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Insécurité foncière et contrôles migratoires en Chine : Un changement structurel sous contrainte.

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1 Introduction

Cette thèse s'intéresse au développement des campagnes chinoises à l'ère des « réformes et de l'ouverture » (*gaige kaifang*) et, plus spécifiquement, aux conséquences des deux principaux héritages institutionnels de la période collectiviste qui ont perduré, dans les régions rurales, malgré la dynamique générale de libéralisation de l'économie chinoise : la propriété collective des terres et les contrôles sur les déplacements intérieurs. Ces deux caractéristiques du développement chinois sont les objets de débats intenses en République Populaire, débats qui s'inscrivent dans des problématiques communes à tous les pays en voie de développement, celle de la définition des arrangements institutionnels sur le foncier agricole et celle de la gestion des flux migratoires intérieurs.

Cette introduction générale se propose donc d'abord d'effectuer un bref rappel du développement des campagnes chinoises depuis 1978, avant de présenter successivement les contextes dans lequels s'inscrivent les deux premiers chapitres de cette thèse, qui s'intéressent à des problématiques liées à la définition des droits fonciers, puis le troisième, consacré aux contraintes sur les migrations intérieures.

1 Le développement des campagnes chinoises depuis 1978 : Une dynamique contrariée.

En 1978, lorsque Deng Xiaoping parvient au sommet du pouvoir en République Populaire de Chine et prend ses distances avec trente ans de politiques économiques et sociales d'inspiration Maoïste, la Chine conti-

nentale est encore un pays très largement rural et agricole. A cette date, selon les statistiques officielles (voir NBS (2008)), 82% de la population chinoise est rurale, et plus de 70% de la main-d'oeuvre est employée dans l'agriculture. Ces proportions ne sont, finalement, que légèrement inférieures à leur niveau ving-cinq ans plus tôt, au début du premier plan quinquennal en 1952, quand 87% de la population chinoise était rurale, et environ 80% de la main d'oeuvre agricole, d'après les données officielles chinoises compilées par Maddison (2007). Non seulement la République Populaire n'a pas connu, pendant son premier quart de siècle, de mouvement prononcé de changement structurel ou d'urbanisation, mais en outre, et malgré les discours politiques sur l'inspiration et les racines paysannes du socialisme chinois, le monde rural et le secteur agricole restent, sur le modèle soviétique, défavorisés par rapport au secteur industriel et aux régions urbaines (Knight (1995)). Ce sont aussi les campagnes qui paient le plus lourd tribut lors des excès des expérimentations collectivistes, notamment lors du Grand Bond en Avant (Li et Yang (2005)). En conséquence, en 1978, le niveau de consommation alimentaire dans les campagnes chinoises est au même niveau qu'au milieu des années 1950 (Lardy (1983)).

Conscients de cette situation, les réformateurs parvenus au pouvoir avec Deng Xiaoping prennent la situation des campagnes comme première priorité (Ash (1988)). Ils étendent d'abord les politiques « d'ajustement » mises en place à la suite du Grand Bond en Avant : l'échelle de la collectivisation est réduite, les prix d'achats proposés par l'Etat pour les produits agricoles sont relevés, l'offre d'intrants agricoles est augmentée. Parallèlement, une expérimentation institutionnelle prend place dans la province de l'Anhui, dont les conséquences se révèleront capitales. Certaines localités de cette province décident en effet, tout en maintenant le principe de propriété collective des terres agricoles, de céder les droits d'usage sur ces terres, dans un cadre contractuel, aux ménages paysans. En deux ans, ce nouveau système, le « système de responsabilité des ménages », se répand dans toute la Chine [1]. C'est toujours ce cadre institutionnel qui, précisé et modifié,

1. Une description synthétique de ces premières années est donnée par Q. Huang (1995).

continue de prévaloir en Chine rurale, trente ans plus tard.

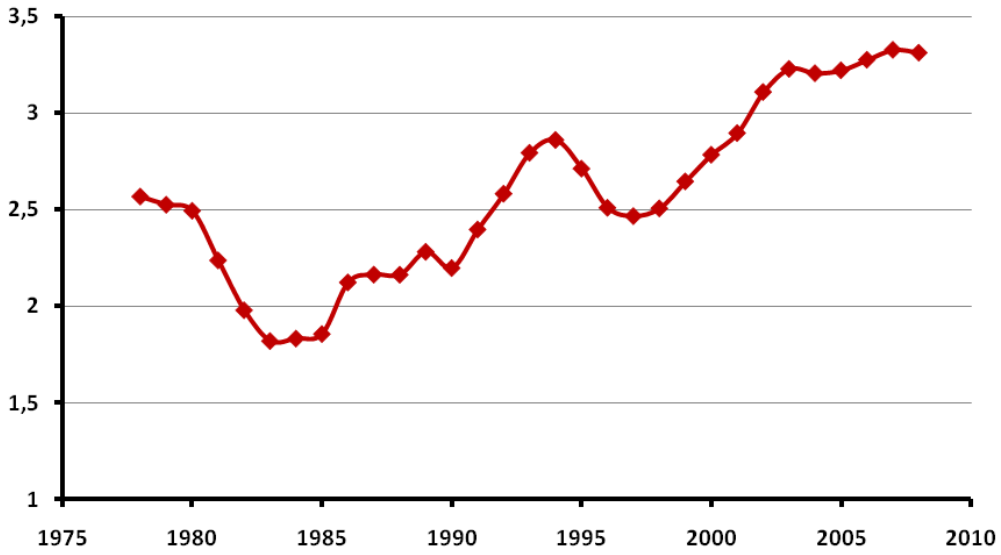
A cette première dynamique de libéralisation, qui touche la terre, s'en ajoute une autre, qui concerne les individus et leur travail. En effet, dans le contexte général de la planification économique mise en place à la fin des années 1950 en Chine, tous les citoyens se sont vus attribuer un certificat dans le cadre du « système d'enregistrement des ménages » (*huji zhidu*, plus connu sous le nom de *hukou*, voir notamment Chan (2009)). Ce système classait, et classe encore, les citoyens chinois en deux grandes catégories, entre le secteur agricole (*nongye*) et non-agricole (*feinongye*), qui ouvrent des droits socio-économiques distincts. Par ailleurs, ces droits ne sont accessibles qu'au lieu de résidence officielle dudit citoyen. Ce double enregistrement agissait naturellement comme une contrainte complète sur les possibilibités d'emploi et de déplacement à l'intérieur de la Chine avant 1978. Cependant, avec l'assouplissement puis la disparition de nombreuses dimensions du collectivisme dans les années 1980 et 1990, ce système, sans disparaitre, a néanmoins laissé place à un plus grand espace de liberté individuelle (Chan et Zhang (1999)) pour l'allocation géographique et sectorielle du travail.

Ces deux dynamiques de libéralisation ont abouti à un succès d'ampleur. Entre 1981 et 2001, le nombre de chinois vivant sous le seuil de pauvreté a décrû de plus de 400 millions (Chen et Ravallion (2004) [2]), la majeure partie de cette amélioration prenant place dans les campagnes, et dans la première moitié des années 1980 (Ravallion et Chen (2007)). Le début de l'ère des « réformes et de l'ouverture » constitue donc sans nul doute un des grands succès récents des politiques de développement économique et de lutte contre la pauvreté. Et comme le souligne Naughton (2007) (p. 88), « c'est dans les campagnes que les réformes ont connu leur premier succès, et c'est ce succès dramatique qui a ouvert la voie pour la poursuite du changement, progressivement plus profond » [3].

2. En utilisant le seuil de 1.08 dollar américain de 1993 en PPA pour définir la pauvreté.

3. « It was in the countryside that reforms succeeded first, and it was the dramatic success of rural reforms that cleared the way for continuing and progressively more profound change ».

FIGURE 1.1 : Ratio des revenus per capita urbain et rural, 1978-2008.

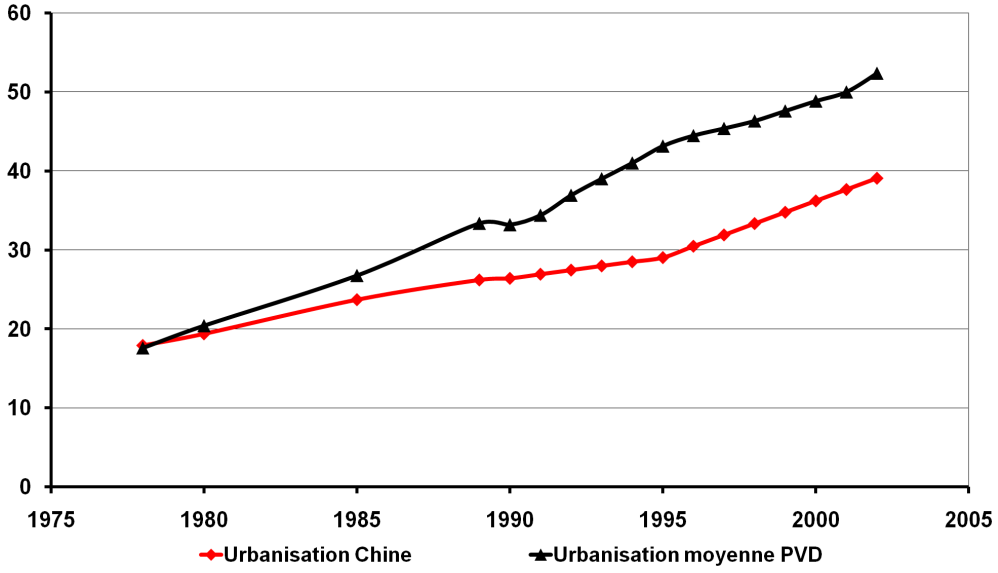


Source : NBS (2009)

Cependant, après le milieu des années 1980, si la situation des campagnes chinoises et des citoyens ruraux continue à s'améliorer, c'est à un rythme bien moins marqué. Symptôme de ce décrochage, après s'être très nettement réduites au début des années 1980, les inégalités de revenus entre ruraux et urbains recommencent à croître à partir du milieu de cette même décennie (Naughton (2007)). Selon les données officielles (NBS (2009)) représentées sur la Figure 1.1, le ratio du revenu individuel moyen rural sur son équivalent urbain a ainsi continûment et nettement décru entre le début des réformes et le milieu des années 1980, passant de près de 2.6 à moins de 1.85. Mais une tendance à la hausse se manifeste dès 1985. En 1992, ce ratio a retrouvé son niveau du début des réformes, et, malgré une correction au milieu des années 1990, il dépasse 3.3 à la fin des années 2000.

Ce décrochage des revenus ruraux par rapport aux revenus urbains s'accompagne d'un accès limité des ruraux aux zones urbaines. L'assouplissement susmentionné du système du *hukou* n'est que tout relatif, et la croissance de la population urbaine, bien que significative, se fait à un

FIGURE 1.2 : Taux d'urbanisation chinois comparé, 1978-2002.



Source : Chang et Brada (2006)

rythme nettement inférieur à celui de la croissance de l'économie chinoise. Selon l'étude de Chang et Brada (2006) dont les principaux résultats sont reproduits sur la Figure 1.2, le taux d'urbanisation de la République Populaire était, en 1978, équivalent à la moyenne de celui des autres pays en voie de développement au même stade de développement (mesuré par le PIB per capita), mais l'écart va ensuite se creuser continûment, pour atteindre douze points de pourcentage en 2002. A cette date, le taux d'urbanisation chinois est légèrement inférieur à 40%, alors que dans les autres pays en voie de développement, au même niveau de développement, il était supérieur à 50%.

Premiers bénéficiaires des réformes, les ruraux chinois se trouvent donc, à partir du milieu des années 1980, relativement laissés pour compte par rapport à leurs concitoyens urbains, qu'ils ne peuvent pas, en outre, aller rejoindre officiellement en ville. Les problématiques liées au développement des campagnes et au partage des bénéfices du succès économique chinois, popularisées à partir de 1996 sous l'appellation des « trois problèmes

ruraux » (*sannong wenti*) par le chercheur Wen Tiejun (T. Wen (1996)), à savoir les problèmes de l'agriculture, des campagnes et des paysans, reviennent au sommet de l'agenda politique chinois à la fin des années 1990 et au début des années 2000. De manière très significative, depuis 2004, tous les Documents No. 1 de l'Etat central ont été consacrés à ces thèmes [4].

Or, les deux principales causes généralement invoquées pour expliquer ce retard relatif du développement rural sont symétriques des facteurs du succès du début des réformes : une décollectivisation inachevée des terres, conjuguée au maintien de l'essentiel du système du *hukou*. Ces deux thèmes, droits des ruraux sur leurs terres, ainsi que droit des ruraux à la mobilité, sont ainsi devenus les sujets d'importants débats, académiques comme politiques et sociaux [5], dans lesquels les travaux de cette thèse cherchent à s'insérer.

Mais ces débats sur les conditions et les modalités du développement économique chinois n'intéressent pas que la République Populaire elle-même. En effet, le remarquable succès chinois intervient au moment même où, dans les années 1990, les déceptions suite aux politiques d'« ajustement structurel » contribuent à mettre en avant la question des institutions, tant au sein du monde académique que dans celui des principales organisations internationales, FMI et Banque Mondiale (Rodrik (2006)). Les prescriptions politiques de « deuxième génération » de ce « consensus de Washington augmenté » (Rodrik (2006)) insistent particulièrement sur la nécessité d'institutions saines, avec notamment des droits de propriété clairs et respectés. La question qui se pose alors, comme l'exprime Brandt et Rawski (2008), est de comprendre « le mélange remarquable de croissance rapide et

4. Les Documents centraux sont publiés conjointement tout au long de l'année par le Conseil des Affaires de l'Etat (c'est-à-dire le gouvernement) et le Comité Central du Parti Communiste Chinois, et numérotés selon leur ordre chronologique de publication. Ils constituent un des moyens essentiels de communication entre les sommets de l'Etat et du Parti et le reste de la hiérarchie administrative et politique. De ce point de vue, ils se rapprochent des circulaires dans l'administration française. Le Document No. 1, le premier publié au cours d'une année, est considéré comme indiquant les priorités politiques de l'Etat chinois pour l'année à venir.

5. Voir par exemple, respectivement, Xiang et Tan (2005) et D. J. Wen (2008).

d'institutions profondément défectueuses en Chine » [6]. Cette contradiction a généré, avec l'aide d'enquêtes particulièrement nombreuses et diversifiées, une littérature importante qui, au-delà de la Chine, interroge les résultats de la science économique sur la croissance et le développement (Jefferson (2008)).

Les trois travaux effectués dans le cadre de cette thèse s'inscrivent dans ces thématiques. Les deux premiers sont consacrés aux problématiques liées aux arrangements institutionnels sur la terre agricole dans la Chine rurale. Ils montrent que ceux-ci sont imparfaits, et réduisent le niveau général d'efficacité économique dans les régions rurales, mais qu'ils peuvent aussi, malgré ce coût, répondre aux préférences des ruraux eux-mêmes. Le troisième s'intéresse aux conséquences des contraintes migratoires incarnées dans le système susmentionné du *hukou* sur l'allocation intertemporelle des ressources. La suite de cette introduction en présente respectivement le contexte et les principaux résultats.

2 Les droits sur la terre en Chine rurale

Comme souligné précédemment, la réforme des institutions collectives d'exploitation des terres, et le transfert de leur usage aux ménages, a constitué un premier succès décisif de l'ère de l'ouverture et des réformes.

Cette section se propose de présenter une description rapide de l'évolution des arrangements fonciers, officiels et officieux, dans les campagnes chinoises depuis 1978, ainsi que des débats qu'ils ont générés [7].

2.1 Les politiques sur la terre agricole depuis 1978

En 1978, lorsque Deng Xiaoping et ses soutiens parviennent au pouvoir, les citoyens ruraux chinois et l'agriculture, clairement défavorisés par les politiques menées sous Mao, comptent parmi leurs priorités. Mais les

6. « China's remarkable mixture of high-speed growth and deeply flawed institutions ».

7. Cette section reprend des éléments de revues de littérature sur ces thèmes parues en 2010 et 2011, à savoir Vendryes (2010b) et Vendryes (2011).

politiques décidées alors par le pouvoir central ne remettent pas en cause le cadre collectiviste d'organisation de la production, elles ne font que prolonger et approfondir les politiques d'« ajustement » engagées dans les années 1960 suite au Grand Bond en Avant. L'échelle des lopins et marchés privés, en marge des structures collectives, est étendue, le prix d'achat des produits agricoles est relevé, tandis que l'offre d'intrants est augmentée (Ash (1988), Putterman (1993), p. 9-59). Ce relâchement des contraintes de la collectivisation et la correction de la planification au profit des régions rurales et agricoles représentent un soulagement immédiat pour les citoyens chinois concernés.

Cependant, les évolutions les plus marquantes, et les plus porteuses de conséquences, proviennent, non de l'Etat, mais des campagnes elles-mêmes. Selon Qian (2000), c'est en Décembre 1978, dans la brigade de production de Xiaogang, du comté de Fengyang (province de l'Anhui), que naît le « système de responsabilité des ménages » (*jiating lianchan chengbao zeren zhi*) qui s'étend en cinq ans à l'ensemble de la Chine, et prévaut toujours aujourd'hui. Les membres de cette brigade décident en effet de diviser les terres collectives et d'en céder l'exploitation aux ménages eux-mêmes. Le principe fondateur de ce système perdure jusqu'à aujourd'hui : la propriété de la terre agricole reste collective, mais les droits d'usage en sont cédés aux ménages paysans dans un cadre contractuel.

Bien qu'au départ réticent, l'Etat central est obligé de reconnaitre le succès de ce système, qui est finalement officiellement encadré par une série de lois et de régulations entre 1982 et 1986. En 1982, la nouvelle Constitution de la République Populaire réaffirme, dans ses articles 9 et 10, la propriété collective des terres. Les terres agricoles sont possédées par les autorités locales, tandis que les autres types de terres (zones urbaines, forêts, montagnes etc.) sont directement propriété de l'Etat. A partir de ce principe, la Loi sur la gestion des terres de 1986 pose le fondement du système de responsabilité des ménages : « les terres possédées par l'Etat ou collectivement par les paysans peuvent être allouées pour être utilisées par des unités ou des individus en accord avec la loi » (article 9). Parallèlement, une série de Documents No. 1, entre 1982 et 1986, spécifie

et précise l'étendue des droits des ménages sur les lopins qui leur sont concédés. Les ménages ruraux acquièrent une grande autonomie en ce qui concerne leurs choix productifs, et peuvent s'approprier le revenu résiduel de leur exploitation (ils deviennent *residual claimants* sur leurs lopins). Le Document No. 1 de 1984 indique également que ces droits d'usage sont attribués aux ménages pour 15 ans, et sont transférables.

En 1986, le système d'abord expérimenté dans un village de l'Anhui huit ans auparavant est donc nationalement reconnu et sanctionné. Il connait peu d'évolutions pendant la douzaine d'années suivantes. En 1993, le Document No. 11 de l'Etat central étend la durée des droits d'usage des ménages à 30 ans, tandis qu'en 1997, le Document No. 16 limite strictement les possibilités, pour les autorités collectives, de reprendre les lopins cédés aux ménages. Mais en 1998 débute une seconde vague d'activité législative et réglementaire sur le sujet. En 1998, la Loi sur la gestion des terres est révisée. En 2002, une nouvelle loi, la Loi sur les contrats fonciers dans les régions rurales, est votée, suivie, en 2007, de l'importante Loi sur la propriété, qui contient des dispositions sur les terres agricoles. Ces lois sont accompagnées, entre 2004 et 2011, d'une série ininterrompue de huit Documents No. 1 consacrés aux problèmes ruraux, et notamment aux droits fonciers.

Cette seconde vague législative et réglementaire cherche à confirmer, étendre et sécuriser les droits des ménages ruraux sur leurs terres. Par exemple, la Loi sur la propriété de 2007 qualifie ces droits d'usufruitiers, ce qui leur donne un statut juridique plus étendu et mieux protégé que sous leur précédente qualification de droits d'usage. Les lois de 1998 et de 2002 réaffirment également la durée de ces droits sur 30 ans, tandis que la Loi sur la propriété de 2007 les prolonge, implicitement, indéfiniment. Autre illustration, le droit de transférer les droits d'usage est réaffirmé dans la Loi sur les contrats fonciers dans les régions rurales de 2002, et ses conditions d'exercice sont spécifiées dans la série de Documents No. 1 de 2004 à 2011.

Selon les lois et réglementations nationales, les droits des ruraux chinois sur leurs lopins de terre sont donc étendus et sûrs, et cela dès le milieu

des années 1980, même si les lois de 1998, 2002 et 2007 les ont encore renforcés. De droit, il n'existe qu'une seule limite aux droits des paysans, celui de changer l'usage de leurs lopins, pour des utilisations non-agricoles, commerciales ou industrielles. Par ailleurs, parallèlement à cette extension des droits des ruraux, une série de réformes ont pris place pour limiter les pouvoirs d'influence des cadres et chefs locaux, notamment sur les arrangements fonciers.

En particulier, en 1998, la Loi organique sur les comités villageois de 1986 est révisée, et met en place des procédures collectives démocratiques de gestion de la vie villageoise, incluant notamment un transfert des compétences en matière de problèmes fonciers aux instances représentant les villageois eux-mêmes. En même temps, pour soulager le fardeau pesant sur les paysans et limiter les intérêts des cadres locaux à manipuler les terres, la fiscalité des produits agricoles est réformée, c'est-à-dire simplifiée et unifiée, à travers la réforme « une taxe au lieu des frais » (*tax-for-fees*), avant d'être simplement abolie en 2005-2006.

Après la période fondatrice du début des années 1980, l'Etat chinois a donc cherché, depuis 1998, à réaffirmer la grande extension et le haut degré de sécurité des droits fonciers des ménages ruraux.

2.2 Le fonctionnement du « système de responsabilité des ménages »

Mais cette profusion de lois et de réglementations, au début des années 1980, puis au cours des treize dernières années, traduit en fait la difficulté de l'Etat central à avoir prise sur les arrangements fonciers au niveau des villages. Lors de la fondation du système de responsabilité des ménages en 1978, ce sont des expérimentations locales qui ont fini par inspirer et informer la politique centrale. Depuis, et plus particulièrement depuis 1998, l'Etat a cherché à mieux encadrer et homogénéiser ce cadre institutionnel, mais les effets de ces efforts ne se sont fait sentir que très progressivement. En effet, toutes les études menées sur les arrangements fonciers locaux, dans

les années 1990 et 2000 [8], ont montré la grande variabilité des pratiques villageoises, qui sont en général très différentes des provisions légales et réglementaires officielles, et offrent aux ménages ruraux des droits moins étendus et sûrs que ceux qui leur sont officiellement accordés. Malgré cette diversité, quelques caractéristiques générales importantes peuvent être déterminées [9].

La caractéristique première du système de responsabilité des ménages, celle qui était au coeur de l'expérimentation de 1978 et qui reste aujourd'hui une constante quasiment universelle des arrangements fonciers dans les campagnes chinoises, est que les ménages ruraux deviennent l'unité de décision et d'appropriation des gains en ce qui concerne l'exploitation de leurs lopins. S'il reste naturellement soumis aux dispositions nationales concernant l'usage et la conservation des terres, et s'il peut participer à des structures locales de production de type coopératives, le paysan chinois bénéficie d'une liberté productive sans commune mesure avec l'époque collectiviste. Par ailleurs, si l'exploitation de terres agricoles impliquaient, du moins jusqu'en 2006, le paiement de divers frais et taxes, ainsi que le versement d'un quota de production agricole à l'Etat, les ménages ruraux chinois s'approprient, depuis 1978, le revenu résiduel de leurs lopins.

Deuxièmement, malgré l'autorisation des transferts de droits d'usage sur la terre dès 1984, et l'encadrement très strict des réallocations collectives, inscrit dans les lois de 1998 et 2002, les processus d'allocation de terre par la marché n'ont pris que tout récemment, dans les années 2000, un importance significative, tandis que les réallocations collectives de terre, nombreuses et importantes dans les années 1990 et 2000, semblent être en déclin. L'allocation des terres reste donc toujours une affaire administrative, ou collective, plutôt que le résultat d'échanges sur un marché, bien que

8. Voir notamment les études du Rural Development Institute (aujourd'hui Landesa), Prosterman, Schwarzwalder et Ye (2000), Schwarzwalder et al. (2002), Zhu et al. (2006), et Prosterman et al. (2009), ainsi que Liu, Carter et Yao (1998) et Krusekopf (2002).

9. Cette description fait volontairement l'impasse sur une dynamique très récente et encore marginale de recollectivisation des terres rurales, les ménages ruraux devenant « actionnaires » (*shareholders*) du terroir du village, ensuite loué à des gros exploitants agricoles, ou pour des usages industriels et commerciaux. Sur ce phénomène, voir par exemple Po (2008).

les dynamiques récentes soient en faveur de ces derniers. Ce maintien des processus collectifs d'allocation des terrres conduit par ailleurs à ce que la durée officielle des droits d'usage sur la terre soit restée, de manière très générale, lettre morte, créant naturellement une insécurité pour les ménages.

Enfin, la dernière limite posée par l'Etat central en ce qui concerne les droits des ménages ruraux, à savoir celui de changer l'usage des terres agricoles, reste effectivement respectée au niveau local. Le changement d'usage des terres reste un privilège des cadres et dirigeants locaux.

Au final, les ménages ruraux chinois ont d'abord vu, entre la fin des années 1970 et le début des années 1980, une extension importante et rapide de leurs droits, puisqu'ils ont alors acquis une liberté étendue, et, depuis, non remise en question, d'exploiter et de tirer bénéfice de leurs lopins. Par contre, le droit pourtant officiellement reconnu de transférer ces droits d'usage entre ménages n'a concrètement émergé que tout récemment, et ne s'est pas encore substitué aux réallocations collectives de terre. Enfin, l'impossibilité de changer l'usage des terres reste une limite stricte, tant de droit que de fait, aux droits des ménages.

2.3 Succès et limites

Du fait de l'importance des réformes engagées depuis 1978, du nombre et la diversité des expériences tentées, ainsi que de la quantité d'informations disponibles (Jefferson (2008)), les problématiques liées aux arrangements fonciers dans les campagnes chinoises ont été le thème d'une importante littérature. Trois grandes problématiques générales en ressortent. A la fin des années 1980 et au début des années 1990, le débat se concentre sur les raisons du succès des réformes dans les campagnes chinoises. Une dizaine d'années plus tard, le questionnement s'oriente sur l'épuisement de la croissance en milieu rural, ainsi que, parallèlement, sur les déterminants de la diversité des arrangements institutionnels locaux. Cette section propose une très synthétique revue de la littérature sur ces trois thèmes [10].

10. Pour une revue plus exhaustive, voir Vendryes (2010b).

Les raisons du succès Au milieu des années 1980 et au début des années 1990, le succès manifeste de la décollectivisation partielle des campagnes chinoises éveille naturellement l'intérêt. Cette expérience prend place, en outre, au moment où une grande partie des Républiques Populaires s'engage dans la voie des réformes, ravivant le débat entre planification centralisée et interactions individuelles sur des marchés (Lin (1988)). C'est également le moment où la recherche en microéconomie est particulièrement active dans le domaine du *mechanism design* (McMillan, Whalley et Zhu (1989)), et où, sous l'influence notamment des travaux de Alchian et Demsetz (Alchian et Demsetz (1972), Alchian et Demsetz (1973)), un intérêt particulier se manifeste, dans le domaine du développement, pour la mise en place de « bonnes » institutions, incluant notamment des droits de propriété privés étendus et sûrs. Cest par exemple un des axes principaux des recommandations politiques de la Banque Mondiale (World Bank (1975)) en ce qui concerne l'agriculture et les régions rurales des pays en voie de développment.

L'évolution des campagnes chinoises entre la fin des années 1970 et celle des années 1980 constitue alors un cas d'étude idéal, pour débattre des avantages comparés des marchés et des incitations à l'effort individuel d'un côté et de ceux de l'organisation et de la rétribution collectives des activités dans les pays socialistes de l'autre. En conséquence, une très importante littérature empirique sur ces questions utilise le cas chinois dans les années 1980 et 1990[11]. La question essentielle est de déterminer l'importance relative de l'évolution des politiques centrales de planification (ajustement des prix, augmentation de l'offre des intrants, etc.), du progrès technique, et, enfin, de la diffusion du système de responsabilité des ménages. Le gain essentiel, parfois unique, attendu de ce dernier est le surcroît d'effort dû au fait que les paysans deviennent bénéficiaires du revenu résiduel (*residual claimants*) sur leurs lopins. Utilisant différentes techniques et différentes enquêtes, les contributions essentielles à ce débat sont constituées de Lin (1988), McMillan, Whalley et Zhu (1989), Lin (1992) et Huang et Rozelle (1996), ainsi que de, plus tardivement, de Brauw, Huang et Rozelle (2004).

11. La revue de littérature la plus récente est fournie par Yu et Zhao (2009).

Toutes ces études pointent l'importance de la mise en place du système de responsabilité des ménages, dont l'effet direct est considéré comme se manifestant à travers un effort accru de la part des paysans, et qui pourrait expliquer, selon les méthodes, entre un quart (de Brauw, Huang et Rozelle (2004)) et les trois quarts (McMillan, Whalley et Zhu (1989)) de la croissance de la production agricole entre 1978 et 1986. Dans tous les cas, cet effet institutionnel est le facteur le plus important dans le succès que connaissent les campagnes chinoises au début des années 1980, sauf pour Huang et Rozelle (1996), pour qui il est précédé par le progrès technique. La littérature sur l'expérience chinoise de la première moitié des années 1980 trouve donc, de manière générale, ce qu'elle y cherchait : le caractère extrêmement bénéfique de l'individualisation des droits sur la terre et des profits qui y sont liés.

Les limites du système Mais les gains dûs au surcroît d'effort sont réalisés une fois le système de responsabilité de ménage mis en place. Et effectivement, après le milieu des années 1980, une fois la totalité de la République Populaire convertie à ces nouvelles institutions, les progrès se font plus modestes. Comme rappelé plus haut, à partir de cette date, le rythme de croissance des revenus ruraux se ralentit, et l'écart recommence à se creuser avec les régions urbaines. Les recherches vont donc se concentrer, notamment à partir de la fin des années 1990, sur les défauts de ce système de responsabilité des ménages, et les moyens de le perfectionner, en étendant et en sécurisant davantage les droits d'usage des paysans. Trois arguments principaux sont mis en avant, tous liés aux deux limites les plus saillantes, et interdépendantes, aux droits fonciers des ménages dans le cadre du système tel qu'il fonctionne aujourd'hui : la limitation des possibilités de transfert des terres entre individus, et, de manière corrélative, la persistence de réallocations administratives, qui créent de l'insécurité pour les ménages en ce qui concerne la durée effective de leurs droits d'usage. Ces deux caractéristiques sont susceptibles d'avoir un coût en terme d'efficacité selon trois dimensions principales, à savoir l'allocation des terre entre ménages, l'investissement, et l'allocation du travail entre les secteurs.

En ce qui concerne le premier type de conséquences, sur l'allocation des terres entre les ménages, l'argument, développé par exemple par Deininger et Feder (2001) et Deininger et Jin (2003), est de souligner que des processus de marché seraient plus efficaces que des redistributions administratives pour allouer de manière optimale les terres. Dans le cas de la Chine, les études de Lohmar, Zhang et Somwaru (2001), Benjamin et Brandt (2002), Deininger et Jin (2005), Jin et Deininger (2009) et Feng et al. (2010) se sont intéressés à ce lien entre droits indiviuels de transférer les terres et efficience de leur allocation, et montrent en effet que les marchés fonciers, là où ils existent, permettent un transfert des lopins aux ménages les plus productifs dans le secteur agricole, et que, si les redistributions administratives de terre ont aussi, de ce point de vue, un effet positif, elles sont néanmoins moins efficaces que les échanges libres sur le marché.

Parallèlement, les études de Jacoby, Li et Rozelle (2002) et Deininger et Jin (2003) ont montré que l'insécurité des droits individuels, due au maintien de la possibilité de réallocations administratives, réduit effectivement l'intensité des investissements dans le secteur agricole. Cependant, aucune étude n'a mis en évidence un effet à la de Soto (2000), liant sécurité et transférabilité des droits fonciers à l'accès au crédit.

Enfin, une plus grande sécurité des droits fonciers individuels, incluant des droits de transfert, devrait permettre une meilleure allocation du travail entre les secteurs, selon un argument développé par Yang (1997). L'idée en est simplement que si un travailleur engagé dans l'agriculture n'a pas le droit de transférer ses terres, ou fait face à de l'insécurité foncière, alors, s'il décide de quitter l'agriculture, il risque de perdre purement et simplement le flux de revenus associés au lopin dont il avait l'usage. Cette absence de droits de transfert sûrs agit donc comme une contrainte sur la décision de quitter l'agriculture. Empiriquement, cet argument a été vérifié, dans le cas chinois, par Rozelle et al. (1999), Lohmar (1999), Shi (2004) et Mullan, Grosjean et Kontoleon (2011), qui montrent tous que la sécurité des droits fonciers et/ou la possibilité de transférer les terres accroît la participation au marché du travail hors de l'agriculture.

Ces trois arguments principaux, portant sur l'allocation des terres, l'in-

vestissement et l'allocation du travail, ont créé une très forte pression en faveur de la sécurisation des droits fonciers des paysans chinois, et de l'extension des marchés fonciers au détriment des réallocations administratives, moins efficaces, et génératrices d'insécurité. Cependant, il doit être noté que ces débats sur les résultats, en termes d'efficacité économique, de l'étendue et de la garantie des droits concédés aux ménages ruraux chinois ont été largement éclipsés, ces toutes dernières années, par des conflits beaucoup plus intenses et significatifs pour le quotidien des citoyens ruraux chinois au sujet des saisies de terres agricoles par les cadres locaux pour en changer l'usage [12].

En effet, comme signalé précédemment, la terre reste, en Chine, de propriété collective. Agricole, elle est possédée collectivement par les paysans, non-agricole, elle est propriété de l'Etat. Les lopins cédés pour exploitation agricole aux ménages ruraux ne peuvent donc pas être utilisés par ceux-ci pour d'autres usages. Or, le développement urbain et industriel de la République Populaire aboutit à ce que la pression pour la conversion des terres soit extrêmement élevée. Mais un changement d'usage des terres nécessite un changement de propriétaire, c'est-à-dire que les terres sont transférés de la propriété collective des paysans à la propriété de l'Etat, par l'intermédiaire de ses représentants locaux (voir Ding (2007) pour une description de ces processus). Ces phénomènes sont l'objet de conflits fonciers extrêmement importants entre les ménages ruraux et les autorités locales, qui s'accaparent l'essentiel des bénéfices tirés du changement d'usage des terres. Ces saisies de terre sont légalement limitées aux cas d'« intérêt public » [13] et doivent donner lieu à une « compensation correspondante » [14], mais ces deux notions elles-mêmes ne sont pas juridiquement spécifiées, laissant la porte ouverte à tous les abus. Ce phénomène de saisie unilatérale des terres, d'une importance marginale et stable pendant les années 1990, manifeste une tendance nettement à la hausse depuis le début des années 2000 [15].

12. Voir par exemple Xiaolin Guo (2001) et Cai (2003) pour des comptes-rendus précoces sur l'émergence de ce phénomène.
13. Article 2 de la Loi sur la gestion des terres de 1998.
14. Article 16 de la Loi sur les contrats fonciers en région rurale de 2002.
15. Cette dynamique est soulignée par l'enquête de 2008 du Rural Development

Bien que les études sur le sujet soient encore très lacunaires, il est loin d'être impossible que cette expansion des saisies de terres agricoles pour en changer l'usage soit en partie liée aux réformes puis à la suppression de l'imposition agricole, qui ont contribué à accroître encore plus, pour les finances des collectivités locales, le déséquilibre entre les valeurs des terres agricoles et non-agricoles (Yep (2004)).

Ces nouvelles problématiques liées aux saisies de terres agricoles n'ont fait que renforcer les pressions en faveur d'une extension et d'une meilleure garantie des droits des paysans. Ces considérations ont par exemple trouvé un écho dans les recommandations politiques faites au gouvernement chinois par des équipes de chercheurs publiées par des organisations telles que l'OCDE (OECD (2009)) ou la Banque Mondiale (Nyberg et Rozelle (1999)). Elles ont également contribué à alimenter l'intense activité législative et réglementaire de l'Etat central chinois depuis 1998 sur les problématiques liées aux institutions foncières locales.

Cependant, cet activisme de l'Etat central manifeste aussi, d'une certaine manière, son impuissance. Dès 1984, les ménages ruraux chinois doivent bénéficier du droit d'échanger leurs lopins, mais les marchés foncier ne commencent à émerger qu'un quinzaine d'années plus tard. De même, l'extension légale de la durée des droits des ménages, à quinze puis à trente ans, et enfin de manière perpétuelle, ainsi que la limitation corrélative des réallocations administratives de terre, n'ont eu qu'un effet lent et progressif sur les arrangements fonciers locaux réels, ce qui a éveillé, dès le milieu des années 1990, des interrogations sur les facteurs et les déterminants des institutions et des pratiques foncières au niveau des villages.

Les déterminants des arrangements institutionnels locaux Le démantèlement d'une grande partie des institutions collectivistes et des administrations de planification centralisée dans la première moitié des années 1980 a abouti de fait à un recul relatif du rôle de l'Etat central au profit des pouvoirs provinciaux et infraprovinciaux dans la définition de l'encadrement institutionnel du quotidien des citoyens chinois. Une

Institute (Prosterman et al. (2009)).

importante littérature a d'ailleurs souligné le rôle positif de ce « fédéralisme à la chinoise » sur le développement économique de la République Populaire (voir par exemple Montinola, Qian et Weingast (1995)).

Dans le cas des droits fonciers en milieu rural, les enquêtes successives effectuées par le Rural Development Institute [16] ont souligné que ce manque d'emprise de l'Etat central au niveau de la vie politique locale a eu pour conséquence, non seulement une implémentation très lacunaire des lois et réglementations nationales sur les problèmes des droits fonciers ruraux, mais également une méconnaissance profonde de leurs dispositions, tant de la part des ménages ruraux que des cadres locaux de l'Etat eux-mêmes. En conséquence, leur première recommandation politique a toujours été que l'Etat central renforce ses moyens d'action et d'information au niveau local.

Parallèlement, dans ce contexte décentralisé et de relative ignorance des dispositions législatives centrales, et les terres agricoles étant collectivement possédées, officiellement, par les paysans, et constituant un aspect essentiel et primordial dans leur vie quotidienne, ceux-ci ont joué et jouent encore un rôle important dans les choix concernant leur gestion et leur distribution. D'ailleurs, comme le rappelle et le souligne Lin (1987), la création et la diffusion du système de responsabilité des ménages provient au départ d'un « choix institutionnel des paysans » [17] eux-mêmes, initialement sans, et même contre, l'avis du gouvernement central. L'importante diversité des arrangements institutionnels locaux, soulignée par toutes les enquêtes menées sur ce thème dans les années 1990 et 2000, est donc le résultat, localement variable, de l'autonomie des autorités locale et de l'influence des préférences des ménages ruraux, comme l'a formulé Rozelle (1994). Ce caractère local de la détermination des arrangements institutionnels sur le terre est même reconnu par la loi, comme le notent Brandt et al. (2002), puisque la révision de la Loi organique sur les comités villageois de 1998 remet la gestion des terres dans les mains des cadres villageois, responsables devant les instances politiques villageoises représentant les

16. Voir note 8.
17. « A peasant's institutional choice ».

paysans. Dans les années 1990 et 2000, un certain nombre d'études se sont donc penchées sur le rôle de ces acteurs locaux dans la définition des arrangements institutionnels fonciers au niveau des villages.

En ce qui concerne les cadres villageois, l'étude pionnière de Rozelle (1994) identifie trois objectifs principaux que ceux-ci peuvent poursuivre en définissant et manipulant les droits sur la terre : leurs intérêts purement particuliers, à travers des activités de type « recherche de rente » (*rent-seeking*), la réalisation au moindre coût de leurs tâches administratives et politiques, comme la livraison des quotas à l'Etat, et enfin l'accroissement de l'efficience économique. Les principales études sur ce thème sont celles de Rozelle et Boisvert (1994), Rozelle et Li (1998) et Brandt, Rozelle et Turner (2004). Toutes montrent que de plus grands gains associés au contrôle de l'économie villageoise conduisent à un plus haut niveau d'insécurité foncière, et donc à des droits fonciers moins étendus et moins sûrs pour les ménages ruraux, ce qui est interprété comme un rôle plus grand des cadres locaux dans la manipulation des terres.

Mais les responsables politiques locaux ne peuvent pas complètement arranger les institutions foncières locales dans leur seul intérêt. Avec ou sans processus de démocratie locale, la communauté des paysans est un élément avec lequel les cadres locaux doivent compter. Les préférences des paysans constituent donc également un facteur décisif dans la définition des droits fonciers au niveau local. Or, selon l'argument développé par la « théorie naïve » (Eggertsson (1990)) de la théorie évolutionniste des droits de propriété, qui prend ses racines dans l'article fondateur de Demsetz (1967), les gains associés à des droits fonciers individuels sûrs et étendus croissent avec le développement économique, et donc la demande pour de tels droits devrait naturellement s'intensifier, conduisant à leur apparition de manière endogène. De tels processus ont bien été mis en évidence. Par exemple dans le cas du Brésil (Alston, Libecap et Mueller (1999)) ou de l'Afrique sub-saharienne (Ault et Rutman (1979), Feder et Noronha (1987) et Migot-Adholla et al. (1991)), il a été montré qu'un plus grand développement de l'agriculture, la sophistication de la technologie ou une meilleure intégration aux marchés peuvent alimenter un processus de changement institutionnel

endogène vers des droits fonciers individuels plus étendus et plus sûrs. Mais cette dynamique est loin d'être générale. D'une part, comme l'a montré par exemple Platteau (1996) de manière détaillée dans le cas de l'Afrique sub-saharienne, les gains potentiels de l'extension et de la sécurisation des droits individuels sur la terre sont souvent surévalués, et leurs coûts sous-estimés. D'autre part, et comme le souligne à juste titre Eggertsson (1990), les dynamiques institutionnelles ne dépendent pas seulement des gains généraux de différents types d'arrangements institutionnels, mais aussi, et surtout, de la distribution de ces gains et du pouvoir d'influence relatif des différents groupes d'intérêt. Ces considérations distributives peuvent donc contrarier l'émergence endogène de droits fonciers individuels sûrs et étendus, telle que prévue par la vision évolutionniste.

En ce qui concerne le cas de la République Populaire, les études sur les préférences des paysans chinois en termes de droits sur la terre ont essentiellement été menées par James Kai-sing Kung [18]. Celui-ci s'est attaché à expliquer les « informations inattendues » [19] (Kung et Liu (1997)) sur les préférences des ménages ruraux chinois, à savoir que non seulement ces derniers étaient loin de manifester un désir univoque et général de privatisation des terres agricoles ou même d'extension de leurs droits d'usage, mais qu'ils n'étaient même pas favorables, dans leur majorité, à une interdiction stricte des processus de redistribution périodique des terres, constat qui est, selon l'enquête la plus récente du Rural Development Institute (Prosterman et al. (2009)), toujours vrai. Ces préférences évoluent cependant, dans une certaine mesure, comme la théorie évolutionniste l'anticipe. Notamment, l'émergence d'opportunités d'emploi en dehors de l'agriculture augmente, chez ceux qui en bénéficient, l'opposition aux réallocations collectives de terres (Kung et Liu (1997)), et elle accroit aussi la participation aux marchés fonciers pour transférer les lopins moins utilisés en cas d'emploi non-agricole (Kung (2002b)). Inversement, le soutien à des redistributions périodiques des terres, plus ou moins égalitaires, c'est-à-dire en fonction des caractéristiques démographiques des ménages, pourrait

18. Kung (1995), Kung et Liu (1997), Kung (2000), Kung (2002a) et Kung (2002b).
19. « Unexpected evidence ».

être dû, au-delà d'un esprit paysan égalitariste à la Chayanov (Kung et Liu (1997)), à la perception de l'accès à la terre comme un filet de sécurité, en l'absence de systèmes de sécurité sociale, rendant son ajustement nécessaire selon l'évolution des structures et des besoins des différentes familles. De telles considérations poussent les redistributions administratives de terres à être préférées par les ménages (Kung (2002a)) relativement défavorisés, pour lesquels la terre agricole constitue une source de revenu essentielle.

Ainsi, en République Populaire de Chine, et cela comme dans les autres pays en voie de développement, les arrangements institutionnels sur la terre agricole ont des conséquences très importantes à la fois sur la vie quotidienne des ménages ruraux et sur le développement économique en général. Et ces arrangements institutionnels ne sont ni univoquement déterminés par les réglementations nationales, ni simplement le résultat d'une dynamique « évolutionniste » vers des droits de propriété individuelle plus étendus et plus sûrs. Ils répondent aussi à l'influence de différents groupes aux intérêts divergents au niveau local.

C'est dans ces différentes problématiques que s'inscrivent les deux premiers chapitres de cette thèse.

2.4 Conséquences et déterminants des droits fonciers

Les deux premiers chapitres de cette thèse ont donc pour thème, dans le cadre des débats évoqués plus haut, les effets ainsi que les déterminants des arrangements institutionnels sur les terres agricoles en Chine rurale. Le premier s'intéresse aux conséquences de l'insécurité des droits fonciers sur l'allocation du travail des ménages, tandis que le deuxième essaie de déterminer les facteurs explicatifs des arrangements institutionnels sur la terre agricole en Chine rurale, et notamment le rôle des contextes économique et politique, qui définissent respectivement les intérêts des différents groupes d'agents locaux et leurs pouvoirs d'influence.

Ces deux chapitres s'appuient, pour leurs dimensions empiriques, sur la partie rurale de la vague 2002 de l'enquête CHIPS (Chinese Household Income Project Survey, S. Li (2009)). Cette enquête fait partie d'un projet

financé par un effort conjoint de la Banque Asiatique de Développement, de l'Académie des Sciences de Chine, de la Fondation Ford et de l'Institut sur l'Asie de l'Est de l'Université de Columbia. Elle est la troisième de ce type, après les vagues de 1988 et 1995. Elle a couvert, dans les régions rurales, 37 969 individus, dans 9200 ménages de 961 villages, dans 22 provinces chinoises [20] sur les 31 entités de niveau provincial. Mis à part son étendue et la taille de son échantillon, cette enquête a comme avantage de fournir, en plus d'informations détaillées sur les individus et les ménages, des données sur les caractéristiques politiques et institutionnelles au niveau des villages, notamment en ce qui concerne les droits fonciers, qui sont au coeur des deux premiers chapitres de cette thèse. Ceux-ci sont brièvement introduits ci-dessous.

2.4.1 Insécurité foncière et temporalité des migrations en Chine

Comme il l'a été souligné précédemment, l'insécurité ou la limitation des droits fonciers des ménages ruraux agissent comme une contrainte sur le choix de quitter l'agriculture, et notamment de migrer, puisque celui-ci peut impliquer la perte sans compensation des terres et donc du flux de revenus qui leur est associé. Dans le cas de la Chine rurale, cet effet a été mis en évidence empiriquement par Lohmar (1999), Rozelle et al. (1999), Shi (2004) ainsi que Mullan, Grosjean et Kontoleon (2011). Ce phénomène n'est cependant pas limité aux campagnes chinoises, et a été identifié par exemple par Field (2007) pour les bidonvilles péruviens.

La thèse ce chapitre est que le caractère hautement temporaire des migrations rurales en Chine peut s'expliquer, du moins en partie, par l'insécurité des droits fonciers des migrants. En effet, il apparait que les migrants ruraux, qu'ils partent travailler en ville ou dans d'autres régions rurales, effectuent de fréquents allers-retours entre les localités de

20. Les provinces enquêtées sont, de l'Est à l'Ouest, et du Nord au Sud : le Jilin, le Liaoning, Beijing, le Hebei, le Shandong, le Jiangsu, le Zhejiang, le Guangdong, le Shanxi, le Henan, l'Anhui, le Hubei, le Jiangxi, le Hunan, le Shaanxi, Chongqing, le Guizhou, le Guangxi, le Xinjiang, le Gansu, le Sichuan, et enfin le Yunnan.

destination et les régions d'origine, dans lesquelles ils finissent souvent par revenir définitivement. Les flux des migrations intérieures sont donc bien plus des phénomènes temporaires que définitifs, et restent, la plupart du temps, « circulaires » (Hu, Xu et Chen (2011)).

Ce caractère temporaire des migrations est bien évidemment dû en grande partie au système d'enregistrement des ménages, au *hukou*, qui rend très difficile, pour un citoyen chinois, l'accès au logement et aux services publics, et donc l'installation définitive, dans une localité autre que celle où il est officiellement enregistré [21]. Une grande partie des migrants préfère donc revenir au village, ou du moins dans leurs localités d'origine, une fois la première partie de leur vie active passée. Ces migrants ne quittent donc pas complètement la campagne, et, de fait, y gardent une présence bien réelle pendant la période même de leur migration, partageant leur temps entre régions d'origine et de destination. Ainsi, selon les données de l'enquête CHIP pour l'année 2002, seulement 5% des migrants ne sont pas retournés dans leurs villages d'origine cette année-là, tandis que 60% d'entre eux sont rentrés pour au moins trois mois.

L'hypothèse du travail mené dans le premier chapitre est qu'une partie ce caractère temporaire des décisions migratoires peut s'expliquer par l'insécurité des droits sur la terre des migrants. En effet, si les droits fonciers sont susceptibles d'être saisis et redistribués par les autorités collectives, et de manière préférentielle aux individus ou aux ménages qui restent principalement engagés dans l'agriculture, alors les travailleurs peuvent être incités à réduire la durée annuelle de leur migration, pour passer plus de temps sur leurs terres, pour pouvoir ainsi manifester leur engagement dans l'activité agricole, ou défendre leurs droits. Un plus haut niveau d'insécurité foncière devrait donc conduire les agents à réduire, au cours d'une année, le temps passé en migration. Par ailleurs, cette contrainte doit être ressentie de manière disproprotionnée, si ce n'est uniquement, par les agents qui se désengagent de l'agriculture pour migrer, par rapport aux travailleurs qui ont emploi non-agricole local, et donc qui restent présents

21. La dernière partie de l'introduction, consacrée au troisième chapitre de cette thèse, propose une présentation plus détaillée de ce « système d'enregistrement des ménages ».

pour défendre leurs droits fonciers, en cas de besoin.

Pour identifier cet effet, deux dimensions de l'insécurité foncière sont utilisées. La première est mesurée au niveau du village. En effet, d'un village à l'autre, le niveau d'insécurité varie sensiblement, du fait, par exemple, des arrangements institutionnels locaux ou des caractéristiques des cadres et chefs villageois. Cette variation n'est cependant pas suffisante pour identifier un impact de l'insécurité foncière sur les comportements migratoires. Une corrélation entre un niveau plus élevé d'insécurité et des migrations plus courtes peut être due à des caractéristiques inobservés des villages, comme par exemple, un plus grand développement industriel local, qui à la fois nécessite une réorganisation du foncier et réduit le besoin d'émigrer, ou bien à un phénomène de causalité inverse, due au fait que les comportements migratoires au sein du village sont susceptibles d'avoir des conséquences sur la manière dont les autorités locales s'impliquent dans l'allocation des terres agricoles.

Pour pallier à ce problème, une deuxième dimension d'insécurité est introduite, entre les lopins de terre eux-mêmes. En effet, dans le cadre général du système de responsabilité des ménages, plusieurs types de contrats sur la terre entre autorités locales et ménages sont reconnus, et ces contrats présentent des degrés divers d'extension et de sécurité des droits pour les ménages. Cette dimension a, par exemple, été utilisée par Jacoby, Li et Rozelle (2002) pour leur étude des comportements d'investissement des ménages ruraux chinois. Ici, ces différents types de contrats sont regroupés en deux grandes catégories : les « terres pour la ration de grain » (*kouliang tian*) d'un côté, et les « terres sous responsabilité » (*zeren tian*) de l'autre. Les premières sont explicitement allouées aux familles pour leur permettre de faire face et de satisfaire à leurs besoins élémentaires, elles sont donc conçues comme une sorte de « filet de sécurité » pour les ménages ruraux, en l'absence, de manière générale, de systèmes d'assurance sociale. Elles sont parallèlement, et du fait de leur statut particulier, moins taxées et soumises à moins de contraintes. A l'inverse, les « terres sous responsabilité » sont utilisées pour la production pour le marché et pour l'Etat. Elles sont donc censées, au-delà du revenu de subsistance garanti par les « terres

pour la ration de grain », fournir un revenu complémentaire, à la fois aux ménages et, à travers impôts et quotas, aux autorités locales. Ces lopins ne bénéficient donc pas du statut particulier, relativement protégé, des « terres pour la ration de grain », et les autorités locales ont à la fois plus d'incitations et plus de légitimité à les saisir et à les redistribuer.

Ainsi, si un village connait de l'insécurité foncière, les lopins sous le statut de « terres pour la ration de grain » sont relativement protégés par rapport à ceux simplement sous le statut de « terres sous responsabilité ». Les ménages qui ont relativement plus de « terres pour la ration de grains » se trouvent donc comparativement protégés en cas d'insécurité foncière au niveau du village. Au final, dans les villages qui connaissent un degré d'insécurité élevé, les ménages avec une proportion plus importante de « terres pour la ration de grains » dans le total de leurs terres doivent se sentir relativement protégés de cette insécurité, et donc doivent pouvoir se permettre de passer plus de temps à émigrer au cours d'une année.

La variable utilisée ici pour indiquer le niveau d'insécurité foncière dans un village est l'existence de « champs de réserve » ou de « terres flexibles » (*jidong tian*) au sein de ce village. Ces terres correspondent à des lopins qui sont pris aux ménages et mis de côté, sous le contrôle direct des autorités locales. Justifié, au départ, par la nécessité d'avoir des lopins en réserve pour faire face aux changements d'allocation des terres entre les ménages, notamment pour des raisons de changement des structures démographiques des familles, ce type de terre a régulièrement été dénoncé, par l'Etat central comme par les spécialistes (voir par exemple Cheng et Tsang (1996)) comme manifestant l'intérêt intrusif des cadres locaux dans l'allocation et la manipulation des terres. La présence de « champs de réserve » dans un village indique donc que les autorités y jouent un rôle relativement important dans la distribution des terres, ce qui crée de l'insécurité pour les ménages.

Quant à la variable dépendante prise en compte, il s'agit de la proportion du temps de travail d'un ménage alloué au travail hors des frontières du comté (*xian*) d'origine. La proportion du temps de travail est prise en compte, pour normaliser de manière simple les comportements migratoires

entre zéro et l'unité, tandis que le ménage est pris comme unité d'analyse car les contrats sur la terre sont passés au niveau du ménage. Une conception unitaire du ménage rural est donc utilisée pour cette étude.

Ainsi, finalement, l'hypothèse de travail de l'étude menée dans ce chapitre est que la proportion du temps de travail d'un ménage consacré à la migration dépend positivement de la proportion de « terres pour la ration de grains » dans leurs terres totales si le village est exposé à un haut niveau d'insécurité foncière. Un modèle simple illustre cet argument, qui est ensuite testé sur les données de l'enquête CHIPS pour 2002.

L'étude économétrique valide cette hypothèse, et une plus grande sécurité des droits fonciers augmente bien la proportion de temps de travail passée à migrer. L'effet est significatif : deux ménages aux caractéristiques dans la moyenne de l'échantillon de l'enquête CHIPS, et dont la proportion de « terres pour la ration de grain » diffère d'un écart-type vont voir leur durée de migration différer de 15 jours, ce qui est relativement important, puisque la durée de migration moyenne est de 74 jours.

Ce premier chapitre met donc en évidence, en utilisant la variété et la variabilité des dimensions de l'insécurité des droits fonciers dans les villages chinois, le fait que celle-ci agit effectivement comme un frein à la migration, et donc, à un niveau plus général, au changement structurel.

2.4.2 Contexte politique, économique et détermination des droits fonciers

Si le premier chapitre de cette thèse s'intéresse aux conséquences de l'insécurité foncière, sur l'allocation du travail, le deuxième chapitre cherche, lui, à identifier les déterminants des arrangements fonciers locaux, et donc, en particulier, ceux de l'insécurité foncière.

Le point de départ de cette analyse est de considérer que les arrangements institutionnels et les pratiques foncières au niveau local sont le résultat des conflits entre différents groupes d'agents, dont les intérêts divergent selon le contexte économique, et dont les pouvoirs respectifs d'influence dépendent du contexte politique, et notamment de l'existence ou non de processus démocratiques au niveau local.

Les cadres locaux, représentants de l'Etat et du Parti, constituent naturellement un premier groupe décisif dans la définition et le respect des droits fonciers au niveau du village. L'hypothèse de travail ici est que ces cadres locaux peuvent trouver un intérêt unilatéral à manipuler les terres du village. Or, la dimension des institutions foncières qui est la plus favorable aux cadres locaux, au détriment des villageois, est l'existence des « champs de réserve ». En effet, ces champs ne sont pas cédés aux ménages pour leur usage, mais conservés par les autorités locales. Ceux-ci peuvent les utiliser comme moyen de manipulation des ménages ruraux (Cheng et Tsang (1996)), en concurrence pour y avoir accès lors de leur redistribution, ou bien les transformer en terres d'usage commercial ou industriel (Xibao Guo (2004)), de valeur bien plus élevée, et dont les gains sont essentiellement accaparés par les autorités collectives. Plus les besoins des cadres locaux sont élevés, plus ceux-ci vont être ainsi incités à manipuler les terres, en saisissant notamment des « champs de réserve ». Mais leur capacité effective à saisir de manière unilatérale des terres va être limitée si des processus démocratiques, renforçant le pouvoir de contrôle des villageois, existent. L'existence de « champs de réserve » dans un village devrait donc être plus probable quand les cadres locaux ont à la fois les incitations et les moyens d'en saisir.

Le rapport d'influence entre villageois et cadres est simplement indiqué par l'existence ou non de processus démocratiques dans le village, c'est-à-dire l'existence d'élections villageoises et la sélection par les villageois eux-mêmes des membres du comité des villageois, qui représente en quelque sorte le pouvoir exécutif des structures politiques villageoises. Sans dénier que ces processus politiques locaux soient de qualité très variable (O'Brien et Han (2009)), et que leur caractérisation comme véritablement démocratiques puisse faire l'objet, localement, de doutes et de débats, il n'en reste pas moins que les villageois ont un plus grand pouvoir de contrôle sur les cadres locaux si ces processus sont en place (L. Li (2003), Brandt et Turner (2007)).

En ce qui concerne les intérêts ou les besoins des cadres locaux, le problème est de trouver une source de variation exogène de leur intensité.

L'idée dans ce chapitre est d'utiliser à cet effet la variation des demandes fiscales des autorités supérieures, au niveau du comté (*xian*). En effet, une importante partie des taxes levées au niveau des villages doit ensuite être versée aux autorités d'un niveau administratif plus élevé. Une plus grande pression de la part de ces autorités génère donc mécaniquement plus de besoins de la part des cadres villageois. Pour essayer d'éviter, dans la mesure du possible, les effets d'endogénéité liés à la pression fiscale sur un village en particulier, l'évolution des demandes fiscales des autorités supérieures est mesurée, pour un village donné, par celle dans les autres villages du même comté.

Finalement, l'hypothèse empirique à tester est qu'une pression fiscale plus intense sur les cadres villageois doit se traduire par une plus grande probabilité que ceux-ci saisissent des « champs de réserve », et cela doit être spécialement, si ce n'est pas uniquement, sensible là où n'existent pas des institutions de démocracie locale. Et effectivement, les résultats économétriques tirés des données de l'enquête CHIPS pour 2002 sont consistants avec cette hypothèse. Quand ils y ont intérêt et quand ils en ont le pouvoir, les cadres locaux tendent bien à limiter les droits des ménages, pour accroître leur contrôle sur les terres du village.

Cependant, cela ne doit pas conduire à conclure que le développement des processus démocratiques villageois conduit nécessairement à une évolution des institutions foncières locales donnant des droits plus étendus et plus sûrs aux ménages ruraux. En effet, comme le soulignent les travaux de James Kung cités plus haut, et notamment Kung (2000), les préférences des ménages ruraux en terme d'arrangements institutionnels sur la terre agricole varient selon leurs situations et le contexte économique général. L'existence de processus démocratiques locaux peut donc permettre l'expression des préférences majoritaires, c'est-à-dire, pour reprendre le modèle de Black (1948), celles de l'électeur médian. Si aucun ménage rural ne peut véritablement favoriser la pratique des « champs de réserve », qui, comme expliqué ci-dessus, est disproportionnellement favorable aux cadres locaux, par contre, les préférences en ce qui concerne les processus d'allocation des terres peuvent varier, entre des redistributions collectives périodiques de

terre et des échanges individuels sur des marchés fonciers. Ces deux processus ne sont pas, dans les pratiques réelles, exclusifs, mais leur importance relative peut varier selon les préférences des villageois en ce qui concerne la gestion des terres agricoles.

Un modèle simple, illustratif, d'une communauté rurale dans un contexte de changement structurel, c'est-à-dire où les agents ont le choix entre rester dans l'agriculture et tenter leur chance dans le secteur non-agricole, montre que l'insécurité des droits fonciers, simplement représentée par un transfert sans compensation des terres des agents qui quittent l'agriculture vers ceux qui y restent, bien que toujours coûteuse en terme d'efficacité économique, peut être préférée par l'électeur médian et par une majorité de la communauté, à des processus de marché, quand les redistributions potentielles de terres sont suffisamment importantes. C'est le cas pour un développement intermédiaire du secteur non-agricole, quand une proportion non négligeable de la main-d'oeuvre peut tenter sa chance hors de l'agriculture.

Ce mécanisme est ensuite confronté aux données de l'enquête CHIPS de 2002, et les résultats de l'analyse économétrique sont consistants avec les intuitions développées par le modèle. Pour tenter d'éviter, dans la mesure du possible, les problèmes d'endogénéité dans la causalité liant arrangements fonciers et changement structurel, les opportunités d'emploi sont mesurées au niveau du comté, c'est-à-dire, pour un village donné, dans les autres villages appartenant au même comté. Par ailleurs, ces préférences des villageois doivent être sensibles particulièrement, si ce n'est seulement, dans les villages où existent des processus démocratiques. Les résultats économétriques à partir des données de l'enquête CHIPS pour l'année 2002 (incluant des informations sur la période courant de 1998 à 2002) semblent consistants avec ces hypothèses. A un niveau de développement encore modeste du secteur non-agricole, l'existence de processus démocratiques a un impact positif sur le recours aux marchés fonciers, et réduit la probabilité de réallocation suite à un extension de l'emploi non-agricole. Et ces résultats s'inversent, comme attendu, pour des niveaux plus élevés du développement des opportunités d'emploi non-agricole.

Ces deux premiers chapitres de thèse cherchent donc à s'inscrire dans la littérature sur les droits fonciers en Chine rurale, et donc dans les débats sur leurs conséquences, mais aussi sur leurs déterminants. Leur principale contribution est méthodologique, puisque le premier cherche à utiliser la diversité des dimensions de variation de l'insécurité foncière pour identifier ses conséquences, tandis que le deuxième s'intéresse au développement de processus démocratiques comme permettant de saisir les variations dans les rapports de pouvoir au niveau local, et donc l'expression variable de différents groupes aux intérêts divergents au sein du village.

Cependant, les droits fonciers, leurs limites et leur insécurité, sont loin d'être le seul facteur aux effets significatifs sur les décisions des ménages ruraux et, de manière plus générale, sur le processus de changement structurel au niveau de la République Populaire. Une autre dimension des institutions chinoises aux conséquences cruciales est le « système d'enregistrement des ménages » qui agit comme une contrainte forte sur les comportements migratoires des individus, et qui fait l'objet du troisième chapitre de cette thèse.

3 Contraintes migratoires et développement en Chine

Si la République Populaire s'est engagée depuis 1978 dans une dynamique progressive de réformes, de libéralisation et d'ouverture, un héritage de la planification centralisée est resté particulièrement contraignant pour la vie quotidienne et les décisions des ménages chinois, le « système d'enregistrement des ménages » (*huji zhidu*, plus connu sous le nom de *hukou*). Cette section introductive se propose de faire une présentation synthétique de ce système, des débats qui l'entourent, et enfin du troisième et dernier chapitre de cette thèse.

3.1 Le « système d'enregistrement des ménages » (*hukou*)

Les origines du système Le *hukou* a été mis en place au tout début de la République Populaire de Chine, dans les régions urbaines dès 1951, puis dans les campagnes, en 1955. Ce système ne constitue à l'origine qu'une simple institution administrative, comme son nom l'indique, d'enregistrement et de surveillance, mais sans contrôle [22]. Héritier de système de recensement plus anciens, le *hukou* ne sert alors que des objectifs statistiques et fiscaux. Son rôle change radicalement à la fin des années 1950, quand la République Populaire, dans le cadre du deuxième plan quinquennal, s'engage significativement dans la voie de la collectivisation et de la planification centralisée. Le *hukou* devient alors un outil d'allocation des travailleurs, ainsi qu'un instrument de contrôle de l'accès aux ressources collectives et aux services de l'Etat. En 1958, la législation sur le *hukou* est ainsi modifiée par l'Assemblée Nationale Populaire, qui en fait un des piliers de l'organisation économique et sociale de la République Populaire, sur le modèle, en partie, de ce qui se pratique dans d'autres Etats du bloc socialiste, et notamment sur celui de la *propiska* soviétique. Les caractéristiques essentielles du système telles que définies alors perdurent jusqu'à aujourd'hui.

Depuis 1958, chaque citoyen chinois est donc enregistré et reçoit un *hukou* individuel. Celui-ci comprend deux dimensions : un type (*hukou leibie*) et une localité (*hukou suozaidi*). Il existe deux types de *hukou*, agricole (*nongye*) et non-agricole (*feinongye*), souvent abusivement appelés, respectivement, rural et urbain. Ce type définit à quelles ressources l'individu en question a droit. Dans le cadre de l'économie planifiée, où un certain nombre de produits étaient rationnés ou distribués de manière administrative, les individus à *hukou* agricole étaient nécessairement engagés dans l'agriculture, et donc n'avaient pas droit aux produits agricoles,

22. Les travaux de référence sur ce thème, dont sont tirées les informations pour cette brève présentation, sont ceux de Kam Wing Chan, et notamment Chan (1996), Chan et Zhang (1999), Chan et Buckingham (2008) ainsi que Chan (2009), complétés par Cheng et Selden (1994).

notamment au grain, fournis par l'Etat, privilège réservé aus détenteurs de *hukou* non-agricole. Le type de *hukou* définit donc, à l'origine comme aujourd'hui, le type de ressources socio-économiques auxquels un individu a accès. Le processus de changement de *hukou*, du type agricole vers le non-agricole (*nongzhuanfei*), est soumis à un quota annuel, et l'éligibilité d'un individu dépend *in fine* des décisions de l'Etat basées sur les nécessités de la planification centralisée. Les canaux réguliers les plus fréquents pour ce processus sont l'embauche dans une entreprise d'Etat, l'intégration dans une université, et les politiques de promotion et d'allocation des personnels de l'administration et de l'armée.

La deuxième dimension du *hukou* est le lieu officiel de résidence. Celui-ci, en plus du type de *hukou* qui indique quels sont les types de ressources accessibles, spécifie où ces ressources sont accessibles. Par exemple, un citoyen bénéficiant d'un *hukou* de type agricole a le droit d'accéder à la terre, et sa localité officielle d'enregistrement spécifie dans quel village cet accès lui est garanti. Chaque citoyen chinois n'a, bien entendu, le droit d'être enregistré que dans une seule localité, et cet enregistrement est soumis, depuis 1958, à l'accord des autorités locales de la localité en question.

Le système du *hukou* crée donc depuis 1958 une double segmentation de la société chinoise, une segmentation statutaire, entre citoyens agricoles et non-agricoles, et une segmentation géographique, entre localités. De la fin des années 1950 au début des années 1980, ces contraintes étaient naturellement extrêmement sévères, puisque le *hukou* conditionnait l'accès aux ressources, presque toutes allouées par l'Etat. Paradoxalement, c'est cependant pendant les expériences les plus extrêmes de la période Maoïste, le Grand Bond en Avant au tournant des années 1960, et les premières années de la Révolution Culturelle, à la fin de cette même décennie, que les contraintes créées par le *hukou* ont été les plus lâches, dans le premier cas parce que la campagne de mobilisation en vue d'augmenter la production nécessitait un transfert rapide de main d'oeuvre dans l'industrie, tandis que dans la seconde période, l'état de chaos généralisé dû à la remise en cause systématique des institutions de l'Etat et du Parti empêchait un

contrôle strict de ce système.

Mais il n'en reste pas moins que, de manière générale, de la fin des années 1950 au début des années 1980, chaque citoyen chinois était attaché, à travers son *hukou*, à un secteur d'activité et à une localité. Comme dans les autres pays socialistes, sur le modèle soviétique, cette contrainte pesant sur les choix d'activité ou de migration des individus était un pilier nécessaire de la politique de développement par le transfert de ressources de l'agriculture et des régions rurales vers l'industrie et les régions urbaines (voir par exemple Chan (2009)). En effet, une telle politique conduit nécessairement à défavoriser les citoyens ruraux et les travailleurs agricoles au profit de leurs compatriotes urbains et industriels. Pour qu'elle soit soutenable, il faut que les premiers soient contraints de rester dans leur statut défavorisé, ce que l'institution du *hukou* garantit, générant ainsi, comme le notent par exemple Cheng et Selden (1994), une nette ségrégation au sein de la population chinoise.

Le *hukou* à l'heure des réformes Même si les fondamentaux et les principes en sont restés largement inchangés, le fonctionnement du *hukou*, *de jure*, mais surtout *de facto*, a néanmoins connu d'importantes évolutions depuis 1978. Ses conséquences, économiques et sociales ont donc également changé. Il convient cependant d'abord de noter que le coeur même de cette institution a été maintenu : chaque citoyen chinois continue d'être enregistré officiellement dans un secteur d'activité et dans une localité de résidence. Trois évolutions peuvent cependant être distinguées depuis le début des réformes. Tout d'abord, le *hukou* et les contraintes individuelles qu'il crée ont changé de signification au fur et à mesure que l'économie et la société chinoise sont devenues moins collectivistes et moins planifiées. Ensuite, l'Etat central a, dans une mesure qui est restée néanmoins limitée, aménagé et assoupli le système. Enfin, l'administration du *hukou* a été très largement décentralisée au niveau des provinces et même des villes et villages. Ces trois évolutions sont brièvement décrites ci-dessous.

Outil essentiel de l'allocation sectorielle et géographique des travailleurs et du rationnement des produits de base, notamment alimentaires, le

hukou perd une grande partie de sa raison d'être quand les institutions collectivistes, notamment les Communes Populaires, disparaissent (en 1984 pour les Communes rurales). La fin du rationnement du grain (à but alimentaire) en 1992, dont l'accès était conditionné par le *hukou*, constitue une autre étape essentielle dans cette réduction des contraintes de fait créées par le système d'enregistrement des ménages. De même, l'émergence progressive, dans les années 1990, d'un marché du logement privé parallèlement aux logements alloués par l'Etat, par les autorités locales ou par les entreprises, élargit l'accès au logement pour les résidents *de facto*, c'est-à-dire non détenteurs d'un *hukou* local. Mais si la diminution des biens et services fournis par l'Etat et les organisations collectives réduit d'autant les contraintes créées apr le système d'enregistrement des méanges, tout un certain nombre de services et de ressources reste néanmoins interdit d'accès en l'absence du *hukou* approprié : les services publics essentiels tels que l'éducation ou la santé, un certain nombre d'emplois, ainsi que le logement subventionné. En conséquence, si ces évolutions autorisent de fait les citoyens chinois à se déplacer, et à s'installer dans des localités sans en avoir nécessairement le *hukou*, ces migrants officieux restent dans une position ségréguée dans leur localité de destination (Chan (1996)), ce qui rend ces migrations bien plus souvent temporaires, « circulaires », que définitives (Hu, Xu et Chen (2011)).

L'Etat central a également, parallèlement, cherché à apporter des modifications à la marge du système, pour rendre les migrations internes plus simples. Ce sont ainsi multipliés les documents qui rendent plus facile le changement de localité de résidence temporaire, sans changement officiel de *hukou*. Des permis de résidence temporaire et des cartes d'identité ont été mis en place entre 1984 et 1985 pour permettre les migrations non définitives. Au même moment, et parallèlement, un *hukou* urbain pour les ménages « auto-suffisants en grain » a été créé dans les petites villes, ce qui permet d'accepter en zone urbaine des migrants ruraux, sans leur donner le droit d'accès au grain fourni par l'Etat aux individus détenteurs d'un *hukou* non-agricole. Enfin, au début des années 1990, l'Etat central reconnait la

pratique des « *hukou* à tampon bleu » [23], qui sont en fait des *hukou* urbains vendus, sous conditions, par certaines villes aux nouveaux arrivants, et qui leur donne le droit d'y résider officiellement, tout en limitant les services et ressources socio-économiques accessibles. Finalement, en 2001, une politique nationale d'ouverture des bourgs et des petites villes a supprimé les restrictions d'accès et d'installation dans les villes du premier échelon de la hiérarchie urbaine. Ces politiques centrales sont significatives, mais n'ont pas radicalement assoupli les conditions de déplacement et de migration à l'intérieur de la Chine. Elles ont surtout cherché à officialiser la pratique des migrations temporaires, et à restreindre l'émigration définitive hors des zones rurales aux villes les moins grandes.

Ces politiques ont aussi, notamment à travers la reconnaissance des « *hukou* à tampon bleu », considérablement décentralisé l'administration du système d'enregistrement des ménages. Comme noté plus haut, les réformes et l'ouverture de la fin des années 1970 et du début des années 1980 ont contribué à donner une grande autonomie aux provinces chinoises, et même, en dessous du niveau provincial, aux autorités locales. L'administration des services publics, élément clef des contrainte créées par le *hukou*, n'échappe pas à cette dynamique. Cette évolution vers la décentralisation du système du *hukou* est sanctionnée par l'Etat central, qui, après avoir reconnu le droit des provinces et des localités à choisir eux-mêmes, notamment avec les « *hukou* à tampon bleu », les migrants qu'elles étaient prêtes à accepter, et sous quelles conditions et quel statut, leur transfère aussi l'administration, autrefois décisive, du processus de changement de statut, de l'agricole vers le non-agricole. Comme le soulignent Chan et Buckingham (2008), cette dynamique de décentralisation des contraintes migratoires a très largement été interprétée comme un assouplissement du système du *hukou*, alors qu'elle s'est en fait très souvent traduite, notamment dans les grandes villes chinoises, par un durcissement des conditions d'accès.

Le mode d'administration et les contraintes créées par le *hukou* ont donc très largement évolué depuis le début des années 1980, au fur et à mesure de la réduction du rôle de l'Etat central dans l'allocation des ressources.

23. Par opposition au *hukou* standard, à tampon rouge.

Les contraintes créées par ce système sont sans conteste moins sévères aujourd'hui qu'elles ne l'étaient avant 1978, mais le *hukou* agit malgré tout toujours comme une limitation forte sur les comportements migratoires, puisque de fait, aujourd'hui, l'accès aux services publics et sociaux, ainsi qu'à certaines ressources économiques, certains types d'emplois et de logement notamment, n'est possible, pour chaque citoyen chinois, que dans sa localité officielle de résidence. Changer celle-ci est certes possible, mais aux conditions décidées par l'autorité locale à destination.

Les migrations en Chine aujourd'hui En conséquence de ce mode de fonctionnement du *hukou* à l'heure des réformes, les migrations temporaires, notamment des campagnes vers les villes, sont devenues assez faciles, tandis que l'installation définitive est restée, si ce n'est devenue encore davantage, difficile.

Sans surprise, le rythme d'urbanisation de la République Populaire s'en est trouvé contrarié. Comme signalé précédemment et comme illustré sur la Figure 1.2, alors que le taux d'urbanisation chinoise était exactement dans la moyenne des autres pays en voie de développement au même niveau de développement au début des réformes en 1978, l'écart n'a cessé de se creuser depuis, conduisant, en 2002, à une « sous-urbanisation » relative de plus de douze points de pourcentage.

Cette urbanisation contrariée s'est aussi traduite par l'émergence d'une immense population de migrants temporaires, issus des campagnes, qui passent une partie de leur vie à effectuer des allers-retours entre leurs villages d'origine et les bassins d'emploi de destination. Les migrations intérieures en Chine sont ainsi temporaires de deux points de vue. D'une part les migrants ruraux, pour lesquels l'installation définitive en ville par l'obtention d'un *hukou* officiel reste très difficile, finissent souvent par retourner définitivement dans leur village d'origine, créant des flux de « migrations de retour » (*huiliu*), et d'autre part, pendant cette période de migration, et comme il l'a été souligné plus haut, ils partagent leur temps, et leur temps de travail, entre régions d'origine et de destination.

Selon les dernières estimations nationales disponibles (NBS (2006)), il y

avait ainsi, en 2006, plus de 130 millions de tels travailleurs ruraux migrants, ce qui signifie qu'environ un quart de la population active rurale était concernée par la migration. La quasi-totalité de ces migrants temporaires vivent dans leurs zones de destination avec des statuts plus ou moins officiels, mais toujours défavorisés par rapport à leurs concitoyens officiellement enregistrés dans les régions urbaines.

L'importance numérique de ce phénomène, tout comme les conséquences sociales de cette ségrégation de la population chinoise en deux statuts bien distincts, n'a pas manqué d'alimenter un débat, dans les milieux académiques et politiques, mais aussi dans la société civile, sur le maintien, l'ajustement ou la suppression de ce système d'enregistrement des ménages.

3.2 Le débat

Le *hukou* est, depuis le début de l'ère des « réformes et de l'ouverture » un important sujet de débat en Chine (Xiang et Tan (2005)). Une grande partie des discussions s'intéresse à la dimension sociale et politique de ce système, dénonçant notamment la construction d'un société à deux vitesses en Chine contemporaine, dont les migrants ruraux seraient les principales victimes (voir par exemple Chan (1996) et Solinger (1999)). Mais ce degré de contrainte inédit sur les migrations intérieures chinoises a aussi donné lieu à des interrogations sur ses conséquences pour le développement de la République Populaire.

Les problématiques liées aux migrations intérieures dans les pays en voie de développement et aux politiques afférentes ne sont pas nouvelles. Les flux migratoires, et notamment le transfert de la main d'oeuvre des campagnes vers les villes, constituent un effet un des phénomènes corrélatifs du processus de développement économique, dont les causes et les conséquences ont été et restent l'objet d'études nombreuses. Si des migrations individuelles libres ne conduisent pas à une allocation optimale des ressources, dans les régions d'origine et/ou dans celles de destination, alors des interventions politiques peuvent être nécessaires (R. E. B. Lucas (1997)). Les raisons de ces défaillances peuvent être très variées.

Parmi ces raisons figurent le « biais urbain » (*urban bias*, Williamson (1988)), soit l'ensemble des raisons qui peuvent faire que les zones urbaines des pays en voie de développement sont disproportionnellement plus attractives que les campagnes, sans que l'immigration rurale puisse aboutir à un équilibre efficace. Par exemple, si les marchés du travail urbains ou ruraux ne sont pas concurrentiels, alors des flux migratoires libres peuvent conduire à un excès d'allocation de main-d'oeuvre dans l'une des deux régions. C'est naturellement le plus souvent le cas de la région urbaine, où peuvent exister des secteurs d'emploi protégés, comme le secteur public ou bien des secteurs d'activité considérés comme importants et favorisés, tandis que l'existence d'un salaire minimum ou de syndicats peuvent limiter la flexibilité à la baisse des salaires. Dans ce type de contextes, le non-ajustement des revenus du travail peut conduire à un excès de migration, comme dans la célèbre étude de Harris et Todaro (1970). Dans ces conditions, ces distorsions dans l'attrait des régions urbaines, conduisant à des flux migratoires excessifs, peuvent légitimement être contrecarrées politiquement.

Par ailleurs, l'attractivité des régions urbaines peut être due à d'autres facteurs, comme par exemple une meilleure offre de services ou de biens publics. Si des migrations excessives conduisent à des effets de congestion dont le coût n'est pas entièrement internalisé par les migrants, alors, dans ce cas également, des politiques destinées à limiter les flux migratoires à destination des villes peuvent être nécessaires. Autrement dit, en présence de grandes asymétries initiales dans la fourniture de biens publics, il est loin d'être sûr que des phénomènes de déplacements individuels à la Tiebout (1956) soient optimaux (Stiglitz (1984)).

Enfin, si les problématiques mentionnées ci-dessus peuvent concerner aussi bien les flux migratoires internes aux pays en voie de développement, entre campagnes et villes, que les migrations internationales, vers les pays développés, ces dernières ont été l'objet d'une très importante littérature prenant comme point de départ des externalités localisées de capital humain, ouvrant ainsi la voie à des interventions politiques, puisqu'en présence de ces externalités, les décisions migratoires individuelles sont très susceptibles

de conduire à des résultats non-optimaux (voir par exemple Benhabib et Jovanovic (2007)).

Un ensemble de raisons peut donc expliquer que des flux migratoires libres conduisent à des résultats collectivement sous-optimaux. Ces problématiques sont cependant plutôt, aujourd'hui, appliquées aux migrations internationales, et non aux migrations internes, dont les effets sont généralement considérées comme bénéfiques (R. E. B. Lucas (1997)). Cependant, la taille du territoire chinois, la diversité des peuples et des dialectes, et, surtout, la rigueur des contraintes migratoires initiales font que des problématiques habituellement associées aux migrations internationales peuvent se trouver pertinentes pour l'analyse des phénomènes et des politiques migratoires en Chine (Chan, Liu et Yang (1999), Solinger (1999)).

Dans le cas de la République Populaire, et bien que les autorités politiques, par l'emploi fréquent du terme « migrations aveugles » (*mangliu*) semblent en effet craindre les effets négatifs sur les villes, et non pris en compte par les migrants eux-mêmes, des décisions migratoires individuelles, aucune étude n'a tenté de mesurer empiriquement de tels effets. D'un point de vue théorique, l'article de Fan et Stark (2008) applique les outils d'habitude utilisés pour l'analyse des migrations internationales, basés sur des considérations d'externalité de capital humain, pour montrer que des contraintes sur les migrations intérieures du type de celles qui existent en Chine peuvent être justifiées.

A l'inverse, une série d'articles, Hu (2002), Au et Henderson (2006), Whalley et Zhang (2007), Ito (2008) et Bosker et al. (2010), ont cherché à mettre en évidence les gains potentiels à une suppression complète des restrictions migratoires en Chine. Leurs méthodologies sont proches. Le *hukou* est conçu comme limitant ou empêchant la mobilité intérieure des travailleurs chinois, entre campagnes et villes ou entre provinces, ce qui génère des inégalités, de salaires et de revenus, entre les différents marchés du travail et les différentes régions. Celles-ci seraient réduites, voire annulées, en cas de suppression des contraintes migratoires, ce qui permettrait en outre de réaliser les gains d'efficacité dus à la réallocation ou l'agglomération des travailleurs et des activités dans les zones, urbaines ou

côtières, les plus développées. Par exemple, pour Whalley et Zhang (2007), la suppression du *hukou* en 2001 aurait pu amener une augmentation immédiate du PIB chinois de 13 à 25% selon le degré de mobilité du capital.

Cependant, ces articles, justifiant ou critiquant ce système du *hukou*, ne prennent pas en compte le fait que, aujourd'hui, les migrants ruraux sont déjà dans les villes chinoises. Même si les contraintes créées par ce système limitent encore, dans une certaine mesure, les décisions migratoires, il n'en reste pas moins que, comme signalé précédemment, près d'un quart de la population active agricole chinoise travaille déjà, au moins une partie du temps, hors de ses régions d'origine, et la très grande majorité de ces migrants ruraux quittent les campganes pour la ville. Pour le dire autrement, le système d'enregistrement des ménages n'empêche pas, ou peu, d'émigrer, mais il oblige à revenir. Appréhender les conséquences du *hukou* sur le développement chinois implique donc de prendre en compte le fonctionnement réel de cette institution, qui autorise en fait les ruraux chinois à s'employer en ville, mais seulement temporairement, et avec un statut ségrégué, défavorisé. C'est ce qu'essaye de faire le troisième chapitre de cette thèse.

3.3 *Hukou*, migrations temporaires et accumulation du capital

L'étude menée dans le troisième chapitre de cette thèse est motivée par le constat que le *hukou*, tel qu'il fonctionne aujourd'hui, autorise en fait les migrations intérieures en Chine, mais seulement de manière temporaire. Les travailleurs ruraux peuvent donc aller chercher un emploi en ville, mais doivent, au bout d'un moment, retourner dans leurs villages d'origine. Ces comportements ont des conséquences importantes non seulement sur le marché du travail, mais aussi sur les comportements d'épargne, et donc sur les dynamiques d'accumulation du capital et de changement structurel. Pour modéliser cette situation, et la comparer avec des situations alternatives de séparation et d'intégration complètes des régions urbaines et rurales,

trois éléments essentiels sont utilisés : une structure économique duale à la Lewis (1954), des générations imbriquées à la Diamond (1965), et enfin un équilibre entre les marchés régionaux du travail déterminé par une condition à la Harris et Todaro (1970).

Les régions rurales, en développement, sont considérées comme étant caractérisées par une structure économique duale, c'est-à-dire qu'une activité traditionnelle, comme l'agriculture, constitue une offre de travail illimitée, pour reprendre le terme de Lewis (1954), pour un secteur moderne où le nombre d'emplois disponibles est limité par la quantité de capital investi. Le développement économique, comme souvent dans les modèles d'économie duale, est donc ici entièrement dépendant du processus d'accumulation du capital.

Celui-ci est représenté par un modèle simple de générations imbriquées, à la Diamond (1965). La quantité de capital disponible à chaque période dépend donc de la distribution de la main-d'oeuvre entre chaque secteur à la période précédente, ainsi que du niveau de revenu dans chacun des secteurs et des comportements d'épargne individuels.

Comme habituellement dans le cadre de modèles d'économie duale, il n'existe pas de niveau de salaire apurant le marché (*market-clearing*) dans le secteur moderne. Celui-ci est donc fixé de manière exogène, et il est montré qu'un plus haut niveau de ce salaire dans le secteur moderne conduit à une accumulation de capital, et donc à un transfert sectoriel de la main d'oeuvre, plus rapide.

Une seconde région est ensuite introduite. Urbaine, elle est considérée comme complètement développée. Si les travailleurs ruraux y sont acceptés de manière temporaire, tel que les contraintes créées par le *hukou* semblent aujourd'hui fonctionner, alors le salaire dans le secteur moderne urbain est déterminé par une condition à la Harris et Todaro (1970), égalisant les revenus espérés dans les deux régions. Une telle politique augmente, sans ambiguité, le rythme d'accumulation du capital dans les régions rurales, puisque les migrants ruraux y investissent, à leur retour, l'épargne rassemblée pendant leur séjour en ville. Une politique d'intégration totale aurait par contre un effet ambivalent. En effet, si la technologie du secteur

moderne urbain est plus avancée qu'en milieu rural, alors la réallocation des activités dans les zones urbaines a un effet bénéfique à la fois sur le niveau instantané de production, et sur le processus de développement. Mais ce processus est compensé, partiellement ou totalement, par le fait que l'intégration complète des marchés du travail provoque une pression à la baisse sur les salaires dans le secteur moderne, ce qui peut être néfaste pour l'épargne, l'accumulation du capital et donc le développement.

Ainsi, si une politique de migrations contraintes, du type de celle du *hukou* aujourd'hui, contribue sans ambiguïté à augmenter l'épargne et l'accumulation du capital par rapport à une situation où ces migrations sont complètement interdites, l'effet d'une libéralisation complète est ambigu, la pression à la baisse sur les salaires dans le secteur moderne pouvant se révéler néfaste. Ces résultats sont testés empiriquement en utilisant la politique mise en place par l'Etat central, dans les années 1998-2002, de relâchement significatif des contraintes pour l'installation dans les petites villes. Cette réforme équivaut à une intégration complète entre ces villes qui constituent le premier échelon de la hiérarchie urbaine chinoise et les campagnes environnantes, après une décennie de migrations contraintes. Selon le modèle développé ci-dessus, cette ouverture des villes devrait conduire à une pression à la baisse sur les revenus dans les activités modernes, et donc à une diminution de l'épargne et de l'investissement. Les conséquences finales sur le rythme du changement structurel et de la croissance économique dépendent par contre également des effets positifs de la relocalisation des activités et de la main-d'oeuvre dans les villes. Si la réforme de 1999-2001 prend place de manière à peu près synchrone dans les provinces chinoises, celles-ci étaient à différents stades de développement au moment de son implémentation. Or, c'est dans les provinces les moins développées, c'est-à-dire celles où, au moment de la réforme, une proportion moins importante de la main-d'oeuvre était employée dans le secteur moderne, que les pressions sur les revenus, et donc sur l'épargne et l'investissement doivent être les plus importantes. La stratégie est donc d'utiliser cette variation dans le niveau de développement des provinces au moment de la réforme pour identifier les effets de celle-ci. Et effectivement,

relativement aux provinces les plus développées, les moins avancées ont connu, suite à cette réforme, une pression à la baisse sur revenus, épargne et investissement, sans effet significatif, toutefois, sur le changement structurel et la croissance économique. Ces résultats sont consistants avec les mécanismes décrits dans le modèle.

Ainsi, si le système d'enregistrement des ménages réduit l'efficacité de l'allocation instantanée des ressources économiques, il pourrait aussi être, à travers les contraintes qu'il génère sur le cycle de vie des ruraux, un des facteurs explicatifs du haut niveau d'épargne et d'investissement de la République Populaire. Cela ne doit cependant pas conduire à conclure que le *hukou* a des effets bénéfiques : la rapidité de l'accumulation du capital en Chine peut aussi bien être vue comme un déséquilibre que comme un succès.

2 Land Rights Insecurity and Temporary Migration in Rural China

This chapter is co-authored with Maëlys de la Rupelle (PSE, FUNDP), Deng Quheng (CASS) and Li Shi (BNU). It is available as a PSE Working Paper (de la Rupelle et al. (2009a)) and as a IZA Discussion Paper (de la Rupelle et al. (2009b)).

1 Introduction

According to the National Bureau of Statistics (NBS), the Chinese rural workforce amounted to 478.52 million people at the end of 2006 (see NBS (2006)). Of these, 131.81 million were migrant workers (*nongmingong*). Out-migration thus affects more than a quarter of the Chinese rural labor force. The individual characteristics, origins and destinations of Chinese rural migrants, as well as the impact of migration on Chinese urbanization and industrialization, have been well documented and analyzed.

Besides its numerical importance, another striking feature of this rural migrant population is its temporal and geographical mobility. For example, according to the results of a survey carried on in 2005 by the State Council Research Bureau on rural migrants (see Bureau (2006)), only 8.13% of the interviewed migrants declared that they planned a long term stay at their migration destination. The overwhelming majority of this population is therefore mobile, and indeed, rural migrants have been referred to, both in the Chinese media and in academic and political circles, as the "floating

population" (*liudong renkou*). This extreme mobility of migrants can have important consequences for Chinese economic development. For example, in recent years, numerous developed coastal provinces have faced sudden "migrant worker shortages" (*nongmin huang*), jeopardizing production in labor-intensive, export-oriented industries.

This temporary pattern of rural out-migration does not seem to fit well the famous baseline migration models of Lewis (1954) and Harris and Todaro (1970). It is not specific to China, and the temporary migration phenomenon has already given birth to a wide literature in economics. The reasons invoked are: changes in the income differentials between origin and destination areas due for example to agricultural seasonality (Knight and Song (2003)), exogenous shocks on the legal and/or professional situations of migrants (Galor and Stark (1990)), psychological costs of migration, especially family ties (Djajic and Milbourne (1988)), a process of geographical job searching (Bhattacharya (1990)), and, finally, the desire of rural households to spread risks among sectors and localities (Stark and Levhari (1982), Stark and Bloom (1985)). However, on the empirical side, studies on the reasons of temporary migration remain scarce.

In this paper, we aim to show that this temporary feature of migration can also be linked to land rights insecurity. More specifically, our hypothesis is that land rights insecurity hinders migration, as the land use rights of out-migrating people can be seized during their absence. When exposed to a higher degree of insecurity, rural workers must migrate less, or for shorter periods. We thus focus on the link between the migration decisions of rural people and maybe the most important element of their rural environment: land.

This issue of land rights insecurity in developing countries has already been the subject of numerous empirical studies, focusing on productive investment (Goldstein and Udry (2008) for Ghana, Jacoby, Li, and Rozelle (2002) for China, Gautam, Dercon, and Ali (2007) for Ethiopia, to name just some of the most interesting articles), or labor allocation (Field (2007) for Peru, Lohmar (1999) and Shi (2004) in the case of China).

All these works face a common problem: how to identify the impact of

land rights insecurity on individual behaviors? Some rely on instruments (such as Shi (2004)) while others use institutional variations in the definition of land rights (such as Goldstein and Udry (2008), Jacoby, Li, and Rozelle (2002) or Field (2007)). In this paper, we opt for a methodology close to this second solution. We use land rights heterogeneity across household plots in a model with village fixed effects to capture the impact of village land rights manipulation on out-migration. This strategy allows us to solve causality and endogeneity issues entailed by land arrangements at the village level. Indeed, village land management may respond to village migration history, or to village characteristics that affect migration as well. Yet, household exposure to village-level risk of land manipulation varies according to the type of plot tenure. While the type of tenure alone may raise endogeneity concerns, its interaction with village-level insecurity does not, once village fixed effects are taken into account. We are therefore able to identify the impact of land rights insecurity on migration behavior. Empirically, this approach is made possible by the width and the quality of the Chinese Household Income Project (CHIP) household survey, which gives detailed individual-level and village-level information on almost 9 200 rural Chinese households distributed in 961 villages all over China. Using Honoré (1992) semi-parametric identically censored least squares estimator, we actually find that the interaction between our indicator of village-level insecurity and a measure of the exposure of household plots to administrative seizure has a significant impact on rural households migration decisions: land rights insecurity does constrain migration behaviors and shortens out-migration durations for Chinese rural workers.

The plan of the paper is as follows. First, we delineate the migration phenomenon in contemporary China, and describe the main characteristics of land institutions. Second, we design a simple theoretical framework in order to formally establish the link between idiosyncratic land rights insecurity and migration decisions. This leads to our third section, namely empirical results.

2 Migration and land rights in China

The purpose of this first section is to provide a general picture of the temporary dimension of the migration phenomenon in China, and to see how it can be linked with the land rights insecurity generated by the institutional context of Chinese rural land management.

CHIP survey description

The following figures are based on past studies as well as descriptive statistics drawn from our data. Throughout this article, we rely on the Chinese Household Income Project (CHIP) cross-section survey conducted by the Chinese Academy of Social Sciences (CASS) in 2003. This was carried out during the 2003 Spring Festival, and investigated the situation of rural households during the preceding year. This survey has four main advantages. First, the set of questions was quite comprehensive, and deals with a large number of aspects of the lives of rural households. Second, the survey sample is very wide: 37 969 people, from 9 200 households distributed across 961 villages,[1] were interviewed. The sample was chosen according to NBS data in order to be representative of the whole Chinese population. And for dimensions like age structure, gender ratio, or household composition, the survey results do indeed appear to be extremely similar to national statistics. Third, it was conducted during the Spring Festival, a time of traditional familial gathering. Consequently, a lot of migrants had returned to their hometown for the occasion and were present. Fourth, this individual and household level survey is complemented by extensive data on village level characteristics.

1. 22 provinces are sampled: (listed from East to West, and from North to South) Jilin, Liaoning, Beijing, Hebei, Shandong, Jiangsu, Zhejiang, Guangdong, Shanxi, Henan, Anhui, Hubei, Jiangxi, Hunan, Shaanxi, Chongqing, Guizhou, Guangxi, Xinjiang, Gansu, Sichuan, Yunnan. The survey covers 37 969 individuals of 9 200 households, in 961 villages distributed over 122 counties in these 22 provinces.

Migration definition and sample representativeness

Migration is defined in relation to two criteria: work place, and work duration. For the purpose of this study, especially focused on the temporal dimension of migration, we define as a migrant in 2002 any individual who declared he worked out of his usual place of residence, whatever the duration of his out-migration. The only restriction we put on this definition is that the place of migrant work must not only be out of the individual's home village (*cun*) and township (*xiang*), but also out of the individual's home county (*xian*[2]), in order to rule out commuters and keep only genuine migrants.

Table 2.2 displays the distribution of the CHIP survey labor force according to the workers' primary work place. Using our definition of migration and according to the survey results, 15,4%[3] of rural workers migrated in 2002, yielding an estimated national population of 93 million rural migrants. This fits remarkably well with official national statistics for 2002, of 94 millions rural migrants (Huang and Pieke (2003)), although our definition of migration differs from the NBS one[4]. These results give some evidence of the sample representativeness.

Moreover, the characteristics of rural migrants in the 2002 CHIP survey are similar to those found in previous studies. As shown in Table 2.1, compared to other rural people, migrants are younger, more educated, and more likely to be male and single. Migrant workers are less likely to be married, and less likely to be the head of household. Moreover, they are mainly long distance migrants, as a majority of them cross provincial borders. These results are very similar to the descriptive statistics given in

2. There are four formal levels in the Chinese administrative structure, which, ranking from highest to lowest, are: province (*sheng*), prefecture(*diqu*), county (*xian*) and township (*xiang*). Villages (*cun*) are informal organizational levels below the township.

3. We include as migrants in our definition workers declaring migrant work as a secondary occupation, which explains why the 15.4% figure is higher than the one computed from the fourth and fifth lines of Table 2.2.

4. The Chinese National Bureau of Statistics defines a migrant worker as an individual who has left his registered place of residence in order to work, for at least 6 months in a given year.

other studies on Chinese rural migrants (see for example the aforementioned Huang and Pieke (2003), the reference works of Y. Zhao (1999b) and Y. Zhao (1999a), or the study of Li and Zanhiser (2002) on the 1995 CHIP survey).

2.1 Rural migrations in China

The diversity of the individual situations of rural migrant workers, often at the fringes of legality, as well as their high temporal and geographical mobility, challenges statistical tools. However, existing studies converge to a commonly accepted estimate of the growth in size of this population from around 2 million in the mid-1980s to about 94 million in 2002 (Huang and Pieke (2003)), and over 131 million by 2006 (Bureau (2006)). That would mean that in China, at the beginning of the 21st century, one worker out of six is a rural migrant.

The related economic literature, on the micro side, has focused mainly on the specific characteristics of migrant people, holding the classical Todarian point of view that labor income differentials were the main motive for migrations (Todaro (1969) and Harris and Todaro (1970)). Moreover, on the macro side, much of the political and social debate about Chinese internal migrations seems to be based on the implicit assumption that the underlying forces behind this phenomenon are comparable to the ones that caused rural depopulation in industrializing Europe and in most developing countries during the last two centuries. Rural out-migration flows are thus seen, in a Lewisian way (Lewis (1954)), as the shift of the agricultural “surplus labor" to the modern sectors, fueling capital accumulation, industrialization and urbanization.

However, a striking feature of rural migration flows in China does not fit in the simplest version of the classical Lewisian-Todarian framework: their temporary nature. Indeed, it appears that most rural migrants come back to their home rural area, after some years spent working on urban informal labor markets, as noted, for example, by Murphy (2002). Out-migration thus seems to be a step in the life-cycle scheme of rural people. This

impression is further confirmed by what has been called, in recent years, the "40 years phenomenon" (*sishi sui xianxiang*): in cities, virtually all rural migrant workers are under 40 years old. "Return migration" (*huiliu*) flows have also begun to draw attention. For example, as mentioned in the introduction, among the rural migrants surveyed for the Chinese rural migrant workers survey (Bureau (2006)), only 8.13% declared that they planned a long term stay at the destination city, whereas 39.07% intend to go back to their hometown as soon as they have accumulated enough savings. In our data, about 75% of the rural migrants are less than 35 years old, that is, in the first part of their working life. All these points are consistent with the view that out-migration characterizes the first part of a rural individual's working life.

Moreover, during this migration stage of their lives, rural migrants keep on moving back and forth between home villages and destination areas (see Cook and Maurer-Fazio (1999)). For example, in the 2002 CHIP sample, only 5% of the migrants did not return to their home villages in 2002, and 60% of them spent less than 9 months outside their home counties. The distribution of the rural migrants according to the duration of their out-migration in 2002, plotted in Figure 2.1, clearly reflects this temporary feature of rural migrations.

The rural migrant population of China thus displays a striking temporal characteristic: out-migration constitutes a transitory stage in a rural individual life pattern, and is a phenomenon of repeated moves between home and destination areas, rather than a more or less permanent settling. This paper deals with this second aspect of migration temporality. Many factors are likely to play a role in rural individuals' decisions regarding migration, and especially out-migration duration. Our hypothesis here is that land rights insecurity hinders out-migration, and especially shortens migration duration, because the longer people out-migrate, the more likely they are to be deprived of their land use rights.

2.2 Land rights insecurity in China

The purpose of this section is twofold. The first aim is to establish that there is land rights insecurity in China. The second is to present the variation in the intensity of this insecurity, across and within villages, that will eventually be used for the econometric investigation.

2.2.1 The *hukou* system and the rural-urban divide

Since the 1950s, Chinese people have been recorded in the "Household Registration System" or *hukou* framework. In the 1960s and 1970s, Chinese individuals' places of residence and work were strictly defined through this institution.[5] Although the controls on mobility have been loosened over the last two decades, the very existence of this *hukou* system still constrains the moves of rural people, mainly because, as Solinger (1999) synthetically states, "civil/social rights and prerogatives, such as the right to subsistence, education, dwelling, employment, and medical care are denied to migrants in the cities". Rural migrants thus remain second-class citizens in urban areas, and though the *hukou* rural/urban divide is clearly less hermetic since the beginning of the reform era, it still firmly hinders rural migrants from settling permanently in cities. Symmetrically, this institution guarantees, for a rural *hukou* holder, the access to a piece of land. This land holding cannot be sold, and roughly substitutes for the social services and public goods rural people cannot access.

This point is important for our study, for the *hukou* system constrains out-migrating rural people to eventually come back to their home villages, and establishes an institutional link between rural workers and agricultural land.

5. A comprehensive depiction of the *hukou* system and its evolution can be found in Cheng and Selden (1994). Evolutions of this system in the 1980s and 1990s are related in Chan and Zhang (1999). The most recent overviews of this institution can be found in F.-L. Wang (2004) and Chan and Buckingham (2008).

2.2.2 The "household responsibility system" and land rights insecurity

The decollectivization of the rural economy and agricultural production, initiated in China at the end of the 1970s, has only been partial. At the beginning of the 1980s, the rural People's Communes were dismantled, [6] but property rights on land have remained in the hands of village collective authorities. Rural households have only been conceded land use rights, intended to be implemented through a well-defined contractual framework, the "Household Responsibility System" (*jiating lianchan chengbao zeren zhidu*), but contracts, and especially the length of contracts, have not been respected by collective authorities. They have kept the habit of periodically reallocating land among their fellow villagers. This situation creates manifest uncertainty for rural households about the durability of their land tenure. This land rights insecurity and the correlative possible abuses from administrative authorities regularly give birth to outbursts of farmers' anger, which sometimes receive media coverage. It also attracts interest from political and academic circles, because of the consequences it may have for the investment decisions of Chinese rural households (Jacoby, Li, and Rozelle (2002)) and labor allocation (Lohmar (1999), Shi (2004), Mullan, Grosjean, and Kontoleon (2011)).

The common problem faced by all studies on land right insecurity and its consequences is that insecurity cannot be easily measured, and is potentially endogenous to the outcome of interest. Solutions include the estimation of "hazards of expropriation" for given plots (Jacoby, Li, and Rozelle (2002)), the use of instruments (Shi (2004) instruments village-level land rights insecurity with centrally imposed land re-contracting), or the use of various dimensions of variation in the intensity of land rights insecurity faced by individuals (as Goldstein and Udry (2008) did in the case of Ghana, using individuals' positions in the political hierarchy with regard to specific plots). The method we use here is close to this last solution. To identify the impact of land rights insecurity on migration duration, we rely on the

6. A general description of the "Household Responsibility System" can be found in Krusekopf (2002) and in Brandt et al. (2002).

interaction of two dimensions of variation of insecurity: the across-village variation, depending on differences in each village's collective management of land, and within-village, across-plot variation, depending on the different contractual status of land plots. These two dimensions of variation are presented in the next section.

2.2.3 Dimensions of land rights insecurity

Collective Management of Land The "Household Responsibility System" framework was intended to be homogeneous throughout mainland China. However, its actual implementation by village authorities has taken very diverse forms. Despite the existence of land contracts, administrative redistributions have persisted, but their frequency and their criteria have differed considerably from one village to another, as Kung and Liu (1997) or Liu, Carter, and Yao (1998), for example, have documented. The involvement of village authorities in the actual management and allocation of agricultural land is extremely variable. In some villages, farmers' land use rights have effectively been enforced and protected, leading to a situation where land use rights are "quasi-private" (see Kung (2002a)). In other places, collective land is periodically redistributed. This redistribution can take different forms, of varying extent, from the use of collective "flexible land" or "reserve fields" (*jidong tian*) to small scale reallocation (*xiao tiaozheng*) and village-wide land redistribution (*da tiaozheng*).

Decisions on land reallocation can be taken either at the administrative or at the natural village level (an administrative village gathers several natural villages). According to the 2002 CHIP survey data, reallocations are usually decided at the natural village level. Only one fifth of the reallocations were decided at the administrative village level. Land management policies thus generally respond to micro level decisions. The characteristics of village leaders and local interactions between villagers and their leaders play a key role in land rights determination, as Rozelle and Li (1998) stressed.

Despite central state regulations to limit administrative land reallocation, 40% of the villages surveyed in 2002 had conducted at least one land reallocation since 1998. In some of them, adjustments even occurred

almost every single year. In 23% of the villages, authorities retained some collective "reserve fields" in 2002.

The first dimension of variation in land rights insecurity is thus a village-level one, as the definition and stability of individual land use rights vary from one village to another, according to local political choices regarding agricultural land management and actual implementation of the "Household Responsibility System".

In this study, the variable we use to indicate the village-level dimension of insecurity is whether the village has retained some land in 2002 for adjustment (*jidong tian*, which is often translated as "reserve field" or "flexible land"). The existence of "flexible land" in 2002 means that there is room for land reallocation: land has been taken that can be redistributed. It thus indicates administrative land transfers at the village level. Moreover, it appears that these "reserve fields" have often been used by collective authorities in order to manipulate farmers and eventually increase levies, a practice that has been condemned by the Ministry of Agriculture since 1995 (see Cheng and Tsang (1996)). If a village retained "flexible land" in 2002, it thus indicates that there is village-level insecurity regarding land allocation.

Contractual Status of Plots In the framework of the "Household Responsibility System", different kinds of contracts on land are defined. Five major tenure types are officially sanctioned by the national government, each of them embodying a different set of rights and duties:[7] private plot (*ziliu di*), grain ration land (*kouliang tian*), contract land (*chengbao tian*), responsibility land (*zeren tian*) and reclaimed land (*kaihuang di*). Each tenure type encompasses a different set of rights and obligations for rural households, and guarantees a different level of security.

Historically, the distinction between grain ration land and responsibility land appeared during the 1980s, when the institutional arrangement known as the "two fields system" (*liang tian zhi*) was experimented. First set

7. For a precise and comprehensive account of different types of tenure in China, see the aforementioned article of Brandt et al. (2002).

up at the end of the 1980s in some counties of the Shandong povince, among which the most famous is Pingdu, this system progressively spread over China during the 1990s. Cheng and Tsang (1996) summarize this system as follows: "Under this scheme, some parts of the land are to be evenly distributed among the rural households as *kouliang tian* (land for the production of grain for self-consumption) with permanent tenancy rights. The remaining land is to be leased as *shangpin tian* (commodity land) or *zeren tian* (responsibility land) to grain-growing specialists by open bidding. Agricultural taxation and obligations to fulfill the state procurement quota are applied to the latter only". As is generally the case in rural China, official regulations and recommendations have not been directly and homogeneously implemented, and there have been local variations in the actual definition of the bundles of rights attached to grain-ration land and to responsibility land. Nevertheless, the founding principle has remained: *kouliang tian* is intended to enable farmers "to retain some land to secure their food supply" (Cheng and Tsang (1996)), whereas *zeren tian* is meant to be used to produce for the market and for the authorities, through quotas and taxes. Grain ration land plots are thus more secure than responsibility land, that is to say grain ration land is less likely to be seized and reallocated in case of out-migration because it is precisely designed to act as a "safety net" for farmers.

To simplify the analysis, we will divide households' land holdings into two general contractual types: grain ration and responsibility land. Private plots being qualitatively comparable and quantitatively marginal compared to grain ration land, we will include them under the label "grain ration land". For similar reasons, the label "responsibility land" covers responsibility land, contract land and reclaimed land.

Our hypothesis is that when land rights are jeopardized at the village level, rural individuals facing a lower insecurity on their land holdings should be more likely to migrate than those with higher insecurity. To formally express this hypothesis, we design, in the next section, a simple model, to analyze the allocation of a rural agent labor between migration and agriculture, taking into account these two dimensions of land rights

insecurity.

3 A model of temporary migration with insecure land rights

We design here a very simple model of a rural household migration decision in a context of land rights insecurity. This illustrative model carries out two objectives. First, it enables to determine under which conditions land rights insecurity has an impact on migration decisions. Second, it formally introduces and justifies the empirical method we use to identify the impact of land rights insecurity on migration decisions, that is, the interaction between village-level land rights insecurity and the contractual structure of rural households' land tenure.

3.1 Framework

In this study, decisions are studied at the household level rather than the individual level. In fact, land plots are, in most of the cases, contractually granted to farmers households, and not to individuals. In any case, the 2002 CHIP questionnaire collected information on land at the household level. This also implies that we will consider that labor allocation decisions, and especially migration decisions, are taken at the household level. We will thus adopt an unitary conception of the household. [8] Even when individuals out-migrate, income pooling still occurs at the household level. A unitary view of Chinese rural households should thus not be too misleading.

8. Without denying that household decisions are the results of intra-household negotiation and bargaining, the unitary model seems to be quite relevant in the Chinese case, especially for the matter of migration decisions. As rural migrant workers are usually relegated to a secondary status in Chinese cities, and are denied access to urban social services, or even formal urban housing, they are constrained not to consume in urban areas, and to save and remit a huge part of their earnings to their rural household.

Household endowments and life cycle

A household life-cycle is divided into two periods. During the first, the household can decide to allocate some work time to migration, while in the second one it definitively settles down in the rural area. That constraint makes the model much more tractable without modifying the central result, and seems to be realistic. Indeed, as mentioned earlier, for most Chinese rural individuals and households, migration appears to be a first step, a first period of their life-cycle, before a definitive return and settling in rural areas.

The household is endowed with a quantity of labor L, constant over time. It is also endowed with an overall quantity of land T_1, which includes both its "grain ration land", T_{G1}, and its "responsibility land", T_{R1}. As explained earlier, the first kind of land cannot be lost, reallocated or transferred by collective authorities, while the second kind can be seized and transferred to other agents from period to period, if a reallocation occurs. We will denote by s the share of "grain ration land" in the first period land endowment. We thus have $T_{G1} = sT_1$ and $T_{R1} = (1-s)T_1$.

To sum up, the initial endowment of a rural household is given by the set (L, T_{G1}, T_{R1}), or, alternatively, (L, T_1, s).

First period

During the first period, the household allocates labor between the rural activity and migration. We assume that the rural activity involves the use of land and labor, and that the agent acts as a private entrepreneur. So the rural activity yields an income $F(T_1, (1-m)L)$, and migration provides a total income mLw, where m is the share of the household working time spent migrating, $1-m$ being the time devoted to the rural activity. $F(T, (1-m)L)$ is the household rural production function. We assume that $F(.)$ is increasing and concave in both arguments. [9]. Finally,

9. Note that we take "grain ration land" and "responsibility land" as perfect substitutes in production. However, even if they differ in quality or other productive characteristics, that does not modify our main result.

w is the migrant wage. The agent's first period income is then a function of m:

$$W_1(m) = F(T_1, (1-m)L) + mLw \tag{3.1}$$

Second period

During the second period, the household cannot migrate; its whole income is thus generated through the rural activity, which yields an income $F(T_2, L)$. Moreover, its first period responsibility land, T_{R1}, may have been reallocated between the two periods. We thus have $T_2 = T_{G2} + T_{R2}$, with $T_{G2} = T_{G1} = sT_1$, because grain ration land is secure, and $T_{R2} = f(.)T_{R1} = f(.)(1-s)T_1$, where the function $f(.)$ captures the changes in responsibility land through redistribution.

From the above, it follows that $f(.)$ will depend on time spent migrating in the first period, $(1-m)L$, the function $f(.)$ being decreasing in m, and on collective management of land, Z. As mentioned earlier, villages' policies on land vary, and land rights are more secure in some places than in others. For this study, and for the reasons given earlier, we will use the fact that village authorities have retained some "flexible land" as an indication that there is administrative involvement in land management, and thus land rights insecurity for households.

Thus, second period income is:

$$W_2(m) = F(sT_1 + f(Z, (1-m)L)(1-s)T_1, L) \tag{3.2}$$

Migration decision

The rural household decides the optimal allocation of its labor during the first period so as to maximize its intertemporal income [10] (which equals its intertemporal utility, with a discount rate taken as equal to one).

10. To simplify our analysis, we have not introduced savings. Doing so and maximizing household's intertemporal consumption gives similar results.

Using (3.1) and (3.2), the maximization program of the agent is:

$$\begin{aligned} \max_{m} W =& F(T_1, (1-m)L) + mLw \\ &+ F\left([s + (1-s)f(Z, (1-m)L)]\, T_1, L\right) \\ \text{s.t. } & 1 \geq m \geq 0 \end{aligned} \tag{3.3}$$

3.2 Land rights insecurity and migration

Optimal labor allocation and optimal migration duration

The agent's optimization program yields two corner solutions, $m = 0$ and $m = 1$. When $m = 0$, no time is devoted to migration. It is more profitable for the household to spend all its first-period working time in the rural area, because the marginal productivity of rural labor is higher than the marginal income of migration, that is the urban informal sector wage. When $m = 1$, all working time is spent out-migrating. It is more profitable for the household to spend all its first-period working time migrating, because the marginal productivity of its rural labor is always lower than the marginal income of migration.

The interior solution, such that $0 < m^* < 1$, satisfies the condition:

$$\begin{aligned} & - F_2(T_1, (1-m^*)L) + w \\ & - (1-s)T_1 f_2(Z, (1-m^*)L) F_1\left([s + (1-s)f(Z, (1-m^*)L)]\, T_1, L\right) = 0 \end{aligned} \tag{3.4}$$

where F_1, F_2 and f_2 are the partial derivatives of $F(.)$ and $f(.)$ with respect to their first and second argument.

In the case where land rights are secure, the time spent out-migrating during the first period does not affect the quantity of land available in the second period, formally $f_2 = 0$, and so the optimal migration duration simply equates the marginal income of the rural activity, F_2, and the marginal income earned on the urban labor market, w.

If land use rights are not secure, that generates a new migration cost. This cost is formally equal to $f_2 T_{R1} F_1$, that is to say it is equal to the

marginal productivity of land in the second period, F_1, multiplied by the marginal gain or loss of "responsibility land" quantity due to out-migration, $f_2(1-s)T_1$. Quite intuitively, this cost is the marginal income loss caused by the loss of land due to out-migration.

Land rights insecurity and optimal migration duration

Equation (4) implicitly defines the optimal migration decisions m^* as a function of the quantity of land and of the productivity in the rural activity, T_1, T_2 and F_1, F_2, of the migrant wage, w, and of land rights insecurity, through s, the structure of the land endowment according to the contractual status of plots, and through the possible loss of responsibility land due to out-migration, $f_2(Z,(1-m^*)L)(1-s)T_1$.

There are thus two dimensions of land rights insecurity that bear consequences for migration decisions, the first one at the household level, the second at the village level. Our econometric estimation will be based on these two dimensions.

At the village-level, we will use the fact that village authorities retained some "reserve fields" in 2002 as an indication of their actual involvement in land management and plot distribution among households. We will denote by R the existence ($R=1$) or not ($R=0$) of these "reserve fields". This dummy thus indicates whether there is insecurity at the village level.

At the household level, we use s, the share of grain ration land in a household land holding. The higher s, the more secure is the household land, as "grain ration land" quantity does not vary, whereas "responsibility land" quantity can change due to village leaders' decisions, and this change will depend on the migration decision. s can thus be seen as indicating the exposure of a household land endowment to land rights insecurity.

Formally, we can express these hypotheses as follows:

If $R=0$, $T_{G2}=T_{G1}=sT_1$ and $T_{R2}=T_{R1}=(1-s)T_1$ (*i.e.*, $f(.)$ is constant),

If $R=1$, $T_{G2}=T_{G1}=sT_1$, and $T_{R2}=f(Z,(1-m)L)T_{R1}$ which gives $T_{R2}=f(Z,(1-m)L)(1-s)T_1$ (*ie*, $f(.)$ is not a constant, and depends on the migration duration). Moreover, we add the assumption that $f_2>0$:

the time spent at home positively affects the quantity of "responsibility land" available in the second period.

From the expression (4) and the above-mentioned assumptions, we get the following results: [11]

$$\frac{\partial m^*}{\partial s} = 0 \text{ if } R = 0 \text{ (}ie\text{ land rights are secure).} \tag{3.5}$$

$$\frac{\partial m^*}{\partial s} > 0 \text{ if } R = 1 \text{ (}ie\text{ land rights are jeopardized).} \tag{3.6}$$

If land rights are secure and not jeopardized, the contractual structure of the agent's land endowment, between "responsibility" plots and "grain ration" plots, should have no effect on migration decisions. This result is quite intuitive, for the main difference between the two kinds of plots is their exposure to insecurity and administrative redistribution. On the contrary, if land plots can be reallocated among villagers, the share of "grain ration land" in an agent's land holding should have a positive effect on the share of working time she can spend migrating, because when land rights are jeopardized, only "responsibility land" is likely to shrink. An agent with a larger share of "grain ration land" in her land holding is thus less exposed to land rights insecurity. She can afford to migrate more, as she is less constrained by the need to be in her village asserting her rights and defending her interests. This interaction between land rights insecurity at the village level and the contractual structure of households' land plots is the key element of our econometric estimation.

4 Empirical results

Our model has led to a set of implications about the link between land rights insecurity and migration duration. In this section, we first describe our identification strategy and then present our results.

11. See Appendix for the proof.

4.1 Econometric specification

To investigate the impact of land rights insecurity on migration decision, we have to deal with two main econometric issues: endogeneity and censoring. This subsection aims to show how our strategy, implemented within a semiparametric censored regression framework, will solve both of them.

Identification strategy

The main factor of land rights insecurity is village land insecurity among households. Yet, looking at the impact of land manipulation on villagers' migration decisions raises an endogeneity problem. Indeed, village land manipulation and villagers' migration decision can both be caused by village-level unobserved characteristics. Besides, it is likely that reverse causality takes place between land management and migration, for if a land seizure can have an impact on migration decisions, it is also possible that villagers' migration behaviors have an effect on village's management of land. In our empirical inquiry, we solve this endogeneity problem by using the interaction between land manipulation and the contractual structure of household land. Alone, the type of tenure of household land holdings might not be exogenous. For instance, there could be some systematic bias in village policies towards grain ration land. But despite being subject to heterogenous policies between villages, grain ration land will always be considered as more secure than other types of land at the household level. Moreover, the influence of grain ration land on households' migration decisions should be the same in all the villages if none of them have reserve fields, once household characteristics and village effects have been taken into account. This provides us with a key hypothesis in our identification strategy. To express this formally, let us consider the following reduced form, that gives the share of household working time devoted to migration, m, according to our model.

$$m(T, s, R, X, Z) = \alpha T + \lambda X + \gamma R + \beta_R s \times R + \beta s + \epsilon$$

X represents observed household characteristics. R is the dummy indi-

cating the fact that village authorities retained "reserve fields" in 2002. T is the amount of land used by the household, while s gives the share of "grain ration land" in total land plots. $s \times R$, the interaction between R and s, is the term of interest. Finally, ϵ is the error term.

As mentioned before, we have $E(\epsilon|s, R) \neq 0$. Our key assumption is that the error term is separable between s and v, with v indexing the villages.

$$E(\epsilon|s, v) = \epsilon_s + \epsilon_v \tag{4.1}$$

That is to say, two households with similar observable characteristics X and land holdings T but different shares of grain ration land, s and s', will have the same difference in ϵ on both types of village, either with $R = 1$ or $R = 0$. Hypothesis (4.1) implies:

$$\begin{aligned} &\forall(s, s'), \\ &E(\epsilon|s', R = 1) - E(\epsilon|s, R = 1) = E(\epsilon|s', R = 0) - E(\epsilon|s, R = 0) \end{aligned} \tag{4.2}$$

Our hypothesis, somewhat similar to the parallel trend hypothesis in a difference-in-difference strategy, as (4.2) shows, allows us to exploit the interaction term $s \times R$. After replacing the error term by its two components, the expectation of migration duration becomes :

$$E(m|v, T, s, X, R) = \alpha T + \lambda X + \gamma R + \beta_R s \times R + \beta s + \epsilon_s + \epsilon_v$$

Conditioning on the village fixed effects, ϵ_v, the exogeneity of other independent variables (T and X) is not a concern, and β_R becomes our unique indicator of migration response to land insecurity. Indeed, it is clear that nothing can be said about the impact of each dimension of land insecurity, taken alone.

Obviously, β is not identified. $\frac{\partial m}{\partial R} = 0$ if $R = 0$ will not be tested.

It is clear as well that we cannot disentangle the land seizure effect, γ, from the village fixed effects, ϵ_v: the latter will include the former. $\frac{\partial m}{\partial R} < 0$ if $R = 1$ cannot be tested either.

Yet, we can test one important implication of the model: $\beta_R > 0$.

Provided sufficient variation in s within villages of both $R = 1$ and $R = 0$ types, β_R is identified, as implied from (4.1).

The structure of land endowment according to types of land tenure thus allows us to identify the effect of land rights insecurity on households' migration decisions. The interaction of the occurrence of land retention with the proportion of grain ration land in household land holdings provides us with a way of overcoming the land manipulation endogeneity problem.

Censored regression model with fixed effects

The second problem we have to face is the censoring of our dependent variable, m, the share of household working time spent migrating. Obviously, m, the share we observe in our data, cannot be less than 0 or greater than 1.

The upper censoring is not a concern. Indeed, the share of migrant work is equal to one for only twenty-two households. Rural households, given their size (they often contain several generations), and given the constraints they face, are very unlikely to have all their members working all year as migrants. Whether or not we exclude them has little effect on our results. We therefore choose not to deal with the upper censoring. Our main preoccupation is the left censoring, affecting nearly 70% of the households.

To take into account the censoring, we implement a semi-parametric estimator for censored model with fixed effects described by Honoré (1992), the Identically Censored Least Squares estimator (ICLS).[12] To do so, we need a narrow set of hypotheses. We assume the error terms to be independent, identically and continuously distributed conditional on the independent variables and on the village fixed effect. Having no parametric hypotheses on the error terms is of particular interest as we have to deal with left-censoring. We use the downhill simplex method as optimization

12. Honoré (1992) proposes two estimators, depending on whether the objective function is based on least absolute deviation or on least squares. We choose the latter, more appropriate when the censoring level of the dependent variable is high.

routine. [13]

4.2 Empirical results

First insights

As explained above, our empirical investigation uses the interaction between village land insecurity and the contractual status of household land holdings to identify the impact of land rights insecurity on migration duration.

Confidence in the actual impact of this interaction can be derived first from the following graphs. In Figures 2.2 and 2.3, we plot the distribution of households including at least one migrant worker, according to the share of their working time devoted to migration. We plot separately this distribution for the households who have some grain ration land, and for those who do not. Figure 2 shows migration patterns for these two kinds of households in 2002 for villages where no "flexible land" was retained that year, whereas figure 3 displays the same distributions, but for villages where some "flexible land" was retained by village authorities.

From the comparison between these two figures, it appears that while the owning of some grain ration land does not seem to have a strong impact on households' migration decisions in villages where no "flexible land" is retained (figure 2), it shifts the share of working time devoted to migration to the right when some "flexible land" is actually retained by village authorities (figure 3). Grain ration land thus seems to allow a household to migrate more when land rights are insecure in a village, that is to say, grain ration land seems to act as a protection when land rights are jeopardized.

We now turn to the formal econometric analysis of the effect on migration decisions of this interaction between village uncertainty and the contractual

13. The implementation mainly relies on the programs written by Bo Honoré for GAUSS. Four optimization routines are provided: the downhill simplex method, Powell's method, the conjugate gradient method of Polak and Ribiere, and the Broyden-Fletcher-Goldfarb-Shanno (BFGS) method. We use the downhill simplex method because it is better at minimizing the objective function.

status of plots.

Variables

The dependent variable According to our theoretical framework, we consider households' working time, and we focus on the share of this working time allocated to migration. More specifically, the dependent variable m is, for a given household, the time spent working out of the county, divided by the time spent working, for all the workers of that household. In our sample, the time allotted to migration by households is, on average, 10%.

Land variables The key land variables are the total area of land used by the household, the share of grain ration land in total land, and the interaction between the share of grain ration land and the village-level land insecurity variable, namely whether or not the village retained some "flexible land" in 2002.

A household's land endowment is 9.7 mu on average, with grain ration land accounting for 39% of that. As mentioned earlier, 23% of sampled villages retained some "flexible land" in 2002.

Households characteristics In our theoretical framework, we have identified important household-level characteristics. Among them, the migration wage and the household's ability to work cannot appear directly in the reduced form. The variables we use are the reduced form determinants: years of education of the head of household, the proportion of men among working members, mean age and mean age squared.

Additional household controls As control variables, we add three households variables in some specifications: the share of dependent members (young and old) in the household, a dummy associated with households from ethnic minorities, and a wealth indicator built from the durable goods possessed by household.

Table 2.7 in the appendix presents descriptive statistics for all variables.

Results

Baseline regression results are presented in Table 2.3.

As we can see, the coefficient of the interaction between land rights insecurity and grain ration land is found to be positive, amounts to 0.19, and is significant at the 2% level. This result strongly confirms our main hypothesis: we actually get $\beta_R > 0$. The coefficient of the interaction term shows that land rights insecurity acts as a hindrance on migration. When land is manipulated by village authorities, a household whose plots are less exposed to reallocation because of their status can afford a longer migration duration. This also reveals that land endowments are still an important variable in household migration decisions.

What does the magnitude of the coefficient mean? Since our dependent variable is censored, we can obtain information on both the latent variable and the observed variable. The coefficient 0.19 gives information on the impact of the interaction term on the desired migration duration, $m^\star$. Let us consider a fictive average household, whose working time amounts to 745 days. If flexible land is retained at the village level, an additional percentage point of secure grain ration land in total land endowment will increase the desired share of working time devoted to migration by 0.19 percentage point. This amounts to $0.0019 \times 745 = 1.4$ additional days of migration.

To get the magnitude of the marginal effect on the actual migration duration, additional calculation is required. As Honoré (2008) stated, the average marginal effect on the dependent variable m is obtained by multiplying the coefficient by the probability that m is not censored [14]. Migration duration is uncensored with a probability of 0.29. Therefore, if land rights are insecure, an additional percentage point of grain ration land share will increase migration duration by $0.29 \times 0.0019 \times 745 = 0.4$ day. Let us consider two households, whose grain ration land shares differ by a standard deviation. If land rights are jeopardized, the migration differential between them would be 15 days. This is a significant variation,

14. Provided that the censoring points do not change while considering a change in the independent variable of interest. This condition is satisfied here.

for an average household allocates 10.2% of its working time to migration, which amounts to 76 days.

Among the other variables, total land area has a slight negative impact on migration duration. This result is quite intuitive, since as Y. Zhao (1999b) stated, land scarcity is a considerable push factor. However, unlike Y. Zhao (1999b), we are not concerned here with the binary decision of migration, as we focus on migration duration. More land naturally increases the productivity of agricultural labor, and thus reduces both the probability to migrate and the time devoted to migration.

Regarding the other variables, the results obtained are consistent with our expectations. The share of grain ration land, alone, has no significant effect on migration duration. The share of dependent members is found to have quite a strong and negative impact on migration duration (-0.23), significant at the 1% level. Education and age variables are also significant, at the five and ten percent level respectively. The higher the education level of the head of household, the shorter the migration duration. This confirms numerous studies showing that local off-farm jobs are scarce and that the most highly-educated people will have more opportunities to work in local off-farm jobs. Local off-farm work is usually their first best choice (see Guang and Zheng (2005)). The younger the household is on average, the larger the share of its working time devoted to migration. The dummy associated with ethnic minority is non significant. One explanation may be that ethnical diversity within village may be small, and the effect of ethnic origins may be entangled in village fixed effects.

Wealth indicators prove to be non significant, except for the dummy associated with the wealthiest households, significant at the 1% level. The wealthiest households migrate less. This is consistent with previous studies, pointing out that the wealthiest households have neither the need nor the desire to migrate. Among the selected controls, the variables related to wealth are of particular concern. On the one hand, one could argue that wealth indicators are endogenous. The purchase of durable goods can be a result of migration history. On the other hand, one could be surprised by their low significance, and fear that they fail to capture differences between

households' ability to pay migration costs or to undertake productive activities. Among the three dummies included in the regression, the last one (motorbike or car ownership) is the only significant one. Yet it is desirable to control for all the variables explaining the different choices faced by the household. To answer our first concern, we run the same regression without wealth indicators, and find no significant alteration of our coefficient of interest. Results are displayed in the same Table 2.3, under the label ICLS (2). Once wealth indicators are omitted, the coefficient of our variable of interest is equal to 0.18, and remains significant at the 5% level. As for our second concern, to check whether our variable properly captures wealth impacts on migration, we try using different wealth controls. We run the same regressions, with and without dummies for durable goods, adding the estimated value of self-owned house (columns (3) and (4) of Table 2.3). Results are not altered. The coefficient of this variable is positive. In the absence of dummies for durable goods, it is significant at the 10% level. The richer the household is, the longer the migration duration will be, the very upper fringe remaining the exception.

Still, these wealth indicators may fail to account properly for the capital that a household owns and can use in its farming activity. As agricultural production plays a crucial role in our model, we run additional regressions with different controls, the results of which are shown in Table 2.4. One relevant variable is the value of household fixed productive assets. The fixed assets related to agricultural production encompass draught animals, farm tools, and machinery. We run a similar regression by adding the value of these fixed productive assets. Their effect on migration decisions is strongly significant, and has, as expected, a negative sign. To better understand what type of fixed productive assets are of importance, we add each item separately. As columns (6), (7) and (8) of Table 2.4 show, the effect of these assets is largely driven by farm tools and machinery. Draught animals alone have no significant impact; they probably do not help differentiate between different households in a village.

The estimated value of household fixed productive assets captures wealth as well as capital used in agricultural production. In this case, the dummies

related to durable goods may not be sufficient to capture household wealth. We add to the regression a variable that captures wealth in a continuous way, the estimated value of self-owned house. Results are shown in Table 2.5, column (9). Productive assets still have a significant and negative impact, and the significance and value of the coefficient of the interaction between grain ration land and the retention of flexible land increases, whereas the land variable becomes less significant. The value of productive fixed assets is indeed likely to be collinear with the size of land. Keeping in mind the possibility of endogeneity, we remain cautious in interpreting such variables. However, we see from these additional regressions that results are quite robust when the indicators used for wealth are omitted or enriched with additional types of wealth controls.

4.3 Robustness checks

In this section, we present two sets of additional regressions in order to assess the robustness of our results.

Social status

In the theoretical framework we have designed, local off-farm work is not an option considered by the household. This simplification relies on the assumption that the trade-off between local off-farm work and migration is of less importance than the trade-off between migration and agriculture. The household which has access to local off-farm work will take advantage of it, and the remaining working time will then be subject to a choice between agriculture and migration. Migration is mostly seen as a second-best option, as Guang and Zheng (2005) observed. Therefore, the choice of migration duration should not be affected very much by the duration of local off-farm work. Yet, the total working time of each household includes off-farm work as well as migration and agriculture. And even if only a limited number of households in our sample are involved in both off-farm work and migration, local off-farm work is an alternative to rural households, that could call into question our modeling. The dependent

variable being a ratio, if our hypothesis is not correct, then variations in household working time devoted to local off-farm work would affect the migration working time. In this case, the addition of variables that are of essential importance in explaining access to local off-farm work would change our results substantially. An interesting control to add is a variable accounting for the household social status. In the context of a rural economy lacking off-farm job opportunities, social status is of strong importance in facilitating access to off-farm jobs. Communist Party membership, in China, helps to identify households more likely to get access to interesting local off-farm positions. Whereas its impact on migration is not clear and appears to be insignificant, the CCP membership variable is likely to play a key role in explaining access to local off-farm jobs. As far as migration is concerned, even if social status does play a role, it is likely that its impact depends mainly on existing networks and on the migration history of the village, and most of the effects at play should therefore be captured by the village fixed effects.

We therefore run a regression adding a dummy indicating whether the head of household belongs to the Chinese Communist Party. If off-farm work substantially affected household working time allotted to migration duration, one would expect this variable to have a significant effect or to alter the coefficients obtained previously for other variables. In fact, the inclusion of this variable does not alter our results, as shown by the ICLS (10) regressions of Table 2.5, and this variable is found to be non-significant. A comparison with the first regression (Table 2.3, ICLS (1)) shows that the variables of interest have identical coefficients. The results are consistent with our analysis. We are not claiming, however, that social status has no impact on migration duration. It is possible that the social status has two offsetting effects, people with better connections being either rich enough not to need to migrate, or well enough connected to village leaders not to fear land seizure if they do out-migrate. Nevertheless, this regression makes us confident that the simplifications made in our theoretical framework are reasonable. The addition of a key variable impacting local off-farm working opportunities does not alter the coefficient of the variables of interest. Our

conclusion is not jeopardized.

Off-farm work and migration

Our main robustness check aims to assess the relevance of our identification strategy. In this paper, we have argued that rural migrants may be deprived of some of their land because they are away from their villages, and are thus not present to defend their rights. We have claimed that the interaction between the retention of collective "flexible land" by village authorities in 2002 and the proportion of grain ration land in a household's total land holdings enables to identify the impact of land insecurity on migration decisions.

However, it could be possible that the significant and positive impact of this interaction term on migration behaviors is not due to land rights insecurity issues, penalizing absent individuals, but that it is caused by other reasons, affecting the general trade-off between agricultural work and off-farm work, local or out of the village.

If that was the case, the interaction term would be correlated not only with migration, but, more generally, with off-farm work, local or not. It would thus be positively correlated, not only with migration behaviors, but also with local off-farm work. On the other hand, if the interaction term does identify the impact of land rights insecurity, then its impact on the time allocated to local off-farm work should be small, if not insignificant. After all, individuals working off-farm but locally can be present to assert their rights and defend their interests if their rights are jeopardized.

As a robustness check, to verify that this interaction term captures the effect of land rights insecurity, we run a regression almost identical to the preceding ones, except that we take as dependent variable not the ratio of the time spent migrating to total working time, but the ratio of local off-farm work to total working time. In our sample, on average, households spent 22% of their working time in local off-farm jobs. If the coefficient associated with the interaction term is negligible or insignificant, that would confirm that our previous results actually identify an impact of land rights insecurity on migration.

Results are presented in Table 2.5. Whatever the specification, the coefficient associated with the interaction is much lower than in the previous regression : 0.07. With a standard deviation of 0.05, it is found to be non-significant. These regressions therefore strongly confirm our previous results.

It is also interesting to note that local off-farm working time responds in a slightly different way to the different independent variables. The dummies associated with household durable goods are more significant. The dummies for two bicycles and for motorbike or car are both significant at the 1% level: wealth seems to matter more for access to local off-farm jobs than for migration opportunities. The social status variable is found to have a highly significant positive impact, with a coefficient of 0.08. The strong impact of Communist Party membership on local off-farm opportunities confirms some of the interpretations proposed above.

5 Conclusion

In this paper, we investigate the effect of land rights insecurity on the migration decisions of rural people, and more specifically on migration duration. The underlying idea, formalized in a simple model, is that in a context where collective authorities can seize and reallocate land plots, the more time an individual spends out of her village, the more likely she is to lose at least some of her land. Future land holdings are thus endogenous as they depend on present migration duration. Moreover, land use rights insecurity in China is idiosyncratic, depending as it does on village-level management of collective land and on the contractual status of plots. The effect of out-migration duration on changes in land holdings is thus not the same for all rural people, and the consequent constraint on migration is more acute for some than for others.

The empirical results drawn from a 2002 CASS survey data using a semiparametric censored regression model strongly support these views. It appears that, when land use rights are jeopardized, migration behavior varies with the contractual structure of land holdings. When land is

manipulated by village authorities, households having more secure grain ration land plots can afford to spend more time migrating.

It is well known that land rights insecurity has a strong effect on rural households' investment decisions. We show here that land rights insecurity also influences households' labor allocation. Insecure and inalienable land rights act as a centripetal force, preventing rural people from moving out of agriculture and out of rural areas.

The results we obtained here also stress that the "floating" characteristic of rural migrants in China is not only due to the administrative constraints on definitive settling in urban areas, through the *hukou* registration system, but is also a consequence of the institutional arrangements in rural areas. If rural migrants do not settle in cities, but keep moving back and forth between home villages and destination areas, it is not only because cities push them back, but also because their home villages actually pull them back.

However, even if land rights insecurity is a manifest constraint on the labor allocation of rural households, one should not unilaterally conclude that Chinese institutional land arrangements should be merely removed, and land rights privatized.

Firstly, it is not clear that if land rights were privatized and controls on population moves loosened, rural people would take the individually and socially optimal decisions on their labor allocation. Actually, one of the main arguments of the Chinese State against freeing land and labor allocations is the fear of "blind migrations" (*mangliu*) by rural people to the cities.

Secondly, the effects of Chinese land arrangements are not limited solely to the dimension of rural labor allocation. It is possible that this constraint they impose on rural households is counterbalanced by advantages in other areas. Indeed it appears that Chinese farmers did not, at least in the end of the 1990s, generally seem to favor an evolution toward privatization, as James Kai-sing Kung and Liu Shouying (see Kung (1995) and Kung and Liu 1997) were the first to notice when they investigated Chinese farmers' preferences. It is thus possible that these drawbacks of the collective

ownership of land are seen, in Chinese rural areas, as the price to pay for still under-studied gains from this institutional framework. For example, even if land use rights on particular plots are not guaranteed over time, the collective management of land secures an access to agricultural land for any rural individual. It could thus constitute an insurance device for Chinese rural people, who, generally speaking, bitterly lack all kinds of social security services. Our study results appear to back such an intuition, for the huge proportion of people who tend to cut short their stay in cities when a reallocation occurs proves how much they rely on the land. Even if land itself may not be sufficient to provide a living for a household, and even if farming households hope to find off-farm occupations, at home as well as in distant cities, it remains a protection when the future is uncertain.

6 Appendix

6.1 The impact of land rights insecurity on migration: Proof

We use here simple comparative statics methods to determinate the effect of the share of grain-ration plots in total land endowment, s, on the optimal share of working time spent migrating, m^*, depending on village-level land rights insecurity, R. We want to prove that:

$$\frac{\partial m^*}{\partial s} = 0 \text{ if } R = 0 \text{ (}ie\text{ land rights are secure).}$$
$$\frac{\partial m^*}{\partial s} > 0 \text{ if } R = 1 \text{ (}ie\text{ land rights are insecure).}$$

From equation (3.3), we know that the objective function of the household C depends on the choice variable m and the parameter s, with $(m, s) \in [0; 1]^2$:

$$C(m, s) = F(T_1, (1-m)L) + mLw + F\left([s + (1-s)f(Z, (1-m)L)]\, T_1, L\right)$$

When land rights are secure ($R = 0$), the quantity of land does not change from the first to the second period, $f(.) = 1$, the objective function is simply:

$$C(m, s) = F(T_1, (1 - m)L) + mLw + F(T_1, L)$$

$C(.)$ therefore does not depend on s, and so, obviously, the optimal m does not depend on s either. We thus have our first result:

$$\boxed{\frac{\partial m^*}{\partial s} = 0 \text{ if } R = 0}$$

When land rights are insecure ($R = 1$), the quantity of land does change from the first to the second period, and this evolution is captured by the function $f(.)$. We make the following assumptions on this function.

When $m > 0$, $f(.)$ is increasing in the share of working time spent in the rural area, or, alternatively, decreasing in m. Moreover, we assume that $f(.) < 1$. Indeed, $f(.) > 1$ would mean that the household would actually gain more "responsibility land" during an administrative reallocation of plots. This is not likely to be the case, for out-migrating households are always a minority of a village population, and the only likely redistribution of land is from less frequently present people to more frequently present ones. There is no chance that a household with an out-migrating member could gain more land. So we can assume that $f(.) < 1$ if $m > 0$.

When $m = 0$, $f(.) \geq 1$ for the same reasons as expressed above: the only likely redistribution of land is from less frequently present people to more frequently present ones, and so households that do not migrate at all should gain, or at least not lose, "responsibility land".

To sum up, we assume that $f(.)$ is continuously differentiable, increasing in the working time spent in the rural area (*i.e.*, decreasing in m), and inferior to 1 when $m \in]0; 1]$. However, $f(.)$ displays a discontinuity for $m = 0$, and $f(L) \geq 1$.

When $m \in]0; 1]$, we know that $m^*(s) = \arg\max_{m \in [0;1[} C(m, s)$, where $C(.)$ is continuously differentiable in m, and the cross partial derivative of

$C(m,s)$ is:

$$-T_1 f_2(Z,(1-m)L)\left[-F_1\left([s+(1-s)f(Z,(1-m)L)]\,T_1,L\right)\right.$$
$$\left.+(1-s)T_1(1-f(Z,(1-m)L))F_1^2\left([s+(1-s)f(Z,(1-m)L)]\,T_1,L\right)\right]>0$$

for $f_2>0$, $F_1>0$, $(1-s)T_1\geq 0$, $F_1^2\leq 0$, because of the decreasing returns of the rural activity, and finally $f(.)<1$.

$C(m,s)$ therefore has strictly increasing differences in (m,s), and, by Topkis (1978) theorem, we get our result:
$\frac{\partial m^*}{\partial s}>0$ if $R=1$ and for $m>0$.

To show that the previous property holds on the whole segment $[0;1]$, that is, including the case $m=0$, we have to establish that C has increasing differences even when m is at its boundary 0. We take two values of m, 0 and $\overline{m}>0$ and two values of s, $\overline{s}$ and $\underline{s}$, with $\overline{s}>\underline{s}$. We then have:

$$\begin{aligned}&(C(\overline{m},\overline{s})-C(0,\overline{s}))-(C(\overline{m},\underline{s})-C(0,\underline{s}))\\ =&F\left([\overline{s}+(1-\overline{s})f(Z,(1-\overline{m})L)]\,T_1,L\right)-F\left([\underline{s}+(1-\underline{s})f(Z,(1-\overline{m})L)]\,T_1,L\right)\\ +&F\left([\underline{s}+(1-\underline{s})f(Z,L)]\,T_1,L\right)-F\left([\overline{s}+(1-\overline{s})f(Z,L)]\,T_1,L\right)\end{aligned}$$

Which is positive, for $\overline{s}>\underline{s}$, $f(V,(1-\overline{m})L)<1\leq f(V,L)$, and $F(.)$ is increasing in both arguments. $C(.)$ thus has increasing differences for all $m\in[0;1]$.

We then get our second result:

$$\boxed{\frac{\partial m^*}{\partial s}>0 \text{ if } R=1}$$

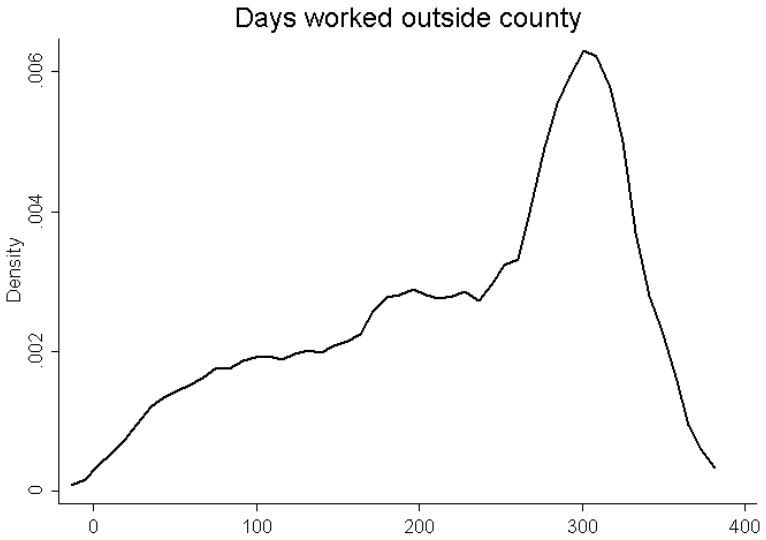
6.2 Figures, tables and results

TABLE 2.1 : Descriptive statistics on labor force

Variable	**Migrants**	**Non migrants**	**All workers**
Mean			
Age	28,7	40,2	38,6
Years of education	8,7	7,4	7,6
Proportion (%)			
Men	66,6	52,8	54,8
Married	48,5	82,5	38,6
Household's head	23,9	38,6	36,5
Number of obs.	3404	20425	23829

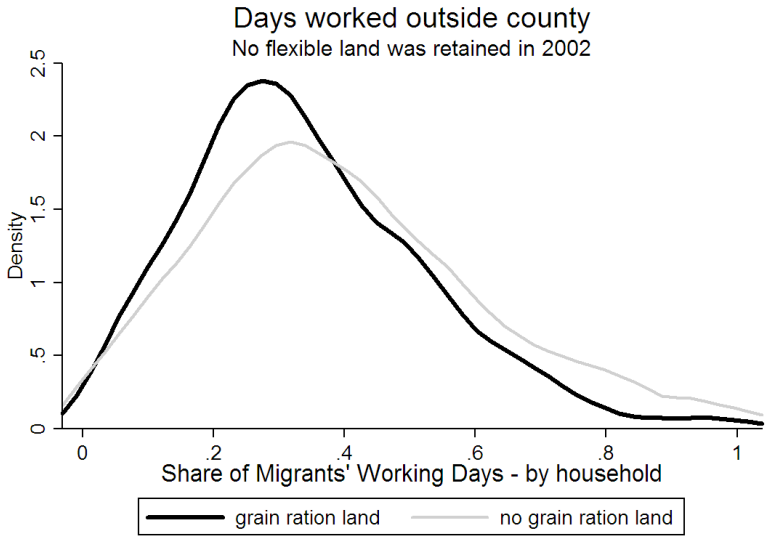
Source : 2002 CHIP survey.

FIGURE 2.1 : Migration days - density.



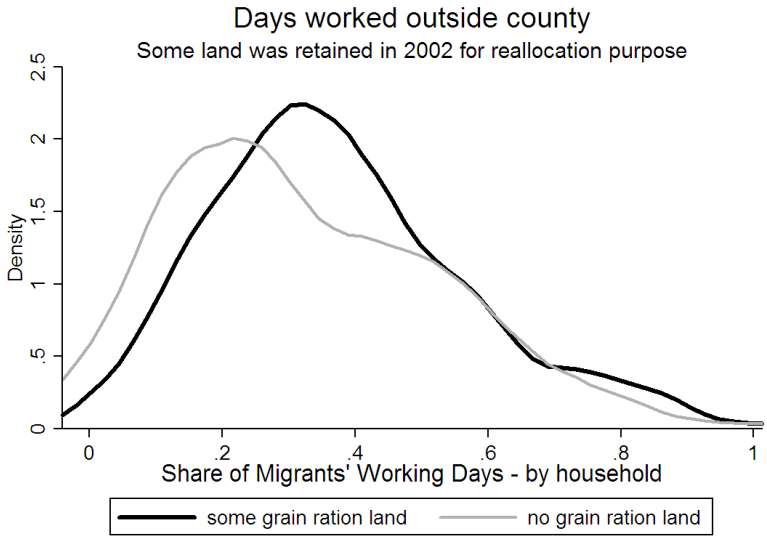
Source : 2002 CHIP survey. Sample restricted to migrant individuals.

FIGURE 2.2 : Migration behaviors in villages not retaining "flexible land"



Source : 2002 CHIP survey. Sample restricted to households with migrants.

FIGURE 2.3 : Migration behaviors in villages retaining "flexible land"



Source : 2002 CHIP survey. Sample restricted to households with migrants.

TABLE 2.2 : Primary work place of rural laborers

Primary work place	Percentage of workers
Agricultural work (within village)	52,68
Within village	16,55
Outside village, within township	10,31
Outside township, within county	5,59
Outside county, within province	6,78
Outside province	8,10
Total	100%

Source : 2002 CHIP survey.

TABLE 2.3 : Results for the share of migration in total working time (1)

	Identically Censored Least Squares Regressions			
Model	**ICLS (1)**	**ICLS (2)**	**ICLS (3)**	**ICLS (4)**
Variables	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)
Total area of land	-0.003**	-0.003***	-0.003***	-0.003***
	(0.0012)	(0.0011)	(0.0011)	(0.001)
Share of grain ration land	-0.04	-0.04	-0.04	-0.05
	(0.038)	(0.039)	(0.039)	(0.039)
Flexible land in 2002×	**0.19****	**0.18****	**0.19****	**0.19*****
Share of grain ration land	(0.075)	(0.073)	(0.073)	(0.074)
Share of dependent members	-0.23***	-0.23***	-0.23***	-0.22***
	(0.028)	(0.029)	(0.03)	(0.03)
Years of education of hh head	-0.005**	-0.005**	-0.005**	-0.005**
	(0.0023)	(0.0024)	(0.0024)	(0.0023)
Hh mean age	-0.03***	-0.03***	-0.03***	-0.03***
	(0.005)	(0.005)	(0.005)	(0.005)
Hh mean age squared	0.0002***	0.0002***	0.0002***	0.0002***
	(0.00006)	(0.00006)	(0.00006)	(0.00006)
Hh mean number of men	0.03	-0.02	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)
Ethnic minority	0.02	-0.02	-0.02	-0.02
	(0.06)	(0.06)	(0.06)	(0.06)
Household durable goods	*yes*	*no*	*no*	*yes*
(ref : three or more bikes)				
One bicycle	-0.05			-0.05*
	(0.029)			(0.028)
Two bicycles	-0.01			-0.02
	(0.02)			(0.018)
Motorbike or car	-0.07***			-0.07***
(0.02)				(0.02)
Estimated value of			6.8 E-7*	8 E-7**
self-owned house			(3.5 E-7)	(3.5 E-7)
χ^2 test for joint significance	422	393.7	415	441
	(p-val=0%)	(p-val=0%)	(p-val=0%)	(p-val=0%)
Number of villages :	862	862	862	862
Number of households :	8005	8005	8005	8005

Significance levels : $*$ 10% $**$ 5% $***$ 1%

Source : 2002 CHIP survey.

TABLE 2.4 : Results for the share of migration in total working time (2)

Model	Identically Censored Least Squares Regressions			
	ICLS (5)	**ICLS (6)**	**ICLS (7)**	**ICLS (8)**
Variables	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)
Total area of land	-0.002** (0.001)	-0.003** (0.0012)	-0.003*** (0.0011)	-0.003*** (0.0012)
Share of grain ration land	-0.04 (0.038)	-0.04 (0.038)	-0.04 (0.039)	-0.04 (0.039)
Flexible land in 2002 × Share of grain ration land	**0.18**** (0.072)	**0.18**** (0.075)	**0.19**** (0.074)	**0.19**** (0.074)
Share of dependent members	-0.23*** (0.03)	-0.23*** (0.03)	-0.23*** (0.03)	-0.23*** (0.029)
Years of education of hh head	-0.005** (0.0023)	-0.005** (0.0023)	-0.005** (0.0023)	-0.005** (0.0023)
Hh mean age	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)
Hh mean age squared	0.0002*** (0.00006)	0.0002*** (0.00006)	0.0002*** (0.00006)	0.0002*** (0.00006)
Hh mean number of men	0.03 (0.03)	0.03 (0.03)	-0.03 (0.03)	-0.02 (0.03)
Ethnic minority	-0.02 (0.06)	-0.03 (0.06)	-0.03 (0.06)	-0.02 (0.06)
Hh durable goods (ref : 3 or more bikes)				
One bicycle	-0.05* (0.028)	-0.05 (0.029)	-0.05 (0.029)	-0.05* (0.028)
Two bicycles	-0.01 (0.018)	-0.01 (0.02)	-0.02 (0.02)	-0.01 (0.018)
Motorbike or car	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)
Value of hh productive assets	*sum*	*item*	*item*	*item*
Draught animals, tools and machinery	-8.3 e-6*** (2.6 e-6)			
Draught animals		-6.7 e-6 (6.6 e-6)		
Large & medium farm tools			-6.5 e-5*** (2.2 e-5)	
Machinery and equipment				-8.3 e-6*** (3 e-6)
χ^2 test for joint significance	422.3 (p-val=0%)	414.9 (p-val=0%)	442.1 (p-val=0%)	421. 3 (p-val=0%)
Number of villages :	862	862	862	862
Number of households :	8005	8005	8005	8005

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

Source : 2002 CHIP survey.

TABLE 2.5 : Results for the share of migration in total working time (3)

	Identically Censored Least Squares Regressions	
Model	**ICLS (9)**	**ICLS (10)**
Variables	Coefficient (Std. Err.)	Coefficient (Std. Err.)
Total area of land	-0.002*	-0.003***
	(0.001)	(0.0012)
Share of grain ration land	-0.04	-0.04
	(0.038)	(0.039)
Flexible land in 2002×	**0.199*** **	**0.19** **
Share of grain ration land	(0.072)	(0.074)
Share of dependent members	-0.24***	-0.23***
	(0.03)	(0.029)
Years of education of hh head	-0.006**	-0.005**
	(0.0023)	(0.0023)
Hh mean age	-0.03***	-0.03***
	(0.005)	(0.005)
Hh mean age squared	0.00013***	0.0002***
	(0.00006)	(0.00006)
Hh mean number of men	0.009	-0.02
	(0.03)	(0.03)
Ethnic minority	-0.04	-0.02
	(0.06)	(0.06)
Household durable goods (ref : three or more bikes)		
One bicycle	-0.05**	-0.05**
	(0.028)	(0.028)
Two bicycles	-0.02	-0.02
	(0.018)	(0.018)
Motorbike or car	-0.06***	-0.07***
	(0.02)	(0.02)
Value of hh productive assets	*yes*	*no*
Draught animals, tools, and machinery	-5.9 e-6**	
	(2.4 e-6)	
Estimated value of self-owned house	8.3 e-7**	
	(3.6 e-7)	
Social status variable	*no*	*yes*
Hh head belongs to CCP		0.007
		(0.015)
χ^2 test for joint significance	433.9	416.8
	(p-val=0%)	(p-val=0%)
Number of villages :	862	862
Number of households :	8005	8005

Significance levels : * 10% ** 5% *** 1%

Source : 2002 CHIP survey.

TABLE 2.6 : Results for the share of migration in total working time (4)

Model	Identically Censored Least Squares Regressions		
	ICLS (11)	**ICLS (12)**	**ICLS (13)**
Variables	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)
Total area of land	-0.007***	-0.007***	-0.007***
	(0.0015)	(0.0014)	(0.0016)
Share of grain ration land	-0.04	-0.04	-0.04
	(0.033)	(0.033)	(0.032)
Flexible land in 2002 ×	**0.075**	**0.075**	**0.075**
Share of grain ration land	**(0.05)**	**(0.049)**	**(0.049)**
Share of dependent members	0.05***	0.05***	0.07***
	(0.021)	(0.022)	(0.021)
Years of education of hh head	0.016***	0.017***	0.014***
	(0.0018)	(0.0018)	(0.0018)
Hh mean age	0.015***	0.016***	0.015***
	(0.0035)	(0.0036)	(0.0035)
Hh mean age squared	-0.0002***	-0.0002***	-0.0002***
	(0.00004)	(0.00004)	(0.00004)
Hh mean number of men	-0.004	-0.0008	-0.005
	(0.024)	(0.025)	(0.024)
Ethnic minority	-0.02	-0.02	-0.02
	(0.04)	(0.04)	(0.04)
Household durable goods	*yes*	*no*	*yes*
(ref : three or more bikes)			
One bicycle	-0.03		-0.03
	(0.021)		(0.021)
Two bicycles	-0.04***		-0.03***
	(0.012)		(0.012)
Motorbike or car	0.07***		0.07 ***
	(0.011)		(0.011)
Social status variable	*no*	*no*	*yes*
Hh head belongs to the CCP			0.08***
			(0.01)
χ^2 test for joint significance	229.3	169.6	295.6
	(p-val=0%)	(p-val=0%)	(p-val=0%)
Number of villages :	862	862	862
Number of households :	8005	8005	8005

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

Source : 2002 CHIP survey.

TABLE 2.7 : Descriptive statistics for the main variables of interest

Households	**All**		**With Migrant worker(s)**		**Without**	
Variables	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Share of hh working time devoted to :						
Migration	0.10	0.193	0.36	0.195	0	0
Local off-farm work	0.22	0.286	0.07	0.139	0.28	0.308
Total area of land	9.3	9.78	8.3	8.45	9.7	10.25
Share of grain ration land	0.39	0.377	0.42	0.373	0.37	0.378
Years of education of hh head	7.2	2.61	6.9	2.60	7.3	2.60
Share of dependent members	0.31	0.230	0.26	0.214	0.33	0.234
Hh mean number of men	0.57	0.197	0.55	0.180	0.57	0.203
Hh mean age	39	8.11	37	6.05	40	8.66
Ethnic minority	0.12		0.10		0.13	
Hh durable goods - Proportion of hhs having :						
One bicycle	0.18		0.21		0.16	
Two bicycles	0.28		0.31		0.27	
Three or more bicycles	0.26		0.28		0.27	
Motorbike or car	0.28		0.2		0.3	
Value of hh fixed productive assets (Yuan) :						
Draught animals	727	1825	568	1160	797	2030
Farm tools	250	1034	227	368	259	1203
Machinery and equipment	1087	3210	689	1848	1248	3607
Sum of three previous items	2063	3987	1484	2304	2298	4472
Estimated value of house	23485	28591	21435	22827	24316	30584
Hh head belongs to CCP	0.17		0.15		0.18	
Number of households	8005		2319		5686	

Source : 2002 CHIP survey, restricted to households with land and working member(s).

3 Land Interests and Land Conflicts: An Investigation of the Determinants of Local Land Institutions in Rural China.

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1 Introduction

From the 1950s to the end of the 1970s, in the heyday of socialism and collectivism, the general organization and functioning of both the Chinese economy and society have not been especially favorable to its rural citizens. As in other socialist countries, the structures of economic planning and of prices were designed to transfer resources out of the agricultural sector and of rural areas to sustain the development of industry and of urban regions (see for example Knight (1995) for an analysis in the case of China). Besides this general, structural, imbalance, rural people have also been the main victims of the excesses of collectivist experiments, as during the Great Leap Forward (Li and Yang (2005)). As a consequence, when Deng Xiaoping and his supporters eventually rose to power at the end of the 1970s, rural and agricultural reforms were among their top political priorities. Within a

few years, the collectivist structures of the rural People's Communes were dismantled, and replaced by the "Household Responsibility System" (HRS), which still prevails today. These changes were critical, and, as Naughton (2007) (p. 88) puts it, "it was in the countryside that reforms succeeded first, and it was the dramatic success of rural reforms that cleared the way for continuing and progressively more profound change".

Since then, the Chinese central government has made repeated and increasing efforts to homogenize, extend and secure rural citizens' rights on land. Over the last dozen of years, central authorities have revised, in 1998, the 1986 Land management law, they then enacted, in 2002, a new Law on land contracts in rural areas, and, finally, they passed in 2007 a crucial Property law with important provisions on agricultural land. At the same time, from 2004 to 2011, the State Council of the National People's Congress (SCNPC) and the Central Committee of the Chinese Communist Party (CCPCC) have published eight consecutive Documents No. 1 [1] dedicated to rural and agricultural problems, and especially to rural land rights issues. On top of that, several laws and programs related to rural institutions and agricultural production have been enacted, such as the modification of the 1988 law on village democracy in 1998, the reform (2002) and then the suppression (2005) of agricultural taxation, and the "grain-for-green" program of soil preservation (2002).

Rural areas, agricultural income, and especially land rights institutions, have then been a primary focus of the Chinese State, at the beginning of the "reform and opening" era, in the late 1970s and early 1980s, and then anew for the last dozen of years. The general guideline of these policies has been to grant Chinese rural households extended and secure rights over their land plots, but under the two main legal and official limitations that, first, land ownership remains collective, in local authorities' hands, while households only have land-use (or, since 2007, usufructuary) rights, and, second, farmers cannot change the use of their land from agricultural

1. The SCNPC and CCPCC Documents are issued on a yearly basis by central authorities in order to give political and administrative directions. The "Document No.1", the first published in a given year, is considered as indicating the top political priority of the Chinese government for the year to come.

to non-agricultural ones. According to the prevailing official laws and regulations, Chinese rural citizens and farmers should then enjoy extended and secure rights over their plots. The motivation behind these policies is that such rights should bring about numerous benefits, at the individual and aggregate levels, well identified by theoretical as well as empirical literature.[2] In the case of China, it has been shown that secure and extended land rights could lead to increased investments on land (Li, Rozelle, and Brandt (1998), Jacoby, Li, and Rozelle (2002), Deininger and Jin (2003)), and to a better allocation of both labor across activities (Yang (1997), de la Rupelle et al. (2009a), Mullan, Grosjean, and Kontoleon (2011)) and land across households (Lohmar, Zhang, and Somwaru (2001), Deininger and Jin (2005), Jin and Deininger (2009)). Sound land rights, with the development of land markets, should then both increase economic efficiency and reduce inequalities.

However, despite these efforts from the central government and the expected gains from extending and securing individual land rights, surveys carried out in the 1990s and 2000s on rural land issues have noticed that local, village-level, institutional arrangements over land have been extremely diversified, and that, generally speaking, farmers' rights on land have remained limited and insecure. For some scholars, for example the teams of the Rural Development Institute (now Landesa),[3] this discrepancy between official legal and regulatory provisions on the one hand and the diversity of actual local practices on the other at least partly comes from the lack, at the grassroots level, of legal knowledge of village leaders and of rural citizens, as well as from a lack of actual political and administrative implementation means of the central government. A second argument, developed for example by Rozelle and Boisvert (1994), Rozelle and Li (1998) and Brandt, Rozelle, and Turner (2004), is that farmers' land rights insecurity and limitations are due to village leaders, who have both the means and the incentives to manipulate land allocation in their village, in

2. See Deininger and Feder (2001) and Besley and Ghatak (2010) for recent and comprehensive literature reviews.

3. See their series of reports: Prosterman, Schwarzwalder, and Ye (2000), Schwarzwalder et al. (2002), Zhu et al. (2006) and Prosterman et al. (2009).

order to extract surplus or achieve various personal objectives. Finally, the works of James Kung [4] have also shown that local land rights arrangements respond to the economic context and to rural citizens' preferences, and that limited and insecure land rights can sometimes be acknowledged and even favored by at least part of the rural citizens themselves, for example because of egalitarian concerns.

The Chinese case is then an interesting illustrative case of the academic as well as political debate on the link between individual rights and economic development. If, as mentioned before, it is generally considered that more secure, more extended and better specified individual property rights enhance economic efficiency, one of the most common views about the endogenous emergence of property rights, the "evolutionist" one, holds that, reversely, economic development leads to an individualization of property rights, as famously argued, for example, by Demsetz (1967), or, in the specific case of agriculture, by Boserup (1965). The general mechanism they have in view is that, with development, for example with better technology, improved access to markets, or growing demographic pressure, the potential gains of extended and secure individual rights increase, raising demand for them, and then leading to their endogenous emergence. However, whereas this mechanism has some explanatory power, the "evolutionist view" is often prone to overstate the gains to be expected from the individualization of rights, whereas it does not take into account the distributive conflicts raised by the redefinition of rights. [5]

The objective of this paper is then to empirically identify, using data on Chinese rural households and villages from the 2002 CHIP survey, the role of local leaders and villagers in shaping local land institutions, as well as, through these different actors, the influence of the overall economic and political context on the definition of individual land rights. The main result is that, whereas the influence of village leaders is generally consistent with previous literature as well as with intuition, that is to say they tend to increase land rights insecurity and limit farmers' rights in order to

4. Kung (1995), Kung and Liu (1997), Kung (2000) and Kung (2002a).
5. See Vendryes (2011) for a review.

extract income, the interests of rural citizens themselves are diverse, and, depending on the context and on available opportunities, this conflict of interests can end up in more or less secure and extended land rights. Most notably, a higher level of economic development, indicated by more numerous off-farm opportunities, can actually lead to an increase of the limitations and insecurity of individual land rights.

The plan of the paper is as follows. The first part will provide a general overview of the characteristics of land rights arrangements in China and of their diversity, with a special emphasis on the dimensions investigated by the 2002 CHIP survey. The second section will discuss the influence of village leaders in shaping local land arrangements. The fourth and fifth part will give respectively a theoretical and an empirical analysis of villagers' interests. The last section concludes.

2 Land rights in China: Dimensions of diversity

As stated in the introduction, there is an important discrepancy between the formal provisions of the Chinese laws regarding rural land rights, and actual land practices in rural China. This section describes the main characteristics of both, with a special emphasis on the dimensions enquired by the 2002 CHIP survey, of which some preliminary descriptive statistics are presented. The rural part of this survey was carried out during Spring Festival 2003, and enquired the situation in the previous year of 9200 households, gathering 37 969 people, distributed across 961 villages in 22 provinces of mainland China.[6] Besides households questionnaire, this survey collected important information on villages' conditions, institutions and governance, and in particular on land rights arrangements.

6. The 22 sampled provinces are, listed from East to West, and from North to South: Jilin, Liaoning, Beijing, Hebei, Shandong, Jiangsu, Zhejiang, Guangdong, Shanxi, Henan, Anhui, Hubei, Jiangxi, Hunan, Shaanxi, Chongqing, Guizhou, Guangxi, Xinjiang, Gansu, Sichuan, Yunnan.

2.1 Land rights in rural China: The official regulations

As mentioned in the introduction, land rights in rural areas have been the subject of a very important legislative and regulatory activity since the end of the 1970s. This section will synthetically describe the main provisions of Chinese laws regarding agricultural land itself, as well as the ones concerning two important institutional dimensions of rural China: local democracy and taxation. [7]

2.1.1 Legal rights over agricultural land

The very foundation of land legal status and of individual land rights lies in the articles 9 and 10 of the 1982 Chinese Constitution: land ownership remains collective. Land used for agricultural production is collectively owned by farmers at the local level, whereas other kinds of land, including urban land, are directly owned by the State. Based on this principle of collective ownership, the article 9 of the 1986 Land management law states that agricultural land can be allocated to individuals or units for use and management. These two legal provisions are the founding principles of what is known, since the end of the 1970s, as the "Household responsibility system" (HRS): land ownership remains collective, and rural citizens have land-use rights [8] over specific plots.

On this basis, a series of laws (1986 Land management law, revised in 1998, 2002 Rural land contracting law, 2007 Property law) and of central authorities' Documents (1980 Document No. 75, 1982-1986 Documents No. 1, 1993 Document No. 11, 1997 Document No. 16, 2001 Document No. 15, and 2004-2011 Documents No. 1) have further specified the extent of individual rights over land.

According to them, farmers' rights are extremely extended and secure. Indeed, the only right rural individuals do not officially have is the one to

7. A detailed overview of the historical evolution of these official laws and regulations on rural land can be found in Vendryes (2010b).

8. Which have been defined as usufructuary rights by the 2007 Property law.

turn their agricultural land plots into non-agricultural uses. [9] Most notably, farmers have, since 1986, a right to transfer, on land markets, their land use rights. Chinese rural citizens' official lands rights are also, officially, very secure, as, according to 1997 Document No. 16, contracts on land between farmers and village authorities are to be signed for 30 years, [10] and should not be unilaterally encroached on or broken by village leaders.

Since the beginning of the reforms in 1978, the Chinese central government has then progressively and gradually extended rural citizens' individual rights over land, at the expense of local collective authorities, who remain the official owners of agricultural land. Since the beginning of the 2000s, these individual rights are then, officially, very extended and secure. To ensure that these rights will not be jeopardized by local leaders, the central government has also taken steps to empower rural citizens, through the reforms of local governance and of rural taxation, which are respectively discussed below.

2.1.2 Surrounding rural institutions

Village democracy As for local governance, in 1998, Chinese central authorities revised the 1988 Organic law of villagers committees, to arrange the implementation of village-level democracy, [11] that is to say to set up villagers assemblies and committees, and election processes for the selection of village leaders. Local affairs are then supposed to be under the close scrutiny of rural citizens.

The development of village-level democracy is naturally extremely significant for the definition of local land rights institutional arrangements, as it modifies the balance of power between village leaders and rural citizens (Oi and Rozelle (2000), Luo et al. (2007)), and then, consecutively, the

9. Of course, farmers also have to abide by central laws and regulations regarding soil uses and ecological concerns.

10. The duration of these contracts has been implicitly prolonged for unspecified duration by the 2007 Property law.

11. It should be noted here that the village (*cun*) constitutes only an informal level in the Chinese administrative hierarchy, which first official level is the township (*xiang*) gathering several villages. Higher levels are respectively the county (*xian*), the prefecture (*diqu*) and the province (*sheng*).

ways through which their conflicting interests can be translated into land rights. According to the 1998 revision of the 1988 Organic Law, the main power of decision in a village lies within its Villagers' Assembly, of which the Villagers' Committee, gathering only a handful of members, is the executive offshoot. These representative and elected political bodies have, according to law, responsibility over land rights and land allocation. In particular, administratively-led reallocations of land have been strictly prohibited, except in case of natural disaster, in which circumstances a reallocation can take place, but only if accepted by two-thirds of the village assembly, or by the village elected representatives.

Village-level democracy is then explicitly designed, among other objectives, to allow rural citizens to better defend their land rights against village leaders' interests.

Rural taxation Rural taxation has been a major issue in Chinese countryside since the beginning of the reforms. Lacking guidelines from central authorities, and in a context characterized by a complete dismantling of collectivist structures and of the associated means and functions of local authorities and public services,[12] agriculture and agricultural taxation became a major source of local revenues. As a consequence, various agricultural "fees" appeared as village authorities financial needs increased, leading to a situation where agricultural taxation was considered as unbearable by farmers, because it was, first, too important, and, second, quite chaotic (Wong (1997)).

This led central authorities to implement policies designed to reorganize and homogenize rural taxation. The main reform is known as the "'tax-for-fees" program, which was first experimented in the rural and agricultural province of Anhui at the end of 1990s, before being extended nationwide between 2001 (Document No. 12) and 2003 (Document No. 12). This reform forbids all kinds of agricultural fees, and replaces them with a unified agricultural tax.[13] The motivation here was to reduce, if not to

12. See for example Zhang and Kanbur (2005) for a recent analysis on the provision of healthcare and education services since the beginning of the reforms.

13. This agricultural tax was altogether suppressed, in a reform of historical signifi-

suppress, the arbitrary power of village authorities in raising fees on farmers and on agriculture, and then their incentives to manipulate land. However, as this reform also significantly jeopardizes the official financial means of local authorities, it remains unclear whether it has really reduced or actually increased the potential conflict of interests between village leaders and farmers, as underscored by Yep (2004).

At the end of the 1990s, two series of institutional reforms took place, designed to reduce the power and the interests of village leaders in manipulating agricultural land: local democracy and taxation reform. Consequences on actual institutional arrangements over land are studied in the next section.

2.2 Actual institutional arrangements

Central laws and regulations officially give Chinese rural citizens extended and secure rights over their land. Moreover, by implementing local democracy, at the village level, and by controlling agricultural taxation, the central government has tried to ensure that these rights are effectively protected, especially from village leaders' and local officials' interests. However, the actual functioning of local land institutions has remained quite different from what the central State advocates. Indeed, it appears that land rights are not as extended and secure as stated by official laws and regulations, as stressed by the afore-mentioned surveys of James Kung [14] and of the Rural Development Institute, [15] and as can be seen from the information gathered by the 2002 CHIP survey, and presented below.

Village democracy As for village democracy, it was seemingly already quite well developed by 1998, when the 1988 Organic law of villagers' committees was revised, and it was widespread in 2002. Summary statistics on this issue according to the 2002 CHIP survey are presented in Table 3.1 and Table 3.2. By 1998, more than three quarters ($78,8\%$) of villages held

cance, in 2005-2006.

14. See note 4.

15. See note 3.

elections, and 71% of villages had both implemented village elections and the direct nomination of village committee members by villagers (instead of a nomination by Party cadres). In 2002, these figures were respectively $93,7\%$ and $86,2\%$.

Tax reform As mentioned earlier, the Tax-for-fees reform was only experimented with in the late 1990s, before being extended nationwide in the years 2001-2003. As a consequence, and as can be seen in Table 3.3, only a handful of villages had achieved this program in 1998, whereas a good majority of them, more than 70% had done so by 2002.

So the years 1998 to 2002 corresponded to the progressive implementation of two important institutional reforms designed to stabilize local land rights arrangements: village-level democracy, and agricultural tax reform. However, these processes were still not achieved in 2002, and did not reach all villages. As for land rights arrangements, descriptive statistics from the 2002 CHIPS data are given below.

Collective reallocations As stated previously, since the mid-1980s, the Chinese central State has exerted continuous pressure to limit and control reallocations or adjustments of agricultural land plots by collective authorities. The allocation of land has been supposed to take place between households, through market processes, and not to be led by village leaders or local cadres. The motivation behind these policies and regulations to suppress land administrative reallocations is, firstly, that they create insecurity for farmers as for the duration of their land contracts, reducing investment and labor allocation to off-farm activities (see respectively the aforementioned works of Li, Rozelle, and Brandt (1998) and de la Rupelle et al. (2009a) for example), and, secondly, that they lead to a less efficient allocation of land than market processes (see the aforementioned article of Deininger and Jin (2005)).

However, it did not prevent, in the end of the 1990s and beginning of 2000s, administrative reallocation from still taking place. According to 2002 CHIP survey, summarized in Table 3.4, 40% of the villages carried out

at least one land reallocation between 1998 and 2002, with 13% reallocating land more than once. Administrative reallocations then seem to be still, in 2002, quite far from being effectively controlled.

Reserve fields Another dimension of local land practices which has been a constant target of central authorities is the one of retaining "reserve fields" at the village level. Initially and officially, "reserve fields" (also called "flexible land") are constituted of land plots kept aside in order to adjust land allocation among households according to demographic evolutions. These fields are then directly kept by village authorities, who can redistribute them if needed. However, these "reserve fields" have been regularly denounced, by scholars as well as political authorities, as simply being land plots taken away from farmers and manifesting the intrusive interests of local leaders in manipulating land (Cheng and Tsang (1996), Xibao Guo (2004)).

However, despite repeated efforts from the central government, according to 2002 CHIP survey data displayed in Table 3.5, close to a quarter (23,2%) of villages retained some "reserve fields" in 2002.

Land transfers and land markets The securing and extension of individual land rights, and the correlative reduction of collective authorities' involvement in land allocation was supposed to allow the development of land transfers between households, and then, eventually, of land markets. However, as the level of land rights insecurity has remained quite high, and as individual rights are still constrained, household level land transfers are not widespread, even if, in 2002, they were not marginal anymore. According to 2002 CHIP survey data, summarized in Tables 3.7 and 3.8, roughly a tenth ($10,9\%$) of surveyed households participated in land transfers, with half of them ($5,8\%$ of the total) being part of land transfers involving the payment of a rent. A significant proportion of villages, roughly a third ($33,5\%$), then experienced transfers between households, and a fifth ($19,8\%$) had seen the emergence of land markets in 2002.

Actual local institutional arrangements were then, in 2002, quite different from what official laws and regulations provided for. Generally speaking, Chinese rural citizens enjoyed less extended and less secure land rights than the ones the central government granted to them. Collective processes of land allocation have not generally been replaced by land markets, but both seem to coexist in nowadays China. The following sections will analyze how the diverging interests of village leaders and of different groups of villagers shape these actual land rights arrangements.

3 Village leaders' interests and influence

This section analyzes the interests of village leaders and their influence in local land management. Using the 2002 CHIP survey, it is shown that, when they have the incentives and the power to do so, they limit rural citizens' land rights.

3.1 Village leaders' interests and "reserve fields"

Village leaders and village cadres naturally play a key role in shaping local land rights institutions, and they have various interests and motivations in manipulating the allocation of village land. Among the dimensions of land rights investigated by the 2002 CHIP survey and mentioned in the previous section, the one which best represents the unilateral interests of village leaders is the existence of "reserve fields". Indeed, these "reserve fields", despite being officially reserved for future reallocation, actually constitute land unilaterally taken from rural agents, and then at the disposal of village leaders. They can be used to manipulate the incentives of farmers' households in order to extract surplus, they can be directly exploited by village leaders themselves or by their relatives, or, finally, they can be turned into more lucrative industrial or commercial uses, which benefits accrue to collective authorities and village leaders (Xibao Guo (2004)).

In order to capture the incentives of village leaders in manipulating land, we use here the fiscal pressure from higher administrative authorities.

Indeed, a good proportion of taxes levied in villages is transmitted to higher levels of the political hierarchy. According to 2002 CHIP survey data, the average village fiscal income amounted to 212 803 *yuan* in 2002, while transfers to higher authorities represented on average 65 770 *yuan*. Respective figures for 1998 were 211 344 and 79 453 *yuan*. If facing increased demands from higher levels of the administration, village leaders will have to find a way to extract income from the village economy, and the seizing and use of "reserve fields" is one of them. However, their power to actually take "reserve fields" is limited by the development of democratic processes, as, according to the law, the Villagers' Assembly and the elected Villagers' Committee are in charge of land management. The development of democracy should then limit the unilateral influence of village leaders.

To measure the evolution of fiscal pressure on leaders of a given village, we use here the evolution of fiscal transfers between 1998 and 2002 of other villages in the same county. This should capture the change in fiscal pressure exerted by county authorities from 1998 to 2002, while ruling out potential endogeneity in the evolution of the fiscal pressure on the village under scrutiny.

As for the development of democracy, the indicator taken here is a dummy indicating whether the village has fully implemented in 2002 the provisions of the 1998 revised Organic law on villagers' committees, that is to say whether village elections take place and village committee members are selected by villagers.

We then expect village leaders to retain more "reserve fields" if they face increasing demands from higher authorities, and when they have the power to do so, that is to say when democracy is limited.

3.2 Econometric specification

Formally, the model estimated to check this assumption is then the following:

$$D_{F02v} = \alpha FT_{9802v} + \beta D_{D02v} + \gamma FT_{9802v} \times D_{D02v} + \delta X_v + \epsilon_v$$

Where v stands for the village under scrutiny. The dependent variable D_{Fv} is the dummy indicating whether village leaders retained some "reserve fields" or "flexible land" in 2002. As for independent variables, the fiscal pressure FT_{9802v} is, as explained above, measured by the evolution of fiscal transfers from other villages in the same county between 1998 and 2002, a higher value indicating increasing demands, and thus increasing pressure. The dummy D_{D02v} stands for the existence of village-level democracy in 2002, that is to say the existence of village elections and the selection of members of the Village Committee by villagers themselves. The main variable of interest is finally the interaction between the evolution in fiscal pressure and the existence of village democracy, $\gamma FT_{9802v} \times D_{D02v}$.

The controls X_v include several sets of variables.

A first set gathers general information on the village economic and social situation (geographic condition, population and working population in 1998 and 2002, per capita income in 1990 and 1998, dummies indicating whether the village is in a suburban or ethnic minority area), as well as measures of agricultural conditions (arable area in 2002, irrigated land in 1998 and 2002, area used for crops and grain in 1998 and 2002, median agricultural income per *mu* in the village) and of the development of the off-farm sector (median off-farm work daily income in the county). Dummies for the occurrence of a natural disaster in 1998 and 2002 are also added, because, according to the law, natural disasters are the only situation under which village land can be reallocated.

A second set of controls include information about the village budget and its structure: the amount of fiscal income as well as the number of salaried cadres in the village in 1998, a dummy indicating whether the village has carried out the Tax-For-Fee reform by 2002, as well as dummies for the existence of village-funded ageing and medical insurance schemes.

A third set of variables relates to governance at the county level: the yearly frequency of inspection tours in the village by upper level officials, and the average number per month of meetings of village officials with township cadres.

The fourth and last set of controls include individual characteristics of

the two most important, politically speaking, persons in the village: the Party Secretary and the head of the Villagers' Committee. They include their age and education, as well as a measure of the time they have been in office.

Finally, ϵ_v is naturally the error term.

We then expect the parameter α to be positive, because higher fiscal needs or fiscal pressure on village leaders should lead to an increase in the probability of reserve fields being seized, as they can help local cadres in meeting their fiscal obligations. Symmetrically, we expect the coefficient γ to be negative, as the development of democracy in a village would act as a significant constraint on local cadres' means to retain flexible land. The coefficient β could also be negative, as democracy empowers villagers, who have clear interests in opposing the seizing of "reserve fields".

3.3 Results

Empirical results are displayed in Table 3.9.

Interestingly enough, the coefficient for the dummy indicating the existence of village democracy in 2002, whereas always negative, is never significant. Democracy *per se* does not seem to limit the practice of "reserve fields". However, as expected, an increase in fiscal demands at the county level leads to a higher probability of "reserve fields" being taken in a village. But this effect is offset when democratic processes exist in the village. This last coefficient, of the interaction between the change in fiscal demands and the existence of village-level democracy, is consistently negative, and becomes more significant as more characteristics of the village governance are taken into account. It then appears that our hypothesis seems to be right: a higher level of fiscal pressure leads to a higher likeliness of "reserve fields" being taken out of the land plots distributed to rural households, but this effect is limited, and even cancelled, by the empowerment of villagers through village-level democracy.

In this section, we have shown that village leaders play a role in shaping local land institutions in China, and that they tend to limit farmers'

land rights, most notably by seizing "reserve fields", when they have the incentives and the power to do so. However, if village level democracy can empower villagers against village leaders and local cadres, local land rights arrangements are also likely to represent the interests of villagers themselves, which can be diverse, and even conflicting, a dimension which is investigated in the following sections, first theoretically, and the empirically.

4 Villagers' preferences in a context of a structural change: An illustrative model

The previous section has discussed the role of village leaders in shaping institutional arrangements over land. The two following ones identify, first theoretically, and then empirically, the diverging interests of villagers themselves. This section introduces an illustrative model delineating the situation of a simple rural community in a context of structural change, as well as the collective choice regarding land rights, through the preferences of the median voter/worker, and depending on the economic context.

Context

We consider here a unity-sized rural community populated by a continuum of agents indexed by i. All agents are endowed with one unit of land and one unit of labor. They have the choice between two activities: farming and off-farm employment.

In farming, agricultural income is given by $F_i = r\sqrt{l_i}$, where l_i is the area of land exploited by agent i. Overall productivity, identical for all agents, is then measured by r, while the square root form of the production function captures decreasing marginal returns.

As for the off-farm sector, it offers an exogenously set wage w, but opportunities are limited. The parameter $p \in [0; 1]$ captures the development of the off-farm sector. The higher it is, the more jobs are available. Moreover, whereas agents do not differ by their agricultural productivity, they do not have the same chance of getting an off-farm job. This is captured by

a probability p_i for agent i, linearly distributed over $[0; 1]$. Finally, the probability for an agent i to find an off-farm job is simply $\pi_i(p, p_i) = p \times p_i$. It is also assumed that the wage in the off-farm job w is higher than income derived from farming one's own plot r, to be sure that there are minimum incentives to leave agriculture.

Each agent maximizes his expected income, and chooses between farming and trying his luck in the off-farm sector. In this last case, if there are secure land transfer rights, he will be able to rent out or sell his land plot. However, if land rights are not secure, he will just lose his land, which will be redistributed to the agents remaining in farming. Both situations, and their effect on the sectoral distribution of the workforce and aggregate income, are studied in this section. Finally, the endogenous choice of land rights arrangements, through the preferences of the median worker, will be analyzed.

4.1 Land rights security, land market and structural change

In this section is analyzed the allocation of both land and labor when land can be securely transferred on land markets. As only one period is taken into account, transfers of land through sale or rent are not distinguished, and will be considered, for simplicity, as mainly constituted of renting transactions.

4.1.1 Incomes and occupational choices

In the case where land can be securely transferred, expected incomes are the following.

If he decides to remain in agriculture, an agent farms his own, unity-sized, plot, and can also get a quantity t of land, for a unit price (or rent) r'. His income is then simply: $g_{Fi} = r\sqrt{1+t} - tr'$. For a given level of the land rent, he will rent in a quantity t^* of land such as:

$$\frac{\partial g_{Fi}}{\partial t}(t^*) = 0 \Rightarrow t^* = (\frac{r}{2r'})^2 - 1 \text{ if } r' \leq \frac{r}{2} \text{ ; and } t^* = 0 \text{ otherwise.} \quad (4.1)$$

This relationship (4.1) expresses demand for land at the individual level. It is naturally increasing in r, the overall productivity in agriculture, and decreasing in r', the land rent. When $r' \geq \frac{r}{2}$, t^* is negative, that is to say the rent is to high, and no agent wants to rent in land.

The income of every agent i who decides to remain in the agricultural activity is then:

$$g_F(t^*) = r\sqrt{t^*+1} - t^* r' = \frac{r^2}{4r'} + r' \text{ if } r' \leq \frac{r}{2} \text{ ; and } g_F(0) = r \text{ otherwise.} \quad (4.2)$$

On the other hand, an agent i deciding to try to get an off-farm job and thus renting out his land can expect an income:

$$g_{Oi} = p_i pw + r' \quad (4.3)$$

An individual i chooses to leave agriculture if his expected off-farm income is higher than the one generated by the agricultural activity, which gives the following condition:

$$\begin{aligned} g_{Oi} > g_{Fi} \Rightarrow & p_i pw + r' > \frac{r^2}{4r'} + r' \Leftrightarrow p_i > \frac{r^2}{4pwr'} \text{ if } r' \leq \frac{r}{2} \\ \text{and } \Rightarrow & p_i pw > r \Leftrightarrow p_i > \frac{r}{pw} \text{ otherwise.} \end{aligned}$$

All agents with a probability of getting an off farm job greater than the thresholds defined by the above-mentioned conditions will leave agriculture. The agent indifferent between the two choices is then characterized by an individual probability $\bar{p}$ such as:

$$\bar{p} = \frac{r^2}{4pwr'} \text{ if } r' \leq \frac{r}{2} \text{ ; and } \bar{p} = \frac{r}{pw} \text{ otherwise.} \quad (4.4)$$

As the individual probabilities p_i of getting an off-farm job are linearly distributed over $[0;1]$ and as this rural community is unity-sized, then $\bar{p}$ agents stay farming, while $1 - \bar{p}$ try to get an off-farm job. As a result, and quite intuitively, the proportion of the population remaining in the agricultural sector is an increasing function of the overall level of

productivity in the agricultural sector r, and a decreasing one of off-farm sector wage w and of off-farm opportunities development p, as well as of the land rent r'. Notice that $\bar{p}$ is always positive for strictly positive values of r and w, that is to say there are always agents willing to engage in farming. However, if agricultural productivity is high enough, that is to say superior to $2w$ in the first case ($r' \leq \frac{r}{2}$), and superior to w in the second ($r' > \frac{r}{2}$), no agent wants to try to engage in the off-farm sector.

4.1.2 Land market equilibrium

The distribution of the population between farmers and candidates for off-farm occupations eventually allow to determine equilibrium on the land market.

As for the demand side, according to equations (4.1) and (4.4), when $r' \leq \frac{r}{2}$, individual demand for land is equal to $t^* = (\frac{r}{2r'})^2 - 1$, and $\bar{p} = \frac{r^2}{4wr'}$ people remain in the agricultural activity. If $r' \geq \frac{r}{2}$, individual demand for land is null, and $\bar{p} = \frac{r}{pw}$ people engage in farming. Aggregate demand for land is then:

$$D(r') = \bar{p}t^* = \frac{r^2}{4pwr'}((\frac{r}{2r'})^2 - 1) \text{ if } r' \leq \frac{r}{2} \text{ ; and 0 otherwise.} \tag{4.5}$$

On the supply side, as every candidate for off-farm jobs rents out his individual land plot, aggregate supply of land is simply equal to the proportion of the population leaving agriculture when positive, and is null otherwise. Using (4.4), land supply can be expressed by the following relationship:

$$\begin{aligned} & S(r') = 1 - \bar{p} \\ & \Rightarrow S(r') = \max\{1 - \frac{r^2}{4pwr'}; 0\} \text{ if } r' \leq \frac{r}{2} \\ & \text{and } S(r') = \max\{1 - \frac{r}{pw}; 0\} \text{ otherwise.} \end{aligned} \tag{4.6}$$

This allows to determine the equilibrium rent for land. If $r' \geq \frac{r}{2}$, there is no demand for land, and then no equilibrium on the land market is

possible. When $r' \leq \frac{r}{2}$, equilibrium rent for land r'^* is simply determined by the equalization of supply and demand, that is to say, using (4.5) and (4.6):

$$D(r') = S(r') \Rightarrow \frac{r^2}{4pwr'}((\frac{r}{2r'})^2 - 1) = 1 - \frac{r^2}{4pwr'^*} \Rightarrow r'^* = (\frac{r}{2})^{\frac{4}{3}}(pw)^{-\frac{1}{3}} \quad (4.7)$$

This equilibrium on the land market is represented in Figure 3.1.

The equilibrium level of the rent is naturally increasing in r and decreasing in p and w, as an improvement of the productivity of the agricultural activity, compared with off-farm opportunities, will increase demand and reduce supply, whereas the reverse is true when incomes and availability of off-farm jobs increase. Notice also that r'^* remains lower than $\frac{r}{2}$ as r remains lower than $2pw$. When r is higher than $2pw$, there is no transactions on the land market.

4.1.3 Occupational choices, incomes and welfare

The equilibrium level of the rent on the land market finally allows to determine the distribution of the workforce between agricultural and off-farm occupations, as well individual incomes and overall welfare.

According to (4.4) and (4.7), the individual who is indifferent between farming and trying to get an off-farm opportunity is characterized by the probability $\bar{p}$ such as:

$$\bar{p} = (\frac{r}{2pw})^{2/3} \text{ if } r \leq 2pw \text{ and } \bar{p} = 1 \text{ if } r \geq 2pw \quad (4.8)$$

The behavior of $\bar{p}$ is represented on Figure 3.2.

$\bar{p}$ is always strictly positive, that is to say, there are always people working on land. However, if $r \geq 2pw$, nobody tries to get an off-farm job, and everybody remains in agriculture. As could be expected, $\bar{p}$ is increasing in r and decreasing in p and w, as the relative opportunities in agricultural and off-farm activities drive individuals in and out these two sectors.

Incomes of the two kinds of workers can now be determined. The

expected incomes of agents trying to get off-farm jobs depend on their individual probability of actually getting one, and on the rent they get from their land plot. Using (4.3) and (4.7), it can be written as follows:

$$\forall i \text{ such as } p_i \geq \bar{p}, g_{Oi} = p_i pw + (\frac{r}{2})^{\frac{4}{3}}(pw)^{-\frac{1}{3}} \tag{4.9}$$

This income is naturally increasing in the level of the expected labor income in the off-farm occupation pw, as $r \leq 2pw$, and it is also increasing in the agricultural productivity r, for part of an improvement in agricultural production is accrued to non-farmers through an increase in land rent.

As for people remaining in agriculture, they all get the same income, which can be written as follows:

$$\forall i \text{ such as } p_i \leq \bar{p}, g_{Fi} = (\frac{r}{2})^{\frac{2}{3}}(pw)^{\frac{1}{3}} + (\frac{r}{2})^{\frac{4}{3}}(pw)^{-\frac{1}{3}} \tag{4.10}$$

This revenue from farming is, as could be expected, increasing in the agricultural productivity r, but it is also increasing in the level of the off-farm expected income pw, for an increase of the labor income in the off-farm sector drives more people out of agriculture, and thus raises land supply while depressing demand, providing remaining farmers with a greater access to land, at a lower cost.

A representation of the distribution of farmers' and off-farm workers' expected income is given by Figure 3.3.

Using (4.8), (4.9) and (4.10), the overall welfare can be determined, and is equal to:

$$G = \int_0^{\bar{p}} g_{Fi}, dpi + \int_{\bar{p}}^1 g_{Oi}, dpi = \frac{pw}{2}[3(\frac{r}{2pw})^{\frac{4}{3}} + 1] \text{ when } r \leq 2pw \tag{4.11}$$

$$G = \int_0^1 g_{Fi}, dpi = r \text{ when } r \geq 2pw \tag{4.12}$$

This aggregate income is represented in Figure 3.4. The aggregate level of income is, quite intuitively, increasing in agricultural productivity r as well as in the level of off-farm sector expected income pw, when $r \leq 2pw$. When $r > 2pw$, no agent leaves agriculture, and so the whole income of

the community comes from agriculture.

4.1.4 Summary

This section has outlined the functioning, at equilibrium, of a simple rural community, where people have the choice between farming on the one hand and renting out their land in order to try to get an off-farm occupation on the other. Quite intuitively, an increase of expected off-farm labor income leads to an increase in the proportion of people leaving land and in overall welfare, and it also drives down the equilibrium rent for land, as it increases land supply while depressing demand.

4.2 Land rights insecurity and occupational change

A case where individual rights on land are insecure is now considered. The context described above remains exactly the same, except for the fact that now people cannot rent in or rent out land, but if they decide to leave farming, they are simply deprived of their land plots, to the benefits of agents who remain in farming. Compared with the previous situation, this insecurity represents a clear loss for would-be leavers, as they lose their land instead of getting an income from it, but it also constitutes a gain for farmers, as they see their land holdings increase. The issue here is to enquire the overall level of welfare as well as the distribution of incomes, compared with the situation of land rights security.

This radical redistribution of land from leavers to farmers is of course a very simplifying view of land rights insecurity, but it constitutes a simple way of capturing the effect of land rights insecurity on the distribution of incomes and of the workforce.

4.2.1 Farmers and off-farm workers

When an agent i, with a probability p_i of getting an off-farm job, leaves agriculture, he loses his land. His expected income is simply given by:

$$g_{Oi} = p_i pw \tag{4.13}$$

This expected income is a linear and increasing function of the expected labor income in the off-farm sector, and of the individual probability of getting a job.

As for agricultural income, after would-be off-farm workers decide to leave agriculture, their land plots are seized and reallocated to farmers. If $\bar{p}$ still denotes the individual probability of the threshold agent who is indifferent between farming and leaving agriculture, then a proportion $1-\bar{p}$ of people leave agriculture, and their unity-sized plots are redistributed to the $\bar{p}$ stayers. Each farmer then gets, on top of his own plot, an extra quantity of land equal to $\frac{1-\bar{p}}{\bar{p}}$. The income of every single farmer is then:

$$g_{Fi} = r\sqrt{1+\frac{1-\bar{p}}{\bar{p}}} = \frac{r}{\sqrt{\bar{p}}} \tag{4.14}$$

It is naturally decreasing with $\bar{p}$ as the more workers leave agriculture, the more land remaining farmers can get.

4.2.2 Occupational choices, incomes and welfare

The threshold individual, with a probability $\bar{p}$ of finding an off-farm job, is indifferent between the two choices. As a consequence:

$$\bar{p}pw = \frac{r}{\sqrt{\bar{p}}} \Rightarrow \bar{p} = (\frac{r}{pw})^{\frac{2}{3}} \text{ if } r \leq pw \text{ and } \bar{p} = 1 \text{ if } r \geq pw \tag{4.15}$$

This threshold probability also represents the proportion of people remaining in agriculture. It is represented in Figure 3.5. It is naturally increasing in agricultural productivity r and decreasing in off-farm expected income pw. As land cannot be transferred, when farming income is greater than the off-farm occupation revenue, $r \geq pw$, then no worker tries his luck in the off-farm sector, everybody remains in agriculture, farms his own plot, and earns an income r.

When $r \leq pw$, using (4.13), (4.14) and (4.15), incomes are respectively, for farmers and off-farm work candidates:

$$g_{Fi} = (pwr^2)^{\frac{1}{3}} \text{ for } p_i \leq \bar{p} \text{ and } g_{Oi} = p_i pw \text{ for } p_i \geq \bar{p} \tag{4.16}$$

The distribution of these incomes is graphically represented in Figure 3.6.

In this case with land rights insecurity, using (4.15) and (4.16), overall welfare is equal to:

$$G = \int_0^{\bar{p}} g_{Fi}, dpi + \int_{\bar{p}}^1 g_{Oi}, dpi = \frac{pw}{2}[(\frac{r}{pw})^{\frac{4}{3}} + 1] \text{ when } r \leq pw \quad (4.17)$$

$$G = \int_0^1 r, dpi = r \text{ when } r \geq pw \quad (4.18)$$

A graphical illustration is provided by Figure 3.7. Aggregate income is of course increasing in the agricultural productivity r as well as in the level of the expected labor income in the off-farm activity pw.

4.3 Land rights insecurity: Costs and determinants

The simple analysis carried out in the previous sections allows to compare the situation in this rural community with and without secure individual rights to transfer land.

4.3.1 Insecure land rights: A costly constraint on structural change.

According to (4.4) and (4.15), the probability $\bar{p}$ of the threshold individual, indifferent between farming and trying to get an off-farm job is determined as follows, respectively in cases of security (S) and insecurity (I):

$$\bar{p}_S = (\frac{r}{2pw})^{\frac{2}{3}} \text{ if } r \leq 2pw \text{ and } \bar{p}_S = 1 \text{ if } r \geq 2pw$$

$$\bar{p}_I = (\frac{r}{pw})^{\frac{2}{3}} \text{ if } r \leq pw \text{ and } \bar{p}_I = 1 \text{ if } r \geq pw$$

They are compared on Figure 3.8. As intuition suggests, $\bar{p}_I$ is always greater than $\bar{p}_S$, and this inequality is strict when $r < 2pw$, that is to say when some workers would like to try to get an off-farm occupation in case of land rights security. This means that land rights insecurity constrains individuals occupational choices and hinders structural change.

As for overall welfare, according to (4.11) and (4.17), aggregate incomes in both cases of land rights security (S) and land rights insecurity (I) can be written as follows:

$$G_S = \frac{pw}{2}[3(\frac{r}{2pw})^{\frac{4}{3}} + 1] \text{ if } r \leq 2pw \text{ and } G_S = r \text{ if } r \geq 2pw$$
$$G_I = \frac{pw}{2}[(\frac{r}{pw})^{\frac{4}{3}} + 1] \text{ if } r \leq pw \text{ and } G_I = r \text{ if } r \geq pw$$

The levels of overall income in both cases are compared in Figure 3.9. Land rights insecurity always lead to a lower level of welfare when the income in off-farm occupations is high enough ($r < 2pw$), for it hinders structural change. In the case where $w \geq r$, that is to say when some individuals leave agriculture whether or not land transfers are secure, the magnitude of welfare loss is equal to:

$$G_S - G_I = \frac{pw}{2}[3(\frac{r}{2pw})^{\frac{4}{3}} + 1] - \frac{pw}{2}[(\frac{r}{pw})^{\frac{4}{3}} + 1] = \frac{1}{2}[\frac{3}{2^{\frac{4}{3}}} - 1](\frac{r^4}{pw})^{\frac{1}{3}}$$

This welfare loss is always positive, but it is worth noting that it is increasing in the level of agricultural productivity r but decreasing in the level of off-farm jobs expected income pw. This is due to the fact that land rights insecurity is costly because it prevents individuals from leaving agriculture, and this constraint is especially tight when r is relatively high or w relatively low, that is to say when, land rights being secure or not, the farming activity is comparatively attractive. So the more productive is the farming activity, the more costly are the consequences of land rights insecurity on structural change. This effect goes in the same direction than the ones identified by Boserup (1965) or Demsetz (1967), who stressed, from different perspectives, the increasing productivity and value of land as one of the main factors in increasing the gains from secure and extended individual rights over land.

4.3.2 Security or insecurity: The choice of the median worker.

If land rights are set up by a social planner, he will choose to give individuals secure transfer rights on their land, for it unambiguously increases welfare, according to the results of the previous section. However, in practice, it is quite possible that land arrangements are chosen, in some ways, by the members of the rural community themselves. Whether land transfers are possible and secure or not can be the explicit or implicit result of a collective choice. There is indeed ample empirical evidence showing that, to a good extent, local institutional arrangements on land respond to community members interests and preferences, as identified, for example, by Lin (1987) in rural China during the reforms. In such a case, and using the simple theoretical framework of Black (1948), the decisive individual will be the median worker, the one who has an individual probability $p_{\frac{1}{2}} = \frac{1}{2}$ of getting an off-farm job if he decides to leave agriculture. This section enquires this median worker's income, and then his preferences regarding land rights arrangements.

Median worker's income with land rights security In the case land can be securely transferred, the median worker leaves agriculture if $\bar{p}_S \leq \frac{1}{2}$ and remains a farmer if $\bar{p}_S \geq \frac{1}{2}$. Using (4.8), (4.9) and (4.10), his income $g_{\frac{1}{2}}$ is in this case:

$$\begin{aligned} &g_{\frac{1}{2}} = g_{F\frac{1}{2}} = r \text{ when } \bar{p}_S = 1 \Leftrightarrow p \leq \frac{r}{2w} \\ &g_{\frac{1}{2}} = g_{F\frac{1}{2}} = (\frac{r^2 pw}{2^2})^{\frac{1}{3}} + (\frac{r^4}{2^4 pw})^{\frac{1}{3}} \text{ when } \bar{p}_S \in [\frac{1}{2}; 1] \Leftrightarrow p \in [\frac{r}{2w}; \frac{\sqrt{2}r}{w}] \\ &g_{\frac{1}{2}} = g_{O\frac{1}{2}} = \frac{pw}{2} + (\frac{r}{2})^{\frac{4}{3}}(pw)^{-\frac{1}{3}} \text{ when } \bar{p}_S \leq \frac{1}{2} \Leftrightarrow \sqrt{2}\frac{r}{w} \leq p \end{aligned} \quad (4.19)$$

Figure 3.10 gives an idea of the evolution of the median worker's income depending on p. The median worker income is first stable at r, when $p \leq \frac{r}{2w}$, as nobody leaves agriculture and the median worker, as every other individual, just farms his own plot. When $\frac{r}{2w} \leq p \leq \sqrt{2}\frac{r}{w}$, some workers leave agriculture, but less than half the population, the median worker remains a farmer, but can increase his revenue by renting some

plots from the leavers. His income is then increasing in w, as an increase in expected off-farm labor income raises land supply and lowers the land rent. Finally, when $\sqrt{2}\frac{r}{w} \leq p$, the median worker himself leaves agriculture and rents out his own plot, and his income is then a clearly increasing function of the off-farm job wage.

Median worker's income with land rights insecurity In the case land rights are insecure, the median worker will leave agriculture if $\bar{p}_S \leq \frac{1}{2}$ and will remain a farmer if $\bar{p}_S \geq \frac{1}{2}$. Using (4.15) and (4.16), his income $g_{\frac{1}{2}}$ is determined by the relationships:

$$\begin{aligned} &g_{\frac{1}{2}} = g_{F\frac{1}{2}} = r \text{ when } \bar{p}_I = 1 \Leftrightarrow p \leq \frac{r}{w} \\ &g_{\frac{1}{2}} = g_{F\frac{1}{2}} = (pwr^2)^{\frac{1}{3}} \text{ when } 1 > \bar{p}_I \geq \frac{1}{2} \Leftrightarrow \frac{r}{w} < p \leq 2(\frac{r}{w})^{\frac{2}{3}} \\ &g_{\frac{1}{2}} = g_{O\frac{1}{2}} = \frac{pw}{2} \text{ when } \bar{p}_I \leq \frac{1}{2} \Leftrightarrow 2(\frac{r}{w})^{\frac{2}{3}} \leq p \end{aligned} \tag{4.20}$$

A graphical illustration is given by Figure 3.11. When $p \leq \frac{r}{w}$, the median worker is, as every other agent, a farmer. He just earns income from working on his own plot. For higher values of p, some people decide to leave agriculture, despite the fact that they will be deprived, without compensation, of their land plots. The median worker then gets his share of leavers' lands, and his revenue is naturally increasing in agricultural productivity r, and also in the expected income of the off-farm occupation, as a higher wage drives more people out of agriculture, and then provides the median worker with more land. Finally, when p is very high, the median worker himself decides to try his luck in the off-farm sector, and his expected income is simply equal to the off-farm wage, weighted by his individual probability of actually getting a job.

The median worker's choice of land rights arrangements The incomes of the median worker in both cases of land rights security and insecurity can now be compared. It appears that, for given values of incomes in both occupations, w and r, the income of the median worker and its preferences for institutional arrangements depend on the development of

the off-farm sector, or the availability of off-farm jobs, indicated by p. Calculations based on the previous analysis of the expected income of the median worker, depending on the economic context (r, p and w) and on the institutional arrangements give the following results. A graphical representation, for limited ranges of values of incomes in both occupations, r and w, is provided by Figure 3.12.

For a low value of p, when $p \leq \frac{r}{2w}$, there is no choice to be made between land rights security or insecurity: whatever the prevailing institutional arrangements, no worker wants to leave agriculture.

For higher values of p, when $\frac{r}{2w} \leq p \leq \frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}$, the median worker can expect a higher income in a case of land rights security, with land markets. Indeed, with secure land rights, more people leave agriculture, thus giving the median worker, who remains a farmer, a larger access to land on markets. Moreover, it can be shown that the gain from land rights security, compared with insecurity, for the median worker, is increasing in p over the range $[\frac{r}{2w}; \frac{r}{w}]$, and then decreasing over the range $[\frac{r}{w}; \frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}]$

When p eventually reaches $\frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}$, then the median worker can expect a higher income from an institutional arrangement of land rights insecurity. Indeed, when the number of off-farm opportunities is high enough, a good proportion of the workforce will try its chance out of agriculture, with or without secure land rights. The median worker, who himself remains a farmer if land rights are insecure, can then expect an important gain from the redistribution of would-be off-farm workers' plots. This gain from land rights insecurity, when compared with land rights security, is increasing in p over the range $[\frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}; \sqrt{2}\frac{r}{w}]$, and then decreasing when p is higher than $\sqrt{2}\frac{r}{w}$.

Finally, when p reaches $[1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}}]^{\frac{3}{2}}\frac{r}{w}$ or $2(\frac{r}{w})^{\frac{2}{3}}$, depending on which is the lowest,[16] the median worker himself prefers to leave agriculture and then naturally favors land rights security. However, his gain from land rights insecurity is decreasing in further increases in p.

It should be noted here that, as p is naturally bounded by 1, some of the

16. With $[1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}}]^{\frac{3}{2}}\frac{r}{w} \leq 2(\frac{r}{w})^{\frac{2}{3}} \Leftrightarrow \frac{r}{w} \leq \frac{2^3}{[1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}}]^{\frac{9}{2}}}$

cases described above can be reached only for consistent values of incomes in agriculture and in the off-farm sector, r and w. As r is assumed to be inferior to w, the first ranges of values for p, $[0; \frac{r}{2w}]$ and $[\frac{r}{2w}; \frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}]$ can always be attained. However, for the third range of values, over $\frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}$ and up to $\min[(1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}})^{\frac{3}{2}}\frac{r}{w}; 2(\frac{r}{w})^{\frac{2}{3}}]$, to be attainable by p, the off-farm sector income w needs to be quite high compared with agricultural income, r. This condition is even more severe for the last range of values for p, over $\min([1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}}]^{\frac{3}{2}}\frac{r}{w}; 2(\frac{r}{w})^{\frac{2}{3}})$, which is attainable only if w is very high when compared with r. As a consequence, in the graphical interpretation of Figure 3.12, it is considered that $\frac{1}{2(2^{\frac{2}{3}}-1)^{\frac{3}{2}}}\frac{r}{w}$ is above unity.

Finally, this simple model of a rural community in a context of structural change shows that, for given values of incomes in both occupations, agriculture and the off-farm sector, the preferences of the median worker, and so the endogenous choice of this community regarding land rights, depend on the development of the off-farm employment, that is to say on the probability of getting an off-farm job. For a low development of the off-farm sector, but which still allows some workers to leave agriculture, the median worker prefers, and then the community chooses, an institutional arrangement with secure land rights, allowing the development of land markets. However, a further increases in this number of off-farm opportunities leads to a change in preferences, towards land rights insecurity. For a very high development of the off-farm sector and then a very high likeliness of getting an off-farm job, land rights security is preferred anew. However, these last two results hold only if the level of the off-farm wage is very high when compared with agricultural income.

5 Villagers' interests and land rights arrangements

The previous section has shown theoretically, through a simple illustrative model, how the preferences of a rural community regarding land rights arrangements can evolve depending on the economic context, and

especially the relative opportunities in agriculture and in the off-farm sector. This section tries to empirically verify these theoretical insights, using data from the 2002 CHIP survey.

5.1 Villagers' interests and land reallocations

This first part of the empirical investigation deals with land reallocations, that is to say collective processes of distribution of land among farmers, corresponding to the case of land rights insecurity in the model defined previously.

5.1.1 Empirical strategy

According to the intuitions formalized by the model of the previous section, a simple rural community can deal with a change in the employment opportunities, that is to say with an evolution in the number of the off-farm sector jobs, by guaranteeing the land rights of potential leavers, or by redistributing land from leavers to remaining farmers. This choice, assumed to reflect the preferences of the median worker, ultimately depends on this median worker's opportunities.

The model outlined in the previous section has shown that, at a low level of development of the off-farm sector, the median worker prefers to respect the land rights of agents leaving agriculture, and can get their land through voluntary transactions. For medium levels of development of the off-farm sector, as the proportion of would-be leavers increase, the gains of a mere redistribution of their land increase, and outweigh the costs of land rights insecurity for the median worker, who remains a farmer. Finally, for a high level of modern sector development, the median worker himself wants to leave agriculture, and then naturally prefers land rights security. However, this last case necessitates very high levels of the modern sector wage compared with agricultural income, as well as a very important proportion of the working population involved in off-farm activities. These conditions are met only in a very limited minority of villages enquired by the 2002 CHIP survey. The following empirical analysis will then focus on

the first two cases.

As a consequence, we expect that in villages were the overall probability of getting an off-farm job (p in the model of the previous section) is low, then the land rights of workers leaving agriculture should be respected, whereas in villages where off-farm opportunities are more numerous, a collective redistribution of land should be preferred. However, these effects should be felt especially or even only where the rural community citizens themselves have a say in land management affairs, through local democracy.

Finally, what we expect to find empirically is that in villages where democratic processes exist, and exposed to an increase in off-farm opportunities, if the development of the modern sector was originally low, it should lead to land rights security, whereas if the development of the modern sector was higher, it should be translated by land rights insecurity and collective processes of redistribution of land.

We measure the level of land rights insecurity in the village by the occurrence, or, alternatively, by the number of land reallocations in a village between 1998 and 2002. The original political context is indicated by the existence in 1998 of both village elections and of the direct selection of Villagers' Committee members by villagers themselves. The original economic context is indicated by the proportion of village's workers engaged mainly in off-farm activities in 1998. Both the simple and square levels are taken, in order to account for the non-linearity of the effect. Finally, the change in off-farm employment during the period 1998-2002 is measured at the county level, in other villages of the same county, because changes in employment in a given village are endogenous to this village's choice of land rights arrangements. Moreover, the county constitutes a natural labor pool of labor and employments in rural China, as it constitutes an intermediate geographical unit,[17] and actually, according to 2002 CHIP data summarized in Table 3.6, less than a third of rural off-farm workers worked outside of their county boundaries in 2002.

17. According to NBS (2008), there are 2859 county-level divisions in mainland China, for a land area of 9 600 000 square kilometers, which gives an average area of 3 350 square kilometers per county.

So finally, the estimated model is the following:

$$\begin{aligned} D_{R9802v} = {} & \alpha_1 OF_{98v} \times D_{D98v} \times OFC_{9802c/v} + \alpha_2 OF_{98v}^2 \times D_{D98v} \times OFC_{9802c/v} \\ & + \beta_1 D_{D98v} + \beta_2 OF_{98v} + \beta_3 OF_{98v}^2 + \beta_4 OFC_{9802c/v} + \gamma_1 OF_{98v} \times D_{D98v} \\ & + \gamma_2 OF_{98v}^2 \times D_{D98v} + \gamma_3 OFC_{9802c/v} \times D_{D98v} + \gamma_4 OF_{98v} \times OFC_{9802c/v} \\ & + \gamma_5 OF_{198v}^2 \times OFC_{9802c/v} + \delta X_v + \epsilon_v \end{aligned}$$

Where v stands for the village under scrutiny. The dependent variable is the occurrence, or, alternatively, the number, of administrative reallocations of land between 1998 and 2002. Our main variables of interest are the interactions between the change in off-farm employment in the other villages of the same county between 1998 and 2002, $OFC_{9802c/v}$, the existence of local democracy in 1998, D_{D98v}, and the simple and squared level of off-farm employment in the village in 1998, OF_{98v} and OF_{98v}^2. As made clear before, we expect α_1 to be positive, and α_2 to be negative. For consistency, non-interacted variables are also included, as well as simple interactions. Finally, as in the empirical analysis of village leaders' interests (see section 3.2, page 100) , X_v includes several sets of characteristics at the village level: general economic and geographic controls, characteristics of the fiscal system, of the county governance, and, lastly, of village leaders.

5.1.2 Results

Results for the occurrence and the number of village land reallocations are presented respectively in Tables 3.10 and 3.11. As expected, the coefficients of the interaction between the existence of democratic processes in 1998, the evolution of off-farm employment in the rest of the county during the period 1998-2002 and, respectively, the share of off-farm workers in the village in 1998 and this same share squared have the expected sign, respectively negative and positive. They are significant, at the 5% or 1% levels, when controls about governance and/or on the fiscal system are taken into account. Moreover, the order of magnitude of the coefficients are quite important, but it should be noted that variation in off-farm employment in the county is quite small, the relative variation being about

24% on average.

As for other variables, it is interesting that democracy *per se* in 1998 does not have a significant effect on the occurrence or number of reallocations. Its only effects are when interacted, as in the two variables described above, or with the squared share of off-farm workers in the village in 1998, or with the change in off-farm employment in the rest of the county between 1998 and 2002. In the first case, interacted with the squared share of off-farm workers, it is negative, indicating maybe the increased pressure from off-farm workers for secure land rights. In the second case, interacted with the the change in off-farm employment, it is positive, indicating maybe the pressure from remaining farmers for leavers' land, as discussed in the model.

It should be noted also that all these variables interacted with democracy have a significant effect, of the opposite sign and same order of magnitude, when they are not interacted with democracy, as if the existence of democracy was counterbalancing forces going the other way in the non-democratic villages.

5.2 Villagers' interests and land markets

The previous section has enquired the choices of Chinese villages regarding collective reallocations of land, based on the results of our simple model, which seems to be verified. This section deals with the alternative situation of land rights security, allowing the development of land transfers between households, and of land markets. It should be noted that, whereas the model has drawn a clear opposition between situations of land rights insecurity, with collective reallocation, and of land rights security, with land markets, this distinction is much less clear-cut in reality, for land rights insecurity never leads to a complete deprivation of off-farm workers' land use rights. Collective reallocations of land and household level land transfers or land markets can thus coexist, but their importance is still supposed to evolve according to the insights delineated in the model.

5.2.1 Empirical strategy

The previous section has enquired the results of the theoretical model concerning the collective reallocations of land. However, the model also provides with almost symmetrical results about land transfers between agents, showing that, when off-farm opportunities are not too developed, the median worker should prefer to grant secure land transfer rights to his fellow villagers, whereas he could favor collective processes of land allocation when the off-farm sector can employ more workers. So the strategy used here is very close to the one described in the case of land reallocations. However, reallocations of land take place when there is a change in the employment structure, necessitating to take into account the changes in employment in the county between 1998 and 2002. But land markets or household-level land transfers do not depend on the change in off-farm opportunities, but only on their level of development. As previously, effects described in the model should be felt only in villages where exists local democracy. So finally, the estimated model is the following:

$$\begin{aligned} D_{T02v} = &\alpha_1 OF_{98v} \times D_{D98v} + \alpha_2 OF_{98v}^2 \times D_{D98v} \\ &+ \beta_1 D_{D98v} + \beta_2 OF_{98v} + \beta_3 OF_{98v}^2 \\ &+ \delta X_v + \epsilon_v \end{aligned}$$

Where the independent variables are defined as in the previous section. As for the dependent variables, we will take into account here the existence and the extension of land transfers between households and of land markets, which are included in household-level land transfers. Descriptive statistics are provided by Table 3.8. For each of these two aspects, transfers and markets, we first take as dependent variable a dummy indicating whether they took place in a given village in 2002, and then a measure of the proportion of households participating in land transfers or in land markets. As this last variable is naturally bounded between 0 and 1, a tobit model will be used. Note here that to account for endogeneity, we use the lagged values (as of 1998) of the independent variables. The sets of variables included in the controls X are the same as before. For details, see respectively section 5.1.1, page 118 and 3.2, page 100.

5.2.2 Results

As for household-levels land transfers and for land markets, results are respectively presented in Tables 3.12 and 3.13 for the existence or not of these phenomena, and in Tables 3.14 and 3.15 for the share of households participating.

As expected, the coefficients of the interactions between the proportion of off-farm workers and its square values are always, respectively, positive and negative. However, they are significant only when controls about governance and village leaders' characteristics are taken into account, and they are more significant when the shares of households participating, instead of a simple dummy indicating whether transfers or markets exist, are taken into account.

Democracy *per se* has always a negative impact, but is significant only when land transfers are the dependent variable. As for the direct effect of the proportion of off-farm workers, it is never significant.

5.3 Robustness check

The three dimensions of land rights and land institutions enquired in this study, the existence of reserve fields, the occurrence or number of collective reallocations of land, and finally land transfers or land markets, were analyzed separately. However, in reality, they are without doubt determined jointly. In this section we simply run a multivariate probit estimation, with the three dimensions, that is to say existence of reserve fields, occurrence of reallocations and existence of land transfers between households, as dependent variables. Results are presented in 3.16.

As can be seen in this table, results remain unchanged when the estimation takes into account the simultaneity of the determination of these three dimensions of institutional arrangements over agricultural land.

6 Conclusion

An important literature has stressed, both theoretically and empirically, the gains that could be expected from extended and secure individual property rights, especially on rural and agricultural land in developing countries in order to promote a balanced a fast economic growth. Symmetrically, the "evolutionist" view on land rights holds that, as the gains from secure and extended individual rights increase with economic development, so should the demand for institutional arrangements which enforces and protects them. So a virtuous circle of expansion of property rights and of economic development should take place.

However, the case of rural China seems to contradict, to some extent, this "simple story". Despite a tremendous economic development, and repeated efforts from the central government since the beginning of the 1980s, institutional arrangements over land in rural China have remained, locally, very diverse, and individual land rights, generally speaking, are still quite limited and insecure.

This paper has tried to show that, at the local level, if institutional arrangements result from the conflicts of different groups with diverging interests and not from overall welfare concerns of a benevolent social planner, then these arrangements, including the extent and security of individual's rights over land, can vary according to their relative influence, depending on the political context, and according to their interests, depending on the fiscal and economic context.

More specifically, using data on rural land rights institutional arrangements from the 2002 CHIP survey, this paper has shown that these land rights arrangements are the result of the conflicting interests of village leaders and of different groups of villagers, especially the ones who remain in agriculture versus the ones who leave farming activities. In this context, the definition of land rights does not only bear consequences on overall economic efficiency, but also on the distribution of these benefits. Some agents can then favor insecure land rights, or collective processes of land allocation, to extended individual rights and land markets.

In particular, it has been shown that village leaders and local cadres have a direct interest in reaping land plots, thus creating land rights insecurity for villagers, when they are under higher fiscal pressure. However, their actual power to distort local land management practices to their advantage is significantly decreased when villagers have a say in village affairs through grass-roots democracy.

However, this does not mean that the development of democracy and a better expression of villagers' interests univocally lead to an extension and securing of land rights, and especially to the emergence of market processes of land allocation. This paper also shows, both theoretically and empirically, that the preferences of the median worker toward modes of land allocation, though markets or through collective redistribution, can vary depending on the economic context. In particular, a higher development of the off-farm sector, with a higher likeliness of employment out of agriculture, can in fact increase the pressure from remaining farmers on leavers' land plots, leading to less, and not more, secure land rights.

When compared with the "simple story" of the evolutionist view, this empirical investigation shows that higher benefits associated with extended private rights do not always lead to their endogenous emergence, as two other dimensions have to be taken into account: the distribution of benefits associated with different institutional arrangements, and the relative power of influence of the different groups of agents with conflicting interests.

7 Tables and figures

7.1 Figures

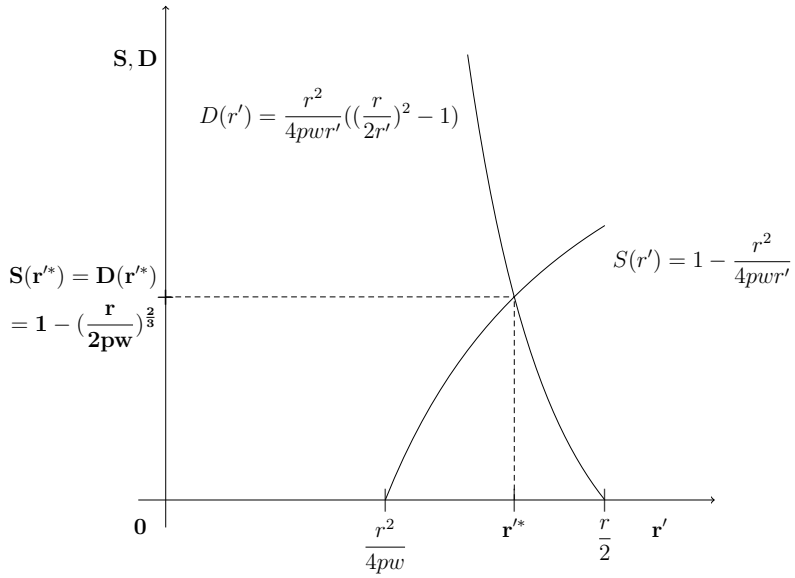

Figure 3.1: Land market equilibrium

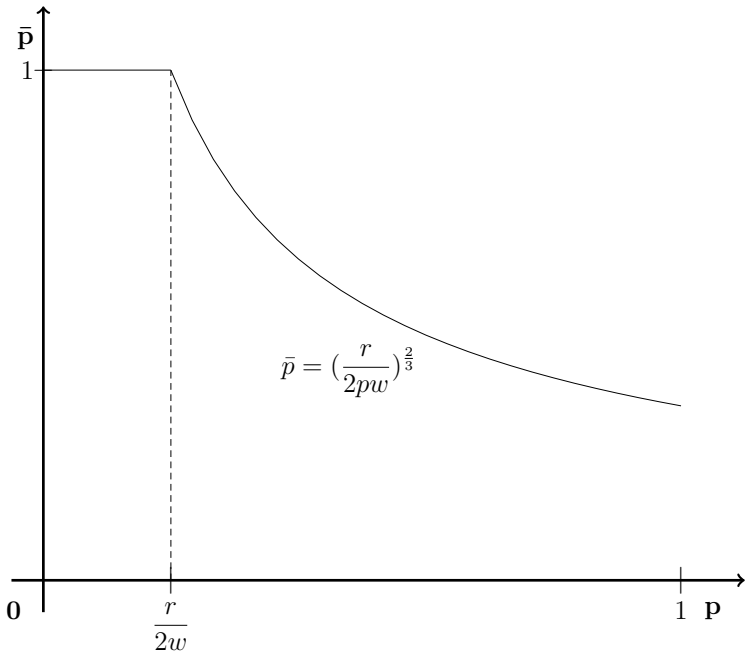

Figure 3.2: Proportion of farmers in case of land rights security

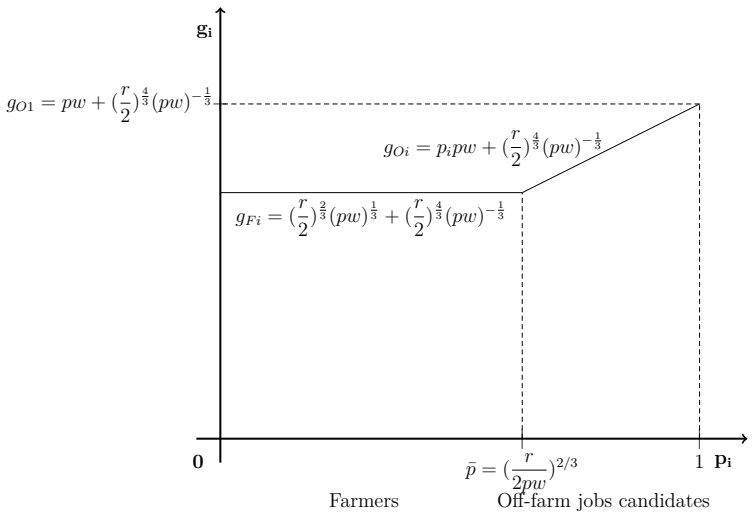

Figure 3.3: Occupations and incomes with land rights security

Note: This graphic is drawn for $r < 2pw$, that is to say some agents leave farming.

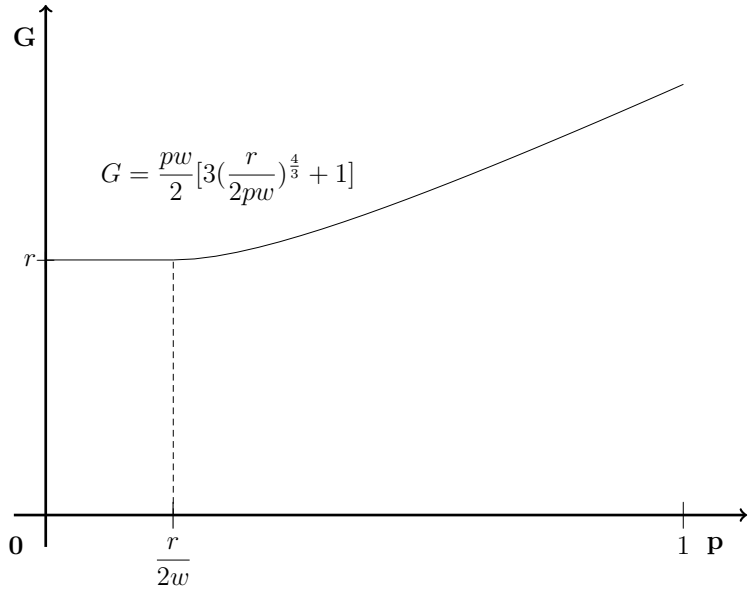

Figure 3.4: Aggregate income (G) with secure land transfer rights

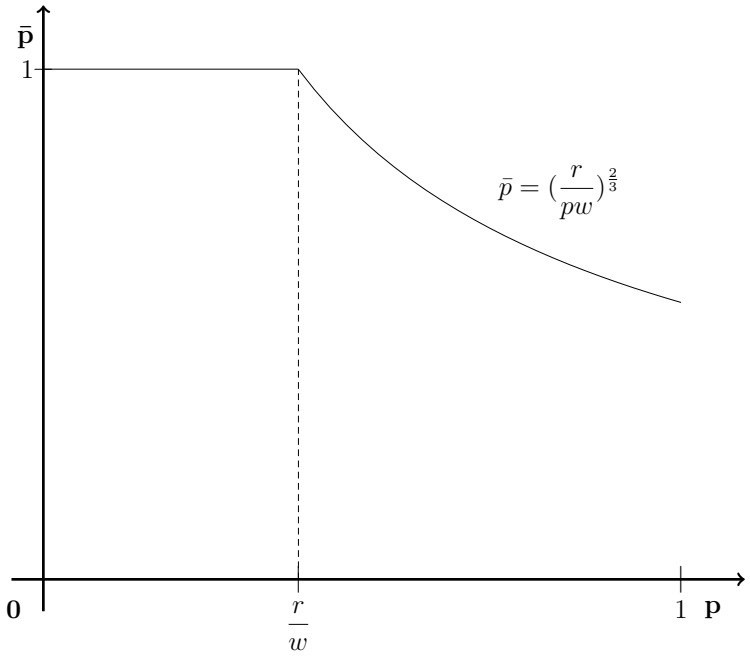

Figure 3.5: Proportion of farmers in case of land rights insecurity

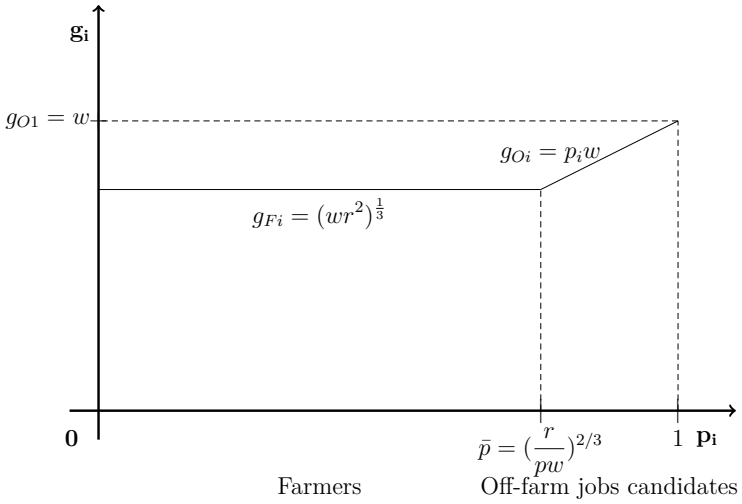

Figure 3.6: Occupations and incomes with land rights insecurity
Note: This graphic is drawn for $r < pw$, that is to say some agents leave farming.

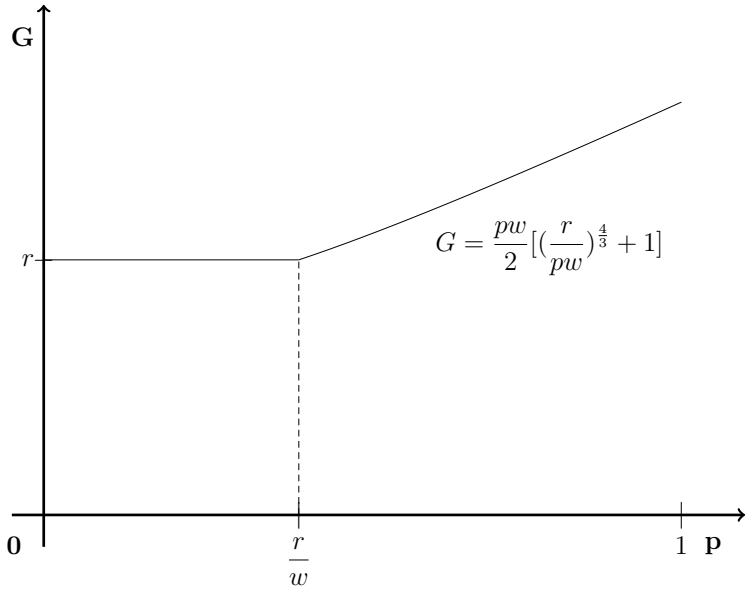

Figure 3.7: Aggregate income (G) with insecure land transfer rights

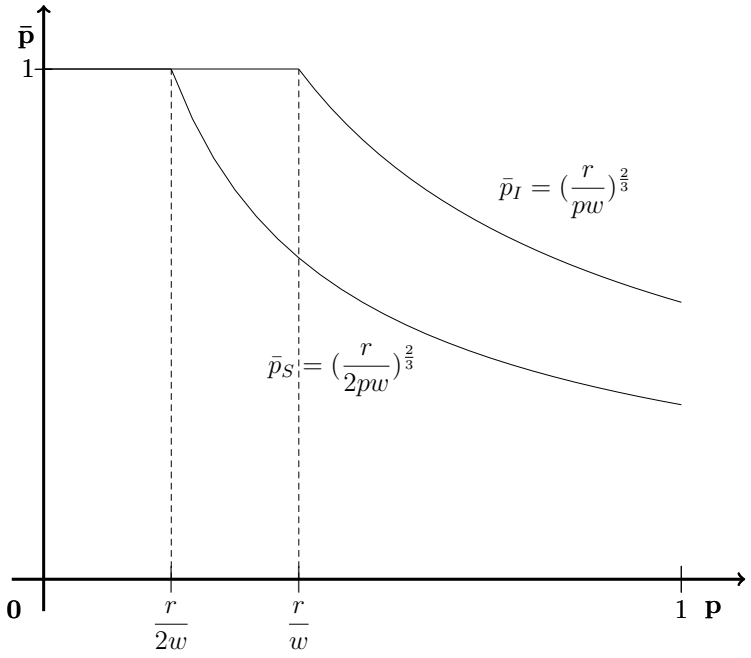

Figure 3.8: Proportion of farmers, with (S) and without (I) secure land transfer rights

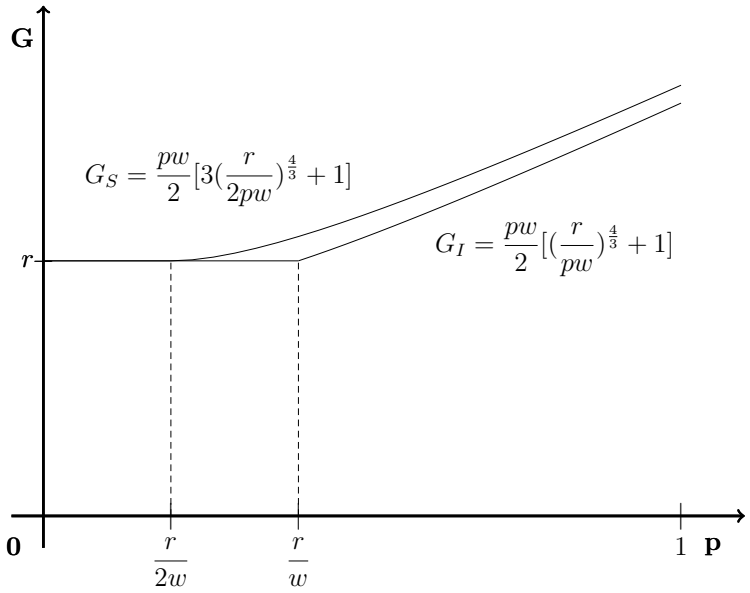

Figure 3.9: Aggregate income (G), with (S) and without (I) secure land rights

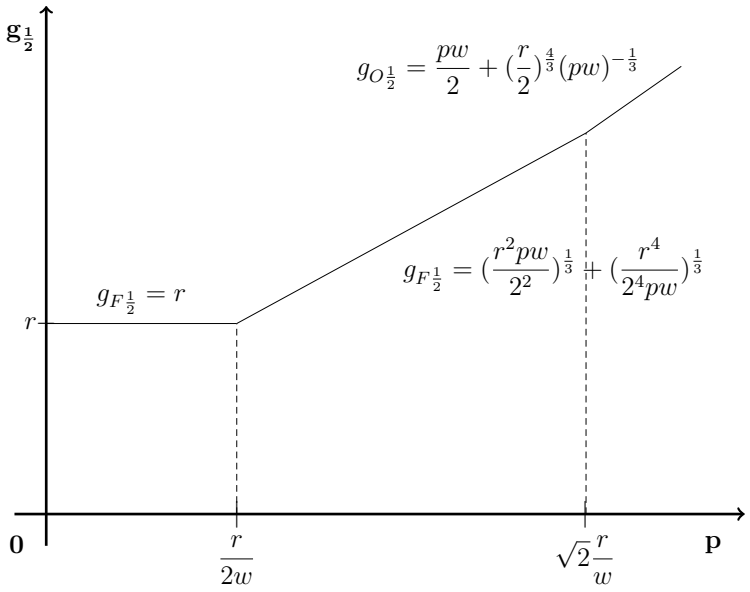

Figure 3.10: Median worker income in case of land rights security

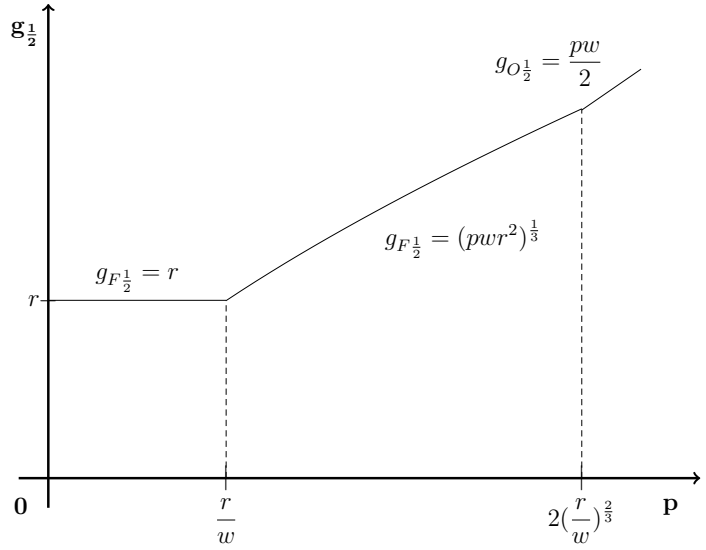

Figure 3.11: Median worker income in case of land rights insecurity

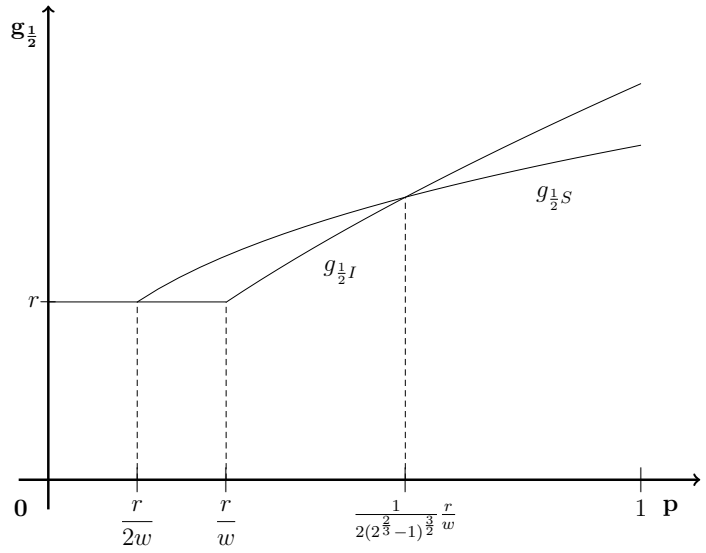

Figure 3.12: Median worker income ($g_{\frac{1}{2}}$), with (S) and without (I) secure land rights

Note: This graphic is drawn for values of r and w such as $[1+(1-2^{-\frac{1}{3}})^{\frac{1}{2}}]^{\frac{3}{2}}\frac{r}{w}$ and $2(\frac{r}{w})^{\frac{2}{3}}$ are both above unity.

7.2 Tables and results

TABLE 3.1 : Village democracy in 1998

		Dummy for direct nomination of village committee members by villagers in 1998		
		0	1	Total
Dummy for village elections by 1998	0	168 (17,5%)	35 (3,7%)	203 (21,2%)
	1	74 (7,7%)	681 (71,0%)	755 (78,8%)
Total		242 (25,3%)	716 (74,7%)	958 (100%)

Source : 2002 CHIP survey.

TABLE 3.2 : Village democracy in 2002

		Dummy for direct nomination of village committee members by villagers in 2002		
		0	1	Total
Dummy for village elections by 2002	0	32 (3,3%)	28 (2,9%)	60 (6,3%)
	1	72 (7,5%)	826 (86,2%)	898 (93,7%)
Total		104 (10,9%)	854 (89,1%)	958 (100%)

Source : 2002 CHIP survey.

TABLE 3.3 : "Tax-for-fee" reform

Villages having achieved the "Tax-and-fee" reform by		Total number of villages
1998	2002	
11	681	960
(1,1%)	(70,9%)	(100%)

Source : 2002 CHIP survey.

TABLE 3.4 : Collective reallocations of land

Dummy for villages having carried out at least one land reallocation between 1998 and 2002				Total number of villages
0	1			
573	384			957
(59,9%)	(40,1%)			(100%)
	of which, number of reallocations			
	1	2	more	
	259	70	55	
	(27,0%)	(7,3%)	(5,7%)	

Source : 2002 CHIP survey.

TABLE 3.5 : Reserve fields

Dummy for villages retaining "reserve fields" in 2002		Total number of villages
0	1	
736	222	958
(76,8%)	(23,2%)	(100%)

Source : Data from 2002 CHIPS.

TABLE 3.6 : Primary occupation and primary workplace

Primary occupation		Primary place of work	
Agriculture	52,68%	Village	100%
Off-farm	47,32%	Village	34,91%
		Outside village, within township	21,79%
		Outside township, within county	11,81%
		Outside county, within province	14,33%
		Outside province	17,11%

Source : Data from 2002 CHIPS.

TABLE 3.7 : Household level land transfers and land markets - Household

Dummy for households participating in land transfers in 2002			Total number of households
0	1		
8197	1003		9200
(89,1%)	(10,9%)		(100%)
	of which, land markets		
	0	1	
	460	537	
	(5,1%)	(5,8%)	

Source : Data from 2002 CHIPS.

TABLE 3.8 : Household level land transfers and land markets - Village

Dummy for villages where household level land transfers take place in 2002		Total number of villages
0	1	
638	322	960
(66,5%)	(33,5%)	(100%)
	of which, land markets	
	0	1
	132	190
	(13,8%)	(19,8%)

Source : Data from 2002 CHIPS.

TABLE 3.9 : Village leaders and land rights

Dependent variable	**Dummy for "reserve fields"** Probit			
Variables	Coefficient (St.-Err.)	Coefficient (St.-Err.)	Coefficient (St.-Err.)	Coefficient (St.-Err.)
Fiscal transfers change × **Democracy** $FT_{9802} \times D_{D2002}$	-9.19e-0.7* (5.21e-07)	-1.17e-0.6** (5.59e-07)	-1.50e-0.6*** (5.12e-07)	-1.47e-0.6*** (5.21e-07)
Village democracy in 2002 D_{D2002}	-0.003 (0.203)	-0.272 (0.200)	-0.226 (0.216)	-0.275 (0.221)
County fiscal transfers change FT_{9802}	1.05e-0.6** (4.92e-07)	1.11e-0.6** (5.33e-07)	1.37e-0.6** (5.62e-07)	1.40e-06** (5.76e-07)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	784	713	598	592
Pseudo-R^2	0.12	0.14	0.17	0.18

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.10 : Villagers and land reallocation -1

Dependent variable	**Dummy for land reallocation, 1998-2002** Probit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share× Democracy × OF employment change $OF_{98v} \times D_{D1998v} \times OFC_{9802c/v}$	-6.88 (4.35)	-11.0** (4.68)	-12.7** (5.15)	-13.4*** (5.19)
OF workers share sq. × Democracy × OF employment change $OF^2_{98v} \times D_{D1998v} \times OFC_{9802c/v}$	12.7* (7.21)	19.18*** (7.23)	18.2** (7.24)	20.0*** (7.54)
Democracy D_{D98v}	-0.146 (0.276)	-0.307 (0.299)	-0.0771 (0.312)	-0.0625 (0.318)
OF workers share OF_{98v}	-2.36 (1.66)	-4.20** (1.74)	-2.61 (1.85)	-2.82 (1.85)
OF workers share sq. OF^2_{98v}	3.92* (2.23)	6.90*** (2.13)	4.79** (2.26)	5.65** (2.22)
OF employment change $OFC_{9802c/v}$	-0.928** (0.433)	-1.06** (0.502)	-1.58*** (0.559)	-1.64*** (0.563)
OF workers share × Democracy $OF_{98v} \times D_{D98v}$	1.45 (1.78)	3.57* (1.84)	2.07 (2.00)	2.66 (2.02)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v}$	-2.75 (2.38)	-6.14*** (2.33)	-4.26** (2.53)	-5.38** (2.59)
OF employment change × Democracy $OFC_{9802c/v} \times D_{D98v}$	0.684 (0.426)	0.827* (0.498)	1.37** (0.575)	1.45** (0.586)
OF workers share × OF employment change $OF_{98v} \times OFC_{9802c/v}$	9.24** (4.25)	13.0*** (4.44)	14.5*** (4.76)	14.5*** (4.74)
OF workers share sq. × OF employment change $OF^2_{98v} \times OFC_{9802c/v}$	-13.6 (6.69)	-19.83*** (6.43)	-18.9*** (6.40)	-20.0*** (6.56)
Constant	-0.648 (0.404)	-1.33 (0.909)	-1.51 (1.00)	-1.06 (1.00)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	779	710	597	591
Pseudo-R^2	0.074	0.098	0.12	0.14

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.11 : Villagers and land reallocation -2

Dependent variable	**Number of land reallocation, 1998-2002** O-Probit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share× Democracy × OF employment change $OF_{98v} \times D_{D1998v} \times OFC_{9802c/v}$	-5.88 (3.74)	-9.33** (3.98)	-10.8*** (4.11)	-11.2*** (4.14)
OF workers share sq. × Democracy × OF employment change $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	9.88 (6.30)	14.7** (6.31)	15.0** (6.30)	16.1** (6.53)
Democracy D_{D98v}	-0.141 (0.232)	-0.377 (0.263)	-0.259 (0.285)	-0.259 (0.291)
OF workers share OF_{98v}	-1.59 (1.42)	-3.17** (1.74)	-2.34 (1.54)	-2.40 (1.69)
OF workers share sq. OF^2_{98v}	2.80 (1.82)	4.91*** (2.13)	3.87* (2.08)	4.26** (1.99)
OF employment change $OFC_{9802c/v}$	-0.870** (0.358)	-1.06** (0.441)	-1.48*** (0.446)	-1.51*** (0.433)
OF workers share × Democracy $OF_{98v} \times D_{D98v}$	0.955 (1.49)	2.98* (1.58)	2.12 (1.75)	2.51 (1.75)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v}$	-1.88 (1.94)	-4.56** (1.93)	-3.57 (2.21)	-4.19* (2.19)
OF employment change × Democracy $OFC_{9802c/v} \times D_{D98v}$	0.646* (0.340)	0.864** (0.436)	1.31*** (0.4444)	1.38*** (0.439)
OF workers share × OF employment change $OF_{98v} \times OFC_{9802c/v}$	8.32** (3.93)	11.6*** (4.15)	12.9*** (4.42)	12.7*** (4.43)
OF workers share sq. × OF employment change $OF^2_{98v} \times OFC_{9802c/v}$	-12.0* (6.19)	-16.4*** (6.04)	-16.3*** (6.24)	-16.8*** (6.43)
Cut 1	0.429 (0.347)	0.230 (0.891)	0.416 (0.980)	0.00626 (0.952)
Cut 2	1.36 (0.355)	1.18 (0.910)	1.37 (1.00)	0.975 (0.975)
Cut 3	1.81 (0.374)	1.65 (0.930)	1.86 (1.03)	1.46 (1.00)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	779	710	597	591
Pseudo-R^2	0.044	0.068	0.080	0.089

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

TABLE 3.12 : Villagers and land transfers -1

Dependent variable	**Dummy for household level land transfers in 2002** Probit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share × Democracy $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	2.05 (1.47)	2.12 (1.58)	3.66** (1.69)	3.74** (1.69)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-1.85 (1.98)	-2.35 (2.13)	-4.69** (2.21)	-4.81** (2.19)
Democracy D_{D98v}	-0.513** (0.232)	-0.380 (0.244)	-0.577** (0.264)	-0.559** (0.273)
OF workers share OF_{98v}	-1.04 (1.29)	-0.877 (1.37)	-1.69 (1.49)	-1.92 (1.48)
OF workers share sq. OF^2_{98v}	0.227 (1.70)	0.103 (1.82)	1.58 (1.87)	1.89 (1.83)
Constant	-0.932*** (0.352)	-1.49* (0.897)	-1.47* (0.840)	-1.02 (0.889)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	781	711	598	592
Pseudo-R^2	0.066	0.076	0.093	0.10

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.13 : Villagers and land markets -1

Dependent variable	**Dummy for land markets in 2002** Probit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share × Democracy $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	0.659 (1.45)	0.733 (1.53)	2.43 (1.62)	2.52 (1.63)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-0.700 (1.99)	-1.08 (2.14)	-4.01* (2.16)	-4.24** (2.12)
Democracy D_{D98v}	-0.192 (0.234)	-0.0816 (0.243)	-0.214 (0.264)	-0.214 (0.278)
OF workers share OF_{98v}	0.305 (1.37)	0.684 (1.41)	0.275 (1.49)	0.202 (1.47)
OF workers share sq. OF^2_{98v}	-1.06 (1.85)	-1.36 (1.99)	-0.493 (1.98)	-0.376 (1.87)
Constant	-1.41*** (0.337)	-1.70* (1.02)	-1.65* (0.944)	-1.40 (1.00)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	781	711	598	592
Pseudo-R^2	0.059	0.076	0.089	0.11

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.14 : Villagers and land transfers -2

Dependent variable	**Share of households transferring land in 2002** Tobit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share × Democracy $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	0.916 (0.651)	0.990 (0.676)	1.65** (0.681)	1.73*** (0.668)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-1.12 (0.916)	-1.39 (0.959)	-2.37** (0.938)	-2.47*** (0.903)
Democracy D_{D98v}	-0.183** (0.0913)	-0.132 (0.0980)	-0.214** (0.0971)	-0.212** (0.103)
OF workers share OF_{98v}	-0.453 (0.597)	-0.379 (0.623)	-0.673 (0.636)	-0.813 (0.630)
OF workers share sq. OF^2_{98v}	0.355 (0.839)	0.325 (0.875)	0.865 (0.838)	1.06 (0.805)
Constant	-0.534*** (0.192)	-0.494 (0.348)	-0.364 (0.316)	-0.0974 (0.348)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	781	711	598	592
Pseudo-R^2	0.074	0.089	0.12	0.14

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.15 : Villagers and land markets -2

Dependent variable	**Share of households in land markets in 2002** Tobit			
Variables	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
OF workers share × Democracy $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	0.279 (0.719)	0.420 (0.741)	1.13* (0.686)	1.18* (0.691)
OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-0.500 (0.634)	-0.800 (1.07)	-1.98** (0.926)	-2.06** (0.919)
Democracy D_{D1998v}	-0.0770 (0.107)	-0.0449 (0.113)	-0.101 (0.110)	-0.0939 (0.113)
OF workers share OF_{1998v}	0.00582 (0.707)	0.105 (0.722)	-0.177 (0.718)	-0.235 (0.710)
OF workers share sq. OF^2_{1998v}	-0.0306 (1.05)	-0.0775 (1.07)	0.411 (1.01)	0.506 (0.976)
Constant	-0.621*** (0.149)	-0.650 (0.413)	-0.507 (0.352)	-0.280 (0.376)
Village controls	X	X	X	X
Fiscal controls		X	X	X
Governance controls			X	X
Village leaders controls				X
Number of villages	781	711	598	592
Pseudo-R^2	0.063	0.083	0.096	0.12

Controls : 1/ geographical situation, suburban area, ethnic minority, natural disaster in 1998 and 2002, arable land in 2002, crop land area in 1998 and 2002, population and working population in 1998 and 2002, income per capita in 1990 and 1998 ; 2/ number of salaried cadres and fiscal income in 1998, Tax-for-fees reform by 2002 ; 3/ frequency of inspection and of meeting with higher authorities ; 4/Age, education and number of years in office of CCP secretary and of the head of the Villagers' Committee.
Standard errors are clustered by county.

Significance levels : $*$ 10% $**$ 5% $***$ 1%

TABLE 3.16 : Village leaders, villagers and land institutional arrangements

	Variables	Multivariate Probit			
		Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)	Coeff. (St.-Err.)
"Reserve fields"	**Fiscal transfers change** × **Democracy** $FT_{9802} \times D_{D02}$	-8.31e-0.7* (4.83e-07)	-1.00e-0.6* (5.19e-07)	-1.32e-0.6*** (5.00e-07)	-1.33e-0.6*** (5.04e-07)
	Village democracy in 2002 D_{D02}	-0.005 (0.198)	-0.257 (0.211)	-0.226 (0.216)	-0.265 (0.213)
	County fiscal transfers change FT_{9802}	9.91e-0.7** (4.77e-07)	9.85e-07* (5.33e-07)	1.25e-0.6** (5.61e-07)	1.31e-06** (5.72e-07)
	Constant	0.142 (0.449)	0.507 (0.976)	1.47 (1.01)	1.21 (4.98)
Land reallocation	**OF workers share**× **Democracy** × **OF employment change** $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-6.52 (4.44)	-10.5** (4.68)	-11.4** (4.90)	-12.6** (4.98)
	OF workers share sq. × **Democracy** × **OF employment change** $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	12.3* (7.42)	18.5** (7.34)	16.2** (6.87)	18.7** (7.48)
	Democracy D_{D98v}	-0.165 (0.275)	-0.312 (0.298)	-0.129 (0.305)	-0.0875 (0.310)
	OF workers share OF_{98v}	-2.30 (1.68)	-4.03** (1.76)	-2.54 (1.83)	-2.75 (1.82)
	OF workers share sq. OF^2_{98v}	3.88 (2.23)	6.61*** (2.17)	4.47** (2.21)	5.46** (2.20)
	OF employment change $OFC_{9802c/v}$	-0.956** (0.448)	-1.08** (0.510)	-1.69*** (0.533)	-1.73*** (0.512)
	OF workers share × Democracy $OF_{98v} \times D_{D98v}$	1.36 (1.80)	3.29* (1.87)	1.80 (1.99)	2.50 (2.02)
	OF workers share sq. × Democracy $OF^2_{98v} \times D_{D98v}$	-2.67 (2.39)	-5.72** (2.37)	-3.70 (2.50)	-5.11** (2.57)
	OF employment change × Democracy $OFC_{9802c/v} \times D_{D98v}$	0.725* (0.436)	0.862* (0.499)	1.47*** (0.546)	1.55*** (0.528)
	OF workers share × OF employment change $OF_{98v} \times OFC_{9802c/v}$	9.18** (4.39)	12.9*** (4.52)	13.9*** (4.55)	14.2*** (4.64)
	OF workers share sq. × OF employment change $OF^2_{98v} \times OFC_{9802c/v}$	-13.8** (6.99)	-19.6*** (6.70)	-17.7*** (6.08)	-19.4*** (6.74)
	Constant	-0.650 (0.403)	-1.33 (0.925)	-1.37 (1.00)	-1.01 (0.987)
Land transfers	**OF workers share** × **Democracy** $OF_{98v} \times D_{D98v} \times OFC_{9802c/v}$	1.98 (1.47)	2.07 (1.57)	3.59** (1.68)	3.73** (1.69)
	OF workers share sq. × **Democracy** $OF^2_{98v} \times D_{D98v} \times OFC_{9802c/v}$	-1.83 (1.97)	-2.30 (2.11)	-4.61** (2.20)	-4.80** (2.19)
	Democracy D_{D98v}	-0.504** (0.232)	-0.372 (0.244)	-0.571** (0.263)	-0.555** (0.273)
	OF workers share OF_{98v}	-0.993 (1.29)	-0.848 (1.37)	-1.67 (1.49)	-1.91 (1.49)
	OF workers share sq. OF^2_{98v}	0.180 (1.70)	0.0568 (1.81)	1.54 (1.87)	1.89 (1.83)
	Constant	-0.938*** (0.354)	-1.52* (0.898)	-1.45* (0.841)	-1.01 (0.893)
	Village controls	X	X	X	X
	Fiscal controls		X	X	X
	Governance controls			X	X
	Village leaders controls				X
	Number of villages	779	710	597	591

Controls : See text and previous tables. Standard errors are clustered by county.

 Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

4 Migration Constraints and Development: *Hukou* and Capital Accumulation in China

Parts of the research carried out for this chapter have been published in *Revue Économique*[1] and in the proceedings of the 2010 Symposium on Urbanization and China's Public Finance.(Peking University)[2]

1 Introduction

The historical experiences of developed countries since the XIXth century and of LDCs after WWII have shown that the process of development, basically an intersectoral transfer of the labor force from traditional to modern activities, is paralleled by a geographical redistribution of the population, mainly through intense migration flows from rural to urban areas. There are two main ways to understand this link between development and urbanization.

The first is based on the classical baseline model of a dual economy developed by Lewis (1954). For Lewis, development essentially corresponds to the transfer of the labor force from labor-intensive activities to modern and capitalistic sectors. Development is then driven by capital accumulation in the modern sector, and rural-urban migration flows are simply a

1. Vendryes (2010a), in French.
2. Vendryes (forthcoming), in Chinese.

by-product of this process, as technology, capital and thus modern sector jobs are more likely to be located in cities.

Externalities are a second way to understand the link between growth and agglomeration. Indeed, if the effects of beneficial externalities are only felt locally, then the concentration of people and activities through urbanization is a crucial determinant of economic growth. These local externalities can be pecuniary, based on scale economies, as underlined by the New Economic Geography literature (Krugman (1991)), or due to human capital, as stressed by R. J. Lucas (1988) and Endogenous Growth theories.

Both of these standpoints leave room for policy intervention in internal migration flows, for pure market processes are not likely to lead to optimal results. Indeed, in the dual economy case, the existence of a traditional sector provides capital owners with an "unlimited supply of labor" (Lewis (1954)), which prevents the emergence of a market-clearing wage. In such a context, free migration flows can lead to detrimental phenomena, like urban unemployment, as shown by Todaro (1969) and Harris and Todaro (1970). And if there are local externalities, this immediately casts doubt on the social optimality of individual migration decisions, for both sending and receiving regions (Taylor and Martin (2001)). Political intervention can then be welfare-enhancing, as is well-known in the case of international migration flows (Benhabib and Jovanovic (2007)).

However, among the various policy options available to LDC governments, direct controls have been generally ruled out, for, as R. E. B. Lucas (1997) puts it, "direct restrictions upon mobility either prove ineffective or require Draconian enforcement measures, incurring a cost in civil liberties most nations are fortunately unwilling to tolerate". This does not really constitute an issue as direct restrictions are generally seen, on economic efficiency grounds, as too tight a policy. To quote Stark (1980), "the 'cannot' tallies with the 'should not' ".

From this point of view, the People's Republic of China stands as a stunning outlier. Since the beginning of the "Reform and Opening" era in 1978, the Chinese State has retained extremely tight controls on individual

moves, through the "household registration system" (*hukou*), but at the same time, the PRC has developed at an unprecedented pace. Within the span of one generation, between the end of the 1970s and the mid-2000s, real GDP per capita has increased seven-fold (Bosworth and Collins (2008)), while the urbanization rate has only doubled. In 2002, the PRC urbanization rate was only 39.09 per cent, 13 percentage points below the average urbanization rate of LDCs at the same level of development (Chang and Brada (2006)). And this urbanization gap has steadily increased as China developed.

This "paradox of China's growing under-urbanization" (Chang and Brada (2006)) has fueled an extremely lively debate in Chinese political and academic circles about internal migration controls and their political, social and economic consequences (Xiang and Tan (2005)). As for the economic side of the debate, most studies have tended to show that the *hukou* system and related migration constraints prevent a better allocation of economic resources in China (Au and Henderson (2006), Whalley and Zhang (2007)), and thus hinder Chinese development. Some scholars, on the other hand, defend the *hukou* institution on the grounds that it prevents socially suboptimal migration flows from rural to urban areas (Fan and Stark (2008)).

On both sides of the debate, the arguments are thus based on considerations of resource allocation: would it be more efficient if migration flows were freer? But the dynamic, temporal aspect of this problem has been largely neglected. The *hukou* system and its various modifications and adjustments are likely to have important consequences on individual life-cycles and consequently on the dynamics of capital accumulation, in both urban and rural areas. The *hukou* constraints thus concern not only the sectoral and geographical allocation of resources in China, but also their intertemporal allocation. In particular, it could be one of the factors explaining the structurally extremely high aggregate saving rate in China and the pace of Chinese development.

The very high level of Chinese aggregate savings has aroused much debate about its causes and concern about its consequences. China has

displayed the world's highest domestic saving rate for the last quarter of a century. Savings were above 35 per cent of Chinese GDP in the 1980s, they exceeded 40 per cent in the 1990s, and even reached an astonishing 52 per cent in 2006 (NBS (Various years)). The causes behind this phenomenon have been widely discussed, and the reasons proposed include traditional Confucian culture (Franke, Hofstede, and Bond (1991)), demographic and age structure evolution (Modigliani and Cao (2004)), precautionary savings in a context of rapid economic changes and dismantling of social services (Chamon and Prasad (2008)), habit formation (Carroll, Overland, and Weil (2000)), and even the PRC one-child policy and the consequent sex ratio imbalance (Wei and Zhang (2009)).

In this paper, a simple overlapping generations model of a dual economy with two regions is used to show that, in a context where production factor markets are imperfect, *hukou*-related migration constraints between a developing (rural) and a developed (urban) region can be a factor in raising the aggregate saving rate and speeding up development, understood as the transfer of the labor force from traditional to modern activities, driven by capital accumulation.

The plan of the paper is as follows. In the first section, the basic settings of the model, with only one region, are presented. In the second section, a second region is introduced, and the effects of different labor migration policies are discussed. The third section discusses how this simple model can explain some aspects of the Chinese experience, while the final part uses a change in migration policies which took place within Chinese provinces between the end of the 1990s and the beginning of the 2000s, to assess the relevance of the theoretical conclusions. The final section concludes.

2 The process of development in a dual economy with overlapping generations

General setting

This simple model aims to describe the dynamic process of development in a dual economy with two-period life cycle agents. We will first deal with the production and employment aspects of the model, and then with the agents' life cycle and intertemporal trade-off. That will finally lead to the characterization of the development process.

As in the classical Lewis (1954) model, development is understood here as the transfer of labor from a traditional to a modern sector, this intersectoral transfer being driven by capital accumulation.

2.1 Production and employment

2.1.1 Production technologies

The economy is dual in the sense that, while one single homogeneous product is produced, of an (exogenously given) price normalized to 1, two technologies are available: a traditional technology, using only labor (L_T), with constant returns to scale, $Y_T = a_T L_T$, where a_T indicates the productivity of labor, and a modern, "capitalistic" one, using labor (L_C) and capital (K), and displaying constant returns to scale and decreasing returns to each factor, $Y_C = AF(L_C, K)$, where A stands for total factor productivity. We can thus write modern sector production in a capital-intensive form, for every period t:

$$Y_{Ct} = AF(L_{Ct}, K_t) = AF(\frac{L_{Ct}}{K_t}, 1)K_t = Af(\frac{L_{Ct}}{K_t})K_t$$

With:

$$f(0) = 0 \qquad f'(\frac{L_{Ct}}{K_t}) > 0 \qquad f''(\frac{L_{Ct}}{K_t}) < 0$$

where $Af'(\frac{L_{Ct}}{K_t})$ is the marginal product of labor, the marginal product of capital being $Af(\frac{L_{Ct}}{K_t}) - A\frac{L_{Ct}}{K_t}f'(\frac{L_{Ct}}{K_t})$. For simplicity, we consider here a case without technological progress: neither the traditional nor the modern production functions change over time.

These assumptions that no capital is used in the traditional sector and that technologies remain constant over time constitute strong simplifications. However, their aim is to capture in the simplest way two of the most basic characteristics of dual economy models, that is to say the fact workers can always find a source of income in a traditional activity, which sets a baseline labor wage in the economy, and that there is a more productive modern sector, which can offer better wages, but whose development is constrained by the amount of capital available in the economy.

2.1.2 Labor market

There is a total quantity L, assumed constant over time, of identical workers born at each generation, who are allocated to the traditional and modern sectors, $L = L_{Tt} + L_{Ct}$, in every period t.

As each worker in the traditional sector produces a_T units of goods, individual real income in traditional activities is simply $w_T = a_T$. This sets the subsistence wage, or minimum conventional income in this economy, as no worker would accept to work for a lower wage.

At any given time t, capitalists have a quantity of capital K_t to invest. As long as the economy is still developing and some workers remain in the traditional sector, capitalists do not have to raise wages to hire more workers, or, to put it another way, for every level of the modern sector wage w_C above the subsistence wage w_T, there is an "unlimited supply of labor" (Lewis (1954)). Various options for modern wage setting are studied at the end of this section. For simplicity, it is assumed here to remain constant over time, as in the Lewis (1954) framework. For any level w_C of modern sector wage, capital owners hire laborers in order to maximize

their profits:

$$\max_{L_{Ct}} \Pi = Af(\frac{L_{Ct}}{K_t})K_t - w_C L_{Ct}$$

This evidently gives the solution:

$$Af'(\frac{L_{Ct}}{K_t}) = w_C$$

This defines, for a given real wage, a relationship between the capital invested and the workforce hired in the modern sector. As $f(.)$ is monotonously increasing, we can write:

$$L_{Ct} = f'^{-1}(\frac{w_C}{A})K_t \tag{2.1}$$

where $f'^{-1}(.)$ denotes the inverse of $f'(.)$, and is thus decreasing.

As usual in Lewisian settings, similar workers are proposed two kinds of job opportunities with different wage levels, which raises the issue of the allocation of workers between the two sectors, as all of them would prefer to work in the modern activity, even if its wage is only slightly higher. No level of the wage in the modern sector can thus be market-clearing. Job allocation may then be purely random, as in the Harris and Todaro (1970) model of rural-to-urban labor markets for migrants, it may result from job-search activities (Fields (1989)), or it may depend on administrative or social processes (see for example Yao (1999) and Zhang and Li (2003) respectively for the case of China).

For a given wage level, aggregate profit in the modern sector is then:

$$\Pi_t = [Af \circ f'^{-1}(\frac{w_C}{A}) - w_C f'^{-1}(\frac{w_C}{A})]K_t$$

The average and marginal rates of return to capital are equal, and can be expressed as a function of w_C:

$$r(A, w_C) = Af \circ f'^{-1}(\frac{w_C}{A}) - w_C f'^{-1}(\frac{w_C}{A}) \tag{2.2}$$

At a given time t, when a quantity K_t of capital is invested, $L_{Ct} = f'^{-1}(\frac{w_C}{A})K_t$ workers are employed in the modern sector, and the residual workers, $L_{Tt} = L - L_{Ct} = L - f'^{-1}(\frac{w_C}{A})K_t$ are employed in the traditional sector. Overall production Y_t is then:

$$Y_t = Y_{Ct} + Y_{Tt} = w_T L + [Af \circ f'^{-1}(\frac{w_C}{A}) - w_T f'^{-1}(\frac{w_C}{A})]K_t \qquad (2.3)$$

2.1.3 Comments

The dual structure of the economy is purely technological and arises from the coexistence of traditional and modern technologies for the same product, the former necessitating only labor, with constant returns, while the latter combines capital and labor. As in most dual economy models, the critical consequence of this technological dualism is on the labor market: the existence of a traditional sector prevents the emergence of a market-clearing modern sector wage, and gives capitalists a dominant position.

Naturally, as derivations of relations (2.1) and (2.2) show, both the rate of return to capital r and the number of workers employed in the modern sector per unit of capital are decreasing functions of modern sector wage, w_C. As a consequence, and as can be verified by differentiating expression (2.3) with respect to w_C, overall production Y_t is also a decreasing function of modern sector wage, for an increase in w_C reduces the number of workers hired in the more productive modern sector. Overall production is also linearly increasing with the capital stock, as long as profit is positive, for $w_C \geq w_T$, and then:

$$Af \circ f'^{-1}(\frac{w_C}{A}) - w_T f'^{-1}(\frac{w_C}{A}) \geq Af \circ f'^{-1}(\frac{w_C}{A}) - w_C f'^{-1}(\frac{w_C}{A}) = \Pi \geq 0$$

All these consequences of the dual structure of the economy on production and employment are exactly similar to the classical conclusions of Lewis (1954). In such a setting, the critical determinant of the level of development is the amount of invested capital, which is studied in the next section.

2.2 Life-cycle, intertemporal trade-off and savings

All agents are identical. Each has a lifespan of two periods, and a life cycle *à la* Diamond (1965). In the first part of his life, when the agent is young (Y), he works and saves, while in the second part of his life, when he is old (O), he invests and consumes his capital. For simplicity, we assume that the intertemporal utility function is homothetic and additively separable, that the agent has the same utility function $u(c)$, satisfying Inada conditions, in both periods, and that he attaches equal weight to first and second period utility. Under these assumptions, the level of individual savings S of a Young agent working during period t is such that:

$$S(r_{t+1}, w_t) = s(r_{t+1})w_t \text{ with } 0 < s(r_{t+1}) < 1 \tag{2.4}$$

A Young worker's level of individual savings is then linearly increasing with his labor income w, but the effect of an increase in returns to capital r depends, as usual, on the relative importance of intertemporal substitution and income effects. Moreover, as individual labor incomes and consequently returns to capital remain constant throughout the development process, in both sectors, savings rates are also constant over time and sectors. Finally, the level of individual savings in the modern sector is higher than that in the traditional sector, because the labor income is higher:

$$S_C = s(r)w_C \geq S_T = s(r)w_T \text{ as } w_C \geq w_T$$

2.3 The process of development

2.3.1 Capital accumulation

In this classical framework, economic development is understood as the transfer of the labor force from the traditional to the modern sector, which is essentially determined by the dynamics of capital accumulation. In the overlapping generations (OLG) setting, the stock of capital available and invested at the beginning of a period t comes from the savings made by Young agents in the preceding period $t-1$. In this preceding period, there

were two kinds of Young agents. A quantity $L_{Tt-1} = L - L_{Ct-1}$ of them were working in the traditional sector, for a real income w_T, and their aggregate savings were thus equal to $(L_R - L_{Ct-1})S_T$. And a quantity L_{Ct-1} were working in the modern sector, for a real income of w_C, and their aggregate savings were thus equal to $L_{Ct-1}S_C$.

We then have:

$$K_t = (L - L_{Ct-1})S_T + L_{Ct-1}S_C = S_T L + (S_C - S_T)L_{Ct-1}$$

L_{Ct-1} is itself a function of K_{t-1}, and as w_T, w_C, and r remain constant over time until the labor force is entirely transferred to the modern sector, the dynamics of capital accumulation is then given, using (2.1) and (2.4), by the simple relationship:

$$K_t = s(r)w_T L + s(r)(w_C - w_T)f'^{-1}(\frac{w_C}{A})K_{t-1} \tag{2.5}$$

In this expression, the first term $s(r)w_T L$ can be seen as the baseline amount of savings in this economy, that is to say the stock of capital that is available if every worker is paid at the traditional sector rate. The second term, $s(r)(w_C - w_T)f'^{-1}(\frac{w_C}{A})K_{t-1}$, can be seen as the extra amount of savings due to the fact that some workers are employed in the modern sector and save more than their counterparts in traditional activities.

If we write:

$$\alpha = s(r)w_T L$$
$$\beta = s(r)(w_C - w_T)f'^{-1}(\frac{w_C}{A})$$

Then equation (2.5) can be rewritten as $K_t = \alpha + \beta K_{t-1}$. If we further assume that the initial capital stock K_0 was simply equal to the aggregate amount of savings when no worker was yet employed in the modern sector, *ie* $K_0 = \alpha$, then the stock of capital available at every period t is simply

given by the relationship:

$$K_t = \frac{\alpha}{1-\beta}(1-\beta^{t+1}) \qquad \text{if } \beta \neq 1 \qquad (2.6)$$

$$K_t = (t+1)\alpha \qquad \text{if } \beta = 1 \qquad (2.7)$$

With growth rates being defined by the relationships:

$$g_{K_t} = \frac{K_t}{K_{t-1}} - 1 = (1-\beta)\frac{\beta^t}{1-\beta^t} \qquad \text{if } \beta \neq 1 \qquad (2.8)$$

$$g_{K_t} = \frac{K_t}{K_{t-1}} - 1 = \frac{1}{t} \qquad \text{if } \beta = 1 \qquad (2.9)$$

Capital stock growth rate is then always positive and decreasing. However, if $\beta \geq 1$, the capital stock is not bounded, and then capital continues to be accumulated until all workers are employed in the modern sector. If $\beta < 1$, then capital will converge, through time, to the steady-state stock of K^* corresponding to the dynamics of capital accumulation (2.5), which is equal to:

$$K^* = \frac{\alpha}{1-\beta} \qquad (2.10)$$

2.3.2 Intersectoral transfer and growth

As employment in the modern sector L_{Ct} and overall production Y_t at every period depend on capital accumulation, their dynamics can now be determined. If we note $\gamma = Af \circ f'^{-1}(\frac{w_C}{A}) - w_T f'^{-1}(\frac{w_C}{A})$, using the above-mentioned relationship for capital accumulation (2.6) and (2.7), and relationships (2.1) and (2.3), we have:

$$L_{Ct} = \frac{\alpha}{1-\beta}(1-\beta^{t+1})f'^{-1}(\frac{w_C}{A}) \quad \text{and } Y_t = \frac{\alpha}{s(r)} + \frac{\alpha\gamma}{1-\beta}(1-\beta^{t+1}) \quad \text{if } \beta \neq 1$$

$$L_{Ct} = (t+1)\alpha f'^{-1}(\frac{w_C}{A}) \quad \text{and } Y_t = \frac{\alpha}{s(r)} + (t+1)\alpha\gamma \quad \text{if } \beta = 1$$

Using (2.8) and (2.9) and relationships (2.1) and (2.3), growth rates are

then:

$$g_{L_{Ct}} = (1-\beta)\frac{\beta^t}{1-\beta^t} \qquad \text{and } g_{Y_t} = \frac{(1-\beta)\beta^t}{\frac{1-\beta}{s\gamma}+1-\beta^t} \qquad \text{if } \beta \neq 1$$

$$g_{L_{Ct}} = \frac{1}{t} \qquad \text{and } g_{Y_t} = \frac{1}{\frac{1}{\gamma s(r)}+t} \qquad \text{if } \beta = 1$$

Note that these growth rates are also positive and decreasing. Following the dynamics of capital accumulation, modern sector employment and overall production converge to a steady-state level if $\beta < 1$, and diverge if $\beta \geq 1$.

2.3.3 Development conditions

The process of development is entirely driven by capital accumulation, which allows the labor force to gradually move from traditional activities to the more productive modern sector. Development is eventually complete when the whole labor force has been transferred to the modern sector, that is to say, when the capital stock has reached a level $\overline{K}$ such that $L = f'^{-1}(\frac{w_C}{A})\overline{K}$.[3]

According to what has been shown in the preceding section, complete development will always occur if $\beta \geq 1$, since the capital stock diverges. However, if $\beta < 1$, the capital stock converges, to a steady-state level that can be lower than $\overline{K}$. Whether or not development actually occurs and capital accumulation reaches a point where the whole labor force is absorbed into the modern sector depends on the ratio:

$$\frac{K^*}{\overline{K}} = \frac{s(r)w_T f'^{-1}(\frac{w_C}{A})}{1-s(r)\left[w_C - w_T\right]f'^{-1}(\frac{w_C}{A})} \tag{2.11}$$

There are then two cases. If capital accumulation converges to a capital stock K^* that is lower than $\overline{K}$, then the economy is stuck in an equilibrium

3. This brutal change of regime, from a dual to a standard neo-classical growth pattern, is naturally a crude simplification. In the real world, evolutions in the traditional sector are likely to take place, as, for example, in the model of Ranis and Fei (1961). However, this does not jeopardize the main mechanisms at play and the general results here.

of partial modernization:

$$0 < \frac{K^*}{\overline{K}} < 1 \Leftrightarrow s(r)w_C f'^{-1}(\frac{w_C}{A}) < 1$$

On the other hand, if capital accumulation tends to converge to a capital stock K^* that is greater than $\overline{K}$, then the economy eventually reaches $\overline{K}$, becomes "modern", and then follows a standard growth pattern:

$$\frac{K^*}{\overline{K}} \geq 1 \Leftrightarrow s(r)w_C f'^{-1}(\frac{w_C}{A}) \geq 1$$

So finally, the necessary condition for complete development is:

$$s(r)w_C f'^{-1}(\frac{w_C}{A}) \geq 1 \tag{2.12}$$

This condition encompasses the "explosive development" case when $\beta = s(r)(w_C - w_T)f'^{-1}(\frac{w_C}{A}) \geq 1$.

Intuitively, the left-hand side of inequality (2.12) is the amount of savings generated by one unit of capital invested in the modern sector. One unit of capital creates $f'^{-1}(\frac{w_C}{A})$ jobs in the modern sector, and each worker then saves an amount $s(r)w_C$. If this value is greater than one, it means that one unit of capital invested in the modern sector generates, through savings, more than one unit of capital in the next period.

2.3.4 The modern sector wage and development

According to (2.8), (2.9) and (2.12), both the likelihood of full development and the speed of capital accumulation are determined by the quantity $s(r)w_C f'^{-1}(\frac{w_C}{A})$. This quantity critically depends on the modern sector wage w_C, and we have:

$$\frac{\partial[s(r)w_C f'^{-1}(\frac{w_C}{A})]}{\partial w_C} = s(r)f'^{-1}(\frac{w_C}{A})(e_{s,r}e_{r,w_C} + e_{L_C,w_C} + 1) \tag{2.13}$$

where:

$s(r)f'^{-1}(\frac{w_C}{A}) > 0$
$e_{s,r} = \frac{s'}{s}r$ is the elasticity of savings with respect to returns to capital,
$e_{r,w_C} = \frac{r'}{r}w_C < 0$ is the wage elasticity of returns to capital,
$e_{L_C,w_C} = \frac{w_C}{Af'^{-1}(w_C)f''\circ f'^{-1}(w_C)} < 0$ is the wage elasticity of labor demand.

Intuitively, an increase in w_C increases the individual savings of modern sector workers, but reduces their number, as it reduces demand for labor. The two effects on capital accumulation, through labor demand and savings behavior, work in opposite directions. However, the critical quantity $s(r)w_C f'^{-1}(\frac{w_C}{A})$ is increasing in w_C under the two following sufficient conditions.

First, the elasticity of the saving rate with respect to rates of return to capital $e_{s,r}$ must be negative or zero. That is to say, in agents' savings decisions, the income effect of an increase in returns to capital must outweigh the substitution effect. Agents must have a preference for smoothing consumption across their life cycle. Empirically, the response of individual savings to interest rates is still being debated. However, since the study of Giovannini (1985), the general consensus is that in developing countries, the interest elasticity of savings is zero, and if not, it is more likely to be negative than positive (Schmidt-Hebbel, Webb, and Corsetti (1992), Bandiera et al. (2000), Ogaki, Ostry, and Reinhart (1996), Loayza, Schmidt-Hebbel, and Servén (1999)). To quote Schmidt-Hebbel, Serven, and Solimano (1996), "the evidence generally shows that interest rates and tax incentives have little or no effect on saving", and "in those exceptional cases in which saving shows a positive response to the interest rate, that response is very small". The fact that the elasticity of savings with respect to interest rates or returns to capital is zero or negative seems to be confirmed in the case of China (Kraay (2000), Qin (2003), and Chamon and Prasad (2008)).

The second sufficient condition is that the elasticity of the demand for labor with respect to wages in the modern sector is, in absolute value,

smaller than one. Since the seminal study of Hamermesh (1993), it is widely agreed that the order of magnitude of the elasticity of the labor demand ranges between -0.5 and -0.3 (Clark and Freeman (1980), Fuchs, Krueger, and Poterba (1998)), depending on the exact definition of the elasticity under scrutiny. Even if most studies have focused on developed countries, most notably the USA and UK, similar results are obtained for developing countries. According to the study of Meng (2000), the elasticity of the demand for labor with respect to wages is even lower in the case of China.

Finally, under these two sufficient conditions, which are quite consensual and empirically sound, we get our first result.

Result 1.1: The pace of capital accumulation, as well as the equilibrium level of development and hence the likelihood of full development, are increasing in modern sector wage level.

It should be noted here that an increase in the modern-sector wage level then speeds up economic development, but at the expense of lower current production. The modern sector wage thus embodies, in this simple setting, the trade-off between current and future consumption or utility present in the overlapping generations model.

2.3.5 Productivity and development

Naturally, the second critical determinant of the pace and eventual level of development is technology, indicated here by the level A of TFP. How does a change in the level of overall productivity affect development? Just as in the previous section, the quantity $s(r)w_C f'^{-1}(\frac{w_C}{A})$ is decisive, and we have:

$$\frac{\partial[s(r)w_C f'^{-1}(\frac{w_C}{A})]}{\partial A} = s(r)f \circ f'^{-1}(\frac{w_C}{A})(-e_{Y_C,L_C}e_{L_C,w_C} - e_{s,r}e_{r,w_C}) \quad (2.14)$$

where:

$s(r)f \circ f'^{-1}(\frac{w_C}{A}) > 0$

$e_{Y_C,L_C} = \frac{w_C f'^{-1}(\frac{w_C}{A})}{Af \circ f'^{-1}(\frac{w_C}{A})} > 0$ is the labor elasticity of modern sector output,

$e_{L_C,w_C} = \frac{w_C}{Af'^{-1}(\frac{w_C}{A}) f'' \circ f'^{-1}(\frac{w_C}{A})} < 0$ is the wage elasticity of labor demand,

$e_{s,r} = \frac{s'}{s} r$ is the elasticity of savings with respect to returns to capital,

$e_{r,w_C} = \frac{r'}{r} w_C < 0$ is the wage elasticity of returns to capital.

An increase in overall productivity has then two effects on the pace and eventual level of development.

First, for a given level of the wage in the modern sector w_C, it increases the productivity of labor, and then leads to an increase of employment and output in the modern sector. This effect has a positive impact on development. Second, an increase in productivity also leads to a raise in returns to capital, which is likely to have, as argued in the previous section, a slightly negative impact on savings and capital accumulation. These two effects then go in opposite directions. However, as stated previously, the saving effect is likely to be small, whereas the employment and output effect have a sizeable order of magnitude. The wage-elasticity of labor demand should range between -0.5 and -0.3 (Hamermesh (1993)), while the elasticity of output with respect to labor is likely to be quite high in modern sectors of developing country. As for China, existing studies give estimates around 0.5 (Kuijs and Wang (2006)) or more (Fleisher and Chen (1997)) for the whole economy.

Finally, the positive effect on development of an increase in productivity, through a higher level of employment in the modern sector, is very likely to outweigh its negative effect through savings. This leads to the second result:

Result 1.2: The pace of capital accumulation, as well as the equilibrium level of development and hence the likelihood of full development, are increasing in the level of aggregate productivity.

2.4 The modern sector wage-setting issue

For a given technology, that is to say a given modern production function, the critical determinant of the development of this simple dual economy is then the modern-sector wage level. This directly determines saving behavior and employment structure and indirectly influences savings rates through the level of returns to capital. However, because of the existence of a traditional sector that guarantees an income w_T, there is, in a Lewisian way, an "unlimited supply of labor" above this threshold. No labor market clearing wage can thus emerge, and the wage level must be set in some institutional manner. Different options or processes are possible for this modern sector wage-setting.

2.4.1 Market determination

In the simplest and most natural case, Old agents, who own and invest capital, can take full advantage of the unlimited supply of labor for every level of the wage equal to or above w_T, and so will tend to set the modern sector wage at the lowest possible level, w_T. In this case, the economy would remain totally stationary, at the lowest possible level of development. However, even if Old agents are free to set the wage in the modern sector, characteristics of developing countries labor force, for example due to nutrition and efficiency considerations, can lead to a higher level of the wage (see for example Rosenzweig (1988) for a review and discussion).

2.4.2 Bargaining

One could imagine that the modern sector wage is set, each period, through a process of bargaining or conflict between Old capitalists and Young workers. The Old agents evidently have a simple and unambiguous interest in lowering the modern sector wage, whereas the Young workers' interests are ambivalent. On the one hand, an increase in modern sector wages increases their incomes. On the other hand, however, it reduces the number of modern sector workers. As the economy progressively develops, more and more workers are hired in the modern sector, and so the former

effect should become relatively more and more important. The modern sector wage should thus progressively increase, and development therefore accelerates over time.

2.4.3 Conventional setting by a social planner

A last solution is that the modern sector wage is set by a political or administrative authority. This authority, acting as a social planner in a context where market processes cannot work, may have various objective functions. Here, we will take a simple case.

At the beginning of a period t, the social planner sets the modern sector wage for the period, having two arguments in his objective function: the overall level of production during the period, Y_t, and the growth rate to $t+1$, or, equivalently, the level of production during the next period, Y_{t+1}.

To sum up, the problem faced by the social planner when setting the modern sector wage is a trade-off between current and future production. This is actually a trade-off because Y_t is decreasing with w_{Ct} while Y_{t+1} is increasing with w_C. Indeed:

$$
\begin{aligned}
Y_t &= w_T L + [Af \circ f'^{-1}(\frac{w_{Ct}}{A}) - w_T f'^{-1}(\frac{w_{Ct}}{A})]K_t \\
&\Rightarrow \frac{\partial Y_t}{\partial w_{Ct}} = \frac{w_{Ct} - w_T}{Af'' \circ f'^{-1}(\frac{w_{Ct}}{A})} K_t \leq 0 \text{ depending on } w_{Ct} \geq 0 \\
Y_{t+1} &= w_T L + [Af \circ f'^{-1}(\frac{w_{Ct+1}}{A}) - w_T f'^{-1}(\frac{w_{Ct+1}}{A})] \\
&\qquad \times [w_T L + (w_{Ct} - w_T) f'^{-1}(\frac{w_{Ct}}{A})] s(r_{t+1}) K_t \\
&\Rightarrow \frac{\partial Y_{t+1}}{\partial w_{Ct}} = [Af \circ f'^{-1}(\frac{w_{Ct+1}}{A}) - w_T f'^{-1}(\frac{w_{Ct+1}}{A})] \\
&\qquad \times [f'^{-1}(\frac{w_{Ct}}{A}) + \frac{w_{Ct} - w_T}{Af'' \circ f'^{-1}(\frac{w_{Ct}}{A})}] s(r_{t+1}) K_t \geq 0 \text{ for } e_{L_C, w_C} > -1
\end{aligned}
$$

The marginal benefit of an increase in w_{Ct} is thus that it increases production in the next period, while its marginal cost is that it decreases current production. Moreover, both the cost and the benefit are proportional to the capital stock K_t available at the beginning of the period. Therefore, the trade-off between them does not depend on the level of capital accumulation, and so w_C is constant over time, until development

comes to an end.

Finally, if the modern-sector wage level is set by a social planner through a trade-off between present and future production, we get the two following results. Firstly, the incentive to choose a modern-sector wage above the subsistence wage comes from a desire to speed up growth, and from the fact that the marginal cost of raising the modern-sector wage tends to 0 when w_{Ct} tends to w_T. Secondly, as both terms of the trade-off linearly depend on the current level of development, *i.e.*, on the current stock of capital, the wage level chosen by the social planner remains constant over time. We thus have, in this case:

$$\forall t, w_{Ct} = w_C > w_T$$

For simplicity, we will consider this case for the rest of the paper.

3 A two-region model of development

General setting

We now introduce a second region, which is seen as urban and fully developed, that is to say, basically, where there is no longer a traditional sector. We will denote the developing region by R for rural and the developed one by U for urban. Initially, the two regions are completely disconnected, that is to say goods, capital and labor cannot move across their borders. Prices and factor incomes are therefore different. We make the following assumptions.

We will assume that there are L_U urban people born at each generation, and that they are identical to the rural workers.

The two regions have access to different technologies, and the urban modern sector is more efficient than its rural counterpart, that is to say, $A_U > A_R$.

The rural region is still developing, *i.e.*, still has a traditional sector, whereas the urban one is fully developed.

We will consider the impact on capital accumulation of two alternative

migration policies, one of **Labor Market Opening** (*hukou* case), where young rural people are allowed to work in cities, but cannot settle there when old, and one of **Complete Integration**, where rural people are allowed to spend their whole lives (Young and Old) in the urban area. The consequences of these two policies on development will be compared with the situation of **Autarky**, described in the previous section.

3.1 Labor market opening

The first policy is to allow young rural workers to come and work in cities, but to deny them the right to invest and settle there. Capital markets are not integrated between the two regions, and so returns to capital are not equalized. As the urban region is now opened to Young rural workers, at each period the rural labor force is allocated between the rural traditional and modern sectors and the urban modern sector.

3.1.1 Urban wage setting

At every period t, the wage offered to the rural-to-urban migrants in the urban modern sector w_{Ut} is determined by a condition *à la* Harris and Todaro (1970), that is to say equilibrium in the labor market between the two regions requires that w_{Ut} is equal to the expected labor income in the rural area. This is because, at the beginning of a period, Young workers choose between moving to the urban area and staying in the rural one. In the rural area, the income they can expect to earn is the average income in rural areas, *i.e.* the average of subsistence and modern-sector wages, weighted by the respective shares of these two sectors in the labor force. It should be noted here that this equilibrium condition is the reverse of the one introduced by Harris and Todaro (1970), for it is in the rural area, and not in the urban one, that workers can fall back on a source of income - the traditional activity - if they fail to find employment in the modern sector.

We then have, with L_R being the rural labor force and K_{Rt} the capital

stock invested in the rural area at time t, and using (2.1):

$$\begin{aligned} w_{Ut} =& \frac{L_{Ct}}{L_R} w_C + (1 - \frac{L_{Ct}}{L_R}) w_T = w_T + (w_C - w_T) \frac{L_{Ct}}{L_R} \\ & \Rightarrow w_{Ut} = w_T + (w_C - w_T) f'^{-1}(\frac{w_C}{A_R}) \frac{K_{Rt}}{L_R} \end{aligned} \tag{3.1}$$

As an immediate consequence of this equilibrium condition, w_{Ut} varies between w_T and w_C and steadily increases as capital accumulates in the rural area:

$$\begin{aligned} & w_T \leq w_{Ut} \leq w_C \\ & w_{Ut} = w_{Ut}(K_{Rt}) \text{ with } \frac{\partial w_{Ut}}{\partial K_{Rt}} > 0 \end{aligned}$$

We will also assume that there is no segregation, that is to say that urban workers and rural migrant workers earn the same income in the urban labor market, as they are assumed to have the same characteristics. As a consequence, there is also no distinction between formal and informal sectors for the rural-to-urban migrant workers. These assumptions greatly simplify the reasoning without altering the results.

3.1.2 Employment and capital accumulation in the urban area

At the beginning of every period t, L_U urbanites are born. When Young, these urbanites earn a labor income w_{Ut} determined as previously stated. When Old, they invest their savings and get a return of $r(w_{Ut+1})$. During a period t, aggregate urban savings are thus equal to:

$$L_U s(r(w_{Ut+1})) w_{Ut} = L_U S_{Ut}$$

At time t, urban Old people invest their savings and, as described above, employ workers in order to maximize their profit. We assume that they act under the constraint of an "urbanites first" policy, that is to say they first employ Young urban workers, and resort to rural migrants only if there are jobs left. Using the same notations as before, the quantity L_{Mt}

of rural migrants they hire during period t is thus:

$$L_{Mt} = \left[f'^{-1}(\frac{w_{Ut}}{A_U}) S_{Ut-1} - 1 \right] L_U \text{ if } \geq 0 \text{ , and 0 otherwise.} \tag{3.2}$$

Note that the number of rural migrants hired in urban areas is ultimately a function of the capital stock accumulated in the countryside, as it is a function of w_{Ut} and w_{Ut+1}, which are themselves functions of K_{Rt} and K_{Rt+1} respectively.

3.1.3 Employment and capital accumulation in the rural area

There are now three kinds of workers in the rural area, according to their life cycles. All of them have to return and invest in the rural area when they are Old, but while Young, they can be rural traditional workers, rural modern sector workers or rural migrant workers. Finally, their situation at time t, like that of urban workers, can be summed up as follows:

Status	Label	Qty	Wage	K Returns	Savings
Rural	Traditional worker	L_{Tt}	w_T	$r(w_C)$	$S_T = s(r(w_C))w_T$
	Modern worker	L_{Ct}	w_C	$r(w_C)$	$S_C = s(r(w_C))w_C$
	Migrant worker	L_{Mt}	w_{Ut}	$r(w_C)$	$S_{Mt} = s(r(w_C))w_{Ut}$
Urban	Modern worker	L_U	w_{Ut}	$r(w_{Ut+1})$	$S_{Ut} = s(r(w_{Ut+1}))w_{Ut}$

With the following relationships between variables, from (2.1), (3.1) and (3.2):

$$\begin{aligned}
L_R &= L_{Tt} + L_{Ct} + L_{Mt} \\
L_{Ct} &= f'^{-1}(\frac{w_C}{A_R}) K_{Rt} \\
w_{Ut} &= w_T + (w_C - w_T) f'^{-1}(\frac{w_C}{A_R}) \frac{K_{Rt}}{L_R} \\
L_{Mt} &= \max\{ \left[f'^{-1}(\frac{w_{Ut}}{A_U}) S_{Ut-1} - 1 \right] L_U ; 0 \}
\end{aligned}$$

This, together with relations (2.2) and (2.4), also gives the following

inequalities, for all t:

$$\begin{aligned} w_T \leq w_{Ut} \leq w_C \\ r(A_U, w_{Ut}) \geq r(A_R, w_C) \\ s(A_U, w_{Ut}) \leq s(A_R, w_C) \end{aligned}$$

We can now determine the new dynamics of capital accumulation in the rural area. At a given time $t+1$, capital invested in the rural area comes from savings made in t by Young workers, *i.e.* rural traditional workers, rural modern sector workers and rural migrant workers:

$$K_{Rt+1} = L_{Tt}S_T + L_{Ct}S_C + L_{Mt}S_{Mt}$$

This relationship, together with the ones described above, allow to express K_{Rt+1} as a function of the previous period's capital stock, and we then get the following dynamics of capital accumulation:

$$\begin{aligned} K_{Rt+1} &= S_T L_R + (1 + \frac{L_{Mt}}{L_R})(S_C - S_T) f'^{-1}(w_C) K_{Rt} \qquad (3.3) \\ \text{with } L_{Mt} &= \max\{\left[f'^{-1}(\frac{w_{Ut}}{A_U}) S_{Ut-1} - 1\right] L_U; 0\} \\ \text{and } w_{Ut} &= w_T + (w_C - w_T) f'^{-1}(\frac{w_C}{A_R}) \frac{K_{Rt}}{L_R} \end{aligned}$$

This dynamics of capital accumulation under a policy of migration constraint is exactly similar to the relationship obtained in the rural region in autarky, given by (2.5), except for the new positive term $\frac{L_{Mt}}{L_R}$, representing savings brought back to rural areas by returning rural-to-urban migrants. With a policy of constrained migration, the pace of capital accumulation and thus of development in the rural region is higher than it is in autarky, simply because a new source of capital is available for investment: returning migrants' savings. This leads to the second result.

RESULT 2: A policy of labor market opening and constrained return migration speeds up capital accumulation and development in the developing

rural area when compared with a situation of autarky.

3.2 Complete integration

An alternative policy is the complete integration of the two regions. Young people are allowed to work in either region, and Old people are allowed to invest and settle down in whichever region they prefer. In this case, we are in fact back to the one-region case. But as compared to the autarkic case, the levels of both the wage and the overall productivity in the modern sector will change.

As all capital will move to the urban modern sector, modern production will entirely shift from the rural to the modern sector, and the overall productivity of the modern sector in this economy will then increase to A_U, which, according to Result 1.2, will have a beneficial impact on the pace and eventual level of development.

However, the effect on the level of the wage is unclear. If w_C and w_{Ut} are the wages prevailing respectively in the rural and urban modern sector before complete integration, with $w_C \geq w_{Ut}$, then there are three possible cases for wage determination after integration.

If urban and rural wages are not institutionally changed after the complete integration, all Old people will naturally invest their whole capital stock in the region where the returns to capital are higher, that is to say where the modern-sector wage is lower. Then, the modern-sector wage at the national level will necessarily be lower than the one prevailing in the rural region at autarky.

Complete integration can also be accompanied by a renegotiation of the modern-sector wage at the national level by a social planner, as described previously. The situation is similar to the one-region autarkic case analyzed in the first section, except for the fact that the modern sector technology is now higher, raising both current and future levels of overall production for every given level of the wage in the modern sector. This changes the condition for the trade-off between current welfare and future growth described above, and can then lead to a change in the modern-sector wage

level chosen by the social planner. If the chosen wage level is lower than in the rural region in autarky, this will have a negative impact on the pace and eventual level of development.

The positive effect on the pace and eventual level of development of the change in overall productivity brought about by the complete integration of the rural and urban region, and thus by the reallocation of workers to the more productive urban modern sector, can then be compensated, if not completely offset, by a decrease in modern-sector wage. Formally, development depends respectively, in the cases of autarky and complete integration, on the quantities:

$$\begin{aligned} \frac{K_R^*}{\overline{K_R}} &= \frac{s(r(\frac{w_C}{A_R}))w_T f'^{-1}(\frac{w_C}{A_R})}{1 - s(r(\frac{w_C}{A_R}))\left[w_C - w_T\right] f'^{-1}((\frac{w_C}{A_R}))} \\ \frac{K_I^*}{\overline{K_I}} &= \frac{s(r(\frac{w_I}{A_U}))w_T f'^{-1}(w_I)}{1 - s(r(\frac{w_I}{A_U}))\left[w_I - w_T\right] f'^{-1}((\frac{w_I}{A_U}))} \end{aligned} \tag{3.4}$$

where w_I denotes the level of the wage after complete integration. As made clear in the second section, the critical determinant of the magnitude of these quantities is $s(r(\frac{w}{A}))wf'^{-1}(\frac{w}{A})$. The higher this expression is, the faster the pace of capital accumulation and the higher the eventual level of development. If, following complete integration, changes in the levels of the wage $dw = dw_I - dw_C$ and of technology $dA = dA_U - dA_R$ are not too important, then we can write, using (2.13) and (2.14):

$$\begin{aligned} d[s(r(\frac{w_C}{A_R}))w_C f'^{-1}(\frac{w_C}{A_R})] =& s(r)f'^{-1}(\frac{w_C}{A_R})(e_{s,r}e_{r,w} + e_{L,w} + 1)dw \\ &+ s(r)f \circ f'^{-1}(\frac{w_C}{A_R})(-e_{Y,L}e_{L,w} - e_{s,r}e_{r,w})dA \end{aligned}$$

Whether complete integration is eventually good for development or not depends on whether this quantity increases or not, which is the case if:

$$\begin{aligned} & d[s(r(\frac{w}{A}))w_C f'^{-1}(\frac{w}{A})] > 0 \\ \Leftrightarrow & \frac{f'^{-1}(\frac{w}{A})}{f \circ f'^{-1}(\frac{w}{A})} \frac{e_{Y,L}e_{L,w} + e_{s,r}e_{r,w}}{e_{s,r}e_{r,w} + e_{L,w} + 1} dA < dw \end{aligned}$$

This inequality is always verified if complete integration leads to an increase in the modern-sector wage. However, a high enough decrease in the modern-sector wage can offset the beneficial effect due to the increase in modern sector technology. This leads to the third result.

RESULT 3: Compared with a situation of autarky, complete integration leads to an overall increase in modern sector technology, beneficial for development, but this effect can be partially or totally offset by detrimental downward pressure on the modern sector wage.

A policy of migration constraints thus unambiguously speeds up development, understood as the transfer of the labor force into the modern sector due to capital accumulation, when compared with autarky. A policy of complete integration, however, can lead to a lower likelihood of development, as it can reduce the modern-sector wage.

4 An application to the Chinese case

Outline

Since the beginning of the "Opening and Reform" era in 1978, the People's Republic of China has maintained one of the tightest migration control systems of developing countries, through the "Household responsibility system" (known in Chinese as the *hukou* system). Individual *hukou* defines, for each Chinese citizen, a set of rights and opportunities, as well as the localities where they can be exercised. This institution thus has a strong influence on individual locational choices. Here we will see whether the model outlined above can shed some light on the impact of this *hukou* system on Chinese development.

Firstly, the model deals with an economy composed of two regions, a developing rural one and a developed urban one, with two markets: capital and labor. The rural region is considered to be developing because it is still a dual economy, characterized by the coexistence of a modern sector and of traditional activities, and thus by the existence of "surplus labor"

in the Lewisian sense. The model also assumes that capital cannot flow from one region to the other. In this section, we will first verify whether this general framework can be relevant in the case of China.

Secondly, according to the model results, the migration policy that leads to the higher pace of capital accumulation is that of an open labor market with constrained return migration. We will then examine whether the *hukou* institution, as it functions today, can be interpreted in this way, and whether the behavior of rural people fits with the model's predictions.

4.1 Chinese dualism

As could be expected in a developing country of continental size with a population of over one billion and a thirty-year long history of administered economy, China is still far from being an integrated market economy, despite the reforms that began in 1978. Products and production factors are not fully allocated and priced through competitive processes, but remain subject to numerous constraints. The Chinese economy today is then characterized by the coexistence of much more than two different sectors or regions. However, these various lines of fragmentation can be synthetically summarized in two main categories: between more or less developed provinces and between urban and rural areas within provinces. Both dimensions of segmentation will be described below.

4.1.1 Developing and developed China

The People's Republic has been, at least since 1978, characterized by very varying growth and development patterns. If the rural-urban income gap has steadily increased since 1985 (Sicular et al. (2007)), one the main and growing dimensions of inequality in China has been the inter-provincial divergence in growth patterns. Already manifest in the 1990s (Naughton (2002)), this trend seems to be continuing at the beginning of the XXIst century, confirming the unequal economic achievements of eastern coastal

provinces [4] when compared with central and western inner ones (Yao and Zhang (2001), Zhang, Liu, and Yao (2001)). Zou and Zhou (2007) contrast a "developed club", including a reduced set of coastal eastern provinces, [5] with the "underdeveloped" rest of China. From a dual economy point of view, these coastal provinces had a lower share of surplus labor in the 1980s (Cai, Wang, and Du (2002)), and this is still the case today (Wang and Ding (2006)). Not surprisingly, most of these regions also have an urbanization rate well above national average (Chen (2002)).

Despite very diverse local situations, it therefore seems reasonable to consider China as being divided, at a very aggregate level, into a developed and urbanized coast and a under-developed and still dualistic hinterland. This characterization fits well with the model developed in the previous sections.

Another way to establish a simple (and simplifying) division between a developed and a developing China is to distinguish between urban and rural areas within the provinces themselves. In the case of the People's Republic, this distinction is not only geographical or structural, but also statutory, as the classification of a place as rural or urban is linked with the classification of its inhabitants, through their *hukou* (more on which later) as "agricultural" or "non-agricultural". The characteristics of these two regions fit well with the two-region model developed above, particularly since traditional, relative unproductive activities, especially in agriculture, coexist in rural areas with an industrial, modern and capitalistic sector, mainly embedded (at least in the 1990s) in the Town and Village Enterprises (TVEs), whereas urban areas are, generally speaking, completely developed, at least in the sense that there is no longer a traditional sector (see Knight and Song (1999) for a complete description). It is also worth mentioning here that, at least in the 1990s, within-province rural/urban inequalities were significantly higher than between-province inequalities (Kanbur and Zhang (1999)).

4. Which are generally defined as including Beijing, Tianjin, Shanghai, Liaoning, Zhejiang, Jiangsu, Guangdong, Fujian, and Hainan (Cai, Wang, and Du (2002)).

5. Namely: Guangdong, Beijing, Jiangsu, Shanghai, Fujian, Zhejiang, Shandong, Tianjin and Hebei.

So there are two main ways to understand the opposition between a urban/developed and a rural/developing region: between coastal and inland provinces, and, within provinces, between urban and rural areas.

However, for this model to be relevant, a second necessary condition is that these two regions should not be well integrated, and especially that capital should not flow easily over borders.

4.1.2 Capital markets

In the general context of the growing economic fragmentation of China since the beginning of the reforms (Young (2000), Poncet (2003)), banks and capital markets have been particularly little integrated or liberalized. Financial markets remain underdeveloped (Allen, Qian, and Qian (2005)), and the banking sector has retained the structure and habits of the socialist planned economy. Banks are still very closely linked with local authorities and have not developed a modern and efficient credit allocation process (Park and Sehrt (1999)). Reforms were implemented at the beginning of the 2000s, but their effects have yet to be felt (Podpiera (2006)). Because of this proximity between banks and local authorities and the poor functioning of capital markets, capital does not flow smoothly across borders within China (Boyreau-Debray and Wei (2005).

These constraints on internal capital flows lead to significant differences in rates of return (Bai, Hsieh, and Qian (2006)). Despite some convergence since the mid-1990s, it appears that real rates of return are, geographically speaking, much higher in coastal, urbanized and modern areas than in inner, rural and more backward regions (He, Zhang, and Shek (2007)).

Constraints on capital flows are also significant within provinces, between rural and urban areas. Rural households' savings are mainly deposited in rural credit cooperatives (Xie (2003)) and rural cooperative foundations, which have by essence a local scope of action (Park, Brandt, and Giles (1997)). These savings, through the grass roots financial institutions, were one the main factors permitting the emergence of TVEs and rural industry in the 1980s and 1990s (Naughton (2007)). As for returns to capital, their relation to the degree of urbanization seems to display an inverted

U-shape: initially they increase with city size, but then they decrease significantly (see for example Au and Henderson (2006)). This is believed to be caused by constraints on capital allocation, leading to too much capital being invested in the main cities, and too little in secondary towns. The dichotomy identified in the model between a rural and an urban region, the latter yielding higher returns to capital, then seems to more relevant in the Chinese case if these secondary ranks town are taken into account.

The divergence in terms of economic performance between inner and coastal provinces and between rural and (secondary) urban areas within provinces is then paralleled, unsurprisingly, by higher returns to capital in the latter. However, capital does not flow from the former to the latter, because capital markets and financial intermediaries are, like many other markets in China, segmented and restricted by local boundaries. This fits with the general framework of the model described in the previous section.

4.1.3 Productivity differences

Finally, a last asymmetry between the two regions assumed in the model corresponds to a higher overall productivity in the urban modern sector compared with its rural counterpart.

As regards the distinction between provinces, it is well established that total factor productivity is highest in the coastal provinces (Fleisher and Chen (1997)), which also experience a higher rate of productivity growth (K.-W. Li (2009)). As for the link between urban agglomeration and productivity, it has also been shown that overall productivity increases with city size (see for example Pan and Zhang (2002)). Whatever the dichotomy considered, between or within provinces, the rural or developing region's modern sector then has access to a technology which is less efficient than its urban or developed counterpart.

The three dimensions of asymmetry between the urban and the rural regions assumed in the model, that is to say, dual economic structure, returns to capital and overall productivity, then fit two different ways of differentiating between China's regions according to their levels of develop-

ment: between provinces, that is to say between coastal and inland ones, and between rural and (at least secondary) urban areas within provinces. We can now turn to the consequences of the dual economy structure of the less developed areas and of the coexistence of underdeveloped and developed areas for labor market functioning and migration policies.

4.2 Labor markets and migration policies

4.2.1 Rural labor markets

In the theoretical model it is assumed that the rural region is still developing, meaning that traditional and modern sectors coexist. So the wage in the rural modern sector should not be determined competitively but institutionally, and jobs in rural industries should be scarce, in relation to labor supply. Three characteristics of Chinese rural labor markets indicate that this is indeed the case.

Firstly, labor incomes in the agricultural sector are low compared with rural industry and migrant wages, indicating that the agricultural activity is not very productive, and that off-farm job opportunities are scarce (Meng (2000), Knight and Song (2003)). Consistent with a dual economy structure, many studies have pointed the significant gap between the marginal productivity of labor in traditional (understood as agriculture) and modern (industry and services) activities (Yang and Zhou (1999)), Cook (1999)).

Secondly, it appears that because off-farm job opportunities are scarce, they tend to be allocated through non-market processes, such as networks (*guanxi*), as shown by Zhang and Li (2003), or political connections (Cook (1998), Guang and Zheng (2005)).

Thirdly, if workers' off-farm wages are determined by market processes, they should respond to individual productivity measures, such as experience and education. Although there is still debate on that point, existing studies seem to indicate that human capital had little or no effect on individual wages in the 1980s (Byron and Manaloto (1990)), and even if labor markets do appear to have matured somewhat in the 1990s (Zhang, Huang, and

Rozelle (2002)), the impact of human capital on off-farm labor income generally remains low (Fleisher and Wang (2004), de Brauw and Rozelle (2008)). Y. Zhao (1999b) and Zhang, Huang, and Rozelle (2002) show that the main impact of education has been on the access to off-farm jobs, much more than any direct effect on earnings.

These facts are consistent with the coexistence, in rural areas, of two sectors with very different labor productivity, and with an institutional, non-competitive determination of wages in rural industries.

4.2.2 Migration policies: *hukou* and temporary work migration

Since the beginning of the reform era, the People's Republic has maintained considerable control over the migration of Chinese citizens, through the *hukou* system. However, this institution has undergone various reforms and modifications, and as a consequence, the constraints it has imposed, since the beginning of the 1990s at least, are similar to the ones embodied in the migration policy defined as "Labor market opening" in the previous section of this paper.

The *Hukou* system was set up in the 1950s, as a purely administrative household registration device (Chan and Zhang (1999)). In the general context of the administered economy in the 1960s and 1970s, it became a tool for the allocation of resources and access to social services. An individual *hukou* determines a status, specifying what kind of resources and social services are available, and a location, indicating where these resources and services are available. Two statuses are defined, agricultural (*nongye*), which gives access to agricultural land and rural social services, and non-agricultural (*feinongye*), which gives access to formal urban sector jobs and urban social services. When the institutions of a planned economy, inspired by the example of the Soviet Union, were set up at the end of the 1950s, the *hukou* was the complementary but necessary tool to the policy of "price scissors" designed to extract surplus from the agricultural sector, as it compelled agricultural workers not to change sector or locality, despite their inferior status and their exclusion from privileges reserved to urban, or "non-agricultural", citizens (Chan (2009)).

Although it is still present today, the system has undergone numerous reforms and changes since 1978 (Chan (2009) provides an up-to-date and synthetic account). It has been liberalized to a large extent. For example, the officially registered sector of employment, "agricultural" or "non-agricultural", does not prevent Chinese farmers from undertaking off-farm activities. However, the severe constraint imposed today by the *hukou* system comes from the fact that the bundle of economic and social rights a Chinese citizen has access to is strictly limited to the place of officially registered *hukou* residence.

Rural workers have thus gradually been allowed to work in off-farm occupations in rural areas, as well as to come and work in cities,[6] and this new freedom has given rise to huge migration flows out of rural areas. According to NBS (2006), in 2002, out of 478.52 million rural workers, 131.81 million - more than a quarter - out-migrated. Unsurprisingly, migration flows have been increasingly directed toward eastern, coastal and developed provinces (Fan (2005)). At their destination, these rural migrants generally seem to face discrimination, in both access to jobs and wage levels (Knight, Song, and Huaibin (1999), Z. Zhao (2005), Lu and Song (2006)), although evidence on the latter is now being questioned (Dong and Bowles (2002), Démurger et al. (2009)).

However, quite apart from this possible labor market segregation, rural migrants are denied access to urban social services, such as health and education, and segregated in the real estate market, because they are not official urbanites but simply tolerated as temporary workers (Gu and Shen (2003), Wu (2004)). As such, they do not have access to public services (education and health most notably) at their destination. Also, they are segregated out of the subsidized housing market, and, without a permanent *hukou* registration at their place of residence, cannot buy a dwelling (Y. Huang (2003)).

These constraints have a very strong impact on the life-cycle of rural migrants, making it extremely difficult for them to settle down in urban

6. In the 1990s, they were called the "floating population" (*liudong renkou*), and are now more generally referred to as the "peasant workers" (*nongmingong*).

areas. A body of corroborating evidence suggests that rural migrants in China actually have a life-cycle divided into two stages, the first spent working in the urban area, and the second spent investing in the rural one. The migration decision of rural workers thus appears to be on a temporary basis (Y. Zhao (1999a)).

Firstly, "return migration" flows (*huiliu*), from urban to rural areas, have begun to rise in recent years, especially since 2000 (Hare (1999), Y. Zhao (2002)).

Secondly, the "40 year phenomenon" (40 *sui xianxiang*), meaning that virtually all migrant rural workers are less than 40 years old, seems to indicate that there is a clear-cut age threshold for migration decisions (H. Wang (2005)).

Thirdly, rural migrants have relatively high savings rates, and they tend to return home when they consider they have accumulated enough (Bureau (2006)).

Fourthly, when they return home, rural migrant workers tend to invest and become entrepreneurs, a phenomenon the Chinese call *huixiang chuangye*, "returning to the countryside to found a business" (see for example, Ma (1999), Ma (2001), Murphy (1999) and Murphy (2002)), which plays a key role in local development.

All these facts are consistent with a two-period life-cycle of rural-to-urban migrants, forced by *hukou* migration controls to eventually return to their home villages to invest the savings accumulated from their work in urban labor markets.

The *hukou* system as it functions today can then be seen as allowing temporary work migration but forcing eventual return migration, as in the "labor market opening" policy defined in the previous section.

4.3 Consequences

4.3.1 Rural workers' labor incomes, interest rates and savings behavior

Characteristics of the People's Republic of China such as the dichotomy between the eastern coastal provinces and the more backward inner provinces, or, more generally, between rural and urban areas, the segmentation of capital markets and the dual economic structure in rural areas thus seem to correspond quite well to the general background of the model described in the previous sections. Moreover, the way *hukou* migration controls constrain rural people seems quite similar to the migration policy described in the second section under the term "labor market opening". The general theoretical framework thus appears to fit the Chinese experience. A series of stylized facts are also consistent with some important results of the model.

Firstly, the distribution of rural workers in the rural traditional activities, rural off-farm sector and migration described in the second section leads to the conclusion that rural workers favor modern sector jobs over traditional activities and local work over migration. Actually, in China, it seems that migration is a "second best option", as Guang and Zheng (2005) put it, confirming the conclusions drawn by Y. Zhao (1999b). Wages may be nominally higher in urban areas, but once migration costs and the costs of living in urban areas have been taken into account, migration incomes contribute less to a rural household's wealth than local off-farm work (Shi, Heerink, and Qu (2007)). Moreover, the well-established inverted-U shape relationship between assets or wealth and migration probability (Du, Park, and Wang (2005)) shows that migrant workers or rural households including migrants are in the middle of wealth and income distribution. These facts fit well with the Harris-Todaro equilibrium condition (3.1), according to which expected incomes for rural workers should be equal across the two regions.

Consequently, and according to the mechanisms described in the model, this lower labor income of rural workers in cities is associated with higher

returns to capital in urban areas, compared with rural and developing regions. The reverse is true for household savings rates. According to Kraay (2000) and Kuijs (2005), the savings rate of rural households has been structurally higher than that of urban households since 1978, although the gap has tended to narrow in recent years. Moreover, they both find that savings rates respond positively to current real income, and negatively to expected future income, as assumed in the model.

Finally, according to the mechanisms of the model, following the rural region's development through capital accumulation, the wage offered to rural-to-urban migrants should rise, leading to a fall in returns to capital in most developed areas, and consequently to a convergence in the saving rates of urban and rural households. Recent evolutions in China are consistent with these results. In recent years, the wages offered to rural-to-urban workers have steadily increased (Knight, Quheng, and Shi (2010)), and this evolution has been paralleled by a convergence of returns to capital across Chinese provinces (Bai, Hsieh, and Qian (2006)). Finally, the savings rate of urban households has been increasing and gradually converging to that of their rural counterparts, according to Kuijs (2005).

All of these evolutions fit well with the mechanisms at play in the context of the "labor market opening" policy described in the model.

4.3.2 Autarky, *hukou* and complete integration

The model therefore seems to fit quite well with the main stylized Chinese facts and evolutions. The *hukou* kind of migration constraints, allowing rural laborers to work in urban areas, but forcing them to return to their home rural areas to use their savings and capital, actually hastens the accumulation of capital and then economic development and structural change in rural areas.

Removal of the *hukou* constraints, and complete integration between urban developed areas and rural developing areas, could then lead to an immediate increase in production and employment in the modern sector, due to capital flows out of rural areas, and consecutively a reallocation of modern sector jobs in urban areas, following mechanisms close to the

ones described by Au and Henderson (2006) and Whalley and Zhang (2007). However, all activities will move to places where returns to capital are higher and labor wages lower, leading to a lower aggregate level of savings. It is then possible that removal of *hukou* migration constraints, while instantaneously raising the share of employment in modern activities, could also end up causing a lower pace of future structural transformation, if, according to Result 3, the detrimental change in the modern-sector wage level offsets the beneficial change in resource allocation to the most developed region, which has a higher level of productivity.

The following section tries to assess the actual effects of a removal of the *hukou* constraints, when compared with the mechanisms described in the model, using the partial reform of 1999-2002, which suppressed migration restrictions to towns and small cities.

5 An empirical evaluation using the "towns and small cities" *hukou* reform

5.1 The *hukou* reform of 1999-2002

As stated above, the *hukou* system has undergone various modifications since the beginning of the reforms in 1978, allowing workers to migrate, but only on a temporary basis. There have been numerous debates about the complete abolition of this system over the last decade, but concrete moves in this direction remain scarce. Still, a very important and significant reform took place between 1999 and 2002, when the central government experimented, and then implemented nationally, a policy of complete opening of towns and small cities (Yu (2002), Fan (2008)). These new regulations provided that in towns and small cities (less than 100,000 inhabitants), an official *hukou* should be granted - and not sold - to any migrants who have had a permanent and stable place of residence and a stable source of income for at least two years. This policy was therefore designed to allow the permanent settling of migrants in secondary or even tertiary urban areas. Compared with the model developed in this paper,

it can be considered as a policy of complete integration between rural areas and the first level of the urban hierarchy, after years of a policy of labor market opening, through the *hukou* system. The national guidelines published between 1999 and 2001 had to be implemented at the local level by provincial authorities. This process took some time and created some variation in the diffusion of this *hukou* reform. The translation of national policies into provincial laws and regulations has been summarized by Zhang (2009). He found that between 1999 and 2002, relevant laws and regulations were passed in 15 out of 31 provinces and province-level administrative divisions.[7] This reform was meant to be local, and to allow rural workers or farmers to move to nearby urban centers. For example, it is stipulated that farmers who want to settle down in towns and cities and change their official *hukou* residence can keep their land use rights in their original village. At least some localities and provinces, such as Beijing, set tighter conditions for migrants from other provinces to obtain *hukou* in towns and small cities. This reform therefore had more of an impact on the reallocation of people and activities within provinces, rather than across provincial boundaries.

5.2 Empirical strategy

According to the mechanisms described in the theoretical discussion, compared with a situation of constrained migration, complete integration of two regions with different levels of development should exert pressure on the modern-sector wage level, leading to a decrease in the level of workers' savings and consequently investment, which has a detrimental impact on the pace of structural change (understood as the transfer of labor from traditional to modern activities) and on the pace of development. However, this impact on structural change and development can be partially or completely offset by the reallocation of resources to the modern sector of

7. The provinces and province-level administrative divisions with relevant legislation are, in alphabetical order: Anhui, Beijing, Chongqing, Fujian, Gansu, Heilongjiang, Henan, Hubei, Inner Mongolia, Jiangsu, Jiangxi, Liaoning, Shanxi, Yunnan, and Zhejiang.

the most developed region, which is more productive.

Moreover, the pressure on the overall wage level in the modern sector at the time of complete integration will depend on the level of development of the developing areas when the opening occurs. Indeed, it is the low level of the wage offered to temporary migrants in the developed region which acts as a downward force when integration occurs and, as relationship (3.1) shows, quite intuitively, this wage positively depends on the level of development of the developing region. The idea is then that in provinces that are already well-developed, that is to say where a good proportion of the labor force is already employed in the modern sector, the pressure on the modern sector wage due to complete integration is likely to be smaller than in provinces where there remains an extensive rural pool of labor. This will constitute the basis of the empirical strategy, which will verify whether the effect of this reform has actually been different according to provincial levels of development, that is to say to the proportion of the workforce engaged in traditional activities at the time of the reform.

Formally, the following expressions will be estimated:

$$Y_{ptg} = \alpha D_g + \beta_g D_{R,pt} \times D_g + \gamma X_{pt} + \delta D_t + \epsilon_{ptg} \tag{5.1}$$

$$Y_{ptg} = C + \alpha D_{g/h} + \beta D_{R,pt} + \beta_g D_{R,pt} \times D_g + \gamma X_{pt} + \delta D_t + \epsilon_{ptg} \tag{5.2}$$

where Y_{ptg} is the outcome of interest for province p of group g in a year t. C is the constant term. D_g and D_t are dummies for groups of provinces and years, to capture systematic differences between provinces and time effects. X_p is a set of province characteristics. In alternative specifications, they are replaced by province fixed-effects. The variable $D_{R,pt}$ is a dummy standing for the towns and small cities *hukou* reform, and taking the value 1 if a province has enacted the reform in a given year. The main variable of interest is the interaction $D_{R,pt} \times D_g$, because the impact of the reform should be different according to the group to which the province belongs. In specification (5.1), all groups dummies are included, so neither the constant C nor the reform variable $D_{R,pt}$ can be included. In specification (5.2), the group of most developed provinces (indexed by h) is taken as

reference, so the dummy D_h is not included, leaving room for the constant and the reform dummy.

5.3 Data and variables

All data come from China Statistical Yearbooks (NBS (Various years)), and were accessed through the website chinadataonline.org. The years under consideration range from 1991 to 2009. The 2009 limit is imposed by the availability of data. The 1991 threshold comes from two facts. First, before 1991, provincial-level data are often missing. Second, the relaxation of the *hukou* system has led to significant internal migration flows since the late 1980s (see for example Liang (2001)). The 1990s therefore correspond better to the constrained temporary migration phenomenon. As for the provinces taken into account, they are the 15 for which Zhang (2009) provides the exact date of implementation of the reform. They are grouped according to the share of the labor force not employed in the farming sector at the time the reform was implemented. Two cases will be considered, with two or three groups of provinces. [8]

As for the dependent variables, the models give predictions regarding the evolution of the modern-sector wage, the levels of savings and investment, and the pace of structural change and development. Compared with a policy of constrained migration, complete integration should lower the first three variables, and the eventual effect on the last two should depend on the productivity gap between rural and urban modern sectors.

The Statistical Yearbooks do not provide direct information on the modern-sector wage level. However, they do give data on the disposable income per capita of urban and rural households. Under the assumptions that households' incomes mainly come from their labor, and that a decrease in the modern sector wage is not offset, at the aggregate level, by an increase

8. In the case of two groups, the "High" provinces are Beijing, Fujian, Heilongjiang, Hubei, Jiangsu, Liaoning, Shanxi and Zhejiang, while the "Low" ones are Anhui, Chongqing, Gansu, Henan, Inner Mongolia, Jiangxi and Yunnan. In the case of three groups, the "High" provinces are Beijing, Fujian, Jiangsu, Liaoning, and Zhejiang, the "Medium" ones are Heilongjiang, Hubei, Inner Mongolia, Jiangxi and Shanxi, and the "Low" ones are Anhui, Chongqing, Gansu, Henan, and Yunnan.

in modern sector employment, then a decrease in the modern-sector wage level should lead to a decrease in households' disposable incomes. The levels of household savings and of investments are measured at the province level for each year, through the amount of household savings deposits and the level of investment in fixed assets (both measured in 100 millions of yuans) in the province. Finally, the paces of structural change and development are simply measured through the annual growth rate of off-farm employment and the provincial economic growth rate. There are then six dependent variables of interest.

Controls at the province level include measures of the overall population, total workforce, (lagged) farming output and (lagged) GDP growth rate. To account for initial conditions at the beginning of the period, they also include a measure of the provincial GDP in 1989 and of the urbanization rate in 1985. An alternative specification includes province fixed-effects instead of province level controls.

Finally, as the six equations for the six variables of interest are very likely not to have uncorrelated errors, they are estimated together through a seemingly unrelated regression system.

5.4 Results

Results are displayed in Tables 4.1 to 4.12. Tables 4.1 to 4.6 give the results with Chinese provinces gathered into two groups. The first three tables give estimates for the two groups of Chinese provinces, following model (5.1), while the following three take the group of most developed provinces as control, under specification (5.2). Estimations from Tables 4.7 to 4.12 apply exactly the same methodology, but for three groups of provinces.

As expected, provinces with a low or medium level of development, that is to say with a comparatively low share of their labor force out of agriculture at the time of the reform, experienced, when compared with relatively well developed regions, downward pressure on disposable incomes, both rural and urban, and a decrease in household savings, indicated by

the amount of household savings deposits at year-end. The effect on the level of investment is constantly negative for the groups of less developed provinces, and is significant when the group of most developed province is taken as a reference, or when province characteristics are taken into account.

However, despite being constantly negative, the effect on the growth rate of off-farm employment is never significant, while the coefficient for provincial GDP growth rate displays no clear pattern.

These results are consistent with the mechanisms described in the model. The relaxing of migration policies, here through the opening of towns and small cities to permanent migration, creates downward pressure on modern-sector wages, measured here by a decrease in household disposable income per capita. This decrease, together with the changes in life-cycle brought about by the end of compulsory return migration, itself leads to a decrease in the level of household savings. This in turn appears to exert downward pressure on investment.

However, this detrimental effect of relaxing migration policies in the form of decreased investment appears to be partially or totally offset by the gain in allocative efficiency due to the fact that activities and resources move to more urbanized, more productive regions. The *hukou* reform of 1999-2002 therefore seems to have no significant effect on the rate of growth of off-farm employment or on GDP growth. Consequently, it does not seem to have had an impact on the pace of development, but it did reduce its capital-intensity: the same growth rate was achieved, but with less capital investments needed.

6 Conclusion

This paper presents a simple model of development in the context of a dual economy, characterized by the coexistence of two sectors, a traditional one using only labor, and a modern one using capital and labor. As usual in such a setting, the wage is not market-clearing, but is institutionally determined, leaving capital owners in a dominant position. This dual

setting is combined with agents that have a two-period life-cycle, *à la* Diamond (1965). Within this simple theoretical framework, and under the empirically sound and consensual assumptions that savings do not respond positively to interest rates and that the elasticity of labor demand with respect to wages is less than one, it is shown that a higher modern-sector wage level leads to a higher level of aggregate savings, and thus to higher investments, and eventually to a faster pace and higher eventual level of development.

If a second, developed, region is introduced, where the modern sector employs the whole workforce and has access to a more productive technology, then a policy of "labor market opening", under which workers from the developing region are allowed to come and work in developed areas, but are obliged to return to rural areas when old, has an unambiguously positive impact on the dynamics of capital accumulation and consequently on the development of the less developed region.

On the other hand, in the case of complete integration between the two regions, all capital will flow to the urban area where rates of return are higher. This will exert pressure on the modern-sector wage, which can lower aggregate savings and then investment. However, this evolution, detrimental for development, can be partially or even totally offset by the reallocation of activities to the more productive modern sector.

These results are especially interesting for analysis of the Chinese case. Since 1978, the People's Republic of China has gradually opened the urban labor markets for its rural citizens, but still denies them the right to permanently settle in cities. This has led to the emergence of a huge population of "peasant laborers" (*nongmingong*) working in cities, but forced to return, after a certain time, to their rural home area, where they often become entrepreneurs and play a key role in local development.

Consequently, the migration constraints in China, embodied in the *hukou* system, probably explain part of the very high Chinese savings rate and the very rapid pace of Chinese development. Although *hukou* migration constraints prevent better current allocation of economic resources, they could speed up capital accumulation and structural change.

Indeed, when a major reform of this *hukou* system was implemented between 1999 and 2002, allowing rural workers to settle in nearby towns and small cities, this led, in the provinces that were comparatively less developed at the time of the reform (that is to say where a higher share of the workforce remained employed in agriculture), to a decrease in incomes, savings, and investment. However, this does not lead to a lower pace of structural change or economic growth. The detrimental effect of the decrease in labor must therefore have been offset by the higher overall productivity achieved by the reallocation of resources and activities.

7 Results tables

TABLE 4.1 : *Hukou* reform in developed and less developed provinces -1

	Urban Inc. per Cap.	Rural Inc. per Cap.	Hhs Savings	I. in Fixed Assets	Off-farm Labor Growth	GDP Growth
	(Yuan)	(Yuan)	(100 Millions)	(100 Millions)	(%)	(%)
"High" group	16,839***	6,142***	6,201***	301.9	0.0361	0.141***
	(1,177)	(573.4)	(888.9)	(566.5)	(0.0394)	(0.0218)
"Low" group	15,729***	5,220***	5,445***	-148.7	0.0557	0.139***
	(1,180)	(575.1)	(892.3)	(633.5)	(0.0395)	(0.0244)
Reform × "High"	308.9	229.7	766.3	667.3	0.0228	-0.00328
	(868.3)	(423.0)	(773.9)	(702.4)	(0.0290)	(0.0270)
Reform × "Low"	-1,270	-730.7*	-1,649**	-545.5	-0.00461	0.00458
	(885.9)	(431.6)	(789.6)	(716.7)	(0.0296)	(0.0276)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE						
Obs.	240	240	240	240	240	240
R^2	0.950	0.918	0.839	0.764	0.401	0.898

Significance levels : * 10% ** 5% *** 1%

TABLE 4.2 : *Hukou* reform in developed and less developed provinces -2

	Urban Inc. per Cap.	Rural Inc. per Cap.	Hhs Savings	I. in Fixed Assets	Off-farm Labor Growth	GDP Growth
	(Yuan)	(Yuan)	(100 Millions)	(100 Millions)	(%)	(%)
"High" group	2,877***	738.9	-4,066***	4,742***	0.107	0.0578
	(1,009)	(553.9)	(847.4)	(1,028)	(0.0694)	(0.0462)
"Low" group	1,729*	209.9	-3,667***	4,935***	0.0949	0.0624
	(959.7)	(527.0)	(806.2)	(981.8)	(0.0663)	(0.0439)
Reform × "High"	133.1	151.4	369.3	-110.0	0.0170	-0.00543
	(578.8)	(317.9)	(486.3)	(413.1)	(0.0279)	(0.0265)
Reform × "Low"	-1,518**	-831.7**	-1,750***	-1,203***	-0.00955	-0.00108
	(604.9)	(332.2)	(508.2)	(431.7)	(0.0291)	(0.0277)
Year FE	X	X	X	X	X	X
Prov. controls	X	X	X	X	X	X
Prov. FE						
Obs.	230	230	230	230	230	230
R^2	0.979	0.958	0.943	0.923	0.498	0.911

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

TABLE 4.3 : *Hukou* reform in developed and less developed provinces -3

	Urban Inc. per Cap.	Rural Inc. per Cap.	Hhs Savings	I. in Fixed Assets	Off-farm Labor Growth	GDP Growth
	(Yuan)	(Yuan)	(100 Millions)	(100 Millions)	(%)	(%)
"High" group	15,351***	1,035***	-1,352***	2,164***	0.0556	0.150***
	(643.8)	(194.5)	(492.3)	(633.5)	(0.0430)	(0.0244)
"Low" group	17,145***	274.6	-1,293**	2,230***	0.0669	0.209***
	(711.6)	(234.5)	(587.1)	(710.6)	(0.0457)	(0.0295)
Reform × "High"	671.4	542.1**	994.7*	111.6	0.0197	-0.0199
	(454.6)	(211.5)	(535.5)	(518.8)	(0.0292)	(0.0266)
Reform × "Low"	-1,133**	-386.4*	-1,026*	-817.4	-0.00445	-0.0181
	(467.7)	(217.6)	(550.9)	(533.7)	(0.0300)	(0.0273)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE	X	X	X	X	X	X
Obs.	240	240	240	240	240	240
R^2	0.988	0.981	0.930	0.883	0.449	0.910

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

TABLE 4.4 : *Hukou* reform in developed and less developed provinces -4

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Low" group	-1,110***	-922.2***	-755.6**	-450.6	0.0195	-0.00225
	(404.7)	(197.2)	(360.7)	(327.4)	(0.0135)	(0.0126)
Reform	308.9	229.7	766.3	667.3	0.0228	-0.00328
	(868.3)	(423.0)	(773.9)	(702.4)	(0.0290)	(0.0270)
Reform × "Low"	-1,579***	-960.4***	-2,416***	-1,213***	-0.0274	0.00786
	(534.4)	(260.4)	(476.4)	(432.4)	(0.0179)	(0.0166)
Constant	3,534***	908.7***	799.9	301.9	0.0208	0.141***
	(705.7)	(341.2)	(546.8)	(566.5)	(0.0234)	(0.0218)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE						
Obs.	240	240	240	240	240	240
R^2	0.808	0.694	0.666	0.591	0.279	0.592

Significance levels : ∗ 10% ∗∗ 5% ∗∗∗ 1%

TABLE 4.5 : *Hukou* reform in developed and less developed provinces -5

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Low" group	-1,149***	-529.0***	398.8	193.8	-0.0121	0.00463
	(356.7)	(195.9)	(299.7)	(254.6)	(0.0172)	(0.0163)
Reform	133.1	151.4	369.3	-110.0	0.0170	-0.00543
	(578.8)	(317.9)	(486.3)	(413.1)	(0.0279)	(0.0265)
Reform × "Low"	-1,651***	-983.1***	-2,120***	-1,093***	-0.0265	0.00435
	(351.5)	(193.0)	(295.3)	(250.8)	(0.0169)	(0.0161)
Constant	18,144***	5,425***	5,931***	4,742***	0.107	0.0675
	(1,441)	(791.1)	(1,210)	(1,028)	(0.0694)	(0.0660)
Year FE	X	X	X	X	X	X
Prov. controls	X	X	X	X	X	X
Prov. FE						
Obs.	230	230	230	230	230	230
R^2	0.925	0.851	0.884	0.867	0.402	0.637

Significance levels : ∗ 10% ∗∗ 5% ∗∗∗ 1%

TABLE 4.6 : *Hukou* reform in developed and less developed provinces -6

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Low" group	-5,153***	-760.7***	-2,711***	-1,041**	0.0113	0.0599**
	(449.8)	(205.8)	(529.8)	(490.8)	(0.0284)	(0.0258)
Reform	671.4	542.1**	994.7*	111.6	0.0197	-0.0199
	(454.6)	(211.5)	(535.5)	(518.8)	(0.0292)	(0.0266)
Reform × "Low"	-1,804***	-928.5***	-2,021***	-929.0***	-0.0242	0.00181
	(276.0)	(128.4)	(325.1)	(315.0)	(0.0177)	(0.0161)
Constant	8,543***	1,035***	1,116**	3,271***	0.0556	0.150***
	(448.9)	(194.5)	(528.5)	(633.5)	(0.0430)	(0.0244)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE	X	X	X	X	X	X
Obs.	240	240	240	240	240	240
R^2	0.952	0.931	0.855	0.797	0.337	0.642

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

TABLE 4.7 : Effect of the *Hukou* reform by groups of provinces -1

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"High" group	2,531***	6,768***	6,322***	8,872***	0.0460	0.153***
	(550.2)	(421.7)	(805.2)	(870.6)	(0.0395)	(0.0223)
"Medium" group	701.7	5,745***	5,359***	8,233***	0.0434	0.126***
	(563.0)	(420.1)	(801.0)	(867.3)	(0.0394)	(0.0228)
"Low" group	836.6	5,393***	5,379***	8,283***	0.0615	0.140***
	(600.2)	(427.3)	(819.8)	(882.1)	(0.0401)	(0.0243)
Reform × "High"	718.7	390.1	1,133	1,042	0.0227	-0.0115
	(674.7)	(315.5)	(707.6)	(651.3)	(0.0296)	(0.0273)
Reform × "Medium"	-2,026***	-885.9***	-1,881***	-1,005	-0.00439	0.0208
	(693.2)	(324.2)	(727.0)	(669.2)	(0.0304)	(0.0281)
Reform × "Low"	-1,984***	-1,119***	-1,990***	-896.1	-0.00436	-0.0140
	(710.9)	(332.4)	(745.6)	(686.3)	(0.0312)	(0.0288)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE						
Obs.	240	240	240	240	240	240
R^2	0.971	0.957	0.872	0.807	0.409	0.900

Significance levels : ∗ 10% ∗∗ 5% ∗ ∗ ∗ 1%

TABLE 4.8 : Effect of the *Hukou* reform by groups of provinces -2

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm L. Growth (%)	GDP Growth (%)
"High" group	1,415*	6,447***	6,012***	-772.8	0.111	0.0899**
	(817.0)	(674.4)	((1,135)	(559.8)	(0.0714)	(0.0433)
"Medium" group	473.3	6,057***	7,358***	386.7	0.109	0.0613
	(811.4)	(642.1)	(1,080)	(554.6)	(0.0680)	(0.0430)
"Low" group	-902.0	5,071***	6,848***	73.67	0.0873	0.0604
	(843.8)	(634.8)	(1,068)	(589.4)	(0.0672)	(0.0447)
Reform × "High"	873.8*	468.4*	1,084**	445.0	0.0201	-0.0139
	(504.6)	(268.2)	(451.2)	(385.6)	(0.0284)	(0.0268)
Reform × "Medium"	-1,765***	-741.1***	-1,477***	-1,052***	0.00393	0.00833
	(522.5)	(277.7)	(467.2)	(399.3)	(0.0294)	(0.0277)
Reform × "Low"	-1,950***	-1,087***	-1,889***	-1,528***	-0.0122	-0.0226
	(553.4)	(294.1)	(494.9)	(422.9)	(0.0311)	(0.0293)
Year FE	X	X	X	X	X	X
Prov. controls	X	X	X	X	X	X
Prov. FE						
Obs.	230	230	230	230	230	230
R^2	0.985	0.971	0.953	0.936	0.502	0.913

Significance levels : ∗ 10% ∗∗ 5% ∗∗∗ 1%

TABLE 4.9 : Effect of the *Hukou* reform by groups of provinces -3

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm L. Growth (%)	GDP Growth (%)
"High" group	19,375***	699.4***	511.2	1,169***	0.0534	0.136***
	(532.8)	(166.1)	(483.9)	(443.7)	(0.0431)	(0.0371)
"Medium" group	15,674***	370.7*	-1,734***	-151.7	0.0524	0.110***
	(536.9)	(192.6)	(527.5)	(444.1)	(0.0400)	(0.0363)
"Low" group	17,520***	334.1*	-1,481***	-564.8	0.0662	0.0883**
	(597.1)	(198.9)	(536.1)	(534.3)	(0.0464)	(0.0403)
Reform × "High"	1,594***	946.3***	1,793***	835.9*	0.0240	-0.0240
	(385.3)	(181.5)	(497.2)	(494.7)	(0.0299)	(0.0271)
Reform × "Medium"	-1,298***	-374.0**	-1,157**	-1,344***	-3.93e-05	-0.00521
	(396.3)	(186.7)	(511.5)	(508.9)	(0.0308)	(0.0279)
Reform × "Low"	-1,510***	-579.8***	-1,104**	-890.0*	-0.00368	-0.0281
	(406.3)	(191.4)	(524.4)	(521.7)	(0.0315)	(0.0286)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE	X	X	X	X	X	X
Obs.	240	240	240	240	240	240
R^2	0.992	0.987	0.943	0.899	0.450	0.911

Significance levels : ∗ 10% ∗∗ 5% ∗∗∗ 1%

TABLE 4.10 : Effect of the *Hukou* reform by groups of provinces -4

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Medium" group	-1,829***	-1,023***	-963.9***	-638.6**	-0.00258	-0.0275**
	(333.9)	(156.1)	(350.2)	(322.3)	(0.0146)	(0.0135)
"Low" Group	-1,694***	-1,374***	-943.7**	-589.1*	0.0155	-0.0135
	(362.5)	(169.5)	(380.2)	(350.0)	(0.0159)	(0.0147)
Reform	718.7	390.1	1,133	1,042	0.0227	-0.0115
	(674.7)	(315.5)	(707.6)	(651.3)	(0.0296)	(0.0273)
Reform × "Medium"	-2,745***	-1,276***	-3,013***	-2,048***	-0.0271	0.0324*
	(465.3)	(217.6)	(488.0)	(449.2)	(0.0204)	(0.0189)
Reform × "Low"	-2,702***	-1,509***	-3,123***	-1,938***	-0.0271	-0.00250
	(486.0)	(227.3)	(509.7)	(469.2)	(0.0213)	(0.0197)
Constant	2,531***	6,768***	1,714***	8,872***	0.0460	0.153***
	(550.2)	(421.7)	(550.7)	(870.6)	(0.0395)	(0.0223)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE						
Obs.	240	240	240	240	240	240
R^2 0.890	0.838	0.735	0.666	0.288	0.603	

Significance levels : * 10% ** 5% *** 1%

TABLE 4.11 : Effect of the *Hukou* reform by groups of provinces -5

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Medium" group	-942.1***	-390.8**	1,346***	1,159***	-0.00243	-0.0286
	(346.1)	(183.9)	(309.5)	(264.5)	(0.0195)	(0.0184)
"Low" Group	-2,317***	-1,377***	835.9**	846.5***	-0.0237	-0.0294
	(428.5)	(227.7)	(383.2)	(327.5)	(0.0241)	(0.0227)
Reform	873.8*	468.4*	1,084**	445.0	0.0201	-0.0139
	(504.6)	(268.2)	(451.2)	(385.6)	(0.0284)	(0.0268)
Reform × "Medium"	-2,639***	-1,209***	-2,561***	-1,497***	-0.0162	0.0223
	(336.2)	(178.7)	(300.6)	(256.9)	0.0189)	(0.0178)
Reform × "Low"	-2,824***	-1,556***	-2,972***	-1,973***	-0.0323	-0.00871
	(361.3)	(192.0)	(323.1)	(276.1)	(0.0203)	(0.0192)
Constant	20,188***	6,447***	-5,434***	-772.8	0.111	0.103
	(1,269)	(674.4)	(730.6)	(559.8)	(0.0714)	(0.0673)
Year FE	X	X	X	X	X	X
Prov. controls	X	X	X	X	X	X
Prov. FE						
Obs.	230	230	230	230	230	230
R^2	0.945	0.899	0.905	0.889	0.407	0.646

Significance levels : * 10% ** 5% *** 1%

TABLE 4.12 : Effect of the *Hukou* reform by groups of provinces -6

	Urban Inc. per Cap. (Yuan)	Rural Inc. per Cap. (Yuan)	Hhs Savings (100 Millions)	I. in Fixed Assets (100 Millions)	Off-farm Labor Growth (%)	GDP Growth (%)
"Medium" group	832.5***	-241.3	323.6	-1,171***	-0.000991	0.0468*
	(295.2)	(157.4)	(481.8)	(379.1)	(0.0259)	(0.0263)
"Low" Group	2,438***	-1,019***	575.6	-1,922***	0.0209	-0.0444*
	(367.9)	(176.5)	(483.6)	(460.6)	(0.0291)	(0.0264)
Reform	1,594***	946.3***	1,793***	835.9*	0.0240	-0.0240
	(385.3)	(181.5)	(497.2)	(494.7)	(0.0299)	(0.0271)
Reform × "Medium"	-2,892***	-1,320***	-2,950***	-2,180***	-0.0240	0.0188
	(259.5)	(122.3)	(334.9)	(333.2)	(0.0202)	(0.0183)
Reform × "Low"	-3,104***	-1,526***	-2,897***	-1,726***	-0.0277	-0.00406
	(272.4)	(128.3)	(351.5)	(349.7)	(0.0211)	(0.0192)
Constant	1,917***	699.4***	2,523***	9,484***	0.0373	0.153***
	(345.6)	(166.1)	(643.8)	(684.1)	(0.0274)	(0.0248)
Year FE	X	X	X	X	X	X
Prov. controls						
Prov. FE	X	X	X	X	X	X
Obs.	240	240	240	240	240	240
R^2	0.967	0.951	0.881	0.824	0.338	0.644

Significance levels : $*$ 10% $**$ 5% $***$ 1%

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