}, and η_{it}, an error term that is uncorrelated with input choices. The investment function is given as:

[4] Another alternative called "indirect approach" or "two-step method" consists in estimating TFP in a first step using Olley and Pakes' method and then to estimate the impact of agglomeration on TFP controlling for firm specific time invariant unobservables. This method has been widely used in recent years to study the effect of openness on productivity (see, Fernandes (2007), Dovis and Milgram (2009)). This method could be accurate if the endogeneity of agglomeration is not a crucial issue. Actually, if the impact of nearby activities on productivity has already been taken into account by the firm, then the lagged value of productivity usually introduced as a regressor in the two-step approach may depend on the agglomeration variable and produce some biased estimates for Agglomeration.

$$i_{it} = i_{it}(\omega_{it}, k_{it}) \quad (2)$$

The investment function is monotonically increasing in ω_{it} (Pakes, 1994). We consider that the productivity not only depend on the state variable capital but also on the characteristics of the location. Then, the plant-specific productivity component can be expressed as::

$$\omega_{it} = h_{it}(i_{it}, k_{it}, agglo_{IRt}) \quad (3)$$

Where $agglo_{IRt}$ is the logarithm of the indicator of agglomeration of the region *R* where the firm *i* is located and of the industry *I*, the firm operates in.

The higher the productivity is, the higher the investment will be. So, the production function can now be expressed as:

$$y_{it} = \beta_l l_{it} + \beta_m m_{it} + \phi_{it}(i_{it}, k_{it}, agglo_{IRt}) + \eta_{it} \quad (4)$$

Where

$$\phi_{it}(i_{it}, k_{it}, agglo_{IRt}) = \beta_0 + \beta_k k_{it} + \beta_a agglo_{IRt} + h_{it}(i_{it}, k_{it}, agglo_{IRt}) \quad (5)$$

Then, we can approximate the unknown function, ϕ_{it}, by a fourth order polynomial in k_{it}, $agglo_{IRt}$ and i_{it}. In the first stage, β_l, β_m and ϕ_{it} are estimated and the second stage evaluate the survival probability of the firm, P_{it}. The third stage of the routine identifies the coefficients β_k and β_a where productivity is assumed to evolve according to a first-order Markov process: $\xi_{it+1} = \omega_{it+1} - E[\omega_{it+1} | \omega_{it}, X_{it+1} = 1]$, with $\xi_{it}+1$ the innovation in $\omega_{it}+1$. This final stage uses the estimations of β_l, β_m, ϕ_{it} and P_{it} to obtain β_k and β_a.

Capital stock is measured using the inventory perpetual method. We use a depreciation rate of 9 per cent based on the average depreciation rate as used in Mas et al. (2005). We use fixed assets (equipment, construction, etc.) as the initial capital stock level for the available initial year and then add investment flows by type of fixed assets. We only consider firms whose structure remained unchanged during the years they answered the survey. If they were affected by a merge, acquisition or division, we selected the longest period without changes from among the periods that precede and follow the fusion, division, etc.

We measure agglomeration in several manners. Each indicator is susceptible to shed some light on the different hypothesis reviewed in section 2 concerning the benefits to be obtained from nearby firms operating in the same industries or in other industries. The indicators we consider are based either on production, exports, imports or hour worked. The variables considered are summarized in Table 1.

Table 1: Indicators of agglomeration

Agglom	"Production in the same industry: Regional / National"
agglom2	"Production all industries: Regional / National"
xagglom	"Exports of the same industry: Regional / National"
xagglom2	"Exports all industries: Regional / National"
magglom	"Imports of the same industry: Regional / National"
magglom2	"Imports all industries: Regional / National"
agglom3	"Regional production all industries / km2"
agglom0	"Regional production in the same industry / km2"
lochour	"Hours worked in the region, same industry"
urbhour	"Hours worked in the region, other industries"

Source: INE, Contabilidad regional de España; Dirección general de aduanas and Wikipedia.

Production is the most general indicator of the potential source of spillover that can emerge from experience at producing from other firms. We use the weight of production at the regional level in the national level to take into account the relative level of production of the region. As seen before, this may not reflect totally the concentration of activities since Spanish regions have very different size. To control for this, we alternatively use the density of production per km2.

Thus, externalities may arise from the specialization of labour markets and from sharing knowledge with other employees and managers, we also use the number of hours worked as a complementary indicator. Hours worked in other industries measure the potential urbanisation economies while the hours worked in the same industry measure the localisation economies.

Managerial capacities could also be improved in contact with foreign suppliers and clients. In particular, firms located nearby could share information concerning their international experience that could benefit each other. To capture this potential source of technology transfer, we also consider the amount of imports and exports at the region level for all industries and at the regional level in the same industry the firm operates in.

4 Results for Spain

In this section, we present the results of various sets of estimations. First, we study the average sensitivity of Spanish firms' TFP to the agglomeration indicators detailed above. Secondly, we check possible asymmetries among firms in terms of their reaction to local agglomeration. We show that reactions differ depending on their size, import and export status and foreign ownership.

a. Data

We use data on Spanish manufacturing firms drawn from the Encuesta sobre Estrategias Empresariales (Survey on Enterprise Strategies; ESEE), an annual survey conducted by the SEPI Ministry of Industry. The ESEE is representative of Spanish manufacturing firms classified by industrial sector and size categories[5] and includes

[5] The survey participation rate was about 70 per cent for firms with more than 200 employees. Firms that employed between 10 to 200 workers (small firms) were randomly sampled by industry and size strata, accounting for 5 per cent of the population.

exhaustive information at the firm level. For each firm, we know the region where it is located and to which industry of the NACE-93 classification belongs the main part of its production. We cleaned the data in order to correct or eliminate problems due to missing data or misreporting. Here, we focus only on single-plant firms what considerably reduces our sample. As pointed by Martin et al. (2008), the ideal level would be the plant since we are interested in the localisation decision and firms may locate plants in different areas and benefit or generate different spillovers. Additionally, spillovers could take place among plants of the same firm. But since ESEE provides information at the firm level, we prefer to restrict our sample to single-plant firm.

Region corresponds to Comunidad Autonoma in Spain that is Nuts2 in Eurostat classification. Our data suffer from two important problems for this analysis. First, the division in region is rather large so we are not able to capture real "urban" agglomeration. This problem has no solution due to the lack of information. However, Ciccone (2002) and Brülhart and Mathys M. (2008) find evidence of positive spillover from production density at this geographic level on aggregated labour productivity. Second, the sampling of the survey does not ensure data to be representative at the region level. This is a common problem in this type of study but rarely mentioned. We try to overcome this restriction in two ways. First, we control that the aggregate of each industry-region calculated with our micro data is highly correlated with the corresponding indicators using macro data. Second, we use macro data to measure agglomeration. The externality of these indicators minors the problem of the potential selection bias of our sample.

b. Descriptive statistics

We use different type of indicators of agglomeration at the region level and region-industry level. Table 2 shows some indicators of the repartition of the activities

among Spanish regions according to macroeconomic data. Production is largely concentrated (70%) in five regions: Cataluña, Madrid, Comunidad Valenciana, País Vasco and Andalusia. Though, these regions have very different size. Then, the density of activity (measured by production per squared kilometer) is overall important in Madrid (4.4 times the average), País Vasco (3.7 times the average), followed by Cataluña and Comunidad Valenciana with lower distance to the average since these areas are biggest. The repartition of exports follows more or less the repartition of production except that Cataluña appears as more export-oriented than the other. Concerning imports, differences among regions are less striking reflecting the well-known fact that demand patterns are more homogeneous among regions than supply ones.

Table 2: Macroeconomic data used in agglomeration indicators by region, for year 2002, Manufacturing.

	Production (%)	Production / Km2 (/National Mean)	Exports (%)	Imports (%)	Hours Worked (%)
Variable	*agglom2*	*agglom3*	*xagglom2*	*magglom2*	*hc*
REGION					
Cataluña	26,8	2,2	32,3	34,6	24,9
Madrid	13,1	4,4	11,5	23,3	10,2
C. Valenciana	11,2	1,3	12	9	13,8
Pais Vasco	10,1	3,7	11,1	6,4	8,6
Andalucia	8,1	0,2	5,9	4,5	9,0
Castilla-La Mancha	5,7	0,2	2,3	2	5,1
Galicia	5	0,5	5,9	4,3	6,2
Aragon	3,9	0,2	3,8	3	4,0
Castilla-Leon	3,2	0,1	3,9	3,6	4,5
Navarra	3,1	0,8	3,5	2,3	2,6
Asturias	2,2	0,6	1,6	1	2,0
Murcia	2,2	0,5	2,1	1,3	2,8
Cantabria	1,4	0,7	1,5	1	1,3
Canarias	1,2	0,5	0,2	2,1	1,5
La Rioja	1,1	0,6	1	0,5	1,2
Baleares	0,8	0,4	0,8	0,6	1,1
Extremadura	0,7	0,0	0,6	0,4	1,1
Total	99,8	1,0	100	99,9	100

Source: INE, Contabilidad regional de España; Dirección general de aduanas and Wikipedia.

In tables 2-6, we display some summary statistics concerning firms' characteristics like labour productivity, employees, export and import ratios. On average, firms of our sample have 138 employees and an export ratio of 17% and import ratio of 8% (Table

3). About three quarters of the firms are traders that means that they export or import at least once during the period 1996-2004. Labour productivity of firms that both export and import is about twice larger than firms that never exported, neither imported. Firms that did export but didn't import have an intermediate position in the labour productivity scale behind firms that imported but never exported. The same ranking applies for size: non traders are smaller than firms that only export, in turn these ones are smaller than the ones that only import and the largest ones are those that both export and import. Our data confirm the existence of some "superstars" firms as target by Mayer and Ottoviano (2008) that are superior in productivity, larger and well inserted in international networks exporting 27% of their production and importing 12% of their intermediate and capital goods.

Another important feature concerns the presence of foreign capital (Table 4). Firms with more than 10% of foreign capital are more than 4 times larger than the domestic firms, they have a greater productivity of labour, export 3 times more and import about a quarter of their input and capital goods while the import ratio of domestic firms is about 5%. Though, this type of firms represents less than 20% of our sample. We distinguish between "domestic" traders and "foreign" traders. Traders are firms that export or import or both. As already said, they display better performance and larger size than non traders. Domestic traders (firms with less than 10% of foreign capital) have a worse performance and are smaller than "foreign traders" that are inserted in the international chain in different way.

Turning to the size of the plants (Table 5), we observe that small plants have in effect a lower labour productivity on average and trade a lower share of their production than large plants do. However, large firms that do not trade have a similar labour

productivity as small firms that trade. Then, trading seems to be a more distinctive feature for labour productivity than size.

In Table 6, we display the same statistics classified in four type of localisation: region with a high (or low) density of the production (production/km2 above (under) the average) and region with dense activity of the production in the industry (production of the industry/km2 above (under) the average). Results show that firms have a higher labour productivity in regions with dense activity but are not larger. Export and import ratios do not differ a lot depending on the density. Density of the production in the same industry and region makes also the workers more productive. Though, it is the overall density (not only the one of the industry in which the firm operates) that matters for firm's labour productivity. This points at a predominance of urbanisation economies in the Spanish case more than localisation economies. Though, these data should be interpreted with cautious since at this stage, we are not controlling for other firms' characteristics and we are talking about labour productivity but not total factor productivity.

We also observe at the industry level (Table 7) the same correlation between high productivity, large size and openness. In particular, the industries of chemical products, Electrical equipment and transport equipment display higher performance in terms of value added per employee with larger plants and larger import and export ratios.

Table 3: Characteristics of importers, non-importers, exporters and non-exporters.

		Non-importers	Importers	Total
Non-exporters	Nb obs.	2.074	1.024	3.098
	Labour productivity	19	26	21
	Employees	27	55	36
	Export Ratio	0	0	0
	Import Ratio	0	7	2
Exporters	Nb obs.	933	6.653	7.586
	Labour productivity	23	35	33
	Employees	35	201	180
	Export Ratio	9	27	24
	Import Ratio	0	12	11
Total	Nb obs.	3.007	7.677	10.684
	Labour productivity	20	34	30
	Employees	30	181	138
	Export Ratio	3	23	17
	Import Ratio	0	11	8

Source: ESEE, Author's calculation. Data for the period 1996-2004.

Table 4: Characteristics of domestic and foreign firms, traders and non-traders.

		Domestic	Foreign	Total
Non-traders	Nb obs.	2.060	16	2.076
	Labour productivity	19	29	19
	Employees	26	155	27
	Export Ratio	0	0	0
	Import Ratio	0	0	0
Traders	Nb obs.	6.740	1.870	8.610
	Labour productivity	29	45	32
	Employees	105	383	165
	Export Ratio	17	37	22
	Import Ratio	7	22	10
Total	Nb obs.	8.800	1.886	10.686
	Labour productivity	27	45	30
	Employees	86	382	138
	Export Ratio	13	37	17
	Import Ratio	5	22	8

Source: ESEE, Author's calculation. Data for the period 1996-2004.

Table 5: Characteristics of small and large firms, traders and non-traders.

		NON-TRADERS	TRADERS	Total
Large	Nb obs.	130	4.225	4.355
	Labour productivity	24	39	39
	Employees	138	312	306
	Export Ratio	0	32	31
	Import Ratio	0	14	14
Small	Nb obs.	1.946	4.385	6.331
	Labour productivity	19	26	24
	Employees	20	24	23
	Export Ratio	0	12	8
	Import Ratio	0	6	4
Total	Nb obs.	2.076	8.610	10.686
	Labour productivity	19	32	30
	Employees	27	165	138
	Export Ratio	0	22	17
	Import Ratio	0	10	8

Source: ESEE, Author's calculation. Data for the period 1996-2004.

Table 6: Characteristics of firms and density of the activity.

			Density in the same industry and region		
			Low	High	TOTAL
Density of the region	Low	Nb obs.	5.138	800	5.938
		Labour productivity	27	28	27
		Employees	146	156	147
		Export Ratio	15	23	16
		Import Ratio	8	7	8
	High	Nb obs.	1.383	3.365	4.748
		Labour productivity	32	33	33
		Employees	131	126	127
		Export Ratio	20	18	18
		Import Ratio	9	9	9
	Total	Nb obs.	6.521	4.165	10.686
		Labour productivity	28	32	30
		Employees	143	132	138
		Export Ratio	16	19	17
		Import Ratio	8	9	8

Source: ESEE, Author's calculation. Data for the period 1996-2004.

Table 7: Characteristics of firms by industry.

Industry	Nb obs.	Labour prod.	Employees	Export ratio	Import ratio
Food, beverages, tobacco	1,352	27	110	10	4
Textiles, Leather and textile products	1,389	21	82	16	9
Wood, Paper and printing products	1,268	29	97	8	7
Chemical products	570	45	190	21	16
Rubber and plastic products	645	30	107	15	9
Other non-metallic mineral products	679	32	133	19	3
Basic metals and fabricated metal products	1,541	33	121	19	7
Machinery and equipment n.e.c.	856	33	132	24	9
Electrical and optical equipment	820	35	160	21	11
Transport equipment	688	35	490	32	15
Other manufactured products	878	20	67	15	5
Total	10,686	30	138	17	8

Source: ESEE, Author's calculation. Data for the period 1996-2004.

c. Agglomeration Premium for a representative firm

Firm-level total factor productivity (TFP) is calculated following the Olley and Pakes (1996) method over the period 1994-2002, the longer period for which we were able to build the macroeconomic indicators of agglomerations detailed above. Estimations reported in Table 25 were run for 11 industries over the period 1994-2006. Coefficients are significant at the one per cent level in all cases and have a similar range to other studies. We replicate these estimations for only single-plant firms. Results are reported in Table 26. This shorter sample is the one used later on. Results do not change

very much. When we estimate the production function for the all sector, the coefficients of labour, capital and intermediate consumption are similar to those obtained in the previous regressions by industries. Then we introduce a measure of agglomeration as an additional input of the firm. Estimations are then performed regardless to the industry since the measure of agglomeration as in most cases an industry dimension. Results are reported in Table 8. As in Javornik (2004), if the Olley-Pakes procedure success- fully corrects for biases, one would expect to find a decrease in the coefficients on labour and material inputs and an increase in the capital coefficient relative to the panel estimations. Results from fixed effects and random effects estimations are reported in Table 27. We effectively observe that Olley and Pakes results move in the predicted directions in general. As expected, inputs are highly significant; the coefficient of capital lies between 0.245 and 0.299 which is in line with the results from other studies on production functions, except in three cases where results turn to be negative. Our results show that Spanish single-plant firms operate with constant returns to scale. As in Martin et al. (2008) we note that random and fixed effects lead to very different results in particular for capital and to a lesser extent for the measure of agglomeration. . It is particularly striking for capital, which coefficient is extremely low when firms fixed effects are taken into account which confirmed that Olley and Pakes method must be a most accurate method.

Table 8: Production estimates with the modified Olley and Pakes (1996) method, for single-plant firms with agglomeration indicators

		AGGLO	L	M	K
Agglom	"Production in the same industry: Regional / National"	0.550***	0.389***	0.361***	0.292***
		[0.055]	[0.027]	[0.038]	[0.012]
agglom0	"Regional production in the same industry / km2"	-0.019***	0.389***	0.386***	-0.049***
		[0.003]	[0.022]	[0.031]	[0.009]
lochour	"Hours worked in the region, same industry"	0.026***	0.373***	0.420***	0.245***
		[0.003]	[0.017]	[0.022]	[0.005]
xagglom	"Exports of the same industry: Regional / National"	0.344***	0.390***	0.387***	-0.071***
		[0.043]	[0.021]	[0.031]	[0.010]
magglom	"Imports of the same industry: Regional / National"	0.557***	0.389***	0.388***	0.287***
		[0.049]	[0.021]	[0.031]	[0.008]
agglom2	"Production all industries: Regional / National"	-0.053	0.389***	0.387***	0.268***
		[0.192]	[0.021]	[0.031]	[0.007]
agglom3	"Regional production all industries / km2"	0.027***	0.389***	0.386***	0.275***
		[0.006]	[0.022]	[0.031]	[0.007]
urbhour	"Hours worked in the region, other industries"	-0.004	0.375***	0.420***	-0.114***
		[0.006]	[0.017]	[0.022]	[0.010]
xagglom2	"Exports all industries: Regional / National"	0.448***	0.388***	0.387***	0.277***
		[0.044]	[0.021]	[0.031]	[0.008]
magglom2	"Imports all industries: Regional / National"	1.034***	0.389***	0.387***	0.299***
		[0.111]	[0.021]	[0.031]	[0.008]

*Source: Author's calculation. Standards errors are in parenthesis * significant at 10%, **at 5%; ***at 1%.*

We now focus to the results of the modified Olley and Pakes method displayed in Table 8 that shows us how the different measures of agglomeration affect TFP of Spanish firms.

The weight of the regional production in the national production for the manufacturing sector (agglom2) has no significant impact. Then, a bigger size of the manufacturing industry than the national average is not a sufficient condition for a firm to benefit from backward or forward linkages in terms of managerial capacities. In turn, the spatial density of this manufacturing production (agglom3) has a significant positive impact and an increase in 100 % of the production per km2 increases by 2.7% the TFP of the firms.

The weight of the regional production in the national production in the same industry (agglom) has a significant positive impact on production. If the weight of the production of the industry the firms belongs to in the national production doubles, the

TFP of the firms would increase by 55%. On the opposite, when this production is compared to the area of the region (agglom0), it has a negative and significant impact. It may be a proof of congestion diseconomies. Though, in this case the coefficient of capital turns to be negative also catching some doubts on the validity of these estimates.

Our results show that there exist positive and significant localization economies: for a firm, all other things being equal, a 10% increase in the number of hours worked in the same industry and region increases the production of that firm by around 0.26%. Though, an increase in the number of hours worked in the other industries has no significant effect on production.

Openness has a more obvious positive effect on production after controlling for standard input contribution. Both the concentrations of exports and imports at the industry level have a similar effect on production as the experience at producing of local firms in the same industry. Concerning the overall openness of the region regardless to the industry, to double the share of exports in national exports would increase by 44% the productivity while the same increase of imports would increase by 100% the production.

Urbanisation, in the sense of agglomeration of production or employment in a region, is not a sufficient condition for spillover to occur if the activity is not dense enough. The amounts of exports and imports have a most obvious positive impact on productivity of the firms in a region. Concerning the horizontal spillover likely to occur among firms with similar activities, our results confirm that they are significant and positive, both measured by production and hours worked. However, if the concentration is too dense some diseconomies may occur.

d. Comparing Agglomeration Premia for different type of firms

We replicate the same estimations as above for different groups of firms depending of their characteristics. Results are displayed in Table 9.

An important hypothesis in the literature on integration is that productivity may be improved when firms accessing foreign markets because their exposure to useful technological innovations from international contacts makes easier the technological diffusion and fosters a more efficient organisation of firms. For all these reasons, we expect traders to benefit in a different way from the experience of other firms since they may have a different absorptive capacity. We replicate the same estimations as above for traders and non-traders separately.

Another important source of asymmetries among firms concerns the origin of capital. Joint ventures or the participation of foreign companies in the capital brings new managerial abilities and techniques, which may increase firms' TFP. We are not able with our data to check if the presence of foreign companies has a positive influence on TFP of firms located nearby. Data concerning the number of foreign firms or their production or employment is not available at the macro level and we don't want to aggregate the information available at the firm level in case our sample were not representative of this issue. In turn, we check if foreign firms have a different absorptive capacity that makes them able to take benefit from the concentration of local clients, suppliers or firms in the same activity in a different way than domestic firms do. To this aim, we repeat the same exercise for foreign and domestic firms separately.

Finally, we split our sample in two groups depending on the size of the plant measured by the number of employees. We divide our sample in plants larger or lower than 50 employees. We expect

Table 9: Production estimates with the modified Olley and Pakes (1996) method, for single-plant firms with agglomeration indicators for different groups of firms.

		ALL	TRADERS	NON-TRADERS	FOREIGN	DOMESTIC	LARGE	SMALL
Agglom	"Production in the same industry: Regional / National"	0.550***	0.402***	0.709***	0.074	0.612***	0.192***	0.848***
		[0.055]	[0.044]	[0.201]	[0.117]	[0.060]	[0.071]	[0.085]
agglom0	"Regional production in the same industry / km2"	-0.019***	-0.022***	0.029***	0.003	-0.015***	0.003	0.042***
		[0.003]	[0.004]	[0.009]	[0.004]	[0.003]	[0.005]	[0.005]
lochour	"Hours worked in the region, same industry"	0.026***	0.063***	-0.001	-0.008	0.038***	0.009*	0.040***
		[0.003]	[0.007]	[0.014]	[0.007]	[0.003]	[0.005]	[0.004]
xagglom	"Exports of the same industry: Regional / National"	0.344***	0.527***	0.600***	0.094	0.502***	0.157***	0.602***
		[0.043]	[0.050]	[0.186]	[0.058]	[0.042]	[0.049]	[0.056]
magglom	"Imports of the same industry: Regional / National"	0.557***	0.537***	0.142	0.099	0.547***	0.753***	0.596***
		[0.049]	[0.054]	[0.123]	[0.097]	[0.049]	[0.126]	[0.054]
agglom2	"Production all industries: Regional / National"	-0.053	-0.957***	0.300**	0.395***	0.483**	0.966***	0.843***
		[0.192]	[0.262]	[0.151]	[0.140]	[0.212]	[0.112]	[0.116]
agglom3	"Regional production all industries / km2"	0.027***	0.006	-0.002	0.071***	-0.005	-0.009	0.030***
		[0.006]	[0.008]	[0.017]	[0.020]	[0.013]	[0.009]	[0.011]
urbhour	"Hours worked in the region, other industries"	-0.004	0.015**	-0.001	-0.292***	0.032***	0.025***	0.005
		[0.006]	[0.007]	[0.021]	[0.025]	[0.009]	[0.006]	[0.014]
xagglom2	"Exports all industries: Regional / National"	0.448***	-0.136	0.940***	0.239**	0.646***	-0.018	1.117***
		[0.044]	[0.116]	[0.319]	[0.121]	[0.050]	[0.139]	[0.137]
magglom2	"Imports all industries: Regional / National"	1.034***	0.902***	0.720***	0.334	0.829***	0.967***	0.486***
		[0.111]	[0.112]	[0.150]	[0.217]	[0.092]	[0.177]	[0.073]

Note: We only display the coefficients of the Agglomeration measure, coefficients for capital, labour and material are available upon request.
*Source: Author's calculation. Standards errors are in parenthesis * significant at 10%, **at 5%; ***at 1%.*

The overall picture is that traders and large firms react in very similar way to agglomeration. Overall, they react in the same way as the whole sample concerning agglomeration at the industry level while they are less sensitive to agglomeration indicators calculated at the regional level. The congestion economies observed at the industry level for a representative firms is mainly due to traders since non-traders benefit from a dense activity. Large firms and traders, unlike other firms are positively influenced by urbanisation measured by hours worked, dense activity is not significant. The weight of production at the regional level influences positively large firms while negatively traders¿?.

Small firms behave in a different manner than large firms and traders. Small plants are very positively affected by agglomeration indicators measured at the industry level. We guess that small plants decisions concerning localisation are less affected by the geographic, historical and other overall characteristics of the region because they may only develop their activity near their residence place. Though, their choice concerning their activity may be influenced the activity of other firms in the same industry since they may be more sensitive to competition. On the other hand, their decision may be influenced by the decisions of firms in other industries since they must act as suppliers or clients of other firms located nearby. Actually, small firms appear as positively affected by the density of production of the region like non-trades though hours worked in other industries is not significant for them.

A common feature to all type of firms is that the amount of imports in general and at the industry level affects all the firms positively and with large coefficient except for foreign firms. The amount of exports at the industry level also affect all the firms positively except for foreign firms. Though, the amount of exports for all sectors have no significant effect on large firms and traders.

Foreign firms are the firms that have a most outsider behaviour. They are not sensible to any kind of agglomeration indicators calculated at the industry level. Their TFP benefits positively form experience at producing of the region, from dense activity and large amount of exports but negatively to hours worked in other industries. Their TFP benefit positively from the experience of the region in general while the experience at the industry level is already taken into account when choosing the location and the level of inputs or does not affect their managerial capacities.

5 Results for Turkey

This paper studies the extent of agglomeration effects on the plant-level productivity in the Turkish manufacturing industry. In particular, we analyze the impact of the regional concentration of production, employment, export and import on the total factor productivity of Turkish manufacturing plants.

a. Data

The Turkish Statistical Institute (TurkStat) collects the plant level dataset used in this study. TurkStat periodically conducts Census of Industry and Business Establishments (CIBE). In addition, TurkStat conducts Annual Surveys of Manufacturing Industries (ASMI) at establishments with 10 or more employees. The set of addresses used during ASMI are those obtained during CIBE years. In addition, every non-census year, addresses of newly opened private establishments with 10 or more employees are obtained from the chamber of industry. For this study we use a sample that matches plants from CIBE and ASMI for the 1990-2001 period.

The data set is assembled at the plant level and does not take into account the organic link between different plants that are under the ownership of the same firm.

There are multi-plant firms in the Turkish industry. However, the number of these firms is rather limited. Therefore, considering only the data at the plant level does not cause any bias for our estimations.

The data is well suited for our purposes because it contains information on variables that are commonly used in estimation of firm level production functions. Specifically, the data includes value of sales, number of employees, values of material inputs, electricity, fuels and investment. CIBE does not include plant with less than 10 employees. Even though, not all the key variables needed for this study have been collected for establishments in the 10-24-size group. Thus our sample consists of plants with 10 or more employees.

We limit the sample to private establishments only. In the resulting sample we have 127,094 plant years for 23,108 plants in 29 three-digit ISIC (Rev. 2) industries. We do not select only the plants that were in the sample period through the entire period and hence use an unbalanced data set. However, entry or exit constitutes a small percentage of total number of plants within each year. In 1993, following the CIBE year 1992, the number of entering plants shows a dramatic increase indicating the concerted effort by TurkStat to identify new plants.

In the analysis we use the exporting and importing activities of the plants. However, the export/output and the import/output ratios are not available at the plant level. Instead, we have information whether the plant undertook any export or import activity in a given year. As a result, in our analysis we use the information on exporter and importer status of the plant rather than the export/output and import/output ratios. If a plant undertook export (import) activity even once over the period, then it is accepted as an exporter (importer).

b. Descriptive Statistics

In Turkey, the official statistics divides the whole country into 81 provinces. Some of these provinces were created from the break-up of geographically larger provinces. As the plant level manufacturing surveys started in 1980 the provincial breakdown takes into account only 67 provinces. Because of the large number of provinces it is rather cumbersome to display the descriptive statistics at the provincial level. As a result, we report the descriptive statistics both by the official geographical regional and provincial breakdown in Table 1. Because manufacturing activity is negligibly low in 11 provinces, mostly in Eastern Turkey, in Table 1 we report the descriptive statistics for only 56 provinces.

There are seven geographical regions in Turkey. The bulk of manufacturing activity is concentrated in the Marmara region. Both in terms of production, exports, imports and employment, Marmara region accounts for more than half of the manufacturing activity in Turkey. When measured as production in per square kilometer Marmara region accounts for close to three quarters of manufacturing production. Istanbul alone accounts for almost half of the manufacturing activity in Marmara region. Kocaeli accounts for between 12 and 16 percent of the production, exports and imports of Turkish manufacturing industry. In terms of employment, however, its contribution declines down to 5 percent. Between 5 to 9 percent share of various manufacturing activity measures, Bursa is the third ranking province in Marmara region (Table 1).

Turkish manufacturing production is mostly concentrated in the western provinces of the country, and especially in the Marmara region. Marmara region is attractive for

the manufacturing firms to locate their plants because that way they will be close to Istanbul, the largest city in the country. For firms being close to Istanbul not only provides easy access to the product market but also to the market for skilled and unskilled labor.

After Marmara region, Aegean region is the second largest contributor in the manufacturing industry. Its contribution ranged from 16.4% in employment to 26.4% in exports. Once we take its geographical size into account, Aegean region's contribution to the Turkish manufacturing output declines down to 12 percent. Izmir, the largest city in the region, is the most important manufacturing center in the region. Manisa and Denizli are the other two important manufacturing centers in the region.

Central Anatolia region is the third contributor to the country's manufacturing production. The capital city Ankara is the largest city in the region. It is also the most important manufacturing center in the region, followed by Kayseri, Konya and Eskisehir. Kayseri and Konya are the provinces that have shown substantial progress in the 2000s especially in food and beverages industry, and furniture industry. They have likely increased their contributions to the Turkish manufacturing activity in the 2000s.

After the first three regions, Mediterranean, Black Sea, South Eastern Anatolia and Eastern Anatolia regions together contribute less than 15 percent of the manufacturing output. Indeed, Eastern Anatolia region accounts for less than 1 percent of the manufacturing output of Turkey. The fact that the four regions' contribution to the manufacturing employment is 18.3 percent of the total reveals that the manufacturing production in these regions is relatively more labor intensive. In these regions, only a couple of provinces have contributions at or above 1 percent. These provinces are Adana and Mersin in

Table 10. Macroeconomic data used in agglomeration indicators by region, for year 2000, manufacturing

Region / Province	Production (%)	Production/area Rel. to National mean	Exports (%)	Imports (%)	Hours Worked (%)
Central Anatolia	**11.8**	**4.1**	**5.6**	**12.1**	**13.0**
Ankara	6.7	1.7	2.0	7.1	5.7
Çankırı	0.2	0.2	0.0	0.2	0.1
Eskişehir	1.3	0.7	1.1	1.5	1.8
Kayseri	1.5	0.7	1.6	1.7	2.2
Kırşehir	0.1	0.1	0.1	0.1	0.1
Konya	1.3	0.2	0.7	1.1	2.1
Nevşehir	0.3	0.3	0.0	0.3	0.2
Niğde	0.3	0.1	0.1	0.1	0.3
Sivas	0.2	0.0	0.0	0.0	0.4
Yozgat	0.1	0.1	0.0	0.0	0.1
Black Sea	**4.5**	**3.4**	**2.3**	**4.4**	**7.0**
Amasya	0.0	0.0	0.0	0.0	0.2
Bolu	0.8	0.6	0.8	0.8	1.2
Çorum	0.2	0.1	0.0	0.0	0.4
Giresun	0.1	0.1	0.3	0.2	0.3
Kastamonu	0.2	0.1	0.2	0.1	0.3
Ordu	0.3	0.3	0.3	0.2	0.4
Rize	0.4	0.3	0.0	0.1	0.9
Samsun	0.4	0.3	0.1	0.5	0.7
Sinop	0.01	0.01	0.0	0.0	0.05
Tokat	0.8	0.6	0.0	1.0	0.4
Trabzon	0.3	0.2	0.4	0.2	0.5
Zonguldak	1.1	0.8	0.3	1.3	1.6
Marmara	**54.4**	**74.4**	**55.8**	**52.1**	**52.3**
Balıkesir	0.9	0.5	0.8	1.1	1.1
Bilecik	0.9	1.6	0.9	1.1	0.8
Bursa	6.8	4.6	6.5	7.1	8.9
Çanakkale	0.9	0.7	1.7	1.2	0.5
Edirne	0.3	0.4	0.3	0.4	0.4
İstanbul	27.6	35.2	23.7	23.8	29.8
Kırklareli	1.1	1.3	1.1	1.1	1.2
Kocaeli	12.1	25.0	16.2	13.3	4.9
Sakarya	1.0	1.5	0.8	0.8	1.3
Tekirdağ	3.0	3.6	3.9	2.1	3.4

the Mediterranean region, Gaziantep in the South Eastern Anatolia region, and Zonguldak in the Black Sea region.

Izmir and Kocaeli stand out with their employment shares that are much lower than their output shares. This is obviously an indication of the low labor intensity of the manufacturing industries in these cities. In other cities such as Bursa, Denizli and Gaziantep, employment shares substantially exceed their output shares. These are the provinces mostly dominated by textiles and apparel production.

Table 11 (Cont'd) .Macroeconomic data used in agglomeration indicators by region, for year 2000, manufacturing

Region / Province	Production (%)	Production/area Relative to National mean	Exports (%)	Imports (%)	Hours Worked (%)
Mediterranean	**7.2**	**4.1**	**8.2**	**8.6**	**6.0**
Adana	2.7	1.3	4.4	3.3	2.7
Antalya	0.3	0.1	0.5	0.3	0.5
Burdur	0.1	0.1	0.0	0.0	0.2
Hatay	0.6	0.8	1.1	0.8	1.0
Isparta	0.3	0.2	0.1	0.1	0.3
Mersin	3.2	1.5	2.1	4.1	1.3
Eastern Anatolia	**0.9**	**0.4**	**0.3**	**0.6**	**1.7**
Elazığ	0.2	0.0	0.3	0.0	0.4
Erzincan	0.0	0.0	0.0	0.0	0.1
Erzurum	0.2	0.0	0.1	0.0	0.3
Malatya	0.4	0.3	0.0	0.6	0.7
Van	0.1	0.0	0.0	0.0	0.1
Aegean	**18.8**	**11.8**	**26.4**	**20.5**	**16.4**
Afyonkarahisar	0.5	0.2	0.7	0.3	0.5
Aydın	0.4	0.4	0.4	0.2	0.7
Denizli	1.9	1.2	2.8	1.5	3.6
İzmir	13.7	8.6	19.6	16.2	8.3
Kütahya	0.3	0.2	0.3	0.3	0.7
Manisa	1.9	1.0	2.6	1.8	1.9
Muğla	0.1	0.0	0.0	0.0	0.2
Uşak	0.1	0.2	0.1	0.1	0.5
South Eastern Anatolia	**2.4**	**1.8**	**1.4**	**1.8**	**3.6**
Diyarbakır	0.1	0.0	0.0	0.0	0.2
Gaziantep	1.5	1.5	0.9	1.6	2.2

Kahramanmaraş	0.4	0.2	0.4	0.1	0.7
Siirt	0.3	0.0	0.0	0.0	0.2
Şanlıurfa	0.2	0.1	0.0	0.0	0.3

After providing a brief overview of the regional distribution of the manufacturing industry, we next turn to the analysis of plant characteristics. There are 127,094 plant-year observations in our sample. On average, plants in the sample have 99 employees. 17% of these plants are exporters whereas 18.5% of them are importers.

We know focus on the trading characteristics of the plants. Slightly more than half of the plant-years belong to non-traders. Non-traders tend to be smaller plants and have lower labor productivity, compared to traders. Approximately a quarter of the total plant-year observations belong to plants that both export and import. Among the four groups considered in Table 2, they tend to be the largest plants with 213 employees on average. They are also more productive than non-traders and half-traders (exporters and non-importers, importers and non-exporters). Importers that do not export tend to have labor productivity (7.12) which is higher than that of the labor productivity in those plants that export but do not undertake imports. This result is quite consistent with our knowledge about the Turkish trade. Turkey exports more labor-intensive products then it imports. Labor intensive sectors tend to have lower labor productivity than capital-intensive sectors. The productivity difference between the two however is small, only 5%.

Table 12. Characteristics of importers, non-importers, exporters and non-exporters

		Non-importers	Importers	Total
Non-Exporters	No. obs.	67,497	12,733	80,230
	Labor Productivity	6.56	7.12	6.65
	Employees	42.1	105.2	52.1
	Export ratio	0	0	0
	Import ratio	0	39.3	6.2
Exporters	No. obs.	13,492	33,372	46,864
	Labor Productivity	6.89	7.36	7.23

	Employees	91.9	213.2	178.3
	Export ratio	34.9	51.6	46.8
	Import ratio	0	55.5	39.5
Total	No. obs.	80,989	46,105	127,094
	Labor Productivity	6.62	7.29	6.86
	Employees	50.4	183.4	98.6
	Export ratio	5.8	37.3	17.2
	Import ratio	0	51.1	18.5

The next plant characteristic that we analyze is the presence of foreign ownership. The presence of foreign ownership, as defined by the ownership exceeding 10% of total, has significant implications for the plant behavior. In Table 3, we present the plant characteristics when both foreign trade behavior and foreign ownership are taken into account. Less than 5% of the plants are foreign owned. The average employment level in foreign owned plants is 311, almost 3.5 times the average employment in domestic owned plants. Foreign-owned plants tend to have higher labor productivity (15% more) than the remaining domestic plants. Approximately 60% of all foreign-owned plants (3350 of them) also undertake foreign trade. Plants that undertake foreign trade employ more workers (370 compared to 220) and are slightly more productive compared to those foreign-owned plants that do not undertake foreign trade. Only 25 percent of domestic plants are involved in foreign trade activity. Their average employment level, 189, is 3 times the employment level of the domestic plants that do not undertake foreign trade. The export ratios of the domestic and foreign-owned plants are close to each other. The import ratio of the domestic plants, 72%, is lower than the import ratio, 86%, of the foreign-owned plants.

Table 13. Characteristics of domestic and foreign firms, traders and non-traders

		Domestic	Foreign	Total
Non-Traders	No. obs.	92,992	2,153	95,145
	Labor Productivity	6.7	7.6	6.7

	Employees	58	220	62
	Export ratio	0	0	0
	Import ratio	0	0	0
Traders	No. obs.	28,599	3,350	31,949
	Labor Productivity	7.3	7.9	7.4
	Employees	189	370	208
	Export ratio	68.3	71.3	68.6
	Import ratio	72.3	85.7	73.7
Total	No. obs.	121,591	5,503	127,094
	Labor Productivity	6.8	7.8	6.9
	Employees	89	311	99
	Export ratio	16.1	43.4	17.2
	Import ratio	17.0	52.1	18.5

Next, in Table 4 we focus on the interaction between plant-size and trade orientation. It is assumed to be a small plant if the average employment for the period is less than 50. Approximately one-third of plants are large and the remaining are small plants. Small plants have lower labor productivity compared to larger plants. While non-trader large plants have 6 times more employees as small plants, trader large plants have 9 times more employees as small plants. Large plants have higher export and import ratios compared to small plants.

Table 14 Characteristics of small and large firms, traders and non-traders

		Non-traders	Traders	Total
Large	No. obs.	24,371	21,062	45,433
	Labor Productivity	6.9	7.5	7.2
	Employees	173	298	231
	Export ratio	0.0	71.9	33.3
	Import ratio	0.0	78.3	36.3
Small	No. obs.	70,774	10,887	81,661
	Labor Productivity	6.6	7.2	6.7
	Employees	24	33	25
	Export ratio	0.0	62.3	8.3
	Import ratio	0.0	64.8	8.6
Total	No. obs.	95,145	31,949	127,094
	Labor Productivity	6.7	7.4	6.9
	Employees	62	208	99
	Export ratio	0.0	68.6	17.2
	Import ratio	0.0	73.7	18.5

In Table 5, we display firm characteristics for four types of localization. We consider the density of manufacturing production in the region and we consider the density in the region and industry. Results show that plants' productivity and size do not change significantly between regions with low and high density. Export and import ratios are slightly higher in regions with higher density of production. Plant sizes tend to be higher if the industry and region have higher production density. Export and import ratios are also slightly higher if the firm is located in an industry and region with higher density.

Table 15. Characteristics of firms, and density of the activity

		Density in the same industry and region		
		Low	High	Total
Density of the Region _ Low	No. obs.	96,941	5,568	102,509
	Labor Productivity	6.8	7.0	6.8
	Employees	97	152	100
	Export ratio	16.1	23.9	16.5
	Import ratio	16.5	24.2	16.9
Density of the Region _ High	No. obs.	6,806	17,779	24,585
	Labor Productivity	7.0	7.1	7.1
	Employees	73	100	93
	Export ratio	19.5	20.7	20.4
	Import ratio	24.7	25.6	25.3
Total	No. obs.	103,747	23,347	127,094
	Labor Productivity	6.8	7.1	6.9
	Employees	95	113	99
	Export ratio	16.3	21.5	17.2
	Import ratio	17.0	25.2	18.5

c. Agglomeration Premium for a representative firm

In Table 12, we present the Olley-Pakes estimates for the production. Olley-Pakes approach to production function estimation corrects for simultaneity and selection biases that may arise when using plant- or firm-level data to estimate the production function. All variables in the production function estimations, including the agglomeration variable, are in logarithms.

We estimate the production functions using different proxies for the agglomeration effects. We measure agglomeration using each of the activity measures, production, employment, exports and imports at the 3-digit ISIC industry level and manufacturing industry level. In the first approximation to the measurement of agglomeration (reported in the first line of Table 12, variable name is lagglom) we use the industry output in the region compared to the industry output at the national level. Next we use 3-digit ISIC industry employment in the region relative to the 3-digit industry employment at the national level. Then we consider the 3-digit ISIC industry

exports in the region relative to the 3-digit industry exports at the national level. Finally, we use the 3-digit ISIC industry imports in the region relative to the 3-digit industry imports at the national level. In the next four agglomeration measures we use the manufacturing industry activity measures at the regional and national level.

Table 16. Production Estimates with the modified Olley and Pakes (1996) method, for single-plant firms with agglomeration indicators

		Agglo	L	K	M
Lagglom	Industry Production (Regional/National)	-0.092**	0.294***	0.207***	0.555***
		[0.017]	[0.007]	[0.003]	[0.006]
lochour2	Industry Employment (Regional/National)	-0.002	0.3***	0.186***	0.557***
		[0.014]	[0.007]	[0.002]	[0.006]
Lxagglom	Industry Exports (Regional/National)	0.317***	0.299***	-0.08***	0.556***
		[0.021]	[0.007]	[0.006]	[0.006]
Lmagglom	Industry Imports (Regional/National)	0.498***	0.3***	-0.087***	0.556***
		[0.029]	[0.007]	[0.006]	[0.006]
lagglom2	Manufacturing Production (Regional/National)	-0.155***	0.298***	0.202***	0.556***
		[0.033]	[0.007]	[0.003]	[0.006]
urbhour2	Manufacturing Employment (Regional/National)	-1.158***	0.299***	0.212***	0.556***
		[0.116]	[0.007]	[0.004]	[0.006]
lxagglom2	Manufacturing Exports (Regional/National)	0.063***	0.299***	0.201***	0.556***
		[0.026]	[0.007]	[0.003]	[0.006]
lmagglom2	Manufacturing Imports (Regional/National)	-0.088***	0.299***	0.205***	0.556***
		[0.031]	[0.007]	[0.004]	[0.006]

The coefficient estimates for variable inputs (labor and material inputs) are robust to the way we measure the agglomeration effect. The estimated labor elasticity of output is 0.30 and the estimated material input elasticity is equal to 0.56, irrespective of the measure of agglomeration effects used. The estimated capital elasticity mostly ranges around 0.20. The only exceptions are the estimates obtained when we use 3-digit industry level exports and imports to measure agglomeration. When we use 3-digit ISIC level exports and imports to measure agglomeration, the estimated capital stock elasticity of output declines down to -0.08. These estimates are definitely problematic because theoretically it is not possible to have negative capital stock elasticity of output. Because of the obtained negative estimate of the capital stock elasticity of output we can

ignore the estimates reported in the third and fourth rows of Table 12. In the five of the other six rows the estimated agglomeration effects turns out to be negative. Only when we use the manufacturing industry exports to measure agglomeration the agglomeration effects on output is positive. The productivity of a plant in a region with more weight of the provincial manufacturing exports in the national manufacturing exports is higher compared to a plant located in a region which has lower weight.

In the case of manufacturing level production, employment and imports-based agglomeration measures the agglomeration effect on productivity is negative. This result shows that in the Turkish manufacturing industry there are negative rather than positive localization economies. This result highlights the presence of congestion effects rather than positive agglomeration effects. When we consider the overwhelming weight of the Marmara region, and Istanbul, in the national manufacturing activity, the coefficient estimates in Table 12 can be interpreted as significant evidence in favor of the presence of congestion in the Marmara region and especially in Istanbul. Such an interpretation would not be completely wrong. For one thing, many firms prefer to locate their plants in or close to Istanbul in order to be close to the market. With its sheer 12 million plus population size Istanbul is a big metropolis. Even though it is less than one-fifth of the population of Turkey, Istanbul commands to a purchasing power much bigger than its population size. As many firms locate their plants close to Istanbul, their first objective is not to improve productivity.

d. Comparing Agglomeration Premia for different type of firms

Table 17: Production Estimates with the modified Olley and Pakes (1996)

	ALL	Traders	Non-Traders	Foreign	Domestic	Large	Small
lagglom	-0.092***	-0.081***	-0.088**	-0.022	-0.101	0.025	-0.009
	[0.017]	[0.02]	[0.038]	[0.085]	[0.016]	[0.025]	[0.024]
lochour2	-0.002	-0.051***	-0.098**	0.173***	-0.022	-0.04	-0.026

	[0.014]	[0.015]	[0.037]	[0.05]	[0.015]	[0.024]	[0.017]
lxagglom	0.317***	0.005	0.178***	0.213***	0.321***	-0.1***	0.046**
	[0.021]	[0.016]	[0.034]	[0.048]	[0.023]	[0.025]	[0.018]
lmagglom	0.498***	0.003	-0.118***	0.261***	-0.04**	-0.06**	0.043**
	[0.029]	[0.016]	[0.038]	[0.058]	[0.015]	[0.026]	[0.018]
lagglom2	-0.155***	-0.112***	-0.996***	0.38***	-0.225***	-0.254***	0.024
	[0.033]	[0.033]	[0.134]	[0.108]	[0.036]	[0.053]	[0.043]
urbhour2	-1.158***	-0.486***	-3.541***	1.782***	-1.761***	-2.699***	-0.33***
	[0.116]	[0.1]	[0.386]	[0.608]	[0.158]	[0.284]	[0.092]
lxagglom2	0.063***	-0.092***	-0.496***	0.472***	-0.181***	-0.293***	0.058
	[0.026]	[0.039]	[0.087]	[0.116]	[0.034]	[0.058]	[0.041]
lmagglom2	-0.088***	0.26	-1.126***	0.694***	-0.054**	-0.439***	0.144***
	[0.031]	[0.052]	[0.165]	[0.22]	[0.028]	[0.069]	[0.042]

An alternative way to approach to the analysis of agglomeration and localization economies is to consider plants with common characteristics together. In that regard, we group the plants that have undertaken export or imports as traders, and those plants that do not undertake either exports or imports as non-traders. Aside from the trade orientation of plants, we treat plants with foreign ownership at 10% or above different from domestic plants. Finally, we distinguish between small and large plants.

We present the agglomeration effect coefficients in Table 13. When we analyze Table 13 in detail, there appears no difference between the results for traders, non-traders, domestic, small and large plants. Their results are very similar to the one we obtained for all plants. The only difference is observed in the case of foreign-owned plants. As the most important result we would like to highlight the presence of positive agglomeration effects only in the case of foreign owned plants. In regions where foreign plants are heavily involved in production, employment, and foreign trade, productivity of a plant tends to be significantly higher than those plants where foreign owned plants are not heavily active.

6 Conclusions and policy implications

Firm-level datasets like the Spanish and the Turkish ones provide some valuable information concerning firms' behaviour and their reactions to agglomeration that is very useful for economic policy design.

In both countries, we have confirmed that traders, that is firms that export but overall those that import are special cases. Few of them account for a large amount of exports. They are different from other firms in the sense that they are bigger and have a higher productivity. Firms that both import and export have also greater export and import ratios that those that only export or only import. We also observe that small firms have a lower labour productivity than large firms as expected since the last ones are more likely to operate under increasing returns. Nevertheless, small traders have a higher productivity than large non-traders, both in Spain and Turkey. This fact points out the importance of international activities of the firms as a clear distinctive feature for the functioning of the firms regarding both managerial capacities, organisation and scale of production. We also observe a cleavage among foreign and domestic firms in both case studies. Foreign firms are more productive, large and trade more than domestic firms, both in Spain and Turkey. Finally, we have compared the characteristics of firms located in regions with high versus low density. We observe that firms located in regions with high intensity are, on average more productive but the distance with other firms is not very large so the impact of localisation for productivity is not so straight that the importance of internationalisation activities as a distinctive feature. An important contribution of this study is to show that these stylised facts are common to two very different countries like Turkey and Spain.

Numerous local governments have developed cluster policies motivated by the thought that the productivity of a firm will increase when other firms that conduce similar activities locate nearby. Since an important barrier for firms to become international is the low productivity and the lack of information about foreign markets, agglomeration could also foster indirectly internationalization by improving productivity. Internationalisation could in turn bring some additional productivity gains.

We seek to evaluate the impact of different type of agglomeration measures on TFP. The challenge consists in measuring the effect of agglomeration taking into account possible selection and simultaneity biases. In fact, firms could select their location according to the return this location could bring them in terms of productivity that is "good place" makes firms better and firms internalise it. On the other hand, "best firms" may choose to agglomerate, then the location they chose may appear as a "good place".

To deal accurately with these issues, agglomeration should not be considered as a strictly exogenous determinant of TFP. We modify the Olley and Pakes (1996) approach to control for endogeneity bias and consider different agglomeration indicators as an endogenous input of the production function.

We measure agglomeration in several manners. Production (and density of production) is the most general indicator of the potential source of spillover that can emerge from experience at producing from other firms. Externalities may arise from the specialization of labour markets and from sharing knowledge with other employees and managers, we also use the number of hours worked as a complementary indicator. Managerial capacities could also be improved in contact with foreign suppliers and clients. In particular, firms located nearby could share information concerning their

international experience that could benefit each other. To capture this potential source of technology transfer, we also consider the amount of imports and exports at the region level for all industries and at the regional level in the same industry the firm operates in. Each indicator is susceptible to shed some light on the different hypothesis concerning the benefits to be obtained from firms located in the vicinity. In turn, externalities can operate through vertical linkages (among firms operating in other industries) or horizontal linkages (among firms located in the same industries). Then, each of the mentioned indicators are calculated both for Spain and Turkey at the regional level or for the same industry in the region to capture the influence of the two types of externalities.

We use the same approach for Spain and Turkey but results obtained are quite different among the two countries concerning agglomeration impact in terms of TFP. These differences may be due to the fact that the repartition of the activities are very different in the two countries. In Turkey, the Marmara region (one of the seven regions considered) accounts for more than half of the national manufacturing production. In Spain, the more productive regions are Madrid and Cataluña which respectively account for 27 and 13% of the national manufacturing production. This is not only due to the fact that the size of the Spanish regions is smaller (we have data for 17 regions) since these differences persist when considering the density of production per square kilometers. The concentration of Turkish activity is very high in Istambul and Kocaeli, the big cities of the Marmara region.

In the Turkish case, we obtain more evidence of congestion problems than evidence in favour of the benefits of agglomeration. Both the concentration of the production at the industry and at regional level have negative impact on productivity. The same applies for the concentration of hours worked. Results concerning exports and

imports at the industry level are not interpretable since they lead to negative impact of capital on the production function, which is theoretically unexplainable. An intensive import activity has also a negative impact on productivity, though the magnitude is lower than for the concentration of production and hours worked. Concentration of exporters, regardless to the sectors of activity, appears as the sole source of positive externalities for the productivity of firms located nearby.

In Spain, we obtain more evidence about the positive effect that firms can obtained from their localisation in terms of TFP but some congestion's problems are also evidenced. Concerning horizontal linkages, that is activity in the same industry at the regional level, there is a risk of congestion costs if the concentration of production is too dense. Results concerning spillovers from exporters cannot be taken into account like in the Turkish case. Unlike Turkey, Spanish manufacturing firms benefit from positive spillovers from concentration of workers and importers conducing similar activities in their vicinity.

Evidence concerning vertical linkages is more mixed. Production in other industries have a negative impact and hours worked in other industries do not affect TFP. However, an increase of imports and exports in other sectors will clearly benefit to the TFP of firms operating in other activities.

We also show for both countries that not all the firms benefit in the same way from the experience of other firms located nearby, probably because they have different absorptive capacities. In particular, traders and large firms share most features and behave differently than their small firms and non-traders competitors. Differences among foreign and domestic firms are very large.

Apart from these features, Spanish and Turkish firms have very different sensitivity to the different indicators except for small firms. Small plants are the firms that learn more from other firms in Spain or are less affected by congestion costs in Turkey. In both countries, the importance of imports at the regional level, regardless the activity havs important positive effect on the managerial capacity of small firms. Since they operate with lower scale and have to specialise more, they must be inserted in the vertical chain of production and obtain good intermediate inputs from otehr firms to guarantee their success. They learn from other firms and in particular from importers in the case of Turkey and exporters in the case of Spain how to make it better. Then, regional government policies should encourage in particular the agglomeration of small firms, their possibility to grow and their link with traders operating in other industries.

Foreign firms are the firms clearly behave diffrerently from domestic firms regarding their response to the activity from other firms located nearby. In Spain, they are not sensible to any kind of agglomeration indicators calculated at the industry level. The TFP of foreign firms benefits positively from the experience of the region in general, both in Turkey and Spain while Turkish large firms suffer systematically from congestion costs. Our interpretation is that foreign firms are more concerned by the experience and activity of the region in general while the experience of firms competing with them at the industry level is already taken into account when choosing the location and the level of inputs or does not affect their managerial capacities.

A common feature to all Spanish firms is that the amount of imports in general, and at the industry level in particular affects all the firms positively (except for Spanish foreign firms). In Turkey the positive effect from importers is clear for foreign and small firms. Promoting the international connection at the industry level both for access to foreign providers of inputs and capital goods but also the entry of products similar to

the ones produced locally, have positive effect on TFP. This kind of policy is a natural complement of all the efforts that should be done to encourage specialization in some specific activities or training and I+D policies that affect productivity more directly.

In our study, the geographical unit used corresponds is rather large. Industry level used is also rather large. Then, we are not able to conclude concerning the accuracy of cluster policies which act as a very specialized level and for small geographical units. However, our results evidence some positive spillovers at the mentioned level and imply that encouraging specialization in some industries avoiding passing a crucial threshold in terms of density of concentration of the activity could have positive effects for TFP of firms in this activity.

Promoting agglomeration is not a sufficient condition to promote productivity but our results confirm that firms (especially the small ones) have a lot to learn from each other. Results largely depend on the internationalisation of the region and of the firm, size of the production at the industry and regional levels and scale of the firm. It seems that regions that export a lot, but overall those that import a lot will obtain considerable productivity gains. Then, a cheap and effective policy could consist in reducing the formal and informal barriers firms face when exporting or importing.

Our study has focused on TFP since it is an important engine for medium term growth production and labour productivity. But obviously TFP growth not automatically translates in employment growth. Studying this link should received further attention. Another complementary issue to study is the role played by the innovation of products, the number of products exported or produced, by firms and by regions. Actually, quality and diversification may play an important role in generating spillover among firms. In the same line, it would be important to study the effect of the

number of producers, importers and exporters (in complement of the indicators of quantity we used in this study) but these indicators were not available at the regional level in the Spanish case.

C Geographic Agglomeration and Export Behavior Evidence from Moroccan Manufacturing Sector

1. Introduction

Agglomeration at the local level of producers, exporters and multinationals can enhance firms' productivity and propensity to export through different channels. Agglomeration cuts down transportation and storage costs and reduces sourcing and marketing times. It offers interaction opportunities among agents that can set formal or informal networks of business relationships and exchange information on their partners, markets, and administrative issues related to their businesses.

The present paper uses micro econometric approach based on firm-level manufacturing surveys and addresses two issues. First, the paper examines the impact of agglomeration on exports by testing if geographical proximity of other exporting firms increases the probability of a firm to export. If such impact exists, it might be driven by interaction opportunities that agglomeration offers. Previous studies indicate that agglomeration of firms from the same industry in the same region or province increases the probability of firms to export . However, to our knowledge, most studies focused on developed countries. Second, the paper examines the effect of agglomeration on exports while taking into account firms' productivity. In addition to local networks, we consider the impact of international networks such as the presence of foreign ownership in the capital of manufacturing firms.

The paper reveals that regional concentration of exports either in the same industry or in all industries exerts a positive and statistically significant effect on the firm's decision to export. Similarly, agglomeration a large number of firms engaged in selling on foreign markets produces a positive and substantially significant effect on firms' likelihood to export. Econometric estimates indicate that these results are not driven by the presence of endogeneity bias. They are also robust to the inclusion of firm's productivity in the econometric model. Beyond the productivity effect, which other studies have shown its impact on firms' decision to export, there is an extra impact explained by agglomeration. The paper also shows that the likelihood to export is much higher when firms from the same industry are agglomerated. This finding can be interpreted as follows. In addition to traditional agglomeration effect due to the presence of logistical infrastructure that ease access to foreign markets, there is an extra component that is industry-specific agglomeration effect.

This finding corroborates the hypothesis that agglomeration offers opportunities for firms to interact and exchange information and knowledge on foreign markets, and that such exchange is much more rewarding –in the sense of leading to export– when interacting firms belong to the same industry. Aggregate level data by region indicate, for instance for the garment sector –the most export-oriented manufacturing industry in Morocco–; that firms in Casablanca region export more to France, those in Rabat-Salé region to UK and those in Tangier to Spain. As no data is available at the firm level data on exports by foreign market, this dimension have not been incorporated in our econometric analysis.

The findings contribute to the academic research on the way the agglomeration factor affect performance of firms, and in particular their exporting behavior in the specific context of a southern Mediterranean country: Morocco. Data availability is very

often the factor that constrains empirical research using firm level data in developing countries. For the purpose of this paper we benefited from privileged access to a large database of the manufacturing sector in Morocco that spans over the period 1995-2006.

From policy-making point of view, countries in the Mediterranean region are doing their best to increase their exports and secure foreign exchange they need for they imports. Understanding the role of agglomeration and its impact of firms' behavior is extremely important for policy-purposes.

The creation of modern industrial zones, called Integrated Industrial Platforms (P2I), connected to transport and telecommunication infrastructure and equipped with various administrative departments represent one of the key pillars of the recent industrial policy in Morocco . The objective of the authorities is to use industrial platforms and their agglomeration effects to boost exports and attract foreign direct investors. About nine platforms are under construction among which five are industry-specific .

The creation of industrial platforms to encourage firms to cluster represents a shift in the Morocco's authorities approach. In the past, the investment code was concerned with a balanced territorial distribution of firms and industries than their effective performance per se. To this end, the code offered tax breaks and other banking credit incentives for firms that establish in less agglomerated zones. Trade liberalization and fierce competition on traditional exporting markets of Moroccan manufacturers pushed the authorities to rethink their industrial policy and implement new tools to support manufacturing exports. The findings from the paper can, therefore, inform policy-makers in devising better territorial zoning policies taking into account the nature of

industries and the direction of trade flows to strengthen the potential effects of agglomeration on industrial performance.

2. Literature : Agglomeration and export behaviour

Exporting may be facilitated by first or second nature location advantages (proximity to the sea or to a transport infrastructure) and export success may be enhanced by the industrial environment of the firm, such as the proximity to multinational firms (Aitken, Hanson and Harrison, 1997; Barrios, Görg and Strobl, 2003). First, proximity to exporters may increase knowledge transmission about the practice of exporting, and facilitate the flow of information concerning specific destination countries (non-market interactions). Second, local exporters may, through two distinct market-based mechanisms, impact on the cost of selling abroad. Aitken, Hanson and Harrison (1997) find that the probability that Mexican plants export is positively linked to the presence of multinational firms in the same state, but uncorrelated to proximity to overall exporters. The empirical evidence for other developing countries show similar conclusion. But there is also evidence in developed countries; for the UK, Greenaway et al (2002) find that domestic firms learn to export from multinationals. Roberts and Tybout (1997), Bernard and Jensen (1999), Clerides et al. (1998) and Clerides and Kassinis (2001) found that imitation fails to play a significant role in the decision to start exporting by previously non-exporters. These authors argue that firms will not start exporting simply because it worked for others. Other empirical papers find that agglomeration economies play a positive role on export performance of local firms, although there is no consensus about the type of agglomeration behind such benefits. Lautanen (2000) analyses the reasons that generate interest for exporting among managing directors of small exporting firms in Finland

and, he finds that the major stimulus comes from inter-firm transmission of information, but not always from firms in the same industry. Becchetti and Rossi (2000) find strong evidence of the positive impact of industrial districts (also called localisation economies) on both the probability to export and the export intensity of Italian small-medium sized firms in 1995. In contrast, Malmberg (2000) observe that localisation economies are not important among Swedish exporters in 1990, while urbanisation economies have a large positive effect on the firms' volume of exports. Sjöholm (2000) find opposite results for Indonesia since the decision to export in 1996 by previously non-exporting establishments in 1995 is significantly affected by firm-level foreign. For the US Bernard and Jensen (2004) find no role for spillovers from nearby exporters or from same-industry exporters, while Koenig (2005) finds strong evidence of spillovers from local exporters to new exporting firms in France over the period 1986-1992. For the period 1998-2003, Koenig et al (2007) find that the number of local exporters in the same industry influences positively the volume of exports to a given country.

Fafchamps et al. (2008) found using panel and cross-sectional data on the Moroccan manufacturing firms that market learning enables firms to export. Young firms decide to engage in export market more than old firms. Most firms that export do so immediately after their creation. Among exporters, new products are exported rapidly after their production has begun. However, the share of exports in the new products increases over time. Old firms are unlikely to switch to exports, even in response to changes in macroeconomic incentives.

Agglomeration advantage can facilitate the firm's decision to export . The proximity to an international commercial port, for instance, reduces the cost to export. The proximity to multinational firms and exporters may increase learning to export and provide valuable information on external markets. Exchange of information between

firms exporting to the same country reduces the individual fixed cost to export and increases the probability to export .

There is, however, no consensus on agglomeration spillovers being a significant factor in the decision to export. In an extreme case, such decision is claimed to be unrelated to proximity of networks of exporters and multinational firms . Simple imitation or replication of what worked for others does not represent the key catalyst in the decision to start exporting . In other cases, the evidence is clear on the correlation between agglomeration and export performance of domestic firms exists but ambiguous on the explicit mechanics of such correlation.

The decision to export can come from information flowing among firms belonging to the same industry or exporting to the same destination country . It can emerge from localization economies in industrial districts . But if industrial districts are poorly located, localization economies can be irrelevant without urbanization economies .

3. Overview of Manufacturing Exports in Morocco

Manufacturing exports represent less than 15 percent of GDP in Morocco compared to an average of 25 percent in emerging countries. Export-orientation is a key factor in the process of structural transformation of an economy. The experience of new industrialized and emerging countries shows they achieved high economic growth rates because they managed to develop a dynamic and competitive exporting sector. The literature identified different channels through which export development influences economic growth. Between 2000 and 2006, Moroccan manufacturing exports have grown at an annual rate of 8 percent compared to 10 percent worldwide, and almost 15 percent in emerging countries. As a result, Morocco's market share on international markets has been declining during the past decade.

3.1. Key export indicators of the manufacturing firms

The share of Morocco's manufacturing firms engaged in export activity is experiencing a downward trend during the past decade. The annual survey carried out by the Ministry of industry and trade indicates that 27 percent of firms sold part of their output on foreign markets in 1995 compared only 21 per cent in 2006. In the clothing sector, two firms out of three export part of their production. In six other manufacturing industries (Leather, textiles, chemicals, Electrical, transport equipment and Wood), there are roughly three out of ten firms that export.

Table 18: Profile of Export behavior in the Manufacturing Sector

Year 2006	Number of firms	Export ratio	Share of exporting firms	Share in total exports	Average number of employees
Food industries	2175	20.9	14.0	17.2	65
Textiles	606	18.9	29.4	4.5	110
Clothing industry	970	69.6	66.1	21.5	182
Leather industry	357	23.4	31.1	2.2	43
Wood and Wood articles	565	2.7	4.6	0.9	16
Paper industry	86	10.6	18.6	1.2	194
Edition and printing industries	495	0.5	2.0	0.1	31
Chemical industry	256	28.2	27.0	18.6	250
Rubber and plastic industries	289	3.7	11.4	0.5	81
Other mineral non metallic	802	2.7	6.9	1.0	173
Metallurgic industry	128	4.6	14.8	2.0	76
Metallic industry	911	5.0	7.7	2.8	44
Machine and equipment industries	204	4.5	7.8	0.4	57
Electrical industries	171	18.8	29.8	15.4	92
Automobile industry	94	10.3	23.4	0.5	46
Other transport equipment	67	20.5	28.4	2.0	33
Furniture industries	233	5.8	13.3	0.3	39
Other industries	86	**	**	9.1	**
Total	8495	19	21	100	101

Source: Author's calculation from manufacturing survey data (2006)

The intensity of export orientation as measured by export ratio, which represents the share of an industry's output sold on foreign market, varies widely among industries. It ranges from less than one percent in edition and printing industries to 70 percent in the clothing industry.

3.2. Regional distribution

Table 2 represents the regional distribution of key manufacturing sector aggregates in Morocco. Three messages emerge from the table. First, there is a high geographical concentration of the manufacturing sector in Morocco. The most important economic region, "Grand Casablanca" (R1), accounts for 50 percent of the manufacturing output, 42 percent of employment and 36 percent of exports. Six regions, out of 16, contribute by 82; 87 and 78 percent to production, exports and employment, respectively.

Table 19: Regional Distribution of Production, Exports and Employment in the Manufacturing Sector

	Year 2006	Production (%)	Exports (%)	Employment (%)
R1	Grand Casablanca	49,8	36,0	41,8
R2	Doukala-Abda	9,9	19,5	4,0
R3	Tanger-Tetouan	8,2	16,4	16,1
R4	Chaouia-Ouardigha	5,1	4,7	4,2
R5	Souss Massa Draa	4,9	5,2	4,0
R6	Rabat-Sale-Zemmour-Zaer	4,4	5,4	8,3
R7	Oriental	3,5	1,7	1,4
R8	Fes-Boulmane	3,4	3,1	5,5
R9	Meknes-Tafilalet	3,3	1,1	2,4
R10	Gharb-Chrarda-Beni Hssen	3,0	1,7	4,7
R11	Marrakech-Tensift-Al Haouz	2,6	2,6	3,9
R12	Laayoune-Boujdour-Sakia Hamra	0,8	1,2	1,4
R13	Taza-Al Hoceima-Taounate	0,4	0,4	1,5
R14	Guelmim Es Semara	0,3	0,2	0,4
R15	Tadla-Azilal	0,3	0,0	0,5
R16	Oued Ed-Dahab-Lagouira	0,2	0,8	0,1
	Total	**100**	**100**	**100**

Source: Author's calculation from manufacturing survey data (2006)

Second, exports seem more concentrated than output and employment. The value of the concentration index (C4) amounts to 77 percent as compared to 73 and 66 percent for production and employment respectively.

Third, two regions "Doukkala Abda" (R2) and "Tanger Tetouan" (R3) contribute to exports twice their contribution to production. Interestingly, their employment data reveals a contrasting picture with capital intensive industries clustered in (R2) and labor intensive industries in (R3).

These descriptive findings are stimulating and indicate that some association exists between regional location of firms and their export behavior. The econometric analysis is expected to provide more in depth explanation on the channels through which such association takes place.

4. Empirical analysis

The Investment Climate Assessment survey (ICA) jointly conducted by the Moroccan Ministry of industry and the World Bank in 2004 collected valuable data on access to local and international networks for both exporting and non exporting firms. Using this information, the purpose is to assess to what extent access and density of these networks have an impact on marketing strategies on the Moroccan firms and their propensity to penetrate foreign markets.

The purpose of this paper is to estimate an empirical model where the dependent variable (Xijkt) is the exporting status of the firm (i) in industry (j) located in region (k) in year (t). Explanatory variables take into account firm specific characteristics Fijkt such as size, age, presence of foreign ownership, import ratio.

They also consider macroeconomic and trade indicators M ijt. The agglomeration variable (Agglom) can either measure the concentration of exporters or producers at the regional level in the same industry or a regional agglomeration measure for all industries. As the fixed cost of entry into export market is not observed, the econometric model introduces lagged export status Xijkt-1 as in Roberts and Tybout (1997) and Bernard and Jensen (2004).

The model also includes time-specific effects to capture macro-level changes in export conditions such as business cycle, exchange rate movements, trade-policy conditions, and world demand for Moroccan exports.

The econometric model takes the following form:

$$X_{ijkt} = \mu + \alpha X_{ijkt-1} + \beta F_{ijkt} + \gamma M_{ijt} + \delta (Agglom) + \eta_t + \varepsilon_{ijkt}$$

For convenience, the agglomeration variable is used under the form: log (1+Agglom).

The model is run with ten alternative agglomeration variables:

- Agglom1: production in the same industry: regional/national;
- Agglom2: production in all industries: regional/national;
- Xagglom1: exports of the same industry: regional/national;
- Xagglom2: exports all industries: regional/national;
- Sagglom1: regional production in the same industry/km2: regional/National,
- Sagglom2: regional production all industries/km2: regional/national;
- Lagglom1: employment of the same industry: regional/national;
- Lagglom2: employment of all industries: regional/national
- Nagglom1: the number of exporting firms in the same industry: regional/national
- Nagglom2: the number of exporting firms in all industries: regional/national.

4.1. Basic model

The econometric estimation uses panel techniques (region fixed effects) over the period 1995-2006.

The econometric estimates show that the likelihood to export increases with the firm's size as measured by the number of permanent employees. On average, each extra 10 employees increases the firm's probability to export by 3 percent. This finding confirms that size matters for export activity. All else being equal, small firms cannot afford sunk costs related market research and identification of potential customers and focus on domestic market or subcontract for larger exporting firms.

On the other hand, the likelihood to export is positively related to the presence of foreign ownership in firm's capital. Overall, each additional 10 percent of foreign ownership raises the firm's probability to export by 4 percent.

Agglomeration proxies that represent the core issue of the paper; are significant in driving the firms' export behavior in six cases out of ten. Regional concentrations of production either in the same industry (Agglom1) or in all industries (Agglom2) don't have any statistically significant effect on the firm's decision to export in the manufacturing sector in Morocco. The same findings seem to be valid for concentrations of production per square kilometer in the same industry (Sagglom1) or in all industries (Sagglom2).

Regional concentrations of exports in the same industry (Xagglom1) or in all industries (Sagglom2) produce a positive and statistically significant effect on the firm's decision to export. In the same vein, the numbers of exporting firms in the same industry (Nagglom1) or in all industries (Nagglom2) at the regional level generate a positive and substantially significant effect on firms' decision to export. Interestingly, the likelihood to export is much higher when firms from the industry are agglomerated. This finding reveals that beyond the presence of logistical infrastructure that ease access to foreign markets, there is an extra component that is industry-specific agglomeration effect.

The findings in table 3 are promising. They can; however be the result of a reverse causality between the agglomeration variable and the decision to export. In other words, do firms agglomerate because they export more or tend to engage in export activity because they are agglomerated? In the first case, firms that decide to export tend to cluster in regions that provide logistical infrastructure required to properly engage in

export activities. In the second case, the presence of exporting firms in a region generates a "contagion effect", probably through exchange of market information and creation of networks, so that a number firms initially focused on domestic markets, start to export.

Table 20: Summary of econometric results (Basic model)

	Agglom1	**Agglom2**	**Xagglom1**	**XAgglom2**	**Lagglom1**	**Lagglom2**	**Sagglom1**	**Sagglom2**	**Nagglom1**	**Nagglom2**
Agglomeration proxy	.31	.64	1.03	1.29	-.36	.96	.000	.001	4.16	2.58
	1.01	*1.25*	*5.37*	*3.57*	*-2.11*	*3.49*	*1.10*	*1.45*	*12.5*	*4.87*
Size	.003	.003	.003	.003	.003	.003	.003	.003	.003	.003
	8.91	*8.92*	*9.33*	*8.90*	*9.11*	*8.93*	*8.91*	*8.92*	*9.24*	*8.93*
Foreign ownership	.40	.40	.37	.38	.39	.39	.40	.40	.36	.38
	4.06	*4.03*	*3.68*	*3.86*	*3.97*	*3.96*	*4.05*	*4.02*	3.63	*3.83*
LR chi2(4)	115	115	153	126	123	126	115	116	292	138
N° Observations	17821	17821	17799	17821	17802	17821	17821	17821	17799	17821

Source: Author's estimation used panel data fixed effect. The numbers under coefficients presented in n italic are z-stat.

4.2. Endogeneity issue

In order to address the endogeneity issue, we ran the same regressions as earlier and included the lagged firm's export status. The econometric results are presented in table 4. They are broadly similar to those in table 3.

The finding provides evidence to the impact of agglomeration per se on the decision to export. Firms may not be exporting initially, but the fact that they are surrounded by exporting firms leads them to shift from an exclusive focus on the domestic market to an interest in foreign markets.

4.3. Productivity effect

To make sure that our econometric findings don't overestimate the impact of the agglomeration proxy on the decision to export, we ran the same regression by taking into account the level of firm's productivity. There is a stream of the literature indication that productivity matters for the decision to export. The table 5 reports the econometric results after we introduced the productivity variable in the regression. Due to availability of information, we could not compute total factor productivity. Therefore, we used labor productivity measured as the ratio of the firm's value added by the number of employees.

First, as expected, high labor productivity increases the firm's probability to export. There is already a large stream of the literature that lends support to this finding. Fafchamps et al. (2004), for the specific case of Morocco, found that manufacturing firms that export are more productive.

Table 21: Summary of econometric results with firm's lagged export status

	Agglom1	**Agglom2**	**Xagglom1**	**XAgglom2**	**Lagglom1**	**Lagglom2**	**Sagglom1**	**Sagglom2**	**Nagglom1**	**Naglom2**
Agglomeration proxy	.22	.94	1.1	1.36	-.15	1.35	.001	.002	4.34	3.08
	0.63	*1.56*	*5.08*	*3.19*	*-0.76*	*4.39*	*1.22*	*1.94*	*11.42*	*4.77*
Size	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002
	5.99	*5.98*	*6.11*	*5.97*	*6.06*	*6.02*	*5.98*	*5.98*	*6.04*	*5.98*
Foreign ownership	.36	.36	.33	.34	.35	.35	.36	.36	.33	.34
	3.17	*3.12*	*2.87*	*2.99*	*3.09*	*3.02*	*3.15*	*3.10*	*2.87*	*2.94*
LR chi2(4)	824	826	854	834	827	843	825	828	966	847
N° Observations	14435	14435	14415	14435	14417	14435	14435	14435	14435	14435

Source: Author's estimation used panel data fixed effect. The models account for endogeneity by taking into account lagged Export status (to save space the coefficient on this variable are not reported here). The numbers under coefficients presented in n italic are z-stat.

Second, and most interestingly, table 5 reveals that the presence of labor productivity in the econometric regression does not reduce the statistical significance of agglomeration proxies in driving the firm's decision to export. In particular, regional concentration of exports in the same industry or in all industries continues to exert a positive and statistically significant impact on the firm's decision to export. As does the number of exporting firms in the same industry or in all industries. For the purpose of paper, our findings confirm that agglomeration of firms has a robust effect on the firm's decision to export that does not go away when the key determinants of export decision are included in the econometric model.

For policy makers, this finding means that in addition to stimulating productivity through subsidized training schemes and public research and development initiatives, a successful export promotion strategy needs also to create incentives for firms to agglomerate. Sectoral agglomeration of firms has been found much more rewarding as firms have a larger pool of knowledge and experience to share.

Table 22: Summary of econometric results with firm's lagged export status and productivity variable

	Agglom1	**Agglom2**	**Xagglom1**	**XAgglom2**	**Lagglom1**	**Lagglom2**	**Sagglom1**	**Sagglom2**	**Agglo9**	**Agglo10**
Agglomeration proxy	.40	.78	1.08	1.44	-.33	1.01	0.001	0.02	4.27	2.83
	1.29	*1.49*	*5.62*	*3.94*	*-1.91*	*3.69*	*1.33*	*1.70*	*12.8*	*5.3*
Size	.004	.004	.004	.004	.004	.004	.004	.004	.004	.004
	9.58	*9.59*	*9.77*	*9.60*	*9.64*	*9.61*	*9.58*	*9.59*	*9.73*	*9.64*
Foreign ownership	.41	.41	.38	.39	.41	.40	.40	.41	.38	.39
	4.13	*4.10*	3.80	*3.92*	*4.07*	*4.04*	*4.12*	*4.09*	*3.77*	*3.90*
Labor productivity	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
	5.46	*5.45*	*5.23*	*5.61*	*5.09*	*5.50*	*5.45*	*5.46*	*5.58*	*5.72*
LR chi2(4)	152	153	188	166	156	164	152	153	332	178
N° Observations	17821	17821	17799	17821	17802	17821	17821	17821	17799	17821

Source: Author's estimation used panel data fixed effect. The numbers under coefficients presented in n italic are z-stat.

5. Conclusions

The creation of modern industrial zones, called Integrated Industrial Platforms (P2I), connected to transport and telecommunication infrastructure and equipped with various administrative departments represent one of the key pillars of the recent industrial policy in Morocco. The objective of the authorities is to use industrial platforms and their agglomeration effects to boost exports and attract foreign direct investors. About nine platforms are under construction among which five are industry-specific.

The creation of industrial platforms to encourage firms to cluster represents a shift in the Morocco's authorities approach. In the past, the investment code was concerned with a balanced territorial distribution of firms and industries than their effective performance per se. To this end, the code offered tax breaks and other banking credit incentives for firms that establish in less agglomerated zones. Trade liberalization and fierce competition on traditional exporting markets of Moroccan manufacturers pushed the authorities to rethink their industrial policy and implement new tools to support manufacturing exports.

This paper provides empirical evidence supporting the strong relationship between spatial agglomeration of firms and their likelihood to engage on foreign markets. Our findings are neither driven by an endogeneity bias nor by an omitting variable bias.

Agglomeration of firms from the same industries exerts a greater impact on the decision to export that agglomeration of firms from different sectors. Such result reveals that beyond the traditional agglomeration effect due to the presence of logistical

infrastructure that ease access to foreign markets, there is an extra component that is industry-specific agglomeration effect.

This corroborates the hypothesis that agglomeration offers opportunities for firms to interact and exchange information and knowledge on foreign markets. Export data by region for the garment sector, which is the most export-oriented manufacturing industry in Morocco, indicate that firms in agglomerated in the same location tend to export towards the same foreign market.

The findings from the paper can, therefore, inform policy-makers in devising better territorial zoning policies taking into account the nature of industries and the direction of trade flows to strengthen the potential effects of agglomeration on industrial performance.

D Intercultural business and trust: an experimental approach

1. Introduction

As mentioned above, a common finding in the recent empirical literature on trade is the superiority, at any point in time, of exporters (either plants or firms) over non-exporters regarding productivity. This fact seems to be mainly explained by the existence of sunk costs at exporting. Since each market has its own specificities regarding administrative and technical norms as well as other nonformal codes for businesses, the barriers for exporting may differ from one market to another. A complementary hypothesis that hasn't been directly verified is the fact that asymmetries of information faced by exporters to a specific market are not the same for all countries. At the macroeconomic level, gravity literature on trade has shown that bilateral trade is

largely influenced by historical, geographical or cultural ties. This implies that bilateral trade costs (both sunk costs and variable costs) differs from one couple of trade partners to another. In sum, not all the trade partners have the same knowledge about the specificities of consumers, administrative norms and business codes of the other countries. At the microeconomic level, the decision to export or trade with some country partners from other countries also depend on the *ex-ante* estimation of these costs. In this line, it probably exists some intangible distance among cultures that prevent or enable them from trading with each other's.

To explore this hypothesis, in **the third part of this study we use experimental economic technique to study how trust among business partners is affected by the information about the residence's country of the partner.** Concretely, we use experimental methods to find out whether the origin of people has an influence on economic transactions. Trust is an integral element in economic transactions between countries, companies, consumers and retailers, as well as a key determinant of economic performance. Trust has been given a great deal of attention across an array of academic disciplines for its role in promoting cooperation among individuals and groups (Berg, Dickhaut and McCabe 1995). Trust positively influences the economic performance of corporations (Barney and Hansen 1994), geographic regions (Putnam 1993), and even countries (Fukuyama 1995). Knack and Keefer (1997) in their study of 29 market economies, empirically demonstrate the link between trust and economic performance. For each 10% rise in their measure of trust, Knack and Keefer find an increase in annual growth of per capita income of 0.8%.

This complementary approach allows us to investigate the way firms establish business relation across borders and to what extent they are influenced by the residence country of their partners. We have selected countries that display a certain degree of

heterogeneity concerning PIB per capita, historical and cultural ties, religions, intensities of trade to have diversity of behaviors and obtain robust estimates. Concretely, the experiment has been realized in four countries: France, Spain, Morocco and Turkey. As we observe later on, these countries have very different experience and Spain has cleraly converge to the PIB per capita level of France, Turkey has also grown significantly while Morocco do not show clear sign of convergence to the others. Our hypothesis is that how the other countries trust in the other partner is an important factor of differentiation in the way countries integrate in the international market.

Our experiment has a twofold objective: 1) to find out whether the origin of people has an influence on trusting behavior; and 2) to explore the reputation for trustworthiness across these countries. The experiment examines a modified version of the Trust Game introduced by Berg, Dickhaut and McCabe (1995). Player A is endowed with $30 and may send any amount to player B. The amount sent is tripled and given to player B who may then return any, all or none of the amount received. They how many monetary units players B would return for every possible amount sent to measure the strategy method of subjects. In our case, this classical "trust game" is adapted to study how the information about the residence country of the other player affects player decisions. Many of our changes to the original game (except measuring expectations within subject) have been examined by others, but not all in one study, and none with this heterogeneous population.

We provide player A with the nationality of player B. We give players A the choice to obtain a certain amount of money for himself and for the player B (10 euros) without risk. The alternative is risky and denoted as the "trust" option. Players A can choose to let player B to decide between two possible options. One of the two options of player B is equalitarian (15 euros for each player) and another one is clearly better for

player B (8 euros for player A and 22 euros for player B). The egalitarian option of player B is called "Reciprocity".

A total of 240 participants participated in this experiment: 60 students from each country (University of Granada, Spain; University of Rabat, Morocco, University of Paris, France; University of Istanbul, Turkey). Participants were randomly assigned to role of player A or player B. The experiment consisted of two sessions in each country: one session for players A and one session for players B. Sessions lasted for about 40 minutes including reading the instructions. On average, subjects earned 14€.

We compare the results concerning players A option depending on the origin of player A (comparison between subjects). This allows us to detect if there is some country more trusting than othe others. For a specific country, we compare the choices of players A depending on the information about the residence of players B (comparison within subjects). These comparisons allow us to determine if *thereare countries which inspire more trusting than others*. In the same way, we compare responses of players B depending on residence of these players we ought to answer to the question: *Are there countries more trustworthy than others? That is are some players B from this country choosing more often the reciprocal option.* Alternatively we compare the different options taken by players B of the same place depending on A's country of residence to know if there are cases of discrimination against one particular country in the sense that the other are clearly less reciprocal with subjects from this country. .

2. Data about the countries of the sample

We have selected countries that display a certain degree of heterogeneity concerning PIB per capita, historical and cultural ties, religions, intensities of trade to have diversity of behaviors and obtain robust estimates. Concretely, the experiment has

been realized in four countries: France, Spain, Morocco and Turkey. As we can observe in the following table, Spain and France, the "north" countries register PIB per capita in 2008 three times larger than Turkey and ten times larger than Morocco. Though, Spain and France represents different cases regarding the economic performance since France was already part of the richest countries in 1970 and Spain has joined the club recently, thanks to an important growth in last thirty years. Turkey is also a different "south" case with an important growth as well all over last three decades. Finally, Morocco is clearly the poorest country of the sample with additionally clear difficulties to increase its PIB per capita.

Table 23: PIB per capita 1970. 1980, 1990, 2000, 2008 for Morocco, Turkey, France and Spain

Country	Year	1970	1980	1990	2000	2008
Spain	PIB ($ PPA) / capita	11.844,88	15.282,84	19.441,79	25.194,52	31.852,98
Spain	ranking in the world	35	35	32	30	27
France	PIB ($ PPA) / capita	14.978,29	20.269,50	24.349,16	28.177,14	30.620,84
France	ranking in the world	26	24	20	26	29
Morocco	PIB ($ PPA) / capita	1.729,02	2.343,61	2.694,40	2.794,03	3.634,28
Morocco	ranking in the world	114	109	127	127	128
Turkey	PIB ($ PPA) / capita	4.704,65	5.562,89	7.362,26	8.865,75	11.102,53
Turkey	ranking in the world	71	73	71	69	77

Source: Authors' calculation from CHELEM database.

Concerning trade relations, we also observe heterogeneity in the intensities of bilateral trade relations among these four partners. Obviously, the relation between Morocco and France is marked by their past colonial ties and the important presence of Moroccan emigrants in France. Trade with France represented around 40% of Moroccan trade in 1967. But Morocco has clearly diversified his trade partner and Spain, his

neighbor has a weight, similar to the one of France in Moroccan trade for the year 2008. The weight of trade with "South" countries in "North" countries' trade is considerably lower than the weight of "North" countries' in "South" countries' trade. Even the Spain-France relation is already marked by this asymmetry since the weight of Spain in French trade (7,5%) is half the weight of France (14%) in the Spanish trade. France has also an important weight in Spanish trade.

Table 24: Share of partner in country's trade: 1967, 1980, 1990, 2000, 2008 for Morocco, Turkey, France and Spain

		% of country's total trade				
Country	**Partner**	**1967**	**1980**	**1990**	**2000**	**2008**
Morocco	France	39,4	27,7	30,4	26,8	17,4
Morocco	Spain	4,7	8,2	8,6	11,3	15,9
Morocco	Turkey	0,1	0,3	0,9	0,7	2,2
Turkey	France	4,6	6,0	6,2	6,9	5,0
Turkey	Spain	0,8	1,2	1,6	3,4	2,9
Turkey	Morocco	0,1	0,2	0,3	0,2	0,4
Spain	France	11,3	12,3	17,8	18,7	14,0
Spain	Turkey	0,2	0,2	0,4	1,0	1,3
Spain	Morocco	1,0	1,1	0,8	0,8	1,3
France	Spain	2,3	2,7	5,7	8,2	7,5
France	Turkey	0,2	0,3	0,5	0,9	1,2
France	Morocco	1,7	0,8	0,9	0,8	0,8

Source: Authors' calculation from CHELEM database.

3. Experimental design and procedures

Trust games in experimental economy

Over the last decades, there has been a steady increase in the use of experimental methods in economics. Control is the most important asset behind running experiments; no other empirical method allows a similarly tight control as do experiments. Moreover, experiments produce replicable evidence and permit the implementation of truly exogenous ceteris paribus changes. While we think that lab and field experiments offer

a very valuable tool, they should not be viewed as substitutes but as complements to more traditional methods of empirical economic analysis. One of the strengths of experimental methods is that we can empirically study the effects of different institutional environments, as defined by their rules and incentives. In the long run, this is likely to generate a more realistic picture of human nature. Phenomena like fairness, trust, reciprocity, loss aversion, over-confidence, etc. have been studied successfully in the laboratory and, by studying their impact on incentives and contracts, on the design of organisations, on labour supply and labour demand, they may enhance our understanding of how firms, households, and labour markets function.

Our experiment has a twofold objective: 1) to find out whether the origin of people has an influence on trusting behavior; and 2) to explore the reputation for trustworthiness across these countries. The experiment examines a modified version of the Trust Game introduced by Berg, Dickhaut and McCabe (1995). Player A is endowed with $30 and may send any amount to player B. The amount sent is tripled and given to player B who may then return any, all or none of the amount received. They how many monetary units players B would return for every possible amount sent to measure the strategy method of subjects. In our case, this classical "trust game" is adapted to study how the information about the residence country of the other player affects player decisions. Many of our changes to the original game (except measuring expectations within subject) have been examined by others, but not all in one study, and none with such heterogeneity of the population.

Our design: Intercultural trust game

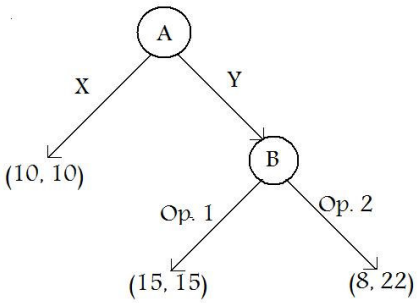
We provide player A with the nationality of player B. We give players A the choice to obtain a certain amount of money for himself and for the player B (10 euros)

without risk. The alternative is risky. Players A can choose to let player B to decide between two possible options. One of the two options of player B is equalitarian (15 euros for each player) and another one is clearly better for player B (8 euros for player A and 22 euros for player B).

Following the game introduced by Bohnet and Zechauser (2004), we focus on a binary-choice trust-game for two subjects in which the principal has to choose between a sure alternative (X) and a risky alternative (Y). The sure strategy results in a sure outcome, whereas the risky can yield the principal either a higher (Option 1) or a lower payoff (Option 2) than the sure outcome.

In this game, choosing the risky alternative means the principal allows the agent to determine the payoffs going to the principal (hereafter, player A) and the agent (hereafter, player B). Figure 1 presents the binary-choice trust game.

Figure 1: Binary-choice trust-game.



A money-maximizing player B would prefer 22 experimental units to 15. If player A considers that player B will behave in this way, she should choose the sure alternative (X), producing the Nash Equilibrium, and receive 10 rather than 8. However, player A may consider that player B has other-regarding preferences and acts reciprocally. In this case, player A should choose the risky alternative (Y), expecting than player B will choose the egalitarian outcome (15, 15).

As Arrow (1972) indicated, every commercial transaction has an element of trust. In this context, this game allows us to investigate trust and reciprocity among four neighbor countries and with narrow commercial relationships: Morocco, Turkey, France and Spain.

In order to examine "trust", each player A played four times, each time with a player B from a different country. In order to investigate "reciprocity", each player B also played four times, each time with a player A from a different country. The strategy method (Selten 1967) allowed to organizationally disconnect the decisions of player B from the decisions of player A. By having player B state her decisions in the case that player A chose the risky alternative, the sequential two-person two-stage game is converted into a two-person normal-form one-stage game for each player. These correlated games can be played independently at different locations and different points in time.

Details about our experiment

The experiment was run using pen-and-paper. This procedure made the experimental design independent of equipment and software compatibility. Instructions are detailed in Appendix.

Participants at each country randomly draw a personal identification code constituting a predefined order of matching across subject pools, not noticeable for participants. The code also ensured full anonymity by a double-blind procedure. Subjects then made their choices on decision sheets marked with their code number and displaying their counterpart's pool country. All sessions in all locations having been finished, experimenters collected the data, computed the payoffs and transferred this

information to all local experimenters. Finally, subjects were paid out by the local experimenters a weak after the last session in any of the subject pools has been finished.

A total of 240 participants participated in this experiment: 60 students from each country (University of Granada, Spain; University of Rabat, Morocco, University of Paris, France; University of Istanbul, Turkey). Participants were randomly assigned to role of player A or player B. The experiment consisted of two sessions in each country: one session for players A and one session for players B. Sessions lasted for about 40 minutes including reading the instructions. On average, subjects earned 14€.

Cross-country controls

The international character of this research warranted that we control for country or culture-specific variables that could influence our results. Specifically, we addressed the following issues as suggested by Roth et al. (1991).

*1. Controlling for subject pool equivalency. S*ubjects were all undergraduate students and were paid for their earnings in the experiment.

2. Controlling for currency effects. We controlled for purchasing power parity by choosing denominations such that monetary incentives relative to subject income and living standards were approximately equal across countries (as in Kachelmeier and Shehata, 1992). The exchange rates were: 1 experimental point = 1€ in France and Spain; 1 experimental point = 10 dirhams in Morocco; and 1 experimental point = 2 YTL in Turkey.

3. Controlling for Language Effects. To control for any nuances in language which may impact results across countries, instructions for the experiments were translated into the native language.

4. Controlling for Experimenter Effects. Various measures were taken to control for differences among experimenters in different countries. First, in each country, the lead experimenter was a native professor of that country. Second, an extremely thorough experimental protocol was used in all four countries. Finally, an experimenter was present in the data recording room while each experiment was being conducted.

5. Controlling for Comprehension of Experimental Task. To be certain that subjects in each country understand the experimental task, after reading through the instructions but prior to engaging in the actual task, subjects completed a series of comprehension checks. Experiment monitors checked the answers of each student before the experiment was allowed to proceed.

4. Results

We first analyze players A's decisions in subsection 2.1. Subsequently, we focus on players B's decisions in subsection 2.2. We contrast decisions of participants from different countries. We use abbreviations F, M, S and T for identifying French, Moroccans, Spanish and Turkish. We denote the risky alternative of player A as trust and the egalitarian option of player B as reciprocity. As we have no specific behavioral hypotheses.

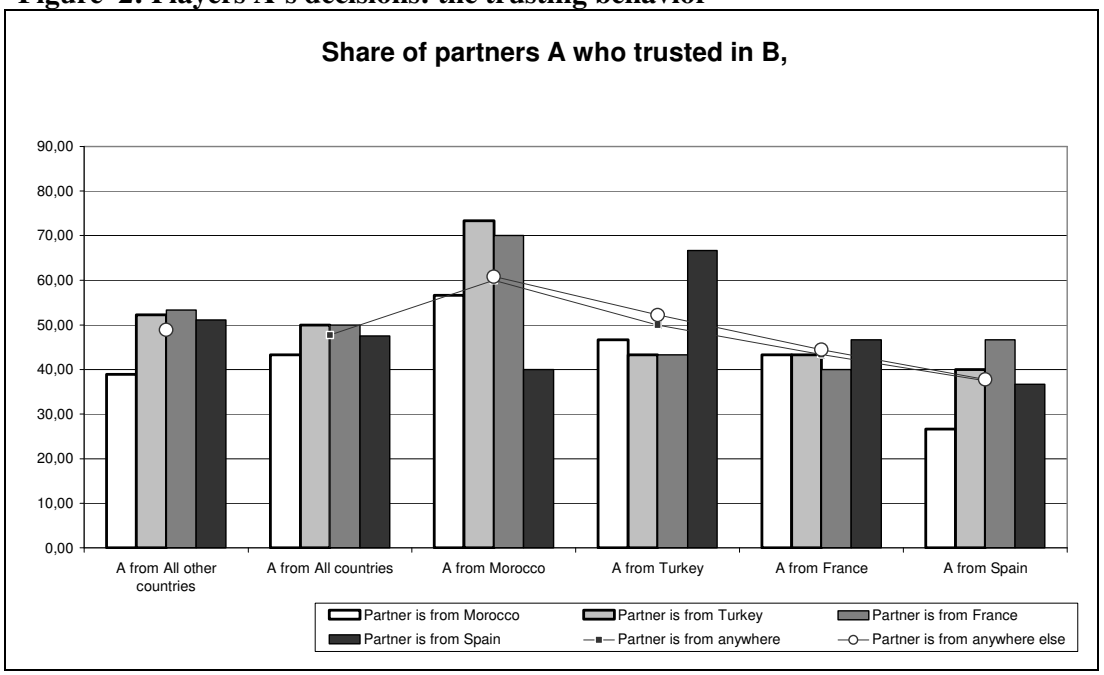
Players A's decisions: the trusting behavior.

We compare the results concerning players A option depending on the origin of player A (comparison between subjects). This allows us to detect if there is some country more trusting than othe others. For a specific country, we compare the choices of players A depending on the information about the residence of players B (comparison within subjects). These comparisons allow us to determine if *there are countries which*

inspire more trusting than others. Players A's responses are displayed in Figure 2, expressed as a share of respondent choosing the Trust option, that is share of player A, that do not choose the sure option (10,10) but rather prefers to let player B decide. Results are also displayed in Table 23 in Appendix.

As we can observe in the second set of columns, about half of the players A have chosen the Trust option when B is from F, S and T. Though the share of people trusting B when B is from Morocco is lower (40%). When we exclude from the calculations the game where A and B are from the same country (first serie of graphs), the level of trust increase slightly for F, S and T what means that they trust slightly less in themselves than other countries do. For M, the opposite occurs, the share of people who trusts in M when excluding players from this country is lower than 40%. This first overview points a specificity of behaviour regarding Morocco to which we will pay more attention when studying bilateral resposnes.

Figure 2: Players A's decisions: the trusting behavior



Are there countries more trusting than others?

As it can be observed, on average, Moroccan and Turkish are the most trusting (60% and 50% respectively) and French and Spanish are the less trusting (43% and 38% respectively). At first glance, these results show how the less developed countries exhibit a higher level of trusting. In particular, Moroccan are significantly more trusting than players from other countries, both to its own country and to other countries in general.

The result of the Pearson's chi-squared displayed in Table 29 confirms the specificity of the Trust behaviour from Morocco. The probability that players A from Morocco behave in the same way than players from Turkey, Spain and France is very low in many cases. The exception concerns their attitude toward Spain. Both Moroccan and Spanish demonstrates low level of trust when player B is from Spain.

Are there countries, which inspire more trusting than others?

From Figure 2, we do not apreciate any significant differences in the level of trustworthiness among partners B.

Are there special bilateral relationships between countries?

The most striking results are the following ones. First, French players A are the only ones who exhibit similar levels of trusting regardless the nationality of players B. Results of the binomial test reported in Table 30 confirms that there are no significant differences in responses of players A from France depending on the residence country of player B.

Second, Spanish and Moroccan players A seem to reflect a mutual distrust: Moroccan players A trust in Spanish players significantly less than in French, Moroccan and Turkish players. Spanish discrimination is more asymetric; Spanish players A trust

in Moroccan players significantly less than in French players (the probability that a Spanish players trust in the same way a player B from M and a player B from F is very low). Spainish players A display low level of trust overall, and lower towards Morocco but the differences among M, S and T are not statically different according to the binomial test.

Third, one can observe a positive discrimination from Turkish to Spanish players. They trust in Spanish players significantly more than in the rest of the countries' players.

At last, special levels of self-trusting cannot be deduced from the data. That is, players A do not significantly trust more in players B from their own country than in players B from foreign countries.

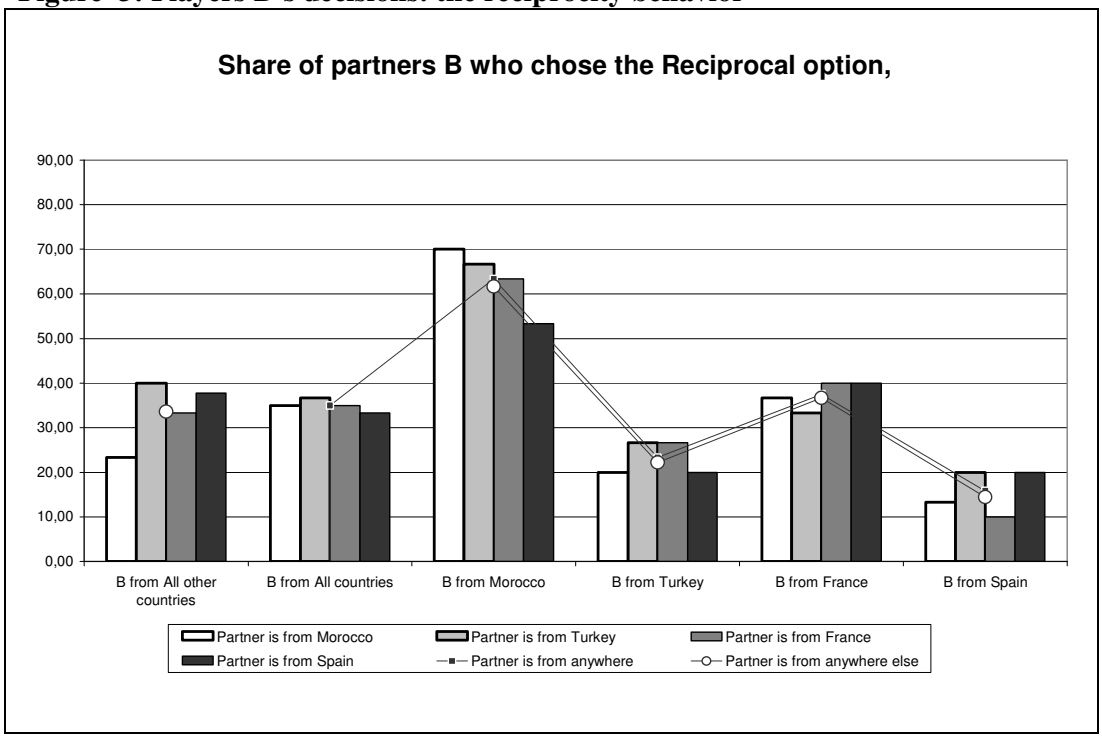
Players B's decisions: the reciprocal behavior.

As for players A, we compare responses of players B depending on their country's residence and the country's residence of subjects A they are playing with. We ought to answer to the following questions: *Are there countries more trustworthy than others?* That is, we wonder if there are some countries choosing more often the reciprocal option? Alternatively, we compare the different options taken by players B of the same place depending on A's country of residence to know if there are *cases of discrimination against one particular country* in the sense that the other are clearly less reciprocal with subjects from this country.

Players B's responses are displayed in Figure 3, expressed as a share of respondent choosing the Reciprocal option, that is share of players B, that chose the equalitarian option that allow both players to earn 15 units.

As we can observe in the second set of columns in the graph, about 35% of the players B have chosen the Reciprocal option, regardless the residence's country of players A. Though, when we exclude from the calculations the games where A and B are from the same country (first serie of graphs), the level of reciprocity is more heterogeneous depending on players A's country. Players B are in general more reciprocal with T and less reciprocal with M than Turkish and Morocco are with themselves. Since we have observed in the previous section that Moroccan players trust more than the average and we observe now that they obtain in turn less reciprocity, it seems that Moroccan are victims of a clear prejudice. Bilateral results gives us more details about the reciprocity behaviour.

Figure 3: Players B's decisions: the reciprocity behavior



Are there countries more trustworthy than others?

As it can be observed, on average, Moroccan players reciprocate significantly more than the rest of players (63%). On the contrary, Spain shows the lowest levels of reciprocity (16%) followed by Turkey and France (23% and 37% respectively). These results suggest that there exists a relationship between the reciprocal and the trusting behavior. That is, the high (low) level of trusting showed by Moroccan (Spanish) players A, regardless the nationality of player B, might be explained by the high (low) level of reciprocity showed by their compatriots in the role of players B, regardless the nationality of player A.

Consequently, although we find that no country inspired more trusting than others, as mentioned above, Morocco is clearly more trustworthy than the rest. This is confirmed by the results of the Pearson's chi-squared test (Table 32) where we can appreciate that the probability that Moroccan players experiment the same levels of reciprocity than players of other countries is very low, regardless the residence country of player A.

Are there cases of discrimination against one particular country?

Overall, players B do not discriminate within countries, i.e., they exhibit similar levels of reciprocity regardless the nationality of players A. The result of the binomial test displayed in Table 33 shows that the probability that B behaves in the same way when A are from different countries is high in all cases with only one exception. When Moroccan players b have to choose among the selfish and reciprocal option for a partner from M and S they are significantly more selfish with Spanish people. Then, the mutual distrust showed by Spanish and Moroccan players A is confirmed when behavior of players B between both countries is analyzed: Moroccan players B exhibit the lowest level of reciprocity to Spanish players A. Analogously, Spanish players B exhibit the

lowest level of reciprocity to Moroccan players A (joint with French players) but these differences are not statistically significant due to the overall low level of reciprocity they demonstrate.

5. Conclusions

Economic determinants and historical, geographical and cultural ties are important determinants of trade and investment relations among countries. Bilateral relations are fruit of these various contexts, which shape some norms and opinions among partners about each other's. These beliefs influence their behaviors. The expectations of their partners about how they act can be driven by true or false intuitions. Some of the reputation is observed and some is not. The experimental laboratory allows us to identify these "a priori" beliefs, isolating them from other determinants of inter-countries economic relations. Obviously, if the intuition concerning how people from a country may act is not confirmed by the fact, a clear prejudice could be commit.

To trust depends both on the subject that experiment this feeling and on the object that inspires this impression. Then, it is bilateral in essence. But some stylised facts are observed concerning Morocco as an object and subject of trust, regardless to the bilateral partner. Our results show that Moroccan is the trustworthiest and that other countries do not place as much confidence in Moroccan as they should. Spain is the most untrustworthy, and overtrusted by most countries.

Reciprocity is more an own characteristic of the donor country than a characteristic that depends on the receiver nationality.

To establish a causal relation between the results of our experiment and the observed relations among the countries of our sample goes beyond the pretension of this study. Nevertheless, it is worth to come back to the observed relations with our results

in mind. Morocco is trustier than the other countries think but less trusty regarding Spanish people. Spain is less trusty than the other countries believe and discriminates especially against Morocco. In last decade, the trade relation between Morocco and Spain has intensified in last decade which may have given them the opportunity to know better each other and Morocco have adopt a less trusty behaviour since they may have observed the non-reciprocity of Spanish partners. But Spain has a clear prejudice against Morocco that hasn't been nuanced by the intensification of the trade, immigration and investment relations. To know someone well may be good or bad for each other image. In comparison, Turkey and Spain have a poor economic relations and Turkey clearly over trusts Spanish people. Although, the bilateral economic relations between Spain and Morocco have intensified, the mutual distrust they display is a potential risk for their political and economic relations.

E. Conclusions and policy implications

These results have important policy implications. Governments should focus on policies that make easier the entry of new exporters more than favouring existing exporters. To this purpose, they should provide conditions for small firms to grow, they should help to reduce trade costs and sunk costs like information costs and administrative costs associated with exporting activities and with importing activities and finally, give firms the accurate framework for a growing of productivity.

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G. Appendix

Production estimates. Spain

Table 25: Production estimates with the Olley and Pakes (1996) method, by industry. Spain

		L	K	M	N
1	Food, beverages, tobacco	0,173***	0,24***	0,596***	2774
		(0,019)	(0,007)	(0,031)	
2	Textiles, Leather and textile products	0,313***	0,03***	0,555***	2074
		(0,022)	(0,014)	(0,019)	
3	Wood, Paper and printing products	0,333***	0,158***	0,553***	2165
		(0,026)	(0,009)	(0,024)	
4	Chemical products"	0,231***	0,136***	0,666***	1199
		(0,03)	(0,01)	(0,035)	
5	Rubber and plastic products	0,273***	0,134***	0,632***	1051
		(0,023)	(0,011)	(0,023)	
6	Other non-metallic mineral products	0,301***	0,217***	0,538***	1289
		(0,037)	(0,018)	(0,034)	
7	Basic metals and fabricated metal products	0,368***	0,126***	0,566***	2539
		(0,023)	(0,01)	(0,025)	
8	Machinery and equipment n.e.c.	0,313***	0,202***	0,551***	1393
		(0,03)	(0,022)	(0,025)	
9	Electrical and optical equipment	0,327***	0,136***	0,586***	1590
		(0,03)	(0,011)	(0,027)	
10	Transport equipment	0,292***	0,131***	0,637***	1313
		(0,033)	(0,019)	(0,036)	
11	Other manufactured products	0,24***	-0,099***	0,601***	1297
		(0,025)	(0,025)	(0,019)	

*Source: Author's calculation. Standards errors are in parenthesis * significant at 10%, **at 5%; ***at 1%.*

Table 26: Production estimates with the Olley and Pakes (1996) method, by industry for single-plant firms. Spain

		COEFL	COEFK	COEFMAT	EN
1	Food, beverages, tobacco	0.223***	0.246***	0.547***	1236
		(0.031)	(0.018)	(0.047)	
2	Textiles, Leather and textile products	0.331***	0.132***	0.509***	1059
		(0.034)	(0.008)	(0.029)	
3	Wood, Paper and printing products	0.306***	0.141***	0.579***	1216
		(0.026)	(0.010)	(0.030)	
4	Chemical products"	0.250***	0.123***	0.649***	574
		(0.053)	(0.010)	(0.075)	
5	Rubber and plastic products	0.312***	-0.063***	0.587***	591
		(0.037)	(0.025)	(0.035)	
6	Other non-metallic mineral products	0.225	0.213***	0.544***	629
		(0.054)	(0.014)	(0.042)	
7	Basic metals and fabricated metal products	0.399***	0.139***	0.544***	1498
		(0.035)	(0.017)	(0.038)	
8	Machinery and equipment n.e.c.	0.338***	0.122***	0.547***	763
		(0.040)	(0.008)	(0.035)	
9	Electrical and optical equipment	0.316***	0.108***	0.610***	771
		(0.034)	(0.010)	(0.025)	
10	Transport equipment	0.249***	0.114***	0.659***	702
		(0.049)	(0.015)	(0.051)	
11	Other manufactured products	0.269***	0.139***	0.609***	738
		(0.038)	(0.012)	(0.026)	

*Source: Author's calculation. Standards errors are in parenthesis * significant at 10%, **at 5%; ***at 1%.*

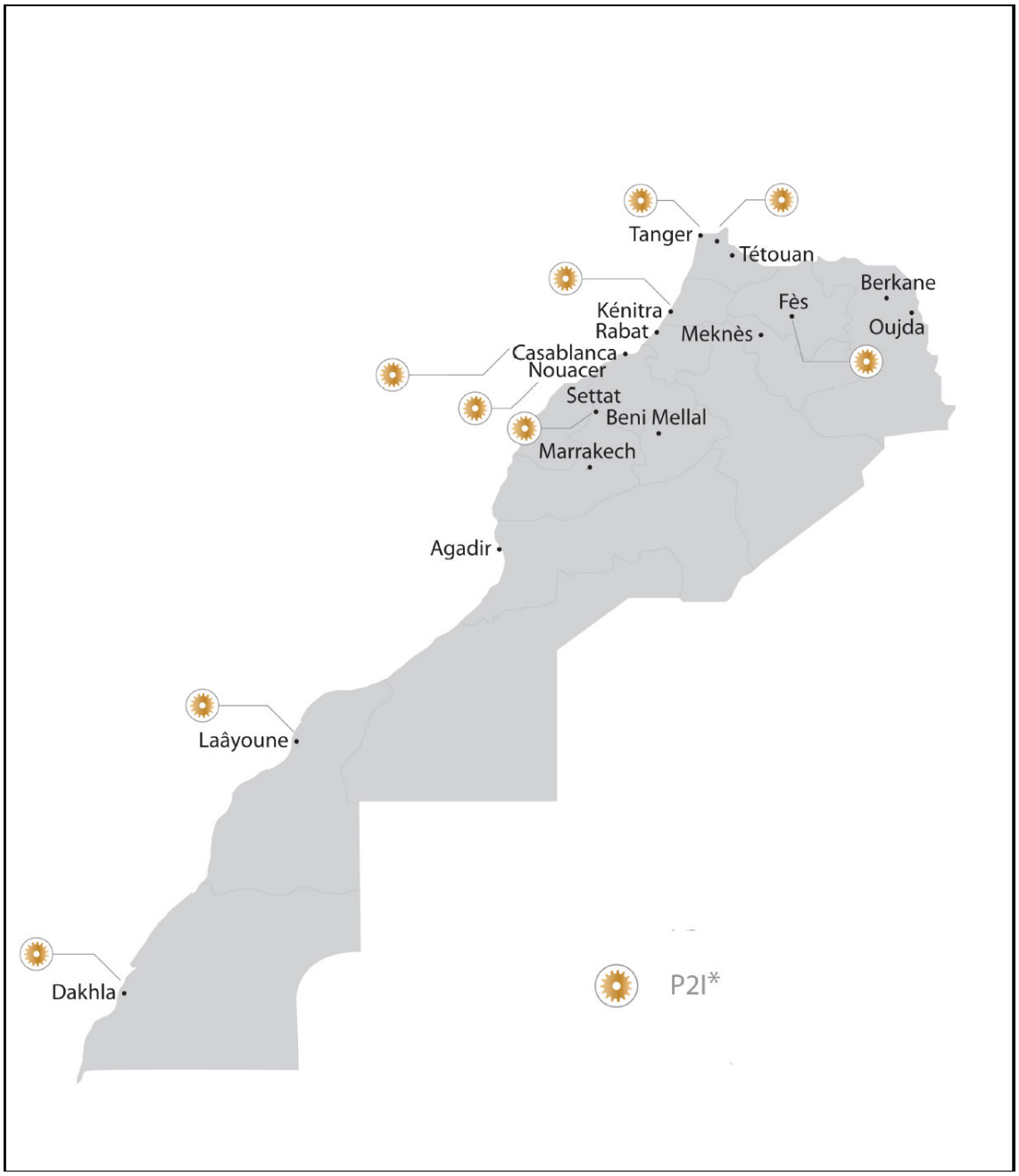
Table 27: Production estimates with panel fixed effect and ramdom effects for single-plant firms. Spain

			l		k		mat		tp		year	Industry	Province	Constant		Observations	R-squared
	-4	re	0.437***	[0.006]	0.129***	[0.004]	0.452***	[0.004]			x	x	x	4.756***	[0.075]	10710	
	-5	fe	0.380***	[0.008]	0.065***	[0.005]	0.396***	[0.004]			x	x	x	6.073***	[0.073]	10710	0.69
lagglom	-6	re	0.445***	[0.007]	0.132***	[0.004]	0.445***	[0.004]	0.355***	[0.109]	x	x	x	4.345***	[0.074]	8758	
	-7	fe	0.378***	[0.010]	0.062***	[0.006]	0.375***	[0.005]	0.123	[0.240]	x	x	x	6.363***	[0.090]	8758	0.68
lagglom0	-8	re	0.437***	[0.006]	0.129***	[0.004]	0.452***	[0.004]	0.008**	[0.003]	x	x	x	4.761***	[0.075]	10710	
	-9	fe	0.379***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.008**	[0.003]	x	x	x	6.166***	[0.075]	10710	0.69
lochour	-22	re	0.436***	[0.006]	0.129***	[0.004]	0.451***	[0.004]	0.038***	[0.010]	x	x	x	4.194***	[0.166]	10710	
	-23	fe	0.378***	[0.008]	0.064***	[0.005]	0.395***	[0.004]	0.070***	[0.016]	x	x	x	4.879***	[0.289]	10710	0.69
lxagglom	-18	re	0.436***	[0.006]	0.129***	[0.004]	0.451***	[0.004]	0.309***	[0.074]	x	x	x	4.754***	[0.075]	10710	
	-19	fe	0.379***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.442***	[0.124]	x	x	x	6.017***	[0.074]	10710	0.69
lmagglom	-20	re	0.437***	[0.006]	0.129***	[0.004]	0.452***	[0.004]	0.181	[0.116]	x	x	x	4.755***	[0.075]	10710	
	-21	fe	0.379***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.047	[0.178]	x	x	x	6.067***	[0.076]	10710	0.69
lagglom2	-10	re	0.436***	[0.006]	0.130***	[0.004]	0.451***	[0.004]	2.254**	[0.890]	x	x	x	4.734***	[0.076]	10710	
	-11	fe	0.379***	[0.008]	0.066***	[0.005]	0.395***	[0.004]	2.577***	[0.866]	x	x	x	5.784***	[0.121]	10710	0.69
lagglom3	-12	re	0.437***	[0.006]	0.130***	[0.004]	0.452***	[0.004]	0.186**	[0.075]	x	x	x	3.721***	[0.421]	10710	
	-13	fe	0.379***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.209***	[0.073]	x	x	x	5.228***	[0.305]	10710	0.69
urbhour	-24	re	0.437***	[0.006]	0.129***	[0.004]	0.452***	[0.004]	0.009	[0.035]	x	x	x	4.235***	[0.613]	10710	
	-25	fe	0.379***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.096***	[0.037]	x	x	x	4.194***	[0.730]	10710	0.69
lxagglom2	-26	re	0.437***	[0.006]	0.129***	[0.004]	0.452***	[0.004]	0.616	[0.386]	x	x	x	4.753***	[0.076]	10710	
	-27	fe	0.380***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	0.679*	[0.377]	x	x	x	5.996***	[0.084]	10710	0.69
lmagglom2	-28	re	0.437***	[0.006]	0.130***	[0.004]	0.452***	[0.004]	-0.779*	[0.415]	x	x	x	4.758***	[0.075]	10710	
	-29	fe	0.380***	[0.008]	0.065***	[0.005]	0.396***	[0.004]	-0.303	[0.407]	x	x	x	6.109***	[0.088]	10710	0.69

*Source: Author's calculation. Standards errors are in parenthesis * significant at 10%, **at 5%; ***at 1%.*

Morocco's Map with geographical location of the Integrated Industrial Platforms

Figure 4: Morocco's Map with geographical location of the Integrated Industrial Platforms (P2I)



Instructions of the experiment

(The instructions reported below are for players A. The instructions were slightly modified for players B)

Thank you for participating in this experiment. Only by participating in it you will get 3 euros to be delivered at the end. In this experiment involved students from four universities: University of Granada (Spain), University of Istanbul (Turkey), University of Paris (France), University of Rabat (Morocco). Please read the following instructions carefully and you can earn a higher amount of money. You may ask questions at any time that you have raised your hand first. Outside of these questions, any communication between you is prohibited. To ensure anonymity and confidentiality you have been assigned a code at random. Throughout the experiment, always use the code at all times.

You as a participant code is: ____

Your earnings in this experiment depend on your decisions and the decisions of other participants. The money earned during the same you will receive in private and in cash within a week. Please keep your code, you will need to collect your winnings. Without your code we cannot pay you.

This experiment consists of four tasks and your earnings in the experiment were determined on the basis of these four tasks (randomly chosen). In each of the tasks will be randomly matched to another participant. Profits depend both on the decisions you make and the decisions you take the other participant with whom you will be matched.

1. You have been randomly and anonymously matched with another participant (call participant B).

2. As Participant A must choose between the alternatives X or Y.

3. If you choose the X option, you and the participant B you get a secure payment of ECU 10 each and the participant B does not have to make a decision.

4. If you choose a payment option and you get really depends on the decision of participant B. Participant B chooses between options 1 and 2.
   - Option 1: 15 ECU to 15 ECU A and participant to participant B.
   - Option 2: 8 ECU for the participant A and 22 ECU for the participant B.

5. The exchange rate is 1 ECU = € 1.

6. To ensure that you understand these instructions before you make any decision to answer a simple questionnaire, so that only if you answer correctly, you can participate in the experiment.

The participant B for this task is a student at the University of Rabat (Morocco). He or she also knows which University you belong.

Please mark with a circle the alternative you choose: Alternative X Alternative Y

Final Questionnaire

- Age:_____
- Sex (male/female):_____
- Studies:_____
- Religion: Catholic___ Muslim___ Jewish___ Nonreligious ___ Other_____
- Nationality:_____
- With respect to the tasks, please kindly ask you to answer the following question: What University would you like it belonged to player B?

  Options: Paris (France), Istanbul (Turkey), Rabat (Morocco), Granada (Spain).
  Please rank your preferences:

  1.-_____
  2.-_____
  3.-_____
  4.-_____

Results and Tests of significance of results

Table 28. Share of players A that choose the Trust option (%)

	B from Turkey	B from Spain	B from Morocco	B from France
A from France	43,3	46,7	43,3	40,0
A from Morocco	73,3	40,0	56,7	70,0
A from Spain	40,0	36,7	26,7	46,7
A from Turkey	43,3	66,7	46,7	43,3
A from any country	50,0	47,5	43,3	50,0

Table 29. Pearson's chi-squared (between players A).

Countries of players A (Trust/No trus),:	*Spain-Turkey*	*Morocco-Turkey*	*Morocco-Spain*	*France-Turkey*	*France-Spain*	*France-Moroco*
B from France	0,8	0,04	0,07	0,79	0,6	0,02
B from Morocco	0,11	0,44	0,02	0,8	0,18	0,3
B from Spain	0,02	0,04	0,79	0,12	0,43	0,6
B from Turkey	0,79	0,02	0,01	1	0,79	0,02

Note: Cells in colour indicate significant differences in the Trust behaviour for players A from the two countries indicate in the column, when player B is from the country indicates in row. (Probability that they behave in the same way is inferior to 10%).

Table 30. Binomial signtest (within players A).

Countries of players B	*Spain-Turkey*	*Morocco-Turkey*	*Morocco-Spain*	*France-Turkey*	*France-Spain*	*France-Moroco*
A from France	0.72	1.00	0.86	0.85	0.58	0.85
A from Morocco	0.00	0.06	0.09	0.68	0.00	0.20
A from Spain	0.85	0.19	0.34	0.46	0.26	0.02
A from Turkey	0.02	0.72	0.03	1.00	0.01	0.86

Note: Cells in colour indicate significant differences in the Trust behaviour of players A from country indicates in row when players B are from the countries indicate in the column (Probability that A behaves in the same way when B are from these two countries is inferior to 10%).

Table 31. Share of players B that choose the Reciprocal option (%)

	A from Turkey	A from Spain	A from Morocco	A from France
B from France	33,3	40,0	36,7	40,0
B from Morocco	66,7	53,3	70,0	63,3
B from Spain	20,0	20,0	13,3	10,0
B from Turkey	26,7	20,0	20,0	26,7
B from any country	36,7	33,3	35,0	35,0

Table 32. Pearson's chi-squared (between players B).

Countries of players B (reciprocal/Selfish):	*Spain-Turkey*	*Morocco-Turkey*	*Morocco-Spain*	*France-Turkey*	*France-Spain*	*France-Moroco*
A from France	0,1	0	0	0,27	0,01	0,07
A from Morocco	0,49	0	0	0,15	0,04	0,01
A from Spain	1	0,01	0,01	0,09	0,09	0,3
A from Turkey	0,54	0	0	0,57	0,24	0,01

Note: Cells in colour indicate significant differences in the RECIPROCITY behaviour for players B from the two countries indicate in the column, when player A is from the country indicates in row. (Probability that they behave in the same way is inferior to 10%).

Table 33. Binomial signtest (within players B).

Countries of players A	*Spain-Turkey*	*Morocco-Turkey*	*Morocco-Spain*	*France-Turkey*	*France-Spain*	*France-Moroco*
B from France	0.44	0.70	0.85	0.44	1.00	0.71
B from Morocco	0.13	0.85	0.07	0.70	0.36	0.43
B from Spain	1.00	0.49	0.49	0.25	0.25	0.79
B from Turkey	0.54	0.54	1.00	1.00	0.36	0.36

Note: Cells in colour indicate significant differences in the reciprocal behaviour of players B from country indicated in row when players A are from the countries indicate in the column (Probability that B behaves in the same way when A are from these two countries is inferior to 10%).