FACULTY OF AGRICULTURAL SCIENCES

Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics
University of Hohenheim
Chair of Rural Development Theory and Policy

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INSTITUTIONAL CHANGE IN CUBA'S AGRICULTURAL SECTOR

Dissertation
Submitted in fulfilment of the requirements for the degree
"Doktor der Agrarwissenschaften"
(Dr. sc. agrar./ Ph.D. in Agricultural Sciences)

to the

Faculty of Agricultural Sciences

presented by

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from San Felipe, Venezuela

2010

This thesis was accepted as a doctoral dissertation in fulfillment of the requirements for the “Doktor der Agrarwissenschaften” (Dr. sc. agrar./ Ph.D.) by the Faculty of Agricultural Sciences at the University of Hohenheim on October 10, 2010

Date of oral examination: December 20, 2010

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ACKNOWLEDGEMENTS

I dedicate this dissertation to my parents Walter and Auristela, who have given my siblings and me all we need: love, strength, freedom, curiosity, and the hope of a better world. My father, moreover, is my most faithful tutor, and always found the time to read and comment on my work. My mother has at all times helped me keep the perspective and never forget that there are more important things than a perfect work. I love and admire them.

Dedico este trabajo a mis padres, Walter y Auristela, quienes nos dieron a mis hermanos y a mi todo lo que necesitábamos: amor, fuerza, libertad, curiosidad y la esperanza de que el mundo puede ser mejor. Mi papá, además, es mi tutor más fiel y siempre ha encontrado tiempo para leer y comentar mis trabajos. Mi mamá me ha ayudado siempre a mantener la perspectiva y a nunca olvidar que hay cosas más importantes que un escrito perfecto. Los amo y los admiro muchísimo.

This dissertation would not have been possible without the academic support of my supervisor, Prof. Dr. Zeller. His comments on my work always opened up new dimensions that I feel enriched my analyses and encouraged me to continue exploring new questions. I especially thank him for the faith in my (not always usual) way of looking at problems and information.

Prof. Dr. Heidhues has also offered me valuable comments and interesting questions, as well as the periodical letters for the DAAD… Thank you!!!

My dissertation was possible thanks to the financial support from the Deutscher Akademischer Austausch Dienst DAAD. I thank them from the heart.

Data collection for the dissertation was supported logistically by the Welthungerhilfe and the Asociación Cubana de Producción Animal ACPA. Several associates of ACPA in Santiago de Cuba, Holguín and Las Tunas provinces provided invaluable help during household and collective interviews. Moreover, among the members of ACPA and the Welthungerhilfe in Santiago de Cuba, Holguín, Granma, Guantánamo, Las Tunas and

La Habana I found true friends that showed me the ways of Cuban people, and helped me understand many mysteries.

But other persons also helped me in innumerable ways during these 3+ years. My colleagues of the Institute 490A not only have helped with academic discussions and rich exchanges of ideas, but they have offered me such a nice friendship, complete with coffee, cakes, and chocolate! I consider myself extremely lucky to have met each one of you. Christian, thank you for the translation!!!

Frau Contag, Coni and Katharina are not only great secretaries that can solve everything, but are also beautiful people and friends.

My family has accompanied me in everything I have endeavoured to reach. I am thankful to know that my sisters, Nana and Titi, will always be there. I would be incomplete without them. My beautiful niece Beatriz made me smile and gave me new strength to continue with the almost daily photos and videos, as well as the live videoconferences.

Javier, I will always carry the hole that you left. One day we will meet again, little brother. Siempre voy a llevar el hueco que dejaste. Un día nos volveremos a ver, hermanito.

Lastly, I thank my husband for his love, his patience, and his company. He not only supported me during all this time but his peaceful presence carried me through the most difficult times. Alone I would not have been able to do this. Carlitos, moltes gràcies!!! You are my home.

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ABBREVIATIONS AND ACRONYMS

ACPA	*Asociación Cubana de Producción Animal* (Cuban Association of Livestock Production)
ACTAF	*Asociación Cubana de Técnicos Agrícolas y Forestales* (Cuban Association of Agricultural and Forestry Technicians)
ANAP	*Asociación Nacional de Agricultores Pequeños* (National Association of Small Producers)
CCS	*Cooperativas de Créditos y Servicios* (Credit and Service Cooperatives)
CPA	*Cooperativas de Producción Agropecuaria* (Agricultural Production Cooperatives)
CUC	Cuban convertible currency
FAO	Food and Agriculture Organization
GDP	Gross domestic product
MLC	*Mercado Libre Campesino* (Free Peasant's Market)
NGO	Non governmental organization
PCA	Principal component analysis
UBPC	*Unidades Básicas de Producción Cooperativa* (Basic Units of Cooperative Production)
USA	United States of America

EXECUTIVE SUMMARY

Cuba is a centrally planned economy that has introduced gradual changes towards a market economy. However, many of these changes are only partial or have been reversed, especially in the agricultural sector. The country depends on food imports as a result of low agricultural productivity, which has often been blamed on technical deficiencies, lack of resources and climatic disturbances. This dissertation, however, focuses on the little explored role that economic and political institutions have on the low productivity of Cuba's agricultural sector. The economic institutions governing land use, access to markets, and the organization of farms (for example, collective or individual) have an impact on production since they determine the incentives and constraints faced by producers and other economic actors. Moreover, the study of the political and economic institutions of Cuba's agricultural sector may help to elucidate the reasons behind its partial and failed reforms. Institutions change slowly or fail to change for various reasons, including the political opposition from actors that expect their economic returns and political capital to decrease as a result of reforms.

In order to understand the production problems of Cuban agriculture and to evaluate the constraints the country faces in implementing successful reforms, this dissertation studies the institutional framework governing production and marketing in Cuba, as well as its impacts on production and food supply, and the political and economic dynamics driving its evolution. The objectives of the dissertation are not only to cover the gap in the published literature regarding these topics, but also to inform policy makers and rural development organizations working in the country.

The dissertation is organized around three research papers. The first paper addresses the institutional framework of Cuba's agricultural sector and its impacts on the performance of different producer types. The second paper explores in more detail the impact of these institutions on collective production, food availability and food security at household level. This study is one of only two known analyses that quantify household expenditures in Cuba, and the first to study the frequency and diversity of food consumption among rural households in the country. In the third paper, the reforms of Cuba's agricultural sector are analyzed through the lens of

theories of institutional change. The primary data used in the dissertation was collected during two research stays (October 2007- March 2008, and April 2009), and was complemented with official statistical reports, published and unpublished studies.

The first paper presents and compares different producers of the cattle sub-sector (private producers, state-dependent collectives and state farms), their access to land and agricultural input and output markets, the legislation governing their cattle husbandry, and their performance. The three main producer types differ in their property rights for land and cattle, as well as in their access to illegal markets. Private producers have different degrees of use rights over land and cattle, from proprietors to usufructuaries and landless, and have better access to illegal markets, but at the risk of fines, confiscation of property or jail convictions. The illegal markets offer much higher prices than the legal markets forced upon state farms and state-dependent collectives, who have, respectively, null or only usufruct rights over land. The state farms have economic returns due to the administrative control of other producers and not from their own production, while the state-dependent collectives have very limited rights to residual income from their cattle production. Private producers have more benefits from consumption and sales, and despite facing higher risks, they are the only ones showing a constant increase of their herd size in the last years. Moreover, it was found that the lack of mechanism to enter or exit production causes an overall decrease of efficiency by forbidding efficient producers to enter the sector and by not allowing the worst producers to exit production. The fact that at least one of the producer types is successful casts doubt on the prevailing idea that production problems are a result of technical deficiencies or lack of resources.

The second paper deals in more detail with the largest producer type in terms of land described in the first paper: the state-dependent collective farms. This study explores collective agricultural production, as well as poverty and food access of collective farm households by using principal component analysis and other methods. It was found that relative poverty and diversity of food consumption in the studied households is characterized by differences in the quality and frequency of food items that are not supplied by the state's food rationing system, but that come from individual or collective food production for home consumption. Moreover, the relative poverty status of the households is not related to the economic or productive performance in the main activities of their collective farms (in this case, beef and

milk). These results, as well as in-depth interviews with managers and workers of collective farms, expose severe incentive problems in collective agricultural production, as workers are not rewarded for their work in the farms' main activities. At the same time, the state restricts the collective and private food production for home consumption as they compete for labour and resources with the collective farm's beef and milk production intended for the supply of the state's food rationing system. These incentive problems hurt the milk and beef that the Cuban population should receive with the food rationing system. At the same time, the food security of the collective workers is also hurt when the land for private and collective food production for home consumption is restricted by the state as a way to "protect" milk and beef production.

Several reforms are needed to correct the incentive problems exposed in the first two papers, but it is not clear if these reforms are possible. To address this question, the third paper explores the evolution of the economic institutions in the agricultural sector of Cuba by evaluating the historical political power dynamics in the sector. The agricultural sector of the country is marked by permanent conflicts between private producers, defined by their strong interests for the establishment of free markets and full property rights over their land, and other actors that have opposing interests, such as the political elite and bureaucrats that control agricultural production and marketing. The country has only partially adopted property rights over land and market incentives for producers during times of extreme crises that have threatened the elite's permanence in power. Moreover, once the threats or consumer unrest have decreased, the reforms are often reversed and alternative solutions are devised to placate consumers. The reversal of the reforms do not only respond to the political elite's interest of permanence in power, but are also a result of the political opposition of bureaucrats that block or delay the implementation of reforms whenever these threaten their political capital and future economic returns. The adoption of institutions that result in a more efficient agriculture would increase the power of private agricultural producers and give political power to new and emerging groups such as the workers of the state-dependent collective farms. This redistribution of political power would occur at the expense of the bureaucracy in state farms and agricultural or food distribution state enterprises. The reforms announced since 2007 seem to point to a strategy of limiting the influence of the bureaucracy with massive

lay-offs, the elimination or merging of state farms and enterprises and the gradual elimination of the food rationing system.

It is suggested that while these reforms point to the right direction, a successful reform of the agricultural sector might additionally require a redefinition of the power bases and relationships between the government and political stakeholders such as the bureaucracy and other groups (for example the civic society) by allowing participation of these stakeholders in the shaping of the reforms. This would not only reduce the opposition and blocking of the reforms, but would also avoid creating poverty and vulnerability among political losers and other groups that will not (at least initially) gain from the reform process.

The dissertation concludes by presenting an outlook for research that includes the need to study the institutions and their impact on production for the highly diverse private producers, as well as the further study of household income and food security of the rural population. I also propose some changes in the activities of rural development organizations working in the country. For example, they might try to change the internal incentive problems in the state-dependent collective farms, and not only seek the collective farms' improvement in production or marketing. Additionally, they could contribute by proposing alternative livelihoods for the political losers of reforms in the agricultural sector, such as the bureaucracy.

ZUSAMMENFASSUNG

Obwohl Kuba immer noch eine Zentralverwaltungswirtschaft ist, wurden in den letzten Jahren durch die Staatsführung schrittweise marktwirtschaftliche Elemente in das Wirtschaftssystem integriert. Allerdings waren diese Veränderungen meist nicht weit reichend oder wurden nach einiger Zeit rückgängig gemacht; vor allem in der Landwirtschaft. In Folge der geringen Produktivität in der Landwirtschaft ist das Land auf Nahrungsmittelimporte angewiesen. Häufig werden technischer Rückstand, fehlende Ressourcen oder ungünstige Wetterbedingungen für die niedrige Produktivität verantwortlich gemacht. Die Betrachtung ökonomischer und politischer Institutionen als eine Mitursache für geringe Produktivitätsniveaus in der Landwirtschaft wird meist vernachlässigt. Hier setzt die vorliegende Arbeit an. Institutionen, welche Landbesitz, den Zugang zu Märkten und die rechtlichen Rahmenbedingungen für landwirtschaftliche Betriebe (Privat- oder Kollektivbetriebe) regulieren, beeinflussen die Produktion, da sie für Produzenten und andere ökonomische Akteure Anreize setzen aber auch Beschränkungen auferlegen. Darüber hinaus bietet eine Untersuchung der politischen und ökonomischen Institutionen Kubas einen Ansatzpunkt um die nur teilweise Umsetzung oder das Scheitern von Reformen im landwirtschaftlichen Sektor zu erörtern. Für einen (zu) langsamen Wandel von Institutionen oder das Scheitern der Reformen lassen sich verschiedene Ursachen anführen. Eine Ursache ist im Widerstand politischer Interessengruppen zu sehen. Diese Gruppen erwarten von Reformen eine Verringerung ihrer ökonomischen Renten oder ihres politischen Einflusses.

Die vorliegende Arbeit untersucht die institutionellen Rahmenbedingungen für die Produktion und Vermarktung landwirtschaftlicher Güter in Kuba sowie den Einfluss dieser institutionellen Vorgaben auf die Produktionsmenge und die Bereitstellung von Nahrungsmitteln. Außerdem wird in dieser Dissertation das Zusammenwirken politischer und ökonomischer Kräfte, welche die institutionellen Veränderungen beeinflussen, analysiert. Diese Untersuchungen ermöglichen es, die Produktionsprobleme in der Landwirtschaft Kubas besser zu verstehen und Hindernisse zu identifizieren, welche die Implementierung erfolgreicher Institutionen

erschweren. Dabei geht es in dieser Arbeit nicht nur darum, einen ergänzenden Beitrag zu diesem bisher in der Literatur wenig behandelten Thema zu leisten. Vielmehr sollen mit dieser Arbeit auch politischen Entscheidungsträgern und Entwicklungshilfeorganisationen, welche im ländlichen Kuba aktiv sind, Informationen über die existierenden Probleme und mögliche Lösungswege bereitgestellt werden.

Drei Forschungsarbeiten bilden die Grundlage für diese Dissertation. Die erste dieser Arbeiten untersucht die institutionellen Rahmenbedingungen des landwirtschaftlichen Sektors Kubas und die Auswirkungen der Institutionen auf die Leistungsfähigkeit unterschiedlicher Produzenten. In der zweiten Studie werden die Einflüsse dieser Institutionen auf die kollektive Produktion von Nahrungsmitteln, sowie die Nahrungsmittelverfügbarkeit und –sicherheit auf Haushaltsebene näher betrachtet. Diese Studie ist eine von nur zwei bekannten Arbeiten, welche Haushaltsausgaben in Kuba quantifizieren und die erste Arbeit, welche Häufigkeit und Vielfältigkeit im Nahrungsmittelkonsum im ländlichen Kuba untersucht. Die dritte Forschungsarbeit widmet sich den Reformen in der Landwirtschaft Kubas und untersucht diese vor dem Hintergrund existierender Theorien des institutionellen Wandels. Während Forschungsaufenthalten in Kuba von Oktober 2007 bis März 2008 und im April 2009 wurden umfangreiche Daten erhoben, welche die Grundlagen für diese Dissertation bilden. Diese Primärdaten wurden durch Informationen aus offiziellen Statistiken sowie aus veröffentlichten und unveröffentlichten Forschungsarbeiten ergänzt.

In der ersten Studie werden verschiedene Rinderproduzenten (private Unternehmen, staatsabhängige Kollektive und Staatsfarmen) vorgestellt und in Bezug auf ihren Zugang zu Land, zu Märkten für andere Produktionsfaktoren und Absatzwegen für erstellte Produkte, die gesetzlichen Vorgaben, welche die Rinderhaltung regeln, und ihren (betriebs-)wirtschaftlichen Erfolg verglichen. Dabei unterscheiden sich die drei wichtigsten Produzententypen in ihren Eigentumsrechten für Land und Rinder sowie ihrem Zugang zu illegalen Märkten. Für private Produzenten ergibt sich eine Bandbreite von Eigentumsrechten an Land und Rindern. Sie können Eigentümer sein, Nießbrauchrechte haben oder keinerlei Landrechte besitzen. Private Produzenten haben einen besseren Zugang zu illegalen Märkten unterliegen dabei aber dem Risiko dafür mit Strafzahlungen belegt, enteignet oder verhaftet zu werden. Auf illegalen Märkten lassen sich sehr viel höhere Preise erzielen als auf den legalen Märkten, auf

welchen Staatsfarmen und staatsabhängige Kollektive gezwungenermaßen ihre Produkte absetzen müssen. Staatsfarmen verfügen über keine Landbesitzrechte und staatsabhängige Kollektive üben lediglich Nießbrauchrechte aus. Staatsfarmen erwirtschaften neben Umsätzen aus ihrer eigenen Produktion auch Umsätze durch die administrative Kontrolle über andere Produzenten. Hingegen haben staatsabhängige Kollektive relativ wenig (Bestimmungs-)Rechte über das verbleibende Einkommen aus der betriebseigenen Rinderproduktion. Private Produzenten profitieren stärker vom Eigenverbrauch und Verkauf ihrer Produkte und sind die einzige Produzentengruppe, deren Herdengrößen in den letzten Jahren konstant angewachsen sind, und das trotz der höheren Risiken, mit denen sie konfrontiert sind. Ein weiteres Resultat ist, dass die sektorweite Effizienz in der Rinderproduktion rückläufig ist, da es an Mechanismen mangelt, die es erlauben würden, dass effizientere Produzenten ihre Produktion ausweiten und weniger effiziente Produzenten aus dem Markt ausscheiden. Sowohl die Produktionsausweitung (für private Unternehmen) als auch der Marktaustritt (für Kollektive and Staatsfarmen) sind verboten. Die Tatsache, dass zumindest eine der untersuchten Produzentenformen erfolgreich ist, lässt Zweifel aufkommen an der allgemein formulierten Ansicht, die Produktionsprobleme seien das Ergebnis technischer Rückständigkeit oder unzureichender Verfügbarkeit von Ressourcen.

In der ersten Arbeit wurden die staatsabhängigen Kollektivbetriebe als flächenmäßig größte Produzenten identifiziert. Daher werden diese in der zweiten Arbeit näher untersucht. Mit Hilfe der Principal Component Analyse und anderer Methoden werden sowohl die kollektive landwirtschaftliche Produktion als auch Armut unter den landwirtschaftlichen Haushalten im Kollektiv und deren Zugang zu Nahrungsmitteln untersucht. Es zeigt sich, dass Unterschiede in der Qualität und Verfügbarkeit von Nahrungsmitteln welche nicht über das staatliche Nahrungsmittelrationierungssystem bezogen werden, sondern aus der individuellen oder kollektiven Eigenbedarfsproduktion stammen, entscheidend sind für die relative Armutssituation der untersuchten Haushalte und die Häufigkeit des Konsums bestimmter Nahrungsmittel. Zudem hängt die relative Armut eines Haushalts nicht von der ökonomischen Leistungsfähigkeit im Hauptproduktionszweig der Kollektivfarm (hier: Rindfleisch und Milch) ab. Diese Ergebnisse zeigen ebenso wie die Erkenntnisse, die aus eingehenden Interviews mit leitenden Angestellten und

Arbeitern der Kollektivfarmen gewonnen wurden, massive Anreizprobleme auf. In der kollektiven Produktion werden Arbeitskräfte nicht adäquat für den Einsatz ihrer Arbeitskraft im Hauptgeschäftszweig des Betriebes entlohnt. Die Milch- und Rindfleischproduktion der untersuchten Betriebe soll in das staatliche Nahrungsmittelzuteilungssystem einfließen. Daher beschränkt der Staat die private und kollektive Produktion von Nahrungsmitteln für den Eigenbedarf, da diese direkt mit der Produktion für das Rationierungssystem um Arbeitskräfte und anderen Ressourcen konkurriert. Durch diese Anreizprobleme wird die für die kubanische Bevölkerung im Rahmen des Nahrungsmittelzuteilungssystems zur Verfügung stehende Menge an Milch und Rindfleisch reduziert. Gleichzeitig wird durch diesen staatlichen „Schutz“ der Milch- und Rindfleischproduktion auch die Nahrungsmittelsicherheit der Arbeiter der Kollektivfarmen beeinträchtigt, da die Menge an Land, welche für die Eigenbedarfsproduktion von Nahrungsmitteln verfügbar ist, beschränkt ist.

Es sind vielfältige Reformen notwendig um die Anreizprobleme, welche in den ersten beiden Studien identifiziert wurden, zu beheben. Es ist allerdings nicht klar, ob diese Reformen durchführbar sind. Dieser Fragestellung wird in der dritten Studie nachgegangen. In dieser Arbeit wird die Entwicklung der ökonomischen Institutionen in der kubanischen Landwirtschaft untersucht indem die historische Entwicklung des Zusammenspiels politischer Kräfte innerhalb des landwirtschaftlichen Sektors ausgewertet wird. Der Agrarsektor Kubas ist von Interessenkonflikten geprägt. Auf der einen Seite haben private Produzenten ein starkes Interesse an der Schaffung freier Märkte und der Zuweisung vollwertiger Landeigentumsrechte. Dem stehen die Interessen der politischen Elite und der Bürokratie gegenüber, da diese beiden Gruppen ihre Kontrolle über die landwirtschaftliche Produktion und Vermarktung erhalten wollen. In Krisenzeiten, in denen die Staatselite ihre Machtbasis gefährdet sah, wurden teilweise Eigentumsrechte an Land zugewiesen oder marktbasierte Anreizmechanismen für private Produzenten eingeführt. Allerdings wurden diese Reformen meist revidiert, sobald die Angst der Staatsführung oder die Unruhen abgeklungen waren, oder durch Scheinmaßnahmen ersetzt, welche die Konsumenten besänftigen sollten. Allerdings ist die Rücknahme von Reformen nicht nur Ausdruck des Verlangens der politischen Elite nach einem vorgesetzten Machterhalt sondern auch ein Ergebnis des politischen Widerstandes der von der Bürokratie des Landes

ausgeht. Die Bürokraten blockieren oder verzögern die Umsetzung von Reformen, sobald sie ihre politischen Einflussmöglichkeiten oder zukünftige ökonomische Renten gefährdet sehen. Wenn Institutionen eingeführt werden, welche die Effizienz der landwirtschaftlichen Produktion steigern würden, dann würde dies die Macht der privaten Produzenten steigern. Politische Macht würde dann anderen und neu entstehenden Interessengruppen, wie den Arbeitern der staatsabhängigen Kollektivfarmen, zukommen. Diese Machtumverteilung ginge auf Kosten der Bürokraten in den Staatsfarmen und in den staatlichen Verteilungszentren für landwirtschaftliche Produkte und Nahrungsmittel. Die seit 2007 angekündigten Reformen deuten auf eine Strategie, welche darauf abzielt, den Einfluss der Bürokratie zu mindern. Dies zeigt sich in Massenentlassungen von Bürokraten, der Abschaffung oder Verschmelzung von Staatsfarmen und anderen Staatsbetrieben und der schrittweisen Abschaffung des Nahrungsmittelzuteilungssystems.

Eine Empfehlung auf Basis der vorliegenden Arbeit ist, dass es für eine erfolgreiche Reformierung des landwirtschaftlichen Sektors einer Neudefinition der Machtbasis und der Beziehungen zwischen der Regierung und politischen Interessgruppen wie den Bürokraten und anderen Gruppen (zum Beispiel die Zivilgesellschaft) bedarf, wobei den Interessengruppen die Möglichkeit zur Mitarbeit an der Ausgestaltung von Reformen gewährt werden muss.

Am Ende der Dissertation wird ein Ausblick auf Ansatzpunkte für weitere Forschungen gegeben. Es erscheint notwendig, das institutionelle Gefüge, welchem private Produzenten unterliegen, genauer zu analysieren und dabei die Auswirkungen dieser Institutionen auf die Produktion zu untersuchen. Außerdem erscheint es angeraten weitere Studien durchzuführen, um das Haushaltseinkommen und die Nahrungsmittelsicherheit der ländlichen Bevölkerung zu analysieren. Zudem zeige ich mögliche Ansatzpunkte für Veränderungen in der Arbeitsweise von bereits im Land aktiven und auf den ländlichen Raum fokussierten Entwicklungsorganisationen auf. Sie könnten zum Beispiel versuchen, die Anreizprobleme innerhalb der staatsabhängigen Kollektivbetriebe zu lösen und sich damit nicht nur darauf beschränken, die Produktions- und Vermarktungsabläufe der Betriebe zu verbessern. Zusätzlich könnten die Entwicklungsorganisationen für die politischen Verlierer von Reformen, zum Beispiel die Bürokraten, Alternativen zur Sicherung ihres Lebensunterhalts aufzeigen.

RESUMEN EJECUTIVO

Cuba es un país con una economía planificada centralmente que ha introducido cambios graduales hacia una economía de mercado. Sin embargo, muchos de estos cambios son parciales o se han revertido, particularmente en el sector agropecuario. El país depende de la importación de alimentos como resultado de la baja productividad agropecuaria, de la cual se ha dicho que es el resultado de deficiencias técnicas, falta de recursos y perturbaciones climáticas. Esta disertación, sin embargo, se enfoca en el papel que juegan las instituciones económicas y políticas en los problemas productivos. Las instituciones económicas que gobiernan el uso de la tierra, el acceso a los mercados y la organización de las unidades productivas (por ejemplo, de forma colectiva o familiar) tienen un impacto sobre la producción, ya que ellas determinan los incentivos y las restricciones a los que se enfrentan tanto los productores como otros actores en la cadena productiva. Adicionalmente, el estudio de las instituciones políticas y económicas del sector agropecuario de Cuba puede ayudar a dilucidar la razones por las cuales dicho sector no ha sido reformado exitosamente. Las instituciones cambian lentamente o permanecen estables por diversas razones, incluyendo la oposición política de actores que temen perder ventajas económicas o su capital político como resultado de la implementación de reformas.

Esta disertación tiene como objetivos entender los problemas productivos de la agricultura Cubana y evaluar los obstáculos que el país enfrenta al intentar implementar reformas exitosas. Con este fin se estudió el marco institucional que gobierna la producción y comercialización agrícola en Cuba, su impacto en la producción y el suministro de alimentos, y las dinámicas políticas y económicas que han impulsado su evolución. Los objetivos de la disertación no se limitan a contribuir a reducir la falta de publicaciones sobre el tema, sino que está dirigida a informar a los responsables de las políticas agrarias del país, así como a organizaciones de desarrollo rural que trabajan allí.

Este trabajo está organizado alrededor de tres artículos de investigación. El primer artículo aborda el marco institucional del sector agropecuario cubano y su impacto en el desempeño de distintos tipos de productores. El segundo artículo explora con más

detalle el impacto de estas instituciones en la producción de colectivos agrícolas, así como en la disponibilidad de alimentos y seguridad alimentaria a nivel de hogares. Este estudio es uno de los dos únicos análisis publicados que cuantifican los gastos de hogares cubanos, y el primero que estudia la frecuencia y diversidad en el consumo de alimentos en los hogares de las zonas rurales del país. En el tercer artículo se analizan las reformas del sector agropecuario cubano usando teorías de cambio institucional. La información primaria utilizada en esta disertación se recolectó durante dos estadías de investigación (Octubre 2007-Marzo 2008, y Abril 2009), y fue complementada con reportes estadísticos oficiales, así como publicaciones y manuscritos sin publicar.

El primer artículo presenta y compara los distintos tipos de productores de ganadería vacuna (productores privados, colectivos dependientes del estado y granjas estatales) en cuanto a su acceso a la tierra, a mercados de insumos productivos y de productos agrícolas, la legislación que regula la cría de su ganado, y su desempeño. Los tres tipos principales de productores difieren en los derechos que poseen sobre la tierra y el ganado, así como su acceso a mercados ilegales. Los productores privados tienen diferentes grados de derechos sobre sus tierras y ganado que varían desde propietarios hasta usufructuarios y sin acceso a la tierra. Además tienen mejor acceso a los mercados ilegales pero a riesgo de ser multados, sufrir confiscaciones de sus propiedades, o cumplir largas condenas de cárcel. Los mercados ilegales ofrecen precios muy superiores en comparación a los mercados oficiales a dónde están obligados a concurrir las granjas estatales y los productores colectivos dependientes del estado. Las granjas estatales no tienen ningún derecho sobre la tierra y sus ingresos económicos se derivan del control administrativo de otros productores, y no de su propia producción pecuaria. Las fincas colectivas dependientes del estado tienen derechos de usufructo sobre la tierra, pero tienen derechos muy limitados sobre los ingresos residuales de las actividades ganaderas. Los productores privados obtienen más beneficios del consumo y ventas provenientes de su producción y, a pesar de sufrir riesgos elevados, son los únicos que han logrado incrementar el tamaño de sus rebaños vacunos en los últimos años. Adicionalmente, en este estudio se encontró que no existen mecanismos para abandonar o ingresar a esta actividad productiva, lo que resulta en una disminución general de la eficiencia del sector al evitarse que los mejores productores entren o aumenten su producción, y a la vez evitar que los peores productores se retiren. Las ideas prevalecientes sobre las causas de la baja producción

ganadera en Cuba se centran en deficiencias técnicas o falta de recursos. Sin embargo, el hecho de que al menos uno de los tipos de productores estudiados sea exitoso en cuanto a la producción pecuaria, pone en duda estas causas.

El segundo artículo estudia con más detalles a los productores que ocupan la mayor parte del área agrícola del país, y que fueron descritos en el primer artículo: las fincas colectivas dependientes del estado. Este estudio explora la producción colectiva, así como la pobreza y el acceso a alimentos de los hogares de estas fincas colectivas. Para esto se utiliza, entre otros, el análisis de componentes principales. La pobreza relativa y la diversidad de alimentos que consumen los hogares estudiados se caracterizan por las diferencias en la calidad y frecuencia de consumo de los alimentos que no son suministrados a través de la cartilla de racionamiento estatal, sino que por el contrario provienen de producción tanto colectiva como individual para autoconsumo. Por otra parte, el estatus de pobreza relativa de los hogares no se corresponde con el desempeño económico ni productivo en cuanto a leche y carne vacuna de las fincas colectivas a las que pertenecen. Estos resultados, sumados a la información obtenida de entrevistas a profundidad con administradores y trabajadores de estas fincas, exponen problemas severos en el régimen de incentivos de las fincas colectivas. Los trabajadores no reciben ninguna recompensa o beneficio por su trabajo en las actividades ganaderas de sus fincas colectivas. Al mismo tiempo, el estado restringe la producción tanto colectiva como familiar de alimentos para autoconsumo, ya que estas actividades compiten por mano de obra y recursos con la producción colectiva de carne vacuna y leche destinados al sistema de racionamiento estatal. Los problemas de incentivos lastiman el suministro de leche y carne vacuna que debería llegar a la población cubana a través de la cartilla de racionamiento. Adicionalmente, al restringir el estado la cantidad de tierras que pueden usar los trabajadores de las fincas colectivas para la producción de alimentos para el consumo de sus familias con el fin de "proteger" la producción de leche y carne vacuna, se pone en peligro la seguridad alimentaria de estas familias.

Se requieren ciertas reformas para corregir los problemas de incentivos identificados en los dos primeros artículos, sin embargo, no está claro si dichas reformas son posibles. El tercer artículo trata de responder esta pregunta explorando la evolución de las instituciones económicas del sector agropecuario de Cuba mediante el estudio de la dinámica histórica entre poderes políticos en el sector. El sector agropecuario

cubano está marcado por constantes conflictos entre los productores privados, definidos por su fuerte interés por el establecimiento de mercados libres y derechos de propiedad completos sobre sus tierras, y otros actores que tienen intereses opuestos, tales como la élite política y los burócratas que controlan la producción y comercialización agrícola del país. Cuba sólo ha adoptado un régimen de derechos sobre la tierra e incentivos de mercado para productores de forma parcial y exclusivamente durante crisis extremas que han amenazado la permanencia en el poder de la élite. Por otra parte, una vez que se reducen las amenazas a la élite, las reformas se revierten y se aplican soluciones alternativas para aplacar a los consumidores. La revocación de las reformas, sin embargo, también resulta de la oposición política de burócratas que bloquean o retrasan la implementación de reformas cada vez que éstas amenazan su capital político o sus ganancias futuras. La adopción de instituciones que resulten en una agricultura más eficiente aumentaría el poder de los productores privados y le daría poder político a grupos nuevos o emergentes; por ejemplo, a los trabajadores de fincas colectivas dependientes del estado. Esta redistribución del poder político ocurriría a expensas de la burocracia de fincas, empresas agrícolas y de distribución de alimentos del estado. Las reformas anunciadas desde el año 2007 en Cuba parecen buscar limitar la influencia de la burocracia a través de despidos masivos, la eliminación o fusión de fincas y empresas estatales, y la gradual eliminación del sistema de racionamiento de alimentos.

Se sugiere que, a pesar de que estas reformas parecen apuntar a la dirección correcta, su implementación exitosa en el sector agrícola puede requerir adicionalmente un redefinición de las bases de poder y las relaciones entre la élite política y otras partes interesadas, tales como la burocracia y otros grupos (por ejemplo, la sociedad civil). Esta redefinición de las relaciones entre los actores podría incluir la participación de todos los grupos en el diseño de las políticas a implementar. Esto no solo tiene el potencial de reducir la oposición y el bloqueo de las reformas, sino que también evitaría la creación de pobreza y vulnerabilidad entre los perdedores políticos y otros grupos que, al menos en un principio, no ganen con el proceso de reforma.

La disertación concluye con la presentación de perspectivas para la investigación de varios temas, incluyendo la necesidad de estudiar más a fondo las instituciones y su impacto sobre la producción de los distintos tipos de productores privados. También se definen algunos temas de interés relacionados al ingreso familiar y seguridad

alimentaria de hogares rurales en Cuba. En esta última sección, también se proponen cambios en las actividades de las organizaciones de desarrollo rural que trabajan en el país. Por ejemplo, estas organizaciones podrían intentar mejorar los incentivos de trabajo al interior de las fincas colectivas, en vez de concentrarse únicamente en el aumento de la producción y comercialización de estas unidades. Asimismo, podrían contribuir a los procesos de cambio mediante propuestas referidas a medios de vida alternativos para los grupos que pierdan durante las reformas, tales como la burocracia.

CHAPTER 1. INTRODUCTION

Cuba has a centrally planned economy that introduced gradual changes towards a market economy in certain sectors – including agriculture – following the collapse of the Soviet Union and the Council for Mutual Economic Assistance in the early 1990s (Xianglin 2007). The country's agricultural sector is characterized by low productivity, and therefore Cuba depends on costly imports in order to feed its population (Mesa Lago 2008). Problems of the agricultural sector not only affect Cuba's balance of payments, but also have important impacts on the food security of the population, as food access remains one of the unsolved challenges of the country (Brundenius 2009; Mesa Lago 2008). The worsening agricultural production and soaring world food prices have recently led to renewed efforts by the state to reform its agricultural sector (Peters 2009). So far the reforms introduced in the 1990s and in 2007-2008 have failed. Production in most subsectors has decreased as compared to pre-crisis levels, except for roots and tubers that have doubled (Mesa Lago 2008; Nova Gonzalez 2010; ONE 2010).

Technical and infrastructure deficiencies, lack of resources and climatic disturbances have been frequently blamed for the low production in Cuba, although it is also recognized that organizational problems and inadequate legislation generate inefficient production and distribution of food (Alvarez 2004; Funes-Monzote 2008; Nova Gonzalez 2008; Pavó Acosta 2003). While there are certainly technical and resource problems, such as outdated machinery, lack of spare parts, fuel and mineral inputs, as well as land degradation (Funes-Monzote 2008; González 2003; Wezel and Bender 2002), I chose to focus on a less explored dimension of Cuba's agricultural

sector. This dissertation aims to analyze the institutional framework that governs agricultural production and marketing, as well as its evolution and failure to provide sufficient incentives for a productive sector able to feed Cuba's population and realize its large potential for agricultural exports.

Food and agricultural production depend on the institutions governing land use, rural labour markets and access to agricultural commodity and credit markets, as these determine the incentives and constraints faced by producers, distributors and other economic actors. For example, lack of rural land markets or insecurity of land tenure can lead to low investments in agricultural production and resource misuse that negatively affects production (Deininger and Songqing Jin 2003; Markussen 2008; Schlager and Ostrom 1992). Moreover, collectively owned or managed production entities, such as the ones common in Cuba, have been shown in other countries to have incentive and monitoring problems that result in inefficient use of labour and low agricultural output (Lerman *et al.* 2003). The institutional framework governing Cuba's agricultural sector and its impact on productive performance has been little explored in the literature. It has been shown, for example, that state intervention is related to lower productivity (Alvarez and Puerta 1994), and that the brief introduction of free markets for agricultural produce in the 1980s caused a significant increase in agricultural output (Deere and Meurs 1992). The study of the impact of economic institutions on different actors in Cuba may additionally bring light on the question of why or how these institutions change or do not change. Institutions evolve slowly in part because changing them is costly and path-dependent, but also because of political opposition from actors that bear most of the costs or that expect their economic returns and their political capital to decrease as a result of reforms (Acemoglu *et al.* 2004; Acemoglu and Robinson 2008; Rozelle and Swinnen 2009).

This dissertation seeks not only to cover some of the insufficiencies in the literature related to the institutions governing Cuba's agricultural sector, their impact on production, and the constraints to their evolution, but I also have the objective of informing policy makers and especially rural development organizations working in the country. The main research questions that I seek to answer in this dissertation are:

- Which institutions govern the use of land and production resources, and the access to agricultural commodity markets in Cuban agriculture?

- What problems are these institutions causing in terms of agricultural production, food availability and food security in Cuba?
- Why do implemented reforms either are reversed or fail to improve the output and productivity of the agricultural sector of Cuba?

Data collection for the dissertation was carried out while establishing a baseline study for a rural development project implemented by the German NGO Welthungerhilfe and the Cuban Association of Animal Production (ACPA), and co-financed by Dutch NGO Hivos. This rural development project, as well as others observed during data collection, will be used as an example in the final discussion of this dissertation, in order to consider strategies to improve agricultural production and living standards in Cuba. The main objectives of the rural development project mentioned above are to improve the living standard of members of collective farms and smallholders by increasing their agricultural production and productivity, and identifying alternative marketing options. The project targets collective and private producers of the cattle production sector in the eastern provinces of Cuba. Project activities include training in business management and planning, and the competitive financing of business plans designed by the beneficiaries (Deutsche Welthungerhilfe 2005). The strategy of the NGO Welthungerhilfe seems to centre on training in "farming economically" as a way to facilitate the transition from a centrally planned economy to a market oriented one, especially for the collective farms (Gaese and Preuss 2001).

The dissertation is organized around three papers: the first two research questions are studied from different angles in the first and second papers (Chapter 2 and 3), while the reforms of Cuba's agricultural sector are dealt with in the third paper (Chapter 4). The key hypotheses I test and the approach used in each of these papers are:

> **H1.-** The institutional framework of Cuba's agricultural sector causes overall low production. Moreover, the three producer types are governed by dissimilar sets of institutions that result in differences in terms of production and economic success.

The cattle sector was chosen in order to test the first hypothesis, as it supplies the rationed food distribution system and is one of the most problematic sectors in Cuba. The first paper (Chapter 2) presents and compares different producer types (private producers, state-dependent collectives and state farms), their access to land and

agricultural input and output markets, the legislation governing their cattle husbandry, and their performance. The data used for this paper was compiled from published and unpublished studies, official statistics, and a quantitative and qualitative study of state-dependent collectives carried out in two field research stays: the first one from October 2007 to March 2008, and the second one during April 2009.

This study did not include other production sectors in Cuba, but several of them share some characteristics with the cattle sector. For example, similarly to the constraints faced by cattle producers, the producers of rice, citric fruits and potato are not allowed to sell their products in markets, but must turn them in full to the state. On the other hand, producers of small livestock and other crops can participate in free markets after honouring state quotas (Nova Gonzalez 2008).

> **H2.-** The institutional framework governing agricultural production in Cuba causes food security problems in the households of collective producers and at national level by negatively affecting food production.

To test the second hypothesis, the largest producer type in the agricultural sector in terms of land will be explored in greater detail. The second paper (Chapter 3) deals with the poverty and food security status of the households of state-dependent collective farm workers, and the relationship they have with collective agricultural production and the economic performance of their collective farms. This study uses principal component analysis (PCA) to separate households in relative poverty groups and compare indicators of food security, as well as the food sources between these groups. The relative poverty index is explored for relationships with collective agricultural production for worker consumption and for the supply of the national food rationing system. The primary data on households and collective farms used in this chapter was collected by me during the two research stays in Cuba.

Neither private farmers nor state farm workers are included in this study because I did not gain permission to contact these groups. The study of poverty, food security, and agricultural production in these two groups remains therefore a largely unexplored topic for future highly policy-relevant research. Household level studies are infrequent in Cuba and the rural areas are particularly underrepresented in the literature, with only a handful of studies focusing on farm or household level published so far, and

none of them from representative sample surveys (see, for example: Deere *et al.* 1995; Enríquez 2003; Leyva Remón 2006; Wezel and Bender 2002).

> **H3.-** Present day institutions in Cuba's agricultural sector are the result of conflicts between different actors: the political elite, bureaucrats that control production and input-output markets, consumers, and private agricultural producers.

To test the third hypothesis, the last paper investigates the evolution of the agricultural policies in Cuba by separating the last 50 years in four periods used as case studies. This paper (Chapter 4) deals with the political conflicts and the economic institutions which result from these conflicts in each period, and identifies the obstacles encountered when trying to implement reforms towards a more efficient agriculture. The study uses the rich literature on policy changes in Cuba's agricultural sector, newspaper articles from dissident and official sources, and observations and interviews with the different actors carried out during field trips to the country.

The dissertation is organized as follows. The results will be presented in the form of the three individual papers mentioned before. Chapter 2 deals with the institutions of cattle production and marketing. After the reader has a general idea of which are the main producer types in Cuba, Chapter 3 will focus on the largest group, the state-dependent collective farms. Subsequently, Chapter 4 deals with the evolution of the agricultural sector. The dissertation will then wrap up in Chapter 5 with a discussion of the main results and outlook for research and development aid.

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CHAPTER 2.

Legal regulations and agricultural production: The case of Cuba's cattle sector

Mercedes Jaffé and Manfred Zeller

Abstract: *The decrease of production in Cuba's cattle sector has been blamed on technical factors, overlooking the role of the institutional setup of the sector. The objectives of the paper are to describe the sector's institutional framework and to compare the performance of different producer types. The three main producer types differ in their access to illegal markets, in the property right structure for land and cattle, and in their economic and productive success. The fact that at least one of the producer types is successful casts doubt on the prevailing idea that production problems are a result of technical problems. It is discussed that the incomplete and insecure property rights regime in Cuba results in an low productivity caused by incentive and other problems.*

Keywords: Institutional framework; Property rights; Markets; Collective agriculture; Cuba

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The definitive version was published in **Post-Communist Economies, Volume 22 Issue 4, December 2010, 531-545**. Available at: http://www.informaworld.com
doi:10.1080/14631377.2010.518478.

Introduction

The agricultural sector is one of Cuba's greatest challenges as the costs of importing food increase, while national food production stagnates or even is reduced. Cuba imports more than $1.5 billion (US) per year of food, but about 50% of the agricultural land is not used and it is believed that most of these imports could be substituted by local production (Alvarez 2004; Nova Gonzalez 2008b; ONE 2008a; ONE 2009a). In the cattle sub sector, herd numbers have steadily decreased in the last years. In the same period, total production and production per head have stagnated and even decreased. The decrease has been mainly blamed on technical variables - the lack of production inputs, medicine and decaying infrastructure - but organizational problems in the state and collective sectors, as well as an inappropriate legislation body have also been named as probable causes (Alvarez 2004; Funes-Monzote 2008; Nova Gonzalez 2008c; Pavó Acosta 2003).

Livestock production has traditionally been important for the island's economy, especially for domestic consumption (García Álvarez 2003; Nova Gonzalez 2008e). The cattle sector is governed by a number of sector-specific laws and is a politically sensitive topic for the population and the state. The functionality of the cattle sector has not been studied in international journals, and Cuban researchers have only explored a small part of its socio-economic and organizational characteristics. Most of the research deals with technical aspects of pasture and livestock management (Benítez *et al.* 2002; Benítez *et al.* 2008; Funes-Monzote *et al.* 2009), while less attention is given to managerial, organizational and socio-economic characteristics of producer types (Borroto *et al.* 2006; Cruz *et al.* 1999; González *et al.* 2003; Nova Gonzalez 2008a; Suárez *et al.* 2007), or to the legal aspects related to cattle tenure and criminality (Pavó Acosta 2003; Pavó Acosta undated).

The lack of publications in the detailed organization and institutional arrangements of Cuban cattle sector prevents a complete understanding of the reasons behind its production problems. Economic performance is closely related to that of the institutions as they determine the incentives and constraints faced by economic actors. The institutional environment at macro-level and the institutional arrangements at micro-level determine the property rights structure as well as the organization and functioning of economic actors (Mercuro and Medema 1997). The property rights

structure, for example, has been shown to be closely related to agricultural productivity (Alston and Mueller 2005; Markussen 2008).

This study presents an overview of the cattle sector in Cuba, describing land and cattle tenure regimes, producer types and the organization of marketing for beef and milk, as well as some of the legal aspects related to cattle production and consumption. It also compares, as far as possible, the different producer types in terms of the institutions that control their production and marketing, as well as the results of these institutions in terms of organization, access to markets and productive performance. The paper is organised as follows: The first part describes the organization of cattle production and marketing, including some of the legal regulations specific to the sector. Subsequently, the performance of cattle's main producer types will be compared. The information presented in the preceding sections will then be discussed in terms of the underlying institutional framework of the cattle sector and its possible impact on the performance of the different producer types analyzed.

The data used in this research is compiled from a range of published and unpublished studies and a survey of state dependent cooperatives carried out by the authors. The primary information used regarding the state dependent cooperatives called UBPC (Basic Units of Cooperative Production), was collected by the authors from October 2007 to March 2008 in three provinces in Eastern Cuba. Data was collected using different qualitative and quantitative research methodologies, ranging from observation and participant observation to structured and semi-structured interviews. In addition, standardised questionnaires were completed at 30 cattle UBPC farms. Actors at different stages of the production chain were interviewed, including additional cooperative farms, employees of state agricultural enterprises, as well as experts and key informants in the sector.

Organization of Cuba's cattle sector

Cuba's cattle sector is complex, having a range of different proprietor types, only one approved state marketing channel, and a lively illegal market. Sector specific laws, sometimes even presenting differences between producer types, strictly regulate production, breeding, transport, consumption and marketing. This section details the most important aspects of the sector, and compares the different producer types.

Land and cattle proprietor and tenant types

There are three legally recognised land property types in Cuba: land belonging to the state, to agricultural cooperatives and to small farmers. Private individuals and cooperatives (or collectives) can also have usufruct rights over state land. The right to sell or rent the land is considered a prerogative exclusive to the state (Pavó Acosta 2008). Cattle can be owned by the state, individuals and cooperatives, and these last two can also keep state owned cattle (Pavó Acosta undated).

The diversity of land and cattle property and usufruct regimes result in a number of producer types. In the case of beef and milk production, we find farms belonging to the state, two types of collectives (the first one is the private Cooperatives of Agricultural Production CPA while the UBPC has state land in usufruct and is tightly controlled by it), and individual producers either organised in credit and service cooperatives (CCS) or dispersed. Landless ownership of cattle is legally restricted but not forbidden (Pavó Acosta undated). However, landless owners are not mentioned separately in official statistics, so it is difficult to ascertain their importance in terms of number of producers or of cattle heads owned. Cattle producers can be broadly separated in three main types: state producers, UBPC or state dependent collectives, and private farmers that include CPA, CCS, landless and dispersed (see Table 1).

The state producers include farms and livestock enterprises, which besides from production also have additional responsibilities as service and input providers. Workers in these farms are public employees that obtain a salary but are not entitled to make any kind of decisions over production or salary. The UBPC farms, on the other hand, are semi-independent from the state. Workers in these collectives are, according to legislation, “owners of their production” (Decree-Law Nr. 142 1993). This ownership is translated in their right to reap benefits from their farm by receiving a part of the total annual revenues. Nevertheless, the state decides what, when and how much will be produced by the collective, and restricts their marketing options. Official statistics and other studies place UBPC together with private producers in the non-state sector (ONE 2009a; Álvarez Licea 2001), but differences in their organization, the legal body regulating their functioning and their lack of independence from the state call for their separate analysis.

Table 1: Main cattle producer types in Cuba and their land and cattle tenure regimes.

Producer type	**Examples /Name**	**Land tenure**	**Cattle tenure**
State	State farms, livestock enterprises, military farms	State	State
State dependent collectives	UBPC: Basic units of cooperative production	State land in usufruct	Private, owned collectively
Private	CPA: Cooperatives of agricultural production	Private, owned collectively	Private, owned collectively
	CCS: Credit and service cooperatives	Private, owned individually, or state land in usufruct	Private, owned individually
	Dispersed farmers	Private, owned individually, or state land in usufruct	Private, owned individually
	Landless cattle owners	No land	Private, owned individually

The private producers are very heterogeneous but share a number of characteristics that differentiate them from the state and UBPC producers. Private producers have a higher independence regarding production and marketing decisions, and participate more in agricultural markets (ONE 2008c; ONE 2009c). Moreover, there exists some form of inheritance in all subtypes. For example, land, livestock and productive assets can be inherited (with certain restrictions) to surviving spouses and family members of individual producers and members of CCS cooperatives (Decree-Law Nr. 125 1991; Pavó Acosta 2008). CPA collectives are somewhat different. They were formed when private individual farmers joined their land during collectivization campaigns at the end of the decade of 1970 (Kay 1988; Nova Gonzalez 2008d;

Álvarez Licea 2001). In the case of the death of a CPA member, inheritance rules dictate that surviving family and spouses are entitled to receive outstanding payments related to the contributed assets and land, any pending utilities or advance payments, and a pension (Law Nr. 95 2002; Decree-Law Nr. 217 2001).

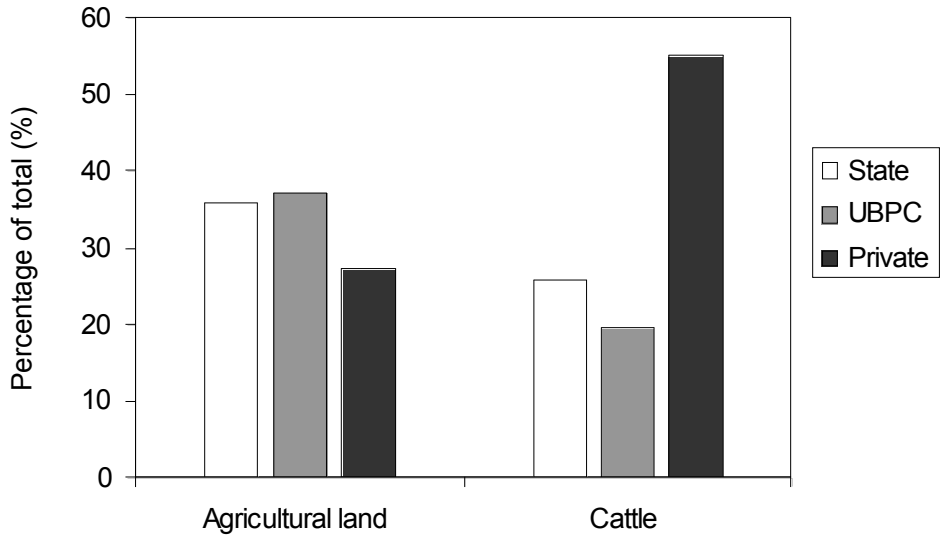
Another key difference between the private producers and the state or UBPC producers, is that they are controlled (or represented) by different organizations. State and UBPC farms respond directly to the Ministry of Sugar (in the case of farms that previously produced sugarcane, but have been transformed into cattle farms) or the Ministry of Agriculture. On the other hand, even if private CPA and CCS also have to respond to the ministries and follow their policies, they have an additional organization that represents them. The National Association of Small Farmers (ANAP) provides extension and other services to its members, including channelling state credits. The president of ANAP is a member of the Council of State of Cuba (Granma 2008), and thus is part of the highest levels of the island's political power. There is some evidence that the ANAP not only represents the producers before the state but also helps the Ministry of Agriculture in controlling them, for example by enforcing laws and regulations (Jordán Morales and Lugo Fonte 1994).

UBPC producers have proposed for a similar organization to unite and represent them but have not been allowed to do it by the Ministry of Agriculture, as was evident at a meeting witnessed in Santiago de Cuba province on February 06, 2008. The observed meeting was attended by the directives of a leading UBPC of the cattle sector and representatives of the Ministry of Agriculture, including the Vice-Minister for Cooperatives Mr. Alcides López Labrada, as well as province and local level officials.

Dispersed and landless cattle producers are different from other private producers in that they are not associated with ANAP. The same inheritance rules mentioned before apply for the land of dispersed farmers, but are not clear for cattle owned by landless producers. Landless producers are interesting but there is very little information regarding them. A look at laws and anecdotic information suggests that the state has tried to control them by restricting the maximum allowed number of cattle and horses they may have (Decree Nr. 225 1997; Resolution Nr. 5 2003), but they have only recently been offered land to increase their production (Decree-Law Nr. 259 2008).

In the Figure 1 it can be seen that private owners had 55% of the total cattle heads at the end of 2008, while the UBPC and state farms had 19% and 26% each. These numbers contrast with the distribution of agricultural land among the different producers, where the UBPC occupy almost 40% of the land, and the private farmers only 33% (ONE 2009a).

Figure 1. Agricultural land and cattle ownership for different producer types in Cuba, in percentage of the total as of December 2008 (ONE 2009a).



Cattle production systems

Cattle production systems in Cuba vary between the different producer types. State and UBPC producers have large farms with extensive and frequently low input systems, while private producers have smaller areas with more intensive and diversified systems (Funes-Monzote 2008).

The cattle producing units from state farms have been under different production technologies since the revolution of 1959. During the first decades of the revolutionary government, the agricultural production model implemented was based on large scale, highly specialised and mechanised state farms, with intensive use of imported chemical inputs and feed concentrates (Funes-Monzote 2008; Kay 1988). This agriculture model was impossible to maintain with the collapse of the Soviet Union and the Council for Mutual Economic Assistance in the early 1990s. The

Cuban response was to decrease the average size of production units by breaking up many of the state farms and transforming them into the UBPC, and to find alternatives to the inputs previously imported (Alvarez 2004; Funes-Monzote *et al.* 2009; Funes-Monzote 2008). However, it is considered that the size of the newly formed UBPC cooperatives remained too large in the cattle sector, thus reducing their potential production efficiency. Private cattle collectives (CPA) were considered more efficient and had smaller average areas as compared to the cattle UBPC collectives in the year 1994 (Funes-Monzote 2008). The situation has not changed much during the first 15 years since the reforms. In the case of the surveyed UBPC, the average size of the farms was around 1.345 Ha, but varied from just over 350 Ha to almost 3.500 Ha. The reported size of the UBPC farms is misleading, though. Unused land accounts for a relatively large percentage of total area in the UBPC farms as a result of abandonment, invasion by weeds or even encroaching by the population (González *et al.* 2003). According to official statistics, this problem is even more pronounced in the state sector (ONE 2009a).

On comparison, private individual farms are seldom bigger than 67 Ha since the second law of Agrarian Reform in 1963 expropriated most of the farms above this limit. Additionally, land titles of maximum 28 Ha were given to landless farmers during the first years of the revolution (Alvarez 2004; Pavó Acosta 2008). Some published case studies in the private sector point to farms no bigger than 27 Ha in Habana province (Iraola *et al.* 2007), while farms of up to 67 Ha have been reported in areas of Guantánamo province, with averages of between 9,5 Ha, and 27 Ha in different villages (Wezel and Bender 2002; Wezel and Bender 2004). There are no data regarding the use of private land, but anecdotic evidence suggests that these percentages are much smaller than in the UBPC or state farms. Moreover, some publications suggest that the private producers overuse their resources instead of under using them (Funes-Monzote 2008; Iraola *et al.* 2007). The few published studies dealing with this producer type shows that of the total farm area, only a percentage of these private farm consists of pastures, ranging from 13 to 59% in Habana province (Iraola *et al.* 2007) while in Guantánamo province, only a limited number of the farmers have pastures while others (specially in the arid areas) use common land to graze.

In the UBPC cooperatives studied, cattle production is by far the most important activity, and therefore pastures constitute the majority of the total area. These areas are mostly low productivity natural pastures, usually not separated in paddocks. According to interviews, the lack of wire and poles restricts the correct management of the pastures. A few of the interviewed collectives have more intensive use of land with improved pastures, protein banks, and different methods of rotational grazing. On the contrary, the private farms use far less percentage of their farms for pastures and seem to have a much more diversified farm. Many private and landless farmers use state land to graze their animals. The stocking rates of private pastures are much higher than the ones in the UBPC or state sector (Iraola *et al.* 2007; Wezel and Bender 2002; Wezel and Bender 2004). These results seem to suggest very different production systems, with a more diversified use of land on the side of the private farmers. Use of additional feed is not common in any of the producer types, as the cost for importing them is too high and there are few national suppliers (Nova Gonzalez and García Álvarez 2002).

Marketing of cattle and cattle products

Cuban laws and regulations for cattle and agricultural production greatly restrict how products are marketed. Food is distributed to the population via ration cards that depend on a highly inefficient system of collection and distribution, called Acopio (Alvarez 2004; Nova Gonzalez 2008a). Several products, such as fruits, vegetables, and tubers, can be bought in agricultural markets. Beef and milk sales are strictly prohibited for entities other than the state and are limited to certain demographic groups, such as children, the sick and pregnant women. Nevertheless, beef is also distributed to state-owned restaurants and cafeterias where it is available to tourists and locals but at a price not affordable to many Cubans, thus creating tensions with the local population. The illegal market has been an important source of milk and beef for the population since the 1990's, and at prices more accessible than those of the official dollarised stores that target tourists and Cubans that receive remittances (Togores González 2003).

The legal restrictions on cattle production and the trade of cattle products and production inputs limit the possible marketing channels available to producers. The only legal market for milk and beef is the state through highly centralised structures,

even if some direct distribution of milk to approved outlets was recently allowed. Any other distribution of beef and milk is considered illegal. The state producers act as controllers for milk and beef marketing, and they also distribute the payments received by UBPC and private producers. Sales of live cattle for purposes other than slaughter are also tightly controlled by the state, but private producers need more permissions than state or UBPC farms in order to participate in these exchanges (Resolution Nr. 5 2003).

Producers deliver their milk to the milk enterprise (*Empresa Láctea*) and, in a small proportion, to end consumers in approved outlets (Figure 2). The delivery to these outlets was only recently allowed as a way to decrease product losses and distribution costs (Carrobello 2007). The surveyed UBPC collectives sell 94% of their milk to the state, of which less than nine percent is delivered directly to approved outlets. Beef, on the other hand, must be turned over in full to the livestock enterprise (*Empresa Pecuaria*) or state farm, which in turn sells it to the slaughterhouse (Figure 3). Private producers also participate in the illegal market and consume their milk, while this is less likely for state farms or UBPC. Among the UBPC interviewed, less than six percent of the total milk production in 2007 was reported as consumed in the UBPC or given to members, and this was mainly due to delays in the collection of the product by the state. The consumption of their own milk is not foreseen in the UBPC annual production plans. Beef, on the other hand, is more difficult to be consumed or sold on the illegal market because of the constant herd inventories, but authorities and experts express suspicions that private producers sometimes hide the birth of calves. The tight control that the UBPC and state farms face makes it virtually impossible to hide the birth of calves. The next section explains in detail some of the legal constraints associated with the illegal marketing and consumption of beef.

Figure 2. Marketing channels for milk produced by private, UBPC and state producers.

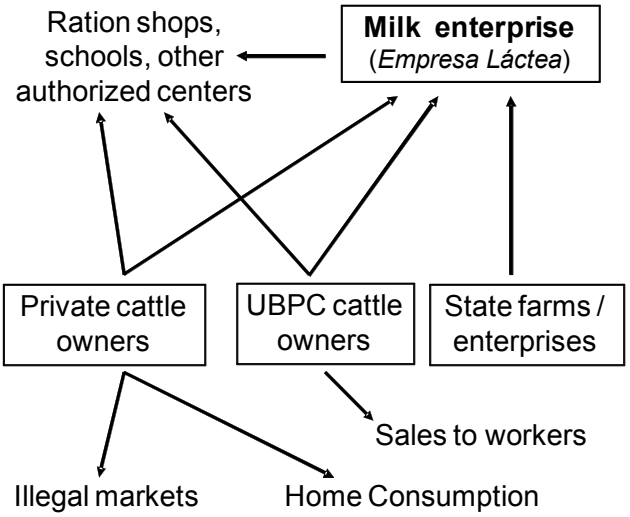
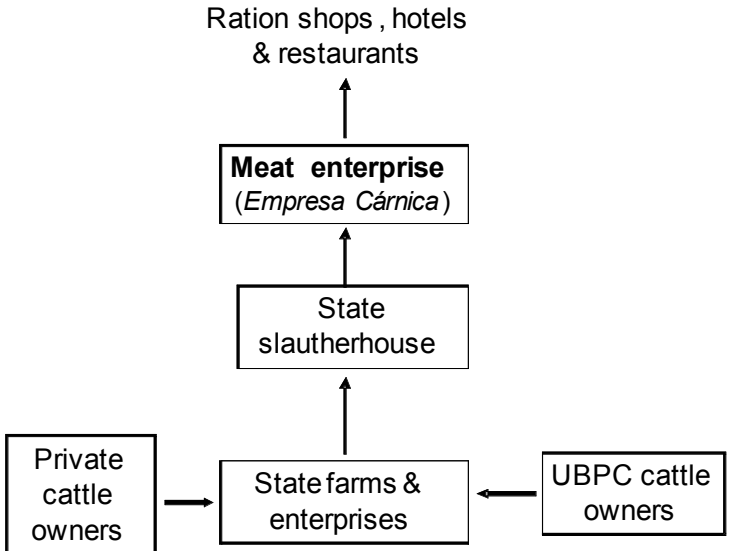


Figure 3. Marketing channels for beef produced by private, UBPC and state producers.



Cattle enterprises organise cattle production and marketing, and thus have the dual function of producers and of controllers of other producers. Each cattle enterprise (usually one per municipality, but this has changed in a number of provinces since 2008) has a number of UBPC and private producers under its control. In the case of the UBPC, the state enterprise even develops the units' production plans and, in some cases, keeps the administrative and financial control of the collective.

The legal marketing channels for milk and beef determine the private and UBPC producer's access to inputs and services, as they depend on the fulfilment of contracts between these producers and the state, represented by the state farms, or cattle, milk and meat enterprises. Official prices (Table 2) are also set by the state and are generally considered below production costs (González *et al.* 2003). Payments are usually greatly delayed and, at least in the case of UBPC collectives, are distributed by the cattle enterprise even if the official buyer is another state enterprise (such as milk or meat enterprises). The state producers, therefore, take on multiple roles: besides from production, they are responsible for production control, input and service supply, and are also "intermediaries" between other producers and the state, especially in the beef trade. State officials control inputs, marketing, payments and penalties, but have little incentive to produce or to cover production costs, since their salary is fixed by the state.

Table 2. Average milk and beef prices for producers and consumers for different marketing channels, Cuba 2007-2008.

Period	**01.-06.2007**	**07.-12.2007**	**01.-02.2008**
Prices paid by the state to producers [a]			
Milk (cuban pesos/liter)	0,99	2,45	2,45
Beef (cuban pesos/kg live weight)	2,30	5,06	5,06
Consumer prices in the illegal market, at national or province level [b]			
Milk (cuban pesos/liter), Cuba	5,28	4,68	5,02
Beef (cuban pesos/kg), Cuba	--	115,00 [c]	55,34
Beef (cuban pesos/kg), Las Tunas	--	--	33,18
Beef (cuban pesos/kg), Holguín	--	--	40,68

Sources: [a] own survey with 30 UBPC in Santiago de Cuba, Holguín and Las Tunas; [b] own calculations based on data from (ONE 2008b); [c] (Reuters 2007).

Cattle producers have important incentives for participating in the illegal markets, as the prices are above those offered by the state (Table 2). The participation

in this market is risky, though, as will be explained in the next section. The state has tried numerous times to stop the illegal markets by fining and punishing participants, and also, in July 2007, by increasing the official prices offered to producers. Before the price increase the average official price paid to the interviewed UBPC was less than a fifth of the prices in the illegal market (Table 2). Illegal prices for milk apparently were reduced around 10% as the official prices more than doubled in July 2007, however this effect seems to be lost with time. No official information was found for beef prices in the first semester of 2007, but a newspaper article reported that one kilogram of beef costed around 115 pesos in November (Reuters 2007). The comparison of beef official and illegal prices seem to show a huge difference (Table 2). The illegal prices vary widely among provinces, but the lowest reported price for beef in Las Tunas province is almost seven times higher than the official one. The real difference should be lower, however, as the official price is for live animals, and the consumer prices are for cut meat without bones (ONE 2008b).

Punishment in the beef trade

At present, Cuban legislation on cattle tenure falls under a set of special laws (linked with production and economics) and not civil law. As a result, property rights regarding cattle are not like those of other goods, since cattle are considered to be of social and not private importance (Ramón Philippón 2007; Velazco Mugarra 1999). The uses of cattle and cattle products are rigorously outlined in the various regulations. The registry of cattle is strictly defined, as are special rules for the breeding and registry of pure breeds. The state keeps a close control over herd numbers by regular national inventories (monthly and annual) that owners and keepers must perform and communicate to authorities. Cattle exchange, transportation, reproduction and consumption are rigorously regulated. Private owners need more permissions and must follow harsher rules in order to exchange or transport their livestock than UBPC and state farms. Cattle slaughter can only be carried out by the state, or under exceptional circumstances by police, as in the case of accidents or sickness. Owners are not allowed to consume their own animals, and must sell them to the state (Resolution Nr. 5 2003).

Breaches to the regulations are covered by misdemeanour decrees (for example, the Decree 225 of 1997) and by the penal code. Both the penalties and the

imprisonment years have increased in the last decades (Law Nr. 62 1988; Law Nr. 87 1999; Gomez Treto 1991). Moreover, proprietors that are victims of theft or whose animals suffer accidents are punished with fines, confiscations or forced sales of their livestock (Decree Nr. 225 1997). The penalties applied for the "illegal slaughter" of cattle are of 4 to 10 years of prison, and since these crimes are considered grave, the convictions can be added up if more than one animal was killed or other crimes were also committed, such as transportation or sale of the product. In this way, prison terms can sum up to 30 years (Law Nr. 87 1999; de la Cruz Ochoa 2000). The illegal transport, sale or consumption of beef is also punishable with prison terms (Law Nr. 87 1999) so that it is no surprise that cattle and beef related criminality are two of the offences with a higher number of convictions in Cuba (de la Cruz Ochoa 2000; Pavó Acosta 2003). The harsh legislation against illegal slaughter of cattle is directed at both producers and at cattle rustlers. Cattle theft is a widespread problem according to published and anecdotic evidence (Espinosa Chepe 2001; Pavó Acosta 2003), and the state considers that owners are at fault for not protecting their animals or because they collaborate with rustlers as a way to market their produce (de la Cruz Ochoa 2000; Gomez Treto 1991; Pavó Acosta undated).

Performance of Cuba's cattle sector

As was already briefly mentioned before, the total production and productivity of the cattle sector in Cuba has been decreasing over time (García Álvarez 2003; Nova Gonzalez 2008e). Available statistics reflect a steady decrease of all indicators of performance since 1995, including total herd size, milk and beef production (ONE 2000; ONE 2006; ONE 2008a; ONE 2009a). Despite this, there are indications that the decrease in productivity had already started during the decade of 1980 (Funes-Monzote 2008).

Detailed and disaggregated data on the productive performance of the different producer types is not easily available. Data from the national statistics office (ONE) is usually separated between the major producers. The Table 3 shows the total herd size, as well as milk and beef production for the different producer types, as reported by ONE. The private producers include the CPA, CCS, dispersed and landless producers. Some information is only reported for state and non-state producers, defined as the above mentioned private and UBPC collectives.

The level of aggregation and unclear data collection methods make it difficult to establish the productive or economic performance of the producer types based on this information. For example, there is no explanation regarding the treatment of home consumption or sales outside the legally recognized marketing channels. Moreover, statistics on beef sales do not seem to reflect production accurately, as, for example, the state sector accounts for 95% of the total beef produced with only 26% of the total herd. The information on herd size should be considerably better, as it is based on constant herd inventories held with a high frequency throughout the country. The table shows that private producers are the only ones with increasing total herd numbers in the last years (ONE 2006; ONE 2008a; ONE 2009a; ONE 2009b). These results agree with previously published reports (García Álvarez 2003), thus showing that this trend has been holding for a long period.

Table 3. Total cattle owned, milk and beef production by the state, UBPC and private producers during 2008.

	State	**UBPC**	**Private**
Total cattle (thousand heads)	981,1	739,6	2.100,6
Change in total cattle heads 2005-2009 (%)	- 10 %	- 3 %	+ 17 %
Milk produced (million liters)	72,07	113,19	303,74
Annual milk yield (kg/animal)*	1671,0	1427,0	
Beef produced (thousand tons)	117,89	5,66	0,33

Source: based on data and own calculations (ONE 2006; ONE 2008a; ONE 2009a)

* Milk yield only reported for state and non-state producers. FAO reports an annual milk yield of 1455,8 kg/animal for Cuba in 2008 (FAOSTAT 2010).

The economic performance of the different producer types is even more difficult to estimate based on available information. The authors are not aware of any study of farm income of private producers, and there have been only a limited number of estimates of family income for these producers. However, these family income estimates do not include any income coming from private exchanges, and thus does not include the illegal market or other legal activities such as private jobs or sales in the open agricultural markets (Leyva Remón 2006). Nevertheless, it is widely

accepted that most private producers have a much higher family income than public or UBPC workers (Togores González 2003), with the only exception being new recent individual usufructuaries that apparently have not been able to insert themselves successfully in the market (Leyva Remón 2006).

Very few studies have been published related to the economic performance of the cattle UBPC collectives. It appears that since their creation in 1993, only a low percentage of the farms has been defined as profitable by the Ministry of Agriculture. During the first 6 years of their creation, the percentage of profitable cattle UBPC ranged from 18 to 42% before reaching a maximum in the year of 2000 of 70% profitable farms. Profitability fell again until 2005, the last reported year, when only 21% of the farms managed to break even (López Labrada 2007). More detailed publications on the economic performance of UBPC farms, point out to a low productivity, restricted availability of feed and improved pastures, as well as low milk prices as the main reasons of low profitability (Díaz Viladevall *et al.* 2003; González *et al.* 2003). The case of the surveyed UBPC collectives shows a better overall economic performance. During 2007, only 14% of the studied farms suffered losses. According to experts in the area, this year was extraordinary both in terms of production and as a result of the increase of beef and milk prices in July 2007. The results show also a huge variation in the net annual income of the collective farms.

The institutional framework and production problems

The institutional arrangements described in the previous sections drive the behaviour of the economic actors involved in the cattle sector. We find that the property rights in the agricultural sector of Cuba are incomplete, both for land and for cattle. For example, land sales are forbidden and there is no land market (Pavó Acosta 2008). For cattle, we can also describe the property rights regime as incomplete and insecure. It is incomplete because private owners of cattle cannot decide on the uses of their animals; commercial exchanges are only possible with the state and owners are not even allowed to consume their own products. Insecurity in the property rights of cattle is given by the threat of confiscation from the police or forced sale to state agencies, besides from cattle theft. Insecurity is more pronounced for private producers as compared to UBPC producers or state farms.

The incomplete and insecure property rights impact agricultural production and economic performance in the sector through a range of mechanisms. Moreover, it is suspected that these mechanisms affect the main producer types described in this paper in different degrees. For example, one of the main negative impacts of insufficient property rights is the sub-optimal use of the resource (Alston and Mueller 2005; Feder and Feeny 1991; Schlager and Ostrom 1992). This mechanism would explain the poor performance and low resource use of the interviewed UBPC farms and state farms. Many of these farms not only have a high percentage of unused land, but also show a lack of investments in improved pastures or in fencing and protecting their areas. Some publications suggest that private producers, on the other hand, may be overusing their resources as well as common resources by having high and unsustainable stocking rates and overgrazing (Iraola *et al.* 2007; Wezel and Bender 2004). The incentives of overusing resources that private producers have could be a result of their easier access to illegal milk markets and revenues as compared to state and UBPC producers. The private producers, due to their number and dispersion, are harder to monitor and therefore can either consume or sell part of their milk. The UBPC cooperatives and state farms, on the other hand, are easier to monitor and apparently have fewer incentives to use their resources more efficiently. The resulting over- and under explotation of land results in the degradation of soils and endangers future production.

The insecurity of property rights can also affect negatively the producers by causing them to incur in self-enforcement costs for the defence of their cattle and the reduction of losses such as theft and even accidents (Alston and Mueller 2005; Mercuro and Medema 1997). The excessive costs of controlling the cattle herd size, for example by monthly and annual census, are only partly covered by the state. Other costs that the producers must cover are related to labour for protection, modification of stables, among others. The costs for private producers are probably higher than the costs for other types of producers, since they are doubly punished, by the state and by the cattle rustlers.

In addition to the impact of legislation on each producer type, the cattle sector as a whole suffers from lack of efficiency as a result of a lack of entry and exit rights. The lack or insufficiency of land and cattle markets associated with the incomplete property rights affect productivity by avoiding that the most efficient or interested

producers have access to land or cattle (Alston and Mueller 2005). The entry rights to this activity are only issued by the state and are limited to small plots of land in usufruct (Enríquez 2003). Landless owners of cattle, on the other hand, are not given rights to land, forcing them to use common or state resources to feed their livestock. The UBPC collectives have the additional problem that they are not even allowed to abandon cattle production as legislation forces them to continue producing. The Decree-Law that created the UBPC and subsequent regulations issued by the Ministry of Agriculture state that these collectives have a "social objective" defined by their main line of production, and that this "social objective" can only be changed by the state (Decree-Law Nr. 142 1993; Resolution Nr. 688 1997). This means that UBPC cattle owners cannot decide to stop their ownership of cattle, while private producers can. The strict limits to the entry and exit of producers have the potential to decrease the overall productivity of the sector (Migot-Adholla *et al.* 1991).

The last aspect regarding the institutional framework of the cattle sector that will be discussed deals with the penal and administrative punishment of cattle owners, illegal traders and consumers. On one hand, the harsh punishments to those accused of unlawfully slaughtering cattle has resulted in an important public problem. Crimes related to cattle and beef are of the most common in the criminal rates, and have led to an increase of the imprisoned population in the country (de la Cruz Ochoa 2000; Pavó Acosta 2003). Moreover, the strategy of punishing producers may have the opposite effect than that intended, namely, of increasing beef production. Two mechanisms could be responsible for this, besides from the increase in defence costs incurred by producers. The first one is that the punishment of victims could be leading to a deterrence of the perceived crime, namely, cattle ownership. The second mechanism has to do with organised crime. The increase in severity in the punishment of the crimes can lead to an increase of either the effectiveness of the crime networks (Garoupa 2007), or of their output, including the decrease of prices (Mansour *et al.* 2006). The economic attractiveness of stealing cattle or slaughtering their own cattle to be sold as beef in the illegal markets is apparently huge (Table 2), and perceived by many in Cuba as a way to become rich. At the same time, the illegal market offers lower prices to the consumers of both milk and beef as compared to state shops (Togores González 2003), making this commerce both attractive and socially accepted by consumers.

Conclusions

The cattle sector of Cuba has a complex structure and is governed by a number of institutions that lead to low productivity. Three main producer types can be recognised based on their property rights over land and cattle, and their organisational dependence from the state. The producer types are identified as state farms, where workers have no claim over land, cattle, or decision making; state dependent collective farms (UBPC) with land in usufruct and a limited claim over production surplus and income; and private smallholders with more property rights over land and cattle, and a higher independence from the state. The state and UBPC producers are characterised by extensive production systems and under use of resources, especially land. Private producers, on the other hand, have smaller and more diversified farms, but apparently tend to overuse their resources as well as communal pastures. Private producers have a better access to illegal milk (and maybe beef) markets with much higher prices than the legal markets forced upon state and UBPC producers. However, the costs for participating in the illegal markets, especially for beef, are very high, and are suffered more intensively by private producers. Private producers whose cattle suffer accidents or are stolen, face the threat of fines, confiscation and forced sale of their animals.

The private, state and UBPC producer types are affected in different ways by these institutional arrangements. The property rights over land and cattle are incomplete and insecure. UBPC producers have limited rights to residual income from cattle production, while state producers have practically none. Private producers have higher benefits from their cattle production activities through home consumption and access to illegal milk markets. However, private producers' ownership of cattle is more insecure as compared with state or UBPC producers. The cattle sector is also characterised by a lack of mechanisms to enter and (in the case of state and UBPC farms) to exit the cattle production sector. This causes an overall decrease of efficiency by forbidding efficient producers to enter the sector or to increase their farms, and on the other hand, by not allowing the worst producers to exit production.

Despite a lack of independent data on performance of the three producer types, it is clear that the private producers seems to be more successful than the UBPC collectives and the state farms, as they are the only ones showing a constant increase of the herd size in the last years. The fact that at least one producer type is able to

increase its herd puts in doubt the prevailing idea that production problems of the sector are a result of technical and resource problems. The mechanisms and results presented in this study are only a first exploration of the topic. The lack of published results dealing with Cuban institutions, informal markets and prices, coupled with the complexity of the sector, call for more detailed research in the future.

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CHAPTER 3.

Poverty and food consumption among workers in collective farms of Eastern Cuba

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Abstract: *This study explores poverty and food access of collective farm households in Eastern Cuba by using principal component analysis and other methods. Our analysis shows that relative poverty is characterized by differences in the frequency of consumption of food items not supplied by the state's rationing system, and households with access to land have higher diet diversity. Additionally, severe incentive problems are revealed, as workers are not rewarded for the performance of their farms, effectively uncoupling poverty and collective agricultural production. The paper derives conclusions for food and agricultural policy and calls for more socio-economic research in Cuba.*

Keywords: Poverty; Food security; Collective agriculture; Caribbean; Cuba

Paper submitted to ***World Development*** (Received: 08. May. 2010)

1. Introduction

Cuba's economic and political system brings it apart from other developing countries. Social policies hold a significant place in planning and public expenditures and the government made social equality of the population one of its priorities. As a result, Cuba achieved an important improvement in the availability and quality of education, health, and social assistance services (Mesa Lago, 2005; Álvarez & Máttar, 2004). However, the severe crisis suffered by the country in the early 1990s caused a deterioration of social indicators. Public expenditures decreased, and the quality and access to social services suffered (Mesa Lago, 2005; Togores González, 2004; Álvarez & Máttar, 2004). Food production and imports declined, and as access to food fell, the population suffered nutrient deficiencies and widespread weight loss (Alvarez, 2004; Funes-Monzote, 2008). Monetary and other reforms caused an increasing inequality linked to remittances and access to employment in tourism and foreign firms (Eckstein, 2010; Espina Prieto, 2008a; Noguera, 2004).

In the agricultural sector, the reforms were wide reaching and tried to counteract the sudden loss of imported production inputs and the decreased availability of food for the population. The most important steps taken were to break up a number of the large and inefficient state farms and transform them into worker-owned collective farms called UBPC (Basic Units of Cooperative Production), to open agricultural markets, and to allow individuals and communities produce food for home consumption in unused state land (Alvarez, 2004; Deere, 1997; Enríquez, 2000; Nova Gonzalez, 2002). These reforms created two new agricultural producer groups, namely the UBPC and the individual land usufructuaries. These new groups, together with private individual and collective farmers, and state farm workers, make up a complex mixture of organization and land tenure types. Farmers in the private sector have been able to insert themselves successfully in production and marketing chains, improving their economic wellbeing (Espina Prieto, 2008b; Noguera, 2004). On the other side, the members of the new UBPC farms have been left behind (Leyva Remón, 2006).

There appears to be a consensus that the crisis and reforms of the early 1990s caused an increase of poverty and vulnerability in Cuba (Álvarez & Máttar, 2004). Despite this, there have been few attempts to measure poverty, with only one study based on a representative household survey (Añé Aguiloche, 2005). This study was made in the

city of Havana and it is not representative of conditions in other cities or rural areas. The rural sector has been mostly neglected in the poverty studies published in Cuba, and so far, Cuban researchers have made few attempts to measure or explore the phenomenon (Espina Prieto, 2008a). Food security and the differential access to food have been a concern for researchers since the opening of agricultural markets, but so far few studies at household level have been published (Añé Aguiloche, 2005; Togores González & García Álvarez, 2004; Togores González, 2004).

The present study deals with the members of the UBPC collective farms. In 2008 the UBPCs accounted for 37% of total agricultural land, making them the most important producer group in terms of area. These collectives were meant to solve the production problems of the large state farms by reducing their size, increasing their autonomy, and improving the incentives to the workers. Moreover, they were expected to partially substitute some the social services offered by the state, especially food provision. UBPC farms have been plagued with low agricultural production and profitability since their creation in 1993, which have been blamed on technical and resource factors, as well as their lack of autonomy from the state (Alvarez, 2004; López Labrada, 2007; Nova Gonzalez, 2008b; ONE, 2009). Poor performance in collective farms is not exclusive of Cuba. In other countries, efficiency and underlying incentive problems have led to the dismantling of collective farms in preference for corporate or family farms (Deininger, 1995; Lerman et al, 2002).

The objectives of this study are to explore poverty and food access at household level and their relation to agricultural production at both collective and household levels. The exploration of the variables related to poverty is based on a multivariate index of relative poverty at household level, in order to address the need to consider several dimensions of poverty additional to income or expenditures per capita (Henry et al, 2003; Zeller et al, 2006). We will first present the data and methodology used. After this, the variables related with poverty will be explored both in the sphere of the household, its activities and resources, and in the sphere of collective agricultural production. The implications on agricultural and food security policies and on poverty studies in Cuba will then be discussed. Last of all, conclusions and outlook for future research will be presented.

2. Data and methods

The data used in this study were collected in the frame of a baseline study for a rural development project aimed at increasing agricultural production and improving the living standard of producers. In total, 170 households belonging to 30 cattle collective farms (UBPC) of Santiago de Cuba, Holguín and Las Tunas provinces were interviewed in the first three months of 2008, and this information was completed with in depth interviews with the administrators of their 30 farms and two additional UBPC farms, as well as local experts, authorities and key informants. The Eastern Region where the three provinces are located is considered one of the poorest in Cuba due to reduced food security, health and other indicators (Enríquez, 2003; Espina Prieto, 2008a; Mendoza Castellanos & et al, 2001; Noguera, 2004). The information collected includes household demography, education and occupation of household members, food consumption patterns, state and materials of the dwelling, producer and consumer assets (except private land), access to public services such as electricity, and household expenditures as an indicator of income poverty. Additionally, the questionnaire included a self-reported "quality of life" measure, and the enumeration of aspects affecting this "quality of life" positively and negatively. At collective farm level, data was gathered regarding production activities, use of land and labor resources, indicators of farm productivity in crop production and animal husbandry activities, overall financial performance of the UBPC as well as its organization.

Raw food consumption data was used to construct three sets of indices. The Dietary Diversity index was constructed by adding the number of different food categories consumed by the household during a recall period of three days. This index included 10 food categories based on their food group (Hatloy et al, 2000; Ruel, 2003) and on the different food sources and marketing channels in Cuba (Añé Aguiloche, 2005; Togores González & García Álvarez, 2004). Additionally, a Market Food index and a Ration Food index were built to separate the consumption of food items primarily obtained in legal and illegal agricultural markets (roots and tubers, fresh vegetables, fruits and fish) from the ones mainly obtained as part of the rationing system (rice, pulses and bread). Both indices were constructed by adding the frequency of consumption of each food type during the recall period.

Principal component analysis (PCA) was used with the household level data to identify variables closely related to expenditures and to construct an index of relative poverty following the methodology developed by Henry et al (2003). Other applications of principal component analysis regarding the construction of an index of relative wealth include, for example, Filmer & Pritchett (2001), Sahn & Stifel (2003), and Zeller et al (2006). After a number of tests and on the basis of several indicators specific for the PCA method which are in detail described by Henry et al (2003), the first component resulting from the PCA can be viewed as a multivariate measure of poverty which captures most of the variance of the variables used to construct it. This poverty index was used to rank the households and assign them to three relative poverty groups that are then compared: Poorest, Medium and Better-off. The poverty index was used in subsequent analysis to test the hypothesis that household level conditions are associated with agricultural and economic performance, production activities and resources of the collective farm that employs the respective household.

Before presenting any results, we wish to briefly describe the research process and the sampling procedure. Our plan – as we have done in other countries – was to design a questionnaire after in-depth interviews at collective and household level, a pretest of the questionnaire with a random sample, and a random selection of observation units based on a full sampling frame. However, some of the steps of this research were compromised by the influence of local authorities. While the research was officially supported by the state, certain questions in the draft questionnaire were not permitted, including land ownership by the household, some characteristics of the dwelling, detailed food consumption including periods with insufficient food and consumption of inferior foods, as well as separated expenditures in rationed and non-rationed food. Second, the selection of UBPC farms and households in each UBPC farm was compromised by limits imposed by authorities regarding the permitted farms and areas to visit and the time available for each farm, as well as suspicions of workers (especially in the presence of state officials). This resulted in an oversampling of the directive board of the farms, and possibly other biases as well. To partially correct this, the data set was weighted to account for salary differences between directives and non-directives of the UBPC. The above mentioned problems jeopardized the representativeness of the collected data. Despite this, the present analysis is considered to be valuable due to the insufficiency of published studies focusing on

Cuban rural households. The results can be an indication of present conditions in this sector and even if the results must be taken with extreme care, they offer some insights and suggestions for future researchers and policy interventions.

3. The UBPC farms and their members

The Basic Units of Cooperative Production (UBPC) are collective farms that have usufruct rights over state land. They were created to improve incentives by transforming state farm workers into "owners" of their new collectives (Alvarez, 2004; López Labrada, 2007; Nova Gonzalez, 2002). This "ownership" means that members are entitled to receive a share of the annual profit of their farms, but they have little saying regarding production. The state decides the production activities of the collective farms, based on a "social objective" (*objeto social*). In the case under study, all sampled UBPC farms have milk or beef production as their "social objective" and main production activities. The state keeps a tight control over the main activities, and all the milk and beef produced must be sold to state firms at fixed prices. Apart from cattle, the farms have "self-consumption" (*autoconsumo*) activities that include all collective activities aimed at crops and small livestock. The most frequent crops produced are roots and tubers, vegetables, grains and fruits. Goats, sheep and pigs are the most common small livestock species kept, but a minority also has rabbits and poultry. The control of the state over these activities is less strict than for the main cattle activities.

The collective farms studied are very heterogeneous in size and resources, ranging from 350 Ha to almost 3500 Ha, and from 42 workers to more than 200, not counting occasional work brigades mobilized from other provinces, schools or re-education programs. The biggest collectives are made up of productive units often far apart from each other. Productive and economic performance of the collectives varies even more widely than their size. Some of the studied UBPC farms lost up to 5600 US$ in 2007 (138 thousand Cuban pesos) while others had profits of more than 23000 US$ (577 thousand Cuban pesos) in the same year. These differences are the result of a huge variation in total production and production efficiency in their main activities: milk and beef. Secondary production activities also differ between the UBPC. For example, crop production in 2007 varied from only 2 tons to almost 400 tons.

The UBPC collectives are made up of members and hired workers, who typically are

around 15% of the total work force. Few differences were found between them in the studied farms; therefore, the words "members" and "workers" will be used interchangeably. The households of these workers are rather homogeneous, in marked contrast to the variation found in their UBPC farms. The households have on average around three persons each, and a half do not have children or the children live in boarding schools for most of the year. The education level of the household members is very uniform, with only 18.5 % of the sampled adults having completed less than nine school years. Almost a half the sampled adults have completed at least 12 years of education. The UBPC farm is the most important occupation in the studied households, as 55% of them depend solely on it for their income. A further 45% of the households have an additional income source, usually in the form of public employment (38%). Salaried jobs are typically in state farms and agricultural firms, schools and other public offices. Around 40 % of household members are unemployed or children.

3.1. Poverty of UBPC farm members

The information at household level was used to construct a relative poverty index using principal component analysis (Henry et al, 2003). The variables selected during the PC analysis are presented in the Table 1. The Kaiser-Meyer-Olkin measure of sampling adequacy can be considered to be relatively high, and all the variables selected have adequately high component loadings. This first component captures 35.4% of the total variance of the data. Using the variables and component loadings, the poverty index was calculated for each household before ranking and separating them in terciles for comparison. The terciles are identified as Poorest, Medium and Better-off households.

Most of the variables selected for the construction of the poverty index are linked to food access and consumption, including the relative importance of food bought and home produced (Table 1). Other variables are related to the household's access to products not included in government programs or the food rationing card. The dummy variable related to the location of the household seems to confirm that the province Santiago de Cuba has worse living conditions than the other two provinces (Las Tunas and Holguín), as has been also suggested by other authors (Espina Prieto, 2008b; Mendoza Castellanos & et al, 2001; Noguera, 2004). Other variables were initially

included in the analysis, such as education, household demography, quality and reparation state of the dwelling, and access to energy and other services. However they showed a low explanatory power for the construction of the poverty index, with component loadings of less than 0.400, and were therefore excluded from the final PCA model (Field, 2009; Zeller et al, 2006). The lack of importance of these variables contrasts from what is commonly found in other studies on market economies in Africa, Asia and Latin America (Zeller et al, 2006). The reasons of these differences appear to be related to Cuba's "equalizing" education, labor, health, and other social policies. For example, educational and demographic factors may not play a role due to the homogeneity of the households and of the employment opportunities in the rural areas. Access to services and housing also seems to be very equal in our sample.

Table 1: Summary of the PCA results for the construction of a relative poverty index of households of UBPC collectives in the provinces Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

	Component Loadings
Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.728	
Per capita expenditures (pesos/person)	0.713
Food value produced and consumed by the household (pesos)	0.728
Does the household produce food for home consumption?	0.584
Percentage of expenditures on buying food (%)	-0.573
Diet diversity index [a]	0.612
Market food index [b]	0.610
Does the household live in Santiago de Cuba province?	-0.486
Expenditures on parties, gifts, etc. (pesos)	0.544
Number of radios and fans owned by the household	0.444

Source: Own data collected among rural households being UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

[a] Diet Diversity index: Number of different food types consumed by the households in three days

[b] Market Food index: Frequency of consumption of food items mainly bought in legal or illegal markets (fresh vegetables, fruits, roots and tubers, fish)

Table 2 shows some of the characteristics of the households of the three relative poverty groups. There are marked differences in total expenditures between the groups, but how poor (in absolute terms) are the studied households? Based on their per capita expenditures it is difficult to answer this question, since there are no recent or official poverty lines published for Cuba, and there is no reliable estimate of purchasing parity prices to draw international comparisons (Mesa Lago, 2008). However, using an estimated cost of the basic food basket for Cuba (Espina Prieto, 2008a), 23% of the sample households is extremely poor and unable to fulfill the most basic food needs.

Table 2: Food production and annual household expenditures of UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

	Poorest N: 57	**Medium N: 56**	**Better-off N: 57**
Household produces own food (%)**	40 %	88 %	100 %
Per capita food value produced and consumed [a] (US$/person)**	12.7 ± 20.61	48.5 ± 43.75	112.1 ± 71.57
Per capita food expenditures [a] (US$/person)	57.1 ± 35.75	72.5 ± 49.90	80.3 ± 55.75
Per capita expenditures on clothes and shoes [a] (US$/person)**	25.7 ± 22.57	45.3 ± 30.35	53.1 ± 32.52
Per capita expenditures on services, health and education [a] (US$/person)	9.2 ± 7.14	9.6 ± 7.07	10.9 ± 10.97
Per capita expenditures on rent, house reparations and buying domestic appliances [a] (US$/person)**	13.9 ± 22.54	16.7 ± 29.84	46.9 ± 64.07
Total per capita expenditures [a] (US$/person)**	133.8 ± 62.65	221.7 ± 101.88	353.7 ± 135.18

Source: Own data collected among rural households being UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Notes: the results are shown as average ± standard deviation

[a] Unofficial exchange rate for 2007-2008 of 24 Cuban pesos = 1 US$ (ECLAC, 2009)

** significantly different with $P > 0.01$, Kruskall Wallis test

In addition to differences in expenditures, the relative poverty status of the households is linked to their private food production (Table 2). The most frequent production activities of the households are pigs, sheep, goats, and poultry, while few also have crop production. The poorest tercile has a significantly higher proportion of households that do not produce their own food, and therefore they rely more heavily on food rations that only cover a portion of the total monthly needs and on the legal or illegal food markets (Nova Gonzalez, 2008a; Togores González & García Álvarez, 2004). The prices in these markets are usually much higher than prices for the rationed food sold in government outlets. Moreover, the better-off households of the sample produce almost ten times more value for home consumption than the households in the poorest tercile. As cash incomes are insufficient among the poorest groups, the results show that the poorest group consumes much less quantity and/or quality of food. The inequality in food consumption is not reflected in the fulfillment of other important needs. Per capita expenditures for services, health, and education are very low but do not show any differences between the groups, most likely as a result of public policies that offer free health and education to the population. Services such as electricity and water are also heavily subsidized by the state (Table 2).

The segmented food markets and other sources of food in Eastern Cuba will be presented before further analyzing the food consumption patterns of the three groups. Table 3 shows the sources of some of the main food items consumed by the sample households. The first food source is the rationing system, where each person gets a provision of products at highly subsidized prices sold in state shops, covering around a third of the caloric and proteic monthly needs (Alvarez, 2004; Nova Gonzalez, 2008a). Children, pregnant women, sick and elderly persons get additional items in the ration. For example, milk is only given to children younger than seven years old. Any additional milk consumed by the households comes from illegal markets, or can be theoretically bought in convertible currency in state shops. However, our observations and interviews during the field research confirm that no milk was offered in these shops in the three provinces studied. Moreover, not all items supposedly offered in the ration are available in reality, as in the case of beef and fish, or their availability fluctuates due to production and distribution problems, as in the cases of bread, pulses and poultry. The state-sponsored channel for ration food is therefore neither a reliable nor a sufficient source of food for rural households in the provinces

studied. Households have to either produce additional food by themselves or use their income to buy food from legal and illegal markets.

Table 3: Main sources of food consumed by the households of UBPC members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Food type	Ration	Agricultural market	Home production	UBPC production	Illegal market
Rice	+ + (c)	+ (b) (c)			
Bread and similar	+ +				
Pulses	+ + (c)	+ (c)	+	+	
Vegetables		+ +	+	+	
Fruits		+ +	+		+
Roots and tubers		+ +	+	+ +	
Eggs	+ +	+ +	+ +	+	
Poultry	+ (c)	+ + (b) (c)	+ +		
Milk	+ +				+ +
Beef	+ (b) (c)				+ +
Pig, sheep or goat meat		+ +	+ +	+	
Meat-soybean mix	+ +				
Fish	+				+ +

Sources: Observations and interviews by the authors, except for cells marked (b) (Alvarez, 2004; Añé Aguiloche, 2005; Nova Gonzalez, 2008a).

Note: the cells show the relative importance (+ + is very important, and + is less important) of each source in supplying food for the consumption of the households as perceived by the authors based on observations and interviews, except for cells marked (c) (Alvarez, 2004; Añé Aguiloche, 2005; Nova Gonzalez, 2008a). The relative importance shown in the table is only for guidance and is not based on a representative survey.

The agricultural market includes free markets and markets with maximum set prices, where both state farms and private producers are allowed to sell their produce. However, not all products are permitted in these markets and prices are usually much higher than the rationed ones (Alvarez, 2004; Nova Gonzalez, 2008a). For example, eggs in the agricultural market of the studied areas cost between 0.90 Cuban pesos per unit (Holguín) and two pesos per unit (Las Tunas), as compared to the 0.15 pesos per

rationed egg. Milk, beef and fish are strictly forbidden in agricultural markets, but are offered in the illegal market (Table 3). This market includes rationed products that are bartered or sold by the households, agricultural products sold without state permission, stolen goods, illegally slaughtered beef or illegally caught fish (Nova Gonzalez, 2008a). Apart from these markets, the studied households can also produce their own food, as shown in Table 2, or receive products from the UBPC collective where they work. The type and quantity of food offered by the UBPC depend on the collective farm production activities, and will be analyzed in detail in the next subsection (3.2).

Our analysis of food acquisition and consumption patterns of rural households in three provinces of Eastern Cuba shows that households' food access relies on different sources with widely variable prices and availability. The following patterns for food acquisition and consumption arise from the analysis of our primary data. The households, as expected, equally consume rationed food such as rice and bread, and this is unrelated to their poverty status (Table 4). The highest consumption frequency is for rice, closely followed by bread, which is consumed by almost all households during each of the past three days. On the other hand, more expensive food that can only be acquired in legal agricultural or illegal markets tends to be consumed less frequently by the poorer households. This is especially true for roots and tubers (considered a staple food in Cuba but not included in the ration), fruits and fresh vegetables (Table 4). This trend is also recognizable in the case of milk, by separating the households entitled to rationed milk because they have children of up to seven years of age. Our results (not shown in Table 4) confirm that significantly more of the better-off households consume illegal milk with daily frequency whereas rationed milk is consumed equally among the three groups.

Better-off households consumed not only more value in terms of food, as was shown in the Table 2, but also significantly more food types (Table 4). The Diet Diversity index increases significantly with the relative wealth of the households. The poorer households consumed an average of seven different food types during the last three days prior to the household survey, while the medium and better-off households consumed an average of eight and nine different food types, respectively, in the same period. The households of the three groups have access to carbohydrates from grains and to animal and plant protein from the ration system, but better-off households

consume more vitamin-rich food items, such as fresh vegetables and fruits. A number of studies have shown that an increase in the diet diversity is highly correlated to a more balanced and better nutrition (Hatloy et al, 2000; Ruel, 2003). These results could reflect a wider nutrition problem in Cuba. Official statistics on the apparent consumption of macro and micronutrients in 2006 show that the population did not consume enough fat, essential fatty acids, vitamins B2 and B12, or niacin (ONE, 2007). The importance of food production for the households is not limited to food consumption. The households with land for crops, space to raise small livestock, and feed availability, have also an additional source of income to cover other needs. For example, many of the interviewed households said they raise pigs in order to buy clothes, assets or to repair their houses.

Table 4: Frequency of household consumption of different food types during the past three days, in the households of UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Food type	Main source of food	Poorest N: 57	Medium N: 56	Better-off N: 57
Rice	Ration	3.0 ± 0.31	3.0 ± 0.19	3.0 ± 0.08
Pulses	Ration	2.5 ± 0.74	2.6 ± 0.88	2.7 ± 0.55
Bread	Ration	2.9 ± 0.57	2.8 ± 0.69	2.9 ± 0.51
Meat	Ration and agricultural markets	1.9 ± 1.15	2.0 ± 0.89	2.4 ± 0.70
Fruits**	Agricultural and illegal markets	0.9 ± 1.31	1.1 ± 1.35	2.0 ± 1.21
Fresh vegetables*	Agricultural markets and UBPC [a]	2.0 ± 1.26	2.6 ± 0.89	2.7 ± 0.64
Roots and tubers **	Agricultural markets and UBPC [a]	2.0 ± 1.26	2.8 ± 0.66	2.9 ± 0.48
Fish	Illegal markets	0.1 ± 0.37	0.2 ± 0.39	0.3 ± 0.58

Source: Own data collected among rural households being UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Notes: the results are shown as average ± standard deviation

[a] Crops from the UBPC can be supplied as in kind salary or sold to the households

** significantly different with $P > 0.01$, Kruskall Wallis test

* significantly different with $P > 0.05$, Kruskall Wallis test

As in the case of food, not all durable assets are related to poverty (Table 5), and this could be a result of the different sources of these assets. Assets received through government programs tend to be similar between the groups, while those that are only available in state shops that sell in convertible currency (CUC) are not. The poorer households have a significantly lower number of fans, radios and television sets. Other high value assets, such as DVDs, are only available through remittances (Eckstein, 2010) and the illegal market, and few of the sample households own them.

Table 5: Durable assets of households of UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Number of	Source of asset	Poorest N: 57	Medium N: 56	Better-off N: 57
Refrigerators	State program	0.6 ± 0.50	0.8 ± 0.55	0.6 ± 0.55
Electric kitchen	State program	0.8 ± 0.59	0.9 ± 0.53	0.8 ± 0.42
Television sets*	State program / Shop in CUC	0.7 ± 0.44	1.0 ± 0.40	0.9 ± 0.46
Fans**	State shop in CUC	0.9 ± 0.82	1.7 ± 0.98	1.8 ± 1.08
Radios / stereos**	State shop in CUC	0.5 ± 0.50	0.8 ± 0.60	1.0 ± 0.54

Source: Own data collected among rural households being UBPC collective members in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Notes: the results are shown as average ± standard deviation

* significantly different with $P > 0.05$, Kruskall Wallis test

** significantly different with $P > 0.01$, Kruskall Wallis test

In order to complement the quantitative information on the poverty status of the households, the respondents were also asked to rank their "life quality" on a scale from one to ten, and then to explain what they considered was affecting their life quality positively and negatively. The "life quality" reported in the three groups had an average of 4.9 to 5.5, and it does not show significant differences between the relative poverty groups. An unexpected result is that this subjective measure of life quality is negatively correlated with per capita expenditures. This result could be caused by negative perceptions of individual gain or positive perceptions of poverty

as being in line with communist ideology (Kreidl, 2000). However, when asked to enumerate the conditions that affect their quality of life, 63% of respondents mentioned insufficient salary or income, and 49% of respondents mentioned inadequate food access and quality as negatively affecting them. This seems to validate the quantitative results in this study regarding expenditures and food consumption.

There is one aspect that seems to be extremely important for the households, but is not captured by the PCA analysis. The self-reported measure on life quality is highly correlated with the repair status of the dwelling that the household occupies as a residence, and 64% of respondents mentioned the quality, ownership, and state of the dwelling as affecting their life quality. Severe restrictions in the access to residential housing and building materials could explain that the conditions of the dwelling are not related with household expenditures or with the PCA index. Even if the better-off households have more available income they cannot invest it to improve their homes or move to a better one. The conditions of the dwelling do not differ between the three relative poverty groups, and an important proportion of them are either in bad state of repair or are built with low quality and non-durable materials. These results are in line with publications that view housing and food availability as the most pressing problems in Cuba (Brundenius, 2009; Álvarez & Máttar, 2004).

3.2. Collective agricultural production and poverty

In order to get a more complete outline of the links between collective agricultural production and household level wellbeing, the poverty index was explored for correlations with the UBPC's production and resource use characteristics. Our correlation analysis shows that the relative poverty level of the households is neither correlated with the main production activity of the UBPC they belong to (i.e. milk and/or beef), nor to its profit as an indicator of economic performance (Table 6). Instead of this, the poverty index is significantly correlated with the secondary activities of the farms, for example with the diversification of the UBPC into small livestock husbandry for collective "self-consumption", with crop production and with the land used for these "self-consumption" activities. In other words, working harder for the primary objective of the collective farm is not rewarded. Instead, those UBPC farms that allow members to use some of the land and their labor for "selfish" self-

consumption activities and related sales of surplus are the ones with relatively better-off members. Moreover, our results show that larger UBPC farms have in tendency poorer workers, which may indicate increasing management problems, for example an under exploitation of economies of scale related to increasing farm size and fragmentation.

Table 6: Correlations between the household level poverty index of workers and their UBPC collective characteristics, provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

Collective farm variable	**Correlation Coefficient**	**Significance (2-tailed)**
Number of small livestock production activities[a]	0.380**	0.000
Total workers per crop area (persons/ha)	-0.326**	0.001
Total area dedicated to crops (ha)	0.304**	0.002
Total crop production in 2007 (tons)	0.287**	0.003
Total area of the UBPC (Ha)	-0.232*	0.018
Total beef produced by the UBPC in 2007 (tons)	-0.030	Not Sign.
Total milk produced by the UBPC in 2007 (1000 x liters)	-0.009	Not Sign.
Total profit of the UBPC in 2007 (pesos)	0.066	Not Sign.
Average monthly salary in the UBPC in 2007 (pesos)	0.158	Not Sign.

Source: Own data collected among rural households being members of 30 UBPC collectives in the provinces of Santiago de Cuba, Holguín and Las Tunas, Cuba 2008

[a] Includes sheep, goats, pigs, poultry, rabbits and other small livestock

** correlation significant with $P > 0.01$, Spearman's rho

* correlation significant with $P > 0.05$, Spearman's rho

Despite the fact that in the sample households the UBPC is the main occupation, the economic performance of the farm and the salary received by the workers do not show any correlation with the poverty status of the households. The average salary and the total annual profit of the farm depend strongly on the milk and beef production of the UBPC. But how does this money reach the households? The annual distribution of the farm's profit is limited by strict regulations (Resolution Nr. 629,

2004) that effectively cap the maximum amount the workers receive. At the same time, UBPC farms that have annual losses are subsidized by the state, so workers almost never stop being paid. Both mechanisms uncouple the economic performance of the collective farm from the households' poverty status. Moreover, the salary received by the workers covers only a fraction of the households' needs. The average salary in the studied collectives was 18.4 US$ per month in 2007 (442 Cuban pesos), and showed no difference between the three poverty groups studied. The household income coming from the UBPC salary would cover between 68% (for the poorer group) to 33% (for the better-off group) of the total annual expenditures.

In contrast to the lack of importance of the main activities, the number of secondary activities, the resources used in these activities and their productive outcomes, are all highly correlated to the household's relative poverty (Table 6). The results also suggest that land used for collective food production is scarce, as shown by the negative correlation between the number of workers per hectare of food crops grown, and the poverty status of collective members. Per capita food either sold or given as in-kind salary to the UBPC workers has a big variation in crops and meat from small ruminants and pigs. However, these figures may be underestimated as the principal author observed during her field visits that crops were sold informally, and were not reported in the general bookkeeping. Besides from being consumed, the products received by the households could be bartered or resold by the households, thus being converted in an additional income source. Interviewed experts expressed their concern that collective resources for crop production (fertilizer, working implements, seeds) are frequently taken illicitly by the workers. In fact, the value of food produced privately in the households is positively correlated with the total number of collective "self-consumption" activities and the amount of land used for collective crop production, suggesting that these collective resources are being used for private food production.

Despite the apparent significance that secondary activities have for the collective workers, the collective farm has restricted access to credits, production inputs and other resources aimed at these secondary objectives, as well as a limited allowance of land for crops. Apart from controlling the extent of the "self-consumption" collective activities, the state also ties the provision of production inputs to the sale of produce to state food distribution firms. This seems to be more pronounced in the case of

crops, where the average share sold to the state in our sample of UBPC is around 40% of the production. However, two of the UBPC declared that they sold 99% and 100% of their crop production to the state. In the case of small livestock production, the share sold to the state seems to be lower (nine to ten percent in the case of pigs and small ruminants, and nothing in the case of poultry and eggs).

4. Poverty and incentives in Cuban collective agriculture

Most poverty studies identify education and other human capital variables as determinant for the poverty status of households (Henry et al, 2003; Sahn & Stifel, 2000; Zeller et al, 2006). However, in the present study these variables appear not to be related to the relative poverty of households. This may be only valid in the studied sample and could be the consequence of education and employment policies in Cuba. On one hand, most of the adults have a medium to high education level, while on the other hand, there are no important differences regarding their employment opportunities or the potential salary they earn, especially in rural areas. These results contrast with poverty conditions reported in the city of Havana, where a higher differentiation of education levels and employment opportunities is to be found (Añé Aguiloche, 2005). Other variables also show a different behavior in Cuba when compared with other countries. The consumption of roots and tubers is positively correlated with the wealth of the household, whereas in other developing countries they are often found to be inferior foods (Musgrove, 1985; Teklu, 1996). This could be a result of cultural differences in terms of food preferences. However, we suppose that it is more likely a consequence of the segmentation of food markets into highly controlled state markets where roots and tubers are not sold, and legal as well as illegal markets with differential access by households. Likewise, the ownership of certain assets and the quality of the dwelling show patterns that are different from other published results (Sahn & Stifel, 2003; Zeller et al, 2006). In Cuba, certain consumption assets are provided by the state whereas others need to be purchased in legal markets with convertible currency or in illegal markets with convertible currency or US dollars, usually from remittances (Eckstein, 2010). These differences are obviously a result of the segmentation and restriction of Cuban markets for consumer assets, for housing and for building materials, which cause –compared to other countries– the unusual dissociation between some of these variables from either household expenditures or poverty index.

The relative poverty status of the households being members or workers in the UBPC collective is found to heavily depend on their access to private and collective resources for food production that can be legally or illegally used for home consumption and sale. While salaries from the UBPC farm constitute an egalitarian income source, our analysis shows that they are insufficient to cover even the basic needs of the households. The studied households must complement their food allowance either in markets that are far more expensive than the rationed one, or with home and collective production. The food rationing system also constitutes an egalitarian nutrition source for the households that guarantees a minimum consumption, but those with additional food sources are found to have better food security in terms of quantity, quality and diversity of the diet. These additional food sources may become even more important in the near future, as changes in the rationing system have been announced that seem to signal its progressive elimination (Espinosa Chepe, 2009; Galvez Chiu, 2010).

Despite their importance for the households, the state puts severe limits to resources used in the self-provision activities. For example, private land is not easily available for households as land markets are restricted. On the other hand, the collective farms are only allowed to produce food for self-consumption if this does not compete with the main activities of the UBPC, and are required to sell part of this production to the state (Resolution Nr. 629, 2004). Why does the state restrict these self-provisioning activities? The apparent objective is to protect the main activities of the UBPC farm, which in the case under study are milk and beef production. Interviewed authorities and local experts consider that the importance of the cattle UBPC farms is based exclusively on their capacity to produce milk and beef, i.e. their "social objective". Since the main activities are designed to feed the rationing system that distributes these products to the rest of the country, any other activity that may compete with them in terms of land, labor and other production resources, is –according to our interviews– officially viewed as being against the interests of the society. The risk that the collective secondary activities compete with the main activities is expressed in legal regulations issued (Resolution Nr. 629, 2004), and in the discourse and behavior of local authorities and agriculture officials.

However, the policies restricting secondary activities in favor of the main activities, added to salary regulations establishing upper limits to the potential earnings of

workers and lower limits even if the UBPC does not deliver to the "social objective", result in a disconnection of the farm's performance for the state and the wellbeing of the households being employed by the UBPC. The current set of incentives neither helps to achieve the "social objective" of the state to safeguard the production of critical ration foods such as beef and milk, nor increases the welfare of rural households in the selected provinces in the poorest part of the country. Our study shows that there is simply no link (positive or negative) between the occupation of workers in the cattle units and the cash or in-kind salary they receive. The lack of working incentives in cattle production is added to the strong incentives to participate in other activities whose products reach directly the homes of the workers. The resulting competition, in terms of labor and resources, is played both in the space of collective agriculture between the two types of activities, and in the private sphere, between home and collective production. This competition, also linked with labor absenteeism, has been frequently described as a common problem in collective agriculture (Deininger, 1995; Tria Kerkvliet, 2005). The lack of work incentives could also explain the constant need of hired workforce and the external work brigades mobilized from schools, other provinces, or even from criminals and unemployed in re-education programs. The policies in place not only hurt agricultural production by not providing the right incentives to workers, but also lose the opportunity of improving the wellbeing of the households. The erratic performance and huge production problems of UBPC farms appear to be in part the result of these policies.

Our study suggests that the latent reform pathway begun in 2008 in Cuba's agricultural policy should be accelerated. This reform was commenced on an experimental basis by the Cuban government, and includes changes towards agriculture with more self-employed farming and incentive-compatible salaries for workers (Decree-Law Nr. 259, 2008; Mesa Lago, 2008; Resolution Nr. 09/2008, 2008). Reform of the land, labor and agricultural commodity markets in other countries, such as Vietnam and China, towards liberalized commodity markets, rights of movement of labor to better-earning jobs, and individual user rights for land (if not full property rights for land) resulted in an increase of welfare and a reduction of poverty (Montalvo & Ravallion, 2009; Ravallion & van de Walle, 2004). Following similar reforms in Cuba would be a big step towards increasing welfare of the rural households and the wellbeing and food consumption of households in Cuban cities

and rural areas. Liberalized markets for land, agricultural commodity and labor could better achieve individual and social objectives.

Our study of poverty and food security of rural households in Cuba and its relationship with agricultural production shows interesting implications not only for future poverty studies in the country, but also for agricultural policies and development projects. Cuba's government would gain an important insight on its agricultural and welfare problems if more socio-economic studies were allowed or promoted in the country (Espina Prieto, 2008a). Poverty studies in the country are limited to income calculations based on either primary or secondary information on public or UBPC salaries, pensions and other permitted sources of income. The researchers usually recognize the importance of additional income from private employment, remittances, or the production and sale of crops and livestock, yet these sources are not considered in income calculations (Añé Aguiloche, 2005; Leyva Remón, 2006; Togores González, 2004). The results obtained in this study suggest that at least some of these activities, like home production, are of great importance to define poverty and inequality at household level, even in relatively homogeneous groups like the one under study. By disregarding them, the income at household level is underestimated, and main income sources are overlooked. Ignoring these income sources in official statistics and in the analysis of wellbeing implies to underrate or even forget promising pathways for agricultural and rural development in Cuba. Without proper research, the apparent incompatibility and conflicts in incentives between private and collective agricultural production are ignored.

5. Conclusions and outlook

The results presented in this study on rural households and collectives in selected provinces of Eastern Cuba bring to light several facts and policy implications that have been written about but rarely documented and supported through primary data and empirical evidence. We derive a number of implications from our research regarding the wellbeing of the rural population and the reform of agricultural policy with respect to land, labor and commodity markets. These topics are clearly of great importance in a country that prides itself of its achievements in social policy while trying to increase the quantity and quality of food production. Based on the empirical

evidence and statistical analysis in the paper, our conclusions and policy implications are summarized below.

First, relative poverty, diversity in food consumption, and overall self-reported quality of life in the households of workers of collective farms in selected provinces of Eastern Cuba, are associated with the households' access to food for own consumption or sale either from own home production or from the state-sanctioned "self-consumption" activities of their UBPC farms. Relative poverty, food diversity, and quality of life are found to have no association at all with the economic or productive performance in the main activities of the UBPC farm.

Therefore, and as a second conclusion, severe incentive problems exist in Cuban agriculture. Workers are not rewarded for better or more work in the UBPC cooperatives, and the land they can devote to private and collective production for home consumption or resale in local markets is restricted by the state. While the main activities of the UBPC farms in terms of beef and milk production are considered fundamental by the state, collective and private food production for home consumption are the most important for the household's quality of life and food consumption. Both collective and private food production compete for labor and resources with the main production activities of the collectives, in this case beef and milk. To correct these incentive problems, the emerging reforms –albeit on an experimental and highly state-controlled basis– should be accelerated towards a system with greater private incentives and liberalized markets for land, labor, and agricultural commodities, especially food.

Third, the further study of agricultural production in Cuba, its institutional setting, and its link with rural poverty, food security and well-being are vital for the much needed policy reforms if the country wants to decrease its dependence on imported food while maintaining its social achievements, for example in the area of education and access to primary health care. Local and national authorities would gain much from the insights of further research, as would NGOs and international development agencies.

Fourth, it is important to point out that, because of the representativity problems of the data used in this study, the results should not be extended to other producer groups or regions in Cuba. It is of course regrettable that local political influence did not allow us to draw a random sample of UBPC cooperatives and their household members. Our

suspicion is –but this is only a suspicion– that the final sample presented in this paper is upwardly biased towards better-performing UBPC farms and households with a relatively better standard of living. However, this remains a suspicion until representative surveys of rural households by independent researchers are allowed in the future. We nonetheless believe that the results shown here are indicative of the severe incentive problems in Cuba's food and agricultural system and the apparent social differentiation of rural households with respect to access to land resources and markets for agricultural products.

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CHAPTER 4.

Agricultural producers, bureaucrats and the political elite in Cuba

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Abstract: *The historical political power dynamics in Cuba's agricultural sector is evaluated in order to identify the constraints towards the adoption of economically efficient institutions. We find that while the private producers are interested in free markets and private property rights over their land, the bureaucrats and the elite prefer less efficient institutions in order to constrain the accumulation of power by producers. Free markets have only been adopted when the elite has been threatened with consumer unrest. Economic or agricultural production crises have forced the elite to give more autonomy to state farm workers, and more land to private producers. The bureaucracy and other groups, however, block the reforms that weaken their political power. Compensating political losers might facilitate the successful implementation of reforms in the agricultural sector.*

Keywords: Cuba; Institutional change; Political power; Inefficient institutions; Agricultural reform

Paper submitted to the ***Journal of Agrarian Change*** (Received: 07. June. 2010)

1. Introduction

Besides from resources and technology, agricultural production depends on the institutional setup governing production and marketing. Institutions shape incentives and constraints of economic actors, and therefore economic performance. In the case of agriculture, for example, individual property rights over land have been recognized as an institution that results in higher investments and productivity. Lack of rural land markets, insecurity on land tenure and collective agriculture, on the other hand, may lead to inefficient agricultural production and resource misuse (Acemoglu and Johnson 2005, 988; Deininger and Songqing Jin 2003, 866-867; Feder and Feeny 1991, 146; Markussen 2008, 2286; Pingali and Xuan 1992, 712; Schlager and Ostrom 1992, 256-257). Considering the importance of agricultural production in a world with increasing food problems, it is imperative to explore the reasons behind the permanence of institutions that result in reduced agricultural output and productivity. Institutions may change slowly or fail to change because of the economic or social cost of changing them (especially the informal ones), as well as historical factors and path dependence (North 1990, 73-104; North 1998, 14-15). The theoretical framework used in this study, however, focuses on political power dynamics and their interaction with changes in the economic institutions (Acemoglu and Robinson 2000, 126; Acemoglu and Robinson 2008, 268-269). In order to explain the processes behind the limited reforms in the agricultural sector of Cuba, we borrow from literature on institutional change, political economy, and authoritarian regimes.

Cuba's agricultural sector provides an interesting case study to explore the persistence of inefficient institutions. This sector is comprised by a mixture of producer groups with different user rights over land, a variety of organization types, and limited markets. In addition, it presents huge production problems, to the point that Cuba relies almost exclusively on food imports that have steadily grown over the years (Mesa Lago 2008, 12; Peters 2009, 4). The country's economic and political institutional setup, despite few changes, has survived a number of economic crises in a way that has surprised critics. There has been much discussion over the changes that Cuba has implemented as a result of the collapse of the Soviet Union in the early 1990s, the economic and social consequences of these changes and the expectations of a further transition to a market economy, or even to a democracy. Most published research describes the reforms adopted by Cuba and their economic, social and

productive consequences, and predicts or suggests possible paths of transition based on different political or economic scenarios (Brundenius 2009, 31; Deere 1997, 649; March-Poquet 2000, 91; Xianglin 2007, 93). Another line of publications offers policy prescriptions dealing with development paths that Cuba could take (or is desired to take), but without exploring the constraints to the adoption of these changes (Alvarez 2004b, 722-733; Royce 2004, 53).

Cuba's transition is described as one with a limited number of reforms in key sectors that have been adopted in order to respond to external shocks. The reforms included a limited opening to international investments, partial dismantling of the state farms that dominated in the agricultural sector, and a monetary reform, all designed to increase the flow of foreign currency into the country and to protect the population from massive food shortages (March-Poquet 2000, 109; Xianglin 2007, 95-98). The limited reforms were enough for some economic recovery and growth, and apparently avoided a political collapse by altering the institutional framework in such a way that the political elite maintains the power by rigorously controlling who gains and who loses with the reforms (Corrales 2004, 56-57). The social services offered by the political elite to the general population serve only partially to legitimize the regime, but are not enough to avoid political unrest (Yamaoka 2004, 331-332). The government uses repression to control dissent on one side, and on the other, rewards a limited group of supporters with highly profitable business opportunities in the reformed sectors (Corrales 2004, 56-57). In the agricultural sector, the economic institutions controlling a large part of production and marketing either have changed on a limited way, or the changes have been partially reversed (de Miranda Parrondo 2005, 9-10). It is not clear what is behind these partial institutional changes and reversal of reforms, and the hypotheses advanced for the overall economy of the island do not seem to explain the evolution in the agricultural sector.

The questions addressed in this paper centre around the evolution of economic institutions in the agricultural sector of Cuba, and the reasons behind the existence of present day institutions. In order to understand this evolution, we analyze four reforms or policy changes in the agricultural sector and their significance on the political power and interests of the groups that interact in this sector. Most of these developments have been extensively described in the literature, but we want to look at them through a different lens, the one of theories of institutional change. The interest

is not only to examine the past, but also to look at the future by discussing the options that could improve the performance of the agricultural sector, and their consequences in other areas. The paper is organized as follows: First, we will present the theoretical framework used in this study. Then, the different groups that hold some type of political power in the agricultural sector will be described in terms of their characteristics and the origin of their political power. Next, several developments and reforms in the agricultural sector will be examined from the point of view of the impact these had on the power balance between the different groups in the sector. Finally, we will present concluding remarks.

2. Institutions and change in agriculture

The processes linked to institutional change have received much attention, and there is a wealth of publications dealing, for example, with the transition from a socialist to a market economy. Most of the communist countries followed reform paths that varied from changes restricted to their economic institutions, as in China and Vietnam, to others that experienced as well a radical alteration of the political institutions, as in the case of some of the Eastern European countries (Kornai 2000, 33). These transition countries, moreover, have reformed their agriculture following various pathways with contrasting results in agricultural production, economic growth and poverty in rural areas (Rozelle and Swinnen 2004, 443-445; Swinnen 1999, 658-659). China and Vietnam slowly decollectivized their rural areas, introduced private property rights over land, and promoted family based production, boosting their agricultural productivity and output and decreasing rural poverty (De Brauw *et al.* 2004, 457-458; Mcmillan and Naughton 1992, 137-138; Pingali and Xuan 1992, 697-699). On the other hand, the former Soviet Union and the Eastern European countries experienced different degrees of rapid changes to their land property regimes and opening of markets that led to an initial slump in output followed by improvements in productivity (Csaki and Lerman 1997, 443-445; Rozelle and Swinnen 2004, 449).

The theoretical framework used in this study stresses the interplay between political and economic institutions. Political institutions and the power balance in societies influence which economic institutions will be selected. That is because the economic institutions govern not only the creation of wealth, but also its distribution between different groups (Acemoglu *et al.* 2004, 2-10; Acemoglu and Robinson 2008, 268). In

highly unequal circumstances, the elite will try to choose a set of economic institutions that allocates most of the created wealth to them, and not necessarily the ones that maximize total wealth (Acemoglu *et al.* 2004, 2-10; Acemoglu and Robinson 2008, 268; Bates 1998, 237-239). These resources and wealth are not only important in the present, but they also carry with them the future potential of maintaining their political power. This mechanism means that the balance of political power will determine not only the economic institutions but also the political institutions in the future (Acemoglu *et al.* 2004, 2-10; Acemoglu and Robinson 2008, 268).

On the other hand, changes in the economic institutions, economic crises or the introduction of technological innovations can cause alterations in the power balance that trigger changes in the political sphere (Acemoglu *et al.* 2004, 6; Geddes 1999, 119, 134-135; Haggard and Kaufman 1997, 266-269). Political elites will try to block changes in the economic institutions or the introduction of new technologies, if they threaten their political power and their future economic advantages (Acemoglu and Robinson 2000, 126-130). Moreover, the political elites must garner support to avoid being overthrown during crises. For example, during economic crises, the support of the regime will not depend on the economic growth or performance per se, but on how much the regime is able to give to its supporters, while maintaining their coercive capacity (Geddes 1999, 138).

Political elites are not the only actors in the policy process. Consumers, farmers and other groups outside agriculture can push for, support or block reforms if they have enough political power and they consider that these reforms will benefit (or hurt) their interests. Moreover, even a group with little influence can successfully push for changes if no other group opposes it (Swinnen 2009, 1528-1529). It has been argued that the reforms in the Soviet Union's agricultural sector were blocked by farm workers that feared their income would decrease if the state farms were turned into worker-owned collectives. On the other side, Chinese collective workers pushed for reforms because it would mean an improvement in their access to food (Rozelle and Swinnen 2009, 280-281).

What determines the political power that a given group has? On one hand, political institutions such as the constitution and laws, determine the constraints and incentives of the elites and other members of a society, and result in the *de jure* political power

of these groups. On the other hand, groups that own resources also have political power, even if this *de facto* political power is not written in any law. The *de facto* political power can be expressed in the threat of revolts, and in the active or in the passive and unorganized blocking or transformation of reforms pushed by the elite (Acemoglu and Robinson 2006, 325-326; Rozelle and Swinnen 2009, 278-279; Tria Kerkvliet 2005, 234-236). For example, peasants in China and Vietnam slowly corroded the collectivization efforts by the elite, eventually making it impossible to maintain this policy. Without any organized political manifestation, the actions and omissions of these groups achieved changes at local and then higher official levels. Changes in the factions in power eventually enabled the legalization of the decollectivization in agriculture, but this happened when, for example, around 90% of Chinese villages were already in fact decollectivized (Rozelle and Swinnen 2009, 277; Tria Kerkvliet 2005, 237). The political influence and the interests of the different groups change with time due to technological innovations, major economic crises, and changes in the socio-economic characteristics of the groups (Swinnen 2009, 1528-1529).

3. Political power and the evolution of Cuba's agricultural sector

We argue that the reform path in Cuba's agricultural sector can be partly explained by changes in the political power and interests of several groups that coexist in the sector, including the political elite, the bureaucrats that control agricultural services and food distribution, the agricultural producers, and the consumers. These groups were identified using information gathered during two visits to the country (the first one from October 2007 to March 2008, and the second one in April 2009), and supplemented with published research, laws and regulations, official statistics, and newspaper articles from international, Cuban official and dissident media.

But who are the groups with political power in Cuba's agricultural sector, and which conflicts have arisen between them? The political elite has almost all the political *de jure* power. Additionally, this group controls a repressive apparatus and most of the resources in the country. The elite controls the access of its supporters to high-earning activities either in the dollarized parallel economy or in local business opportunities (Corrales 2004, 50-51). The political system of Cuba can be defined as an

authoritarian one-party regime, where only one political party is allowed. Despite the existence of a very strong leader, the party exercises at least some power over the policies of the country (Geddes 1999, 124). In the classical socialist system, power is concentrated in the hands of the communist party, and party and government function as one entity permeating and controlling all activities in the country (Kornai 1992, 33-39). The interest of the political elite is to stay in power, and can use different strategies to gain support or repress dissent (Bates 1998, 237-238; Geddes 1999, 125, 134).

The second group that calls our attention consists of bureaucrats and local cadres that are in charge of the agricultural marketing and distribution chains, both for inputs and outputs, and administratively control (totally or partially) most of the country's agricultural land. Moreover, they are suspected to have an important participation in illegal markets, as these are supplied by products diverted from official channels (Ritter 2006, 6-7). The political elite controls other groups in society through the bureaucrats, as these are in command of permissions, administrative punishment and payments of agricultural producers. Kornai (1992, 40-45) considers that the leaders, the communist party and the bureaucracy are a monolithic entity with the same interests but with power distributed hierarchically. However, it can be discussed that bureaucrats may have different interests and political *de facto* power as compared to the elite. The interests of bureaucrats and local cadres are to protect the rents and political capital they obtain from their offices (Bates 1998, 237; Rozelle and Swinnen 2009, 281-282). The political elite is interested in retaining power, and this may require improving economic conditions in order to gain or maintain political support, especially during crises. When the interests of bureaucrats and the elite are not aligned, conflicts between them may arise.

Cuba's private producers, the third group, have a political power based not only on their resources and food production potential, but also on their participation in the communist party as an organized lobby group. Private producers owned or occupied around 27% of Cuba's agricultural land in 2007, and owned almost 60% of the cattle at the end of 2009 (ONE 2009, Table 9.1; ONE 2010b, Table 2.35). Most of them are also organized in the ANAP (National Association of Small Producers), who has a representative in the highest levels of the political communist bureau. Their active and organized participation in the communist party gives producers some political *de jure*

power. Their *de facto* power is exercised by withholding, destroying or illegally selling their agricultural products, sometimes even forcing the authorities to negotiate.

The political power of the two last groups arises from very different sources. In the case of producers, it depends on the ownership or use rights over land and other productive resources, and in the case of the bureaucrats, on legal and administrative prerogatives granted by the political elite. More important even, private producers would win if reforms towards market economy are applied, while local bureaucrats would lose their political power with these reforms. The bureaucrats have therefore a strong incentive to block any changes in the direction of a market economy, and since they are responsible for the implementation of reforms defined by the political elite, they have the power to alter their functioning, to block or delay their application.

The political power of the private producers stems partly from their potential to turn other groups (especially the consumers) against the political elite. The consumers (mainly in the city of Havana) also have power over the political elite, coming from the threat of unrest voiced in the limelight of ministries and international media. This *de facto* political power is evident from the strategy of the elite to allocate more resources such as food and shops to the population of the city of Havana than to other smaller cities or rural areas, and to respond with changes in policies when threatened with revolt (Deere 1997, 661; Marshall 1998, 278, 281-282). Despite the lack of legally recognized civic or consumer groups, the support or opposition from consumers during food crises can have an important effect over the elite's actions.

Once we have an overview of who are the main groups that interact in the agricultural sector, we will analyze how the political power and the interests of these four groups have changed over time, and how these changes have affected the performance of the agricultural sector. The analysis centres on the changes in the distribution of resources between the four groups (related to their *de facto* political power) and the political institutions in the sector (related to the *de jure* political power of each group). For this analysis, we have chosen some of the main events in the agricultural sector in the last 50 years. The first one stretches over 20 years, beginning with the triumph of the 26th of July Movement and the establishment of a new communist government. During this time, the agricultural sector was reorganized and its main producer groups were defined. The second event is related to the brief legalization of open agricultural markets in the 1980s. The third event is what some authors identify as the beginning

of the transition period towards a market economy, when major changes in the agricultural sector fuelled expectations of a mass privatization of land. The last event studied is the recent and ongoing set of reforms advanced by the government from 2007 onwards.

3.1. State farms and collectivization (1960s-1970s)

The agricultural sector of Cuba has always been highly unequal and characterized by the coexistence of smallholders and big landowners. This inequality did not change with the victory of the revolution. On one side, the new elite expropriated the huge plantations and cattle farms belonging to the previous political and economic elite, in order to create large state farms. Around 400.000 workers of these farms were converted from day labourers to state employees with higher salaries and income security. On the other side, property rights over land were given to smallholders (Alvarez 2004a, 32-36; Kay 1988, 3-5). The initial promise of the revolutionaries was to distribute the expropriated land, however, the preferences for economies of scale and the need to control the resources meant that state farms were favoured over their fragmentation and the creation of a large and powerful private sector (Alvarez 2004a, 32). After the Second Agrarian Reform of 1963, between 70 and 76% of the land was under state control, while private smallholders controlled the remaining 24-30% (Kay 1988, 5).

Smallholders and landless peasants actively participated in or supported the guerrilla struggle that led the present government to power. Their political support was rewarded with land property rights and a radical improvement of the living conditions and education opportunities in the rural areas. Moreover, they were given political voice through an organization of small farmers. The National Association of Small Producers (ANAP) was created in 1961, in part as a pressure group to push for the improvement of the rural communities and to protect the interests of its members (Alvarez 2004a, 39; Álvarez Licea 2001, 83-84). However, members are required to support the revolutionary government, and ANAP is at the same time a lobby group that advances the political and economic policies of the government, as is usual in classic socialist systems (Alvarez 2004a, 39; Blutstein *et al.* 1971, 316-317; Kornai 1992, 39-40, 45).

Despite the fact that authorities formally recognized the private land rights of smallholders and they were given a political voice, other forms of controlling this sector were soon devised. This was especially true in the case of perceived political opponents, when the state expropriated land and evicted peasants to punish active or passive political dissent (Alvarez 2004a, 37-38; González 2003, 700-701; Kay 1988, 7). The state also pushed for the incorporation of private producers in the large state farm system, either by inviting them to join nearby farms, or by forced sales (González 2003, 700-701; Kay 1988, 6-7). The state retained the rights of first offer over land, and limited inheritance to family members who had worked the land previously (Kay 1988, 21-22; Pavó Acosta 2008, 3-4). Moreover, the family plots for home consumption of state farm workers were reduced (Kay 1988, 6).

The political elite also promoted the association of the smallholders in credit and service cooperatives (CCS) and collective farms (CPA), as these organizations were easier to monitor and control (Kay 1988, 20-22). Moreover, all commerce and services, including agricultural inputs and outputs, were expropriated and eventually controlled by the political elite (Blutstein *et al.* 1971, 315-316; Burchardt 2002, 57). During the 1960s and 1970s, the new elite consolidated its political power with the help of the bureaucrats that came to have control of most of the country's economic activities through planning and assignment of resources. The bureaucrats and the communist party also served the purposes of controlling the society and repressing political dissent (Dilla 1999, 230-231). The smallholders were forced to sell their produce to the state at low prices. Credits, agricultural inputs, machinery and access to new technologies like irrigation were used as incentives to push farmers to collectivize their lands. The result was that dispersed farmers and CCSs had less access to production resources than CPAs, while state farms received the majority of the investments (Alvarez and Puerta 1994, 1665; González 2003, 701). These measures had the intention of limiting the political power of private producers *vis-à-vis* the state by decreasing their property and user rights over their land and produce, and by limiting their potential to grow and accumulate wealth.

Which impacts did these changes have on agricultural production? The first years of the new government saw a slump in the output of almost all crops, while cattle was slaughtered due to the increased land tenure insecurity. Production eventually recovered, as large investments were made on mechanization and modernization of

production (Blutstein *et al.* 1971, 308-313; Kay 1988, 33-34). Despite the efforts of the state to suppress private farming, the percentage of agricultural land in private lands (including dispersed farmers, CCSs and CPAs) oscillated around 20% until the early 1990s. One of the reasons may be that even with limited access to production resources and services, the non-state sector consistently outdid the state farms in terms of productivity even when state farms had most of the resources and better technology. Private production fed not only the state's food distribution system, especially with vegetables, fruits, roots and tubers, but also the export markets of sugarcane, coffee, and tobacco (Alvarez and Puerta 1994, 1664-1670, 1672-1673; Deere and Meurs 1992, 829; González 2003, 702-703). The political elite was willing to sacrifice part of this production potential in order to constrain the accumulation of political power and wealth by the private farmers. However, they were obviously not prepared to force the collectivization or the expropriation of all the land, as other communist countries did with tragic consequences (Kornai 1992, 77-78).

In summary, the smallholders gained political power by the recognition of their rights over land and their organization in ANAP, but the political elite tried repeatedly to minimize this power by limiting these property rights using expropriation and collectivization, and by curtailing both the productive potential of the farmers and their re-investment capacity. The state farm workers (previously part-time labourers in the private large plantations and farms) improved their wellbeing and security when they turned into state employees, but did not gain any political power as this was transferred to the elite and the bureaucracy. The bureaucracy came to have control over all production decision making and the distribution of benefits to other producers. The state farm system, despite their preferential access to resources and technology, was less productive than the private farmers.

3.2. Free peasant's agricultural markets –MLC– (1980s)

The first experiment of the Cuban communist government with free markets started in 1980, and lasted only 6 years. The Free Peasant's Markets (MLC) were restricted to the participation of private cooperatives and smallholders that were allowed to sell their produce after honouring quotas with the state-run distribution system (Alvarez 2004a, 64; Marshall 1998, 277-278). The establishment of these markets was motivated, on one side, by the poor production of state agriculture and the stagnation

of private production during the 1970s. On the other side, there was excess monetary liquidity due to the scarcity of consumer goods and a black market with extremely high food prices. The scarcity of consumer goods, the low quality of state-produced food, and the high prices in the black market caused growing inequality and frustration in the population, and eventually led to unrest and mass emigration (Deere and Meurs 1992, 828-829; Marshall 1998, 278; Rosenberg 1992, 66). The unrest was nationally and internationally evident in 1980 as more than 10.000 persons tried to get political asylum in the Peruvian embassy, and as the government unilaterally opened the border leading to the Mariel boatlift that saw around 120.000 Cubans migrating to USA (Hoffmann 2005, 440).

A struggle within the governing elite preceded the introduction of the markets. A faction supported them as they considered that opening markets would decrease food prices in comparison with the black market, decrease excess liquidity, and stimulate private agricultural production. Provincial and national leaders, on the contrary, opposed the markets as they feared losing the control over the private sector. The conflict resulted in the opening of extremely restricted and small-scale markets (Espinosa 1995, 56; Marshall 1998, 278-279; Rosenberg 1992, 60-65).

Private producers responded very well to the opening of the MLC markets, and agricultural production, sales to the state and food quality increased dramatically as a result of improved incentives. On the other hand, the markets failed to lower the prices of agricultural goods (Alvarez 2004a, 64-65; Deere and Meurs 1992, 831; Kay 1988, 10). There is little information of the impact of the free markets in the economic performance of the private producers. However, a study conducted on 1991 found that household income was much higher for private individual farmers followed by CPA farmers, while the poorest households were those of state farm workers (Deere *et al.* 1995, 217). Regulations pertaining to land sales and the hiring of labour, as well as policies limiting the access to machinery and production resources, meant that although private producers could increase their personal wealth through the participation in the free markets, they could not improve the future production potential of their farms (Rosenberg 1992, 71).

The failure in decreasing food prices caused opposition by consumers who could not afford to buy the goods sold in these markets. Private producers and intermediaries were accused of earning large profits, increasing the opposition from the political elite

to this newly empowered group (Kay 1988, 29; Marshall 1998, 279). There was also opposition by organized CPAs to the free markets due to their "debilitating" effect on collective farms. This effect was evident as fewer farmers were willing to join the collectives as a result of improved incentives in their individual farms, against which the CPAs could not compete (Deere and Meurs 1992, 834; Kay 1988, 29).

The free markets were only eliminated in 1986, but since 1982 their functioning was affected by more bureaucratic controls and permission requirements, higher taxes and restricted participation of the CPA farms. Individual farmers were taxed more heavily and eventually all excess production of the CPAs was channelled to the state-controlled parallel market that had been functioning previously, instead of to the MLC markets (Deere and Meurs 1992, 833; Marshall 1998, 280). While the MLC were reduced, the state-controlled parallel markets received contributions from the state farms and private CPA farms. The parallel markets increased their offer of agricultural products at controlled prices, and the state avoided facing rejection by consumers when the MLC free markets were eventually closed in 1986. At the same time, production was encouraged in the politically and ideologically preferred CPA farms (Deere and Meurs 1992, 835).

The creation and elimination of the MLC markets exposed the interplay between political and economic interests in Cuba. Opponents to the markets managed to limit their scope in such a way that their functioning was greatly impaired and they could not reach their objectives of lowering food prices. They feared the empowerment of the private sector, but they also feared that factions within the elite (the so-called technocrats) would gain political power if the markets succeeded (Espinosa 1995, 54; Rosenberg 1992, 85). Was there also pressure from the agricultural producers? The ANAP initially supported the establishment of the markets, while organized CPAs were against them (Deere and Meurs 1992, 832-833; Rosenberg 1992, 65-66). However, the failure of the markets to deliver lower prices and the growing opposition by consumers meant that almost all ANAP support was withdrawn. The head of ANAP and other high-ranking officers that initially supported the markets were removed in 1985. At the end, the only ones supporting the markets were CCS, dispersed smallholders and some Cuban academicians (Espinosa 1995, 57; Rosenberg 1992, 77-78, 82).

In summary, when consumers threatened with unrest, the authorities allowed the opening of free agricultural markets in order to improve their consumption possibilities. The elite implicitly recognized that free markets lead to higher agricultural output and better quality of food and can have the potential to lower prices. However, the struggles within the political elite meant that the adopted markets were so restrictive that the MLCs markets could not lower prices although they increased both production and quality of food. The consumers' needs were therefore only partially met, and their initial support for the free markets faded. The highly controlled parallel markets were used as an alternative that, even if not completely fulfilling the consumers' needs, did not involve the transfer of political power to the private sector. Moreover, conflicts even within the agricultural producers appeared, probably caused by the fear of the CPA collective members to lose their preferential access to production resources and services due to their incapacity to compete against individual farmers.

3.3. Dismantling of state farms and opening of agricultural markets (1990s-2000s)

Agricultural production in Cuba had accumulated deficiencies due to incentive problems and the lack of labour for agriculture, leading to food shortages in the late 1980s. The state farms proved to be especially problematic, as their output decreased even when they had most of the land and production resources (Alvarez 2004a, 66, 69-72). On top of this, a significant blow to the external sector of Cuba came about with the collapse of its main trading partners, the Soviet Union and the Council for Mutual Economic Assistance. This external shock caused a deep economic crisis, hitting the agricultural sector particularly hard as the state farm system depended on imported inputs, machinery, and fuel. The consequences for the population were grave, as food production and imports collapsed, causing a serious lack of food and spiralling inflation (Xianglin 2007, 94-96). Public unrest increased rapidly, including rarely seen public protests in the coastline avenue of Havana – the *Malecón* – (Hoffmann 2005, 445; Marshall 1998, 281) and the emigration towards USA of over 50.000 Cubans in makeshift rafts from 1990 to 1994, of which over 37.000 were intercepted and returned to Cuba (Hoffmann 2005, 441, 445). Food consumption decreased causing widespread weight loss and nutrition deficiencies (Alvarez 2004a, 161-162; Funes-Monzote 2008, 25). It is estimated that even in the late 1990s,

average energy and protein consumption was below the levels recommend by the Food and Agriculture Organization (Togores González 2003, 12).

The profound crisis of the country in the years 1993 and 1994 carried with it the threat of a radical political change. The survival of the communist government may have seemed surprising, but one-party regimes are usually more resilient to economic shocks than other types of authoritarian regimes (Geddes 1999, 139-140). The Cuban regime responded by giving their supporters access and control over highly profitable business opportunities, and reduced the number of benefited supporters, thus making their support extremely lucrative (Corrales 2004, 56). However, shielding itself against dissent inside the party or the military was not enough. The increased access to highly profitable economic activities and a monetary reform produced a new group of wealthy consumers that were catered for with hard currency shops (Xianglin 2007, 97). The majority of the consumers, however, were in danger of a famine.

The initial response of the government in the agricultural sector was to continue a "rectification process" started in 1986, and to introduce small changes in the state farm system from 1990 to 1992 with the objective of maintaining production and productivity (Deere and Meurs 1992, 836; Deere 1997, 651-652). This strategy, where the government seeks to "perfect" the system instead of changing its basic principles, has been identified as a common initial response to the accumulation of economic problems in classical socialism (Kornai 1992, 396-397). These partial solutions did not increase food and agricultural production in the face of the abrupt decrease of imported inputs and fuel. The elite was eventually forced to search for radical solutions that included sacrificing some of the ideological premises held so dearly before, and had to start dismantling the state farm system (Deere 1997, 651-652).

Many of the large and inefficient state farms were broken up in 1993 and transformed in worker-owned collective farms called UBPC (Basic Units of Cooperative Production). The state avoided turning the state farms into individual producers, like China and Vietnam had done before, and instead chose the second best option: to imitate the CPA collective farms. These private collectives, although less productive than CCS and dispersed farmers, were easier to monitor and control, and had shown consistently better outcomes than state farms even during the first years of the crisis (Alvarez 2004a, 41-42; Deere 1997, 651-652). Moreover, collective farming was better aligned with the communist ideology than individual property (López Labrada

2007, 30-34). The new collective farms only had usufruct rights over the land, were not represented by any organization, and were tightly controlled by the remaining state farms (Decree-Law Nr. 142 1993).

Private producers had previously demonstrated that they could cope much better with the crisis and that they were more productive than the state sector even with limited production inputs and services (Alvarez and Puerta 1994, 1664-1670; González 2003, 702-703). In addition to the creation of the UBPC collective farms, the government reversed the land expropriation drives of the 1960s and 1970s, and not only actively promoted the creation of household and collective plots for home consumption, but also gave away unused state land in usufruct to individuals for commercial and subsistence production (Deere 1997, 655; Enríquez 2000, 7; Xianglin 2007, 97). Producers of tobacco, coffee, cacao and other crops were given small areas with an average of 1,8 Ha per producer (Nova Gonzalez 2008, 4).

Moreover, in 1994 agricultural markets were opened that were less constrained than the MLCs of the 1980s – the new markets, for example, allowed all producers to participate once they had fulfilled their obligations with the state distribution agency, and a higher variety of products and processed food were allowed. In addition, intermediaries were legally recognized. To stimulate the influx of food to the capital, sales in the city of Havana were taxed 5% of the gross value of the goods brought to the market, while sales in the rest of the country were taxed 15% (Alvarez 2004a, 100; Marshall 1998, 281-282). The newly opened markets initially decreased the prices and flooded the capital city with produce (Deere 1997, 662-663). However, they were still restricted by the prohibition to sell milk, beef, eggs, and other high demand products, and the potential food supply was reduced by the high quotas demanded by the state to UBPC and CPA collective producers before they received permission to sell in these markets. These factors translated in an insufficient food supply which kept the prices high. An additional market, supplied by state and UBPC producers and with fixed maximum prices, was opened by the state in 1999 to lower the prices (Alvarez 2004a, 100-108).

The reforms achieved some recovery in the agricultural sector as compared to the 1993-1994 crisis levels (González 2003, 725). However, in 2007 production levels for most sectors had not recovered to 1989 levels, including sugar (86% lower), cattle (24% less cattle heads), eggs (12% less) and milk (57% less). The only sector that

experienced growth was the production of tubers, which more than doubled in the period 1989-2007 (Mesa Lago 2008, 5, 8-9). The new UBPC farms have suffered from low productivity and profitability since their creation (Alvarez 2005, 125-134; López Labrada 2007, 43, 48-57). Moreover, there is some evidence that the majority of the new individual usufructuaries and UBPC workers are poor, indicating that they were not able to accumulate wealth as a result of the reforms (Leyva Remón 2006, 98-105). Why did the reforms fail to increase production?

There is evidence that the reforms were altered by the bureaucracy. The reforms weakened the *de facto* political power of the bureaucrats as around 40% of the land they managed was transformed in UBPC farms, and part of their monopoly in marketing and distribution was transferred to free markets. The reforms threatened to take away the rents they could extract out of controlling producers, as well as their access to side benefits. In order to safeguard some of the previous power balance, the new UBPCs were kept under the supervision of state farms (renamed enterprises), but the intervention of the bureaucracy in the new collective farms grew and was eventually identified as a factor limiting their performance (López Labrada 2007, 79-81).

The study carried out by the authors on UBPC cattle farms in 2007 and 2008 showed some of the alterations of the reforms made by the bureaucracy. These alterations affected the administrative functioning of the UBPC farms and lowered their incentives. For example, although the law states that UBPC collectives are independent in voting for their own leaders and administrators (Decree-Law Nr. 142 1993; Resolution Nr. 629 2004), state enterprises directly selected the administrators of at least two of the UBPC visited. Moreover, state enterprises did not allow the UBPC farms to include pensioners in their work force or administration. One of the visited UBPC farms hired experts illegally, while another one paid the pensioners informally in kind. The law also states that UBPC farms can sell their production surplus in agricultural markets once they have honoured state quotas (Decree-Law Nr. 142 1993; Resolution Nr. 629 2004), however, 16 out of 30 interviewed UBPC farms were not given permissions to sell their surplus production. Another central point of the law regarding the UBPC farms is the correspondence between the workers' effort and the salary they receive, but in practice, only certain maximum salaries were permitted.

Yet another aspect modified by the bureaucracy implies not only reduced incentives for UBPC workers, but may also endanger their food access. The self-consumption collective plots that were the centre of the reform in the 1990s have been restricted by the bureaucrats controlling inputs, credits and the rationed food distribution system. The law states that the UBPC has the right to produce food for home consumption of its workers in a collective plot (Decree-Law Nr. 142 1993; Resolution Nr. 629 2004). Despite this, a large percentage of the production for "home consumption" (40% in average, but up to 100% in two of the farms visited) had to be sold to the state food distribution system. Moreover, UBPC farms were not given permissions to invest in their collective home consumption activities by buying machinery or building infrastructure, nor were they given credits to start or expand food production activities.

In summary, the balance of power in the agricultural sector changed in the early 1990s, when the private producers gained relative importance for the survival of the elite in the face of a serious food crisis. The interest of the political elite was to increase agricultural production (especially food) and economic efficiency in order to avoid public unrest that would endanger their permanence in power. The ruling elite recognized that private use rights over land are superior to collective or state property. However, in order to keep some of its power over the land while at the same time boosting production, the producers were offered only partial land rights. The state dependent UBPC farms, moreover, were not allowed to enter the ANAP and therefore had no political voice. In this way, reforms were never complete as the elite tried to control and limit the accumulation of power by the private producers and the new UBPC farms. At the same time, bureaucrats used their *de facto* power to block, alter and even reverse the reforms in order to stop their loss of power.

3.4. Raul Castro's presidency and reforms (2007-2010)

The first decade of the new millennium encountered challenges for Cuba's political elite both in the economic and the political spheres. Agricultural production stagnated or even decreased for most products and the costs for importing food grew due to the sudden increase of world food prices. UBPC farms needed constant financial support by the state to cover their losses. Moreover, the organized opposition proposed changes using their constitutional rights, to which the government responded with

repression (HRW 2009, 41-44). And in 2006, Fidel Castro fell sick and was succeeded by his brother, Raúl Castro, who was formally elected president in 2008 by the National Assembly. Internal struggles erupted between factions in the communist party, leading to the removal of top figures (Ravsberg 2009, 1-3).

Agriculture was displaced in importance by services and tourism, and whereas at the end of the 1960s, agriculture accounted for around half of the gross domestic product (GDP) and 90% of exports, in 2007 it accounted for less than 5% of the GDP (Blutstein *et al.* 1971, 299; Mesa Lago 2008, 9). However, food scarcity due to low agricultural production, added to increased costs for importing food, have made agricultural reform a priority and have led to the announcement of several changes (Peters 2009, 4; Rodríguez 2008, 1-4). In a recent speech, Raúl Castro recognizes the potential for food production that individual farmers have, and mentions the need of changing the "organizational forms" in order to let producers sell their surplus in markets ruled by offer and demand (Castro Ruz 2009, 3).

The reforms announced include improving the incentives for agricultural production by settling long standing debts with farmers and raising official prices. Beginning in July 2007, the official prices for some of the most controlled products (beef, milk, and more recently, coffee) were greatly increased (Peters 2009, 5). In the case of the UBPC farms visited by the authors, the average price for milk paid by the state increased from 0.99 to 2.45 Cuban pesos per litre, while beef increased from 2.30 to 5.06 pesos per Kg (live weight). Additionally, the state has started granting usufruct rights over idle state land to new and established private farmers and UBPCs (Decree-Law Nr. 259 2008). There is so far no official information on changes in the land tenure structure of the country, but according to official news articles, almost one million hectares have been handed to natural and legal persons up to 2010 (Puig Meneses and Varela Pérez 2010, 2). This would mean that private producers may have increased the proportion of Cuba's agricultural land under their control from 27% in 2007 to between 30% and 41% in 2010 (Marino Murillo 2010, 2; ONE 2010a, Table 9.1; Pérez Sáez *et al.* 2010, 1). The reforms will also improve incentives for UBPC producers by formally eliminating caps on the maximum salary that workers are allowed to earn (Resolution Nr. 09/2008; Rodríguez 2008, 1).

The most interesting of many of these changes is that their objective seems to be to erode the *de facto* power of the bureaucrats, in order to enhance production of UBPC

and private producers. According to a high ranking official of the Ministry of Agriculture met on the 06 February and 25 March, 2008, state officials will be moved to different towns to limit their influence with producers. Additionally, state enterprises in all municipalities in the country will be reorganized to decrease their control over agricultural producers, particularly UBPC farms. The reorganization includes closing and merging state enterprises, as well as laying-off up to 40.000 redundant employees (Pérez Cabrera 2010, 1). These changes translate into a partial liberalization of certain activities. For example, the legalization of the direct sale of milk to consumers and retailers is aimed at lowering transport costs and storage losses (Carrobello 2007, 2-4). Other changes include the slow elimination of products from the rationing system and their liberalization in agricultural markets (Castro Ruz 2008, 6). The reforms will create new shops for inputs and production resources where producers can choose freely what to buy, substituting the centralized allocation (Marino Murillo 2010, 3).

The reforms not only weaken the political power of the bureaucrats, but are also transferring this power to the producers as their increased presence in the official media implies. The ANAP has been very vocal in its critique against the bureaucracy and these critiques have appeared repeatedly in official newspaper articles (Pérez Sáez *et al.* 2010). However, information collected by the authors during February to March 2008 and April 2009 suggest that two associations of producers and academicians are also gaining strength in lobbying for changes with the political elite. The Cuban Associations of Livestock Producers (ACPA) and of Agricultural and Forestry Technicians (ACTAF) group together private, state and UBPC producers, as well as scientists and technicians. Both associations are local counterparts of international non governmental organizations (NGO) working for rural development in the country. Their local visibility stems from the implementation of projects that not only demonstrate technical and organizational improvements to the elite, but also bring foreign capital to Cuba.

So far the reforms have failed in increasing agricultural production, as has been publicly recognized (Nova Gonzalez 2010, 1-3; ONE 2010c, 3). It would seem that the bureaucracy is blocking the reforms by slowing down administrative processes, harassing producers to offset benefits gained by the reform, or substituting eliminated bureaucratic controls for new ones. Dissident and government newspaper articles

accuse the bureaucrats of numerous actions that have resulted in decreased agricultural production and food availability in the markets of the city of Havana. These actions include bombarding the new land usufructuaries with numerous permissions and fines, slowing down the granting of land use titles, as well as placing a multitude of restrictions to the transport and sales of agricultural products (Garve 2010, 1; Rodríguez 2010, 1-2; Varela Pérez 2010a, 1-3; Varela Pérez 2010b, 1-2).

In summary, the recent reforms seem to point to a strategy of decreasing the power and influence of the bureaucracy (without eliminating it completely), and at the same time, increasing the importance of producers. Agricultural producers are being promoted by allocating more land to private farming, improving the incentives of private and UBPC producers and increasing the voice of ANAP and other producer associations in official media and decision making. While input markets apparently will be liberalized, output markets will continue being restricted to market surplus after contracted sales to the state have been satisfied. It is not known if the food rationing system supplied through these contracted sales will be totally eliminated, but current changes point to a progressive liberalization of many food items. The bureaucracy is accused of blocking the reforms, especially the reorganization of agricultural enterprises and the distribution of idle state land.

4. Summary and conclusions

We consider that the agricultural sector of Cuba is very interesting because political power is not in the hands of only one group. Private producers, for example, have managed to increase their wealth and resources and are now owners of around a third of the total agricultural land in Cuba. Many of them are organized under an association that has representatives in the highest circles of the government. The agricultural sector is marked by permanent conflicts caused by the coexistence of this group, defined by their strong interests on the establishment of free markets and full property rights over their land and other production resources, with other groups that have opposing interests, including the political elite and bureaucrats.

The political elite, despite knowing that secure property rights and free markets can improve agricultural production, has failed to reform these inefficient institutions. On one hand, this is due to the fact that reforms would change the power balance between the groups. On the other hand, there has not been enough pressure to change these

inefficient institutions or the elite has found alternative ways to respond to the pressure. Property rights over land and free markets are only partially adopted when external shocks or internal conditions result in threats to the elite's permanence in power. Consumer unrest has been counteracted by suppressing public opinion and voice by civic groups and permitting the mass emigration of dissidents. Moreover, the elite has found various options to fulfil the needs of at least a fraction of the consumers. These alternative options include substitute institutions like state controlled markets targeting consumers that have access to remittances or income in hard currency.

The study of the evolution of the agricultural sector of Cuba in the past decades show that reforms are at danger of being blocked if they reduce the political power of any group. Among the potential political losers we find not only the political elite, but also the bureaucrats and some of the private producers. For example, some private producers became political losers and opposed open markets due to their lower productivity. However, in more recent periods, the political losers opposing the reforms seem to be the bureaucrats. The change to a more efficient agriculture would reduce their influence on markets and on other producers. The reforms would increase the power of private agricultural producers and can give *de facto* or *de jure* political power to new groups, such as the UBPC farms, new land usufructuaries, or private transporters and distributors of agricultural produce and inputs.

The recently announced reforms suggest that the political elite has chosen to sacrifice the agricultural bureaucracy in order to increase the productivity of private and UBPC producers. The reforms include massive lay-offs, the elimination or merging of state farms and enterprises and the gradual elimination of the food rationing system. While these appear to be steps in the right direction on the reform pathway, it is suggested that a successful reform of the agricultural sector might additionally require a compromise between the political elite and various stakeholders. The potential negative effects of the reforms on the bureaucracy, consumers and producers could be minimized by allowing their active participation in the shaping of these reforms. Giving voice to the consumers and the civic society would be an important step in this direction. Additionally, the bureaucracy and other political losers might be given a compensation for their losses in terms of income. Such compensations (for example for early retirement, or training for alternative jobs in an emerging private agricultural

sector) could be financed by taxes on additional income generated from the reforms. Such a compromise between the elite and other stakeholders would reduce the opposition to the reforms, and can also prevent the impoverishment among political losers and other groups that will not (at least initially) gain from the reform process. The remarkable social security system that Cuba has managed to maintain even during economic crises should not be tarnished by ignoring the consequences of reforms in terms of poverty and vulnerability, especially in the face of the possible disappearance of the food rationing system and the lay-off of public employees.

Cuba ought to consider a gradual reform process toward liberalized markets and improved property rights while retaining major food and social security functions and by introducing progressive taxation systems. The experiences in transition countries of Eastern Europe, China and Vietnam can offer insights on the possibilities and limits of reform processes (Rozelle and Swinnen 2004). These reforms do not always entail the radical change in political structures. The governments of Vietnam and China have quite successfully retained their political power while providing time-bound land use rights to farmers and liberalizing markets (Lau *et al.* 2000; Rozelle and Swinnen 2004). Cuba could also benefit from the accumulated experience of these two countries regarding the effects of reforms on poverty and inequality (Luong and Unger 1998).

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CHAPTER 5. SUMMARY AND DISCUSSION OF RESULTS

This dissertation studies the institutions of the agricultural sector of Cuba, their impacts in terms of production and food security, and their evolution. The results are presented in three research papers that will be summarized below.

The first paper (Chapter 2) describes the institutional framework of Cuba's cattle sector and evaluates the impact it has on agricultural production by using secondary and primary data. It is found that the cattle sector of Cuba has a complex structure and is governed by a number of institutions that have been shown to lead to low productivity in other countries. Three main producer types can be recognized based on their property rights over land and cattle, and their organizational dependence from the state. The producer types are identified as state farms; state-dependent collective farms (called *Unidades Básicas de Producción Cooperativa*, or Basic Units of Cooperative Production UBPC) with land in usufruct; and private smallholders with different degrees of land tenure and a higher independence from the state. The state and UBPC producers are found in this research to underuse their land, while private producers have smaller and more diversified farms, but apparently tend to overuse their land as well as communal pastures. Private producers have a better access to illegal milk (and maybe beef) markets that offer much higher prices than the legal markets forced upon state and UBPC producers. However, the costs for participating in the illegal markets, especially for beef, are very high as producers face the threat of lengthy jail convictions, fines, confiscation and forced sale of their livestock.

It was found that property rights over land and cattle are incomplete and insecure in Cuba. The UBPC producers have limited rights to residual income from cattle

production, while state producers have practically none and instead have economic returns due to the administrative control of other producers. Private producers have higher benefits from their cattle production activities through home consumption and access to illegal milk markets. However, private producers' ownership of cattle is more insecure as compared with state or UBPC producers. The cattle sector of Cuba is also characterized by a lack of mechanisms to enter and (in the case of state and UBPC farms) to exit the cattle production sector. This causes an overall decrease of efficiency by forbidding efficient producers to enter the sector or to increase their farms, and on the other hand, by not allowing the worst producers to exit production.

According to official statistical reports, it is clear that private producers are more successful than UBPC collectives and state farms as they are the only ones showing a constant increase of the herd size in the last years. The fact that at least one producer type is able to increase its herd puts in doubt the prevailing idea that production problems of the sector are a result of technical problems, lack of resources or climatic factors. The mechanisms and results presented in this study are only a first exploration of the topic due to the lack of primary research on production, institutions, informal markets and prices. The results presented in the first paper, even if restricted to the cattle sector, could inform the study of other productive sectors in Cuba, especially those that share similarly restricted access to input and output markets.

Whereas state and private producers remain largely unexplored, the second paper presented in this dissertation covers some of the knowledge gaps regarding the institutions and performance of UBPC collective producers in the cattle sector. This paper (Chapter 3) contributes to the literature in several ways. On the one hand, it is one of only two known analyses that quantify household expenditures in Cuba (the other study was carried out in the city of Havana in 2001), and the first to study the frequency and diversity of food consumption among rural households in the country. Furthermore, this study evaluates the incentives of workers at UBPC collective farms and concludes on their impact on supply to the food rationing system of Cuba, as well as on the food security of the households of UBPC workers. Despite the fact that the primary data used in this research suffers from representativeness problems due to the intervention of authorities during the process aimed at drawing a truly random, representative household sample for my research, its analysis is still considered to be very valuable due to the current lack of quantitative and qualitative studies focusing

on Cuban rural households. Moreover, the results bring to light several facts and policy implications that have been written about but rarely documented and supported through primary data and empirical evidence.

Using principal component analysis (PCA) to investigate several dimensions of poverty in Cuban rural households, the second paper finds that relative poverty, diversity in food consumption, and self-reported quality of life in the studied households is mainly characterized by differences in the quality and frequency of food items that are not supplied by the state's food rationing system, but come from individual or collective food production for home consumption. Moreover, the results from household and collective farm data analysis, as well as in-depth interviews with managers and workers of collective farms, show that relative poverty, food diversity, and quality of life have no association at all with the economic or productive performance in the main activities (in this case, beef and milk) of the UBPC farms. This lack of association exposes severe incentive problems in collective agricultural production, as workers are not rewarded for better or more work in the UBPC farms. At the same time, both collective and private food production compete for labour and resources with beef and milk production in the UBPC collective. These incentive problems hurt the state's food rationing system that should be supplied with milk and beef, and therefore the food availability for the Cuban population. More grave still is the fact that the food security of the UBPC workers is also hurt when the land these workers can devote to private and collective food production for home consumption is restricted by the state as a way to "protect" milk and beef production.

The second paper derives a number of conclusions for food and agricultural policy and calls for more socio-economic research in Cuba that might provide useful information for the reform pathway in food policy of the Cuban government. To correct the incentive problems exposed in these results, the Cuban government might consider accelerating the emerging reforms towards a system with greater private incentives and liberalized markets for land, labour, and agricultural commodities, especially food. But, are these reforms possible? Or will they be reversed like in previous periods? To address these questions, the third paper explores the evolution of the economic institutions in the agricultural sector of Cuba.

The third paper (Chapter 4) shows how the agricultural sector of the country is marked by permanent conflicts that arise between private producers, defined by their

strong interests for the establishment of free markets and full property rights over their land and production resources, and other actors that have opposing interests, including the political elite and bureaucrats that control agricultural production and marketing. Despite knowing that secure property rights and free markets can improve agricultural production (as is evident in several public speeches), the political elite has failed to reform the sector's inefficient institutions because these would increase the wealth and political power of private producers. In addition, the failure to change these institutions comes about because there has not been enough pressure from consumers to change the inefficient institutions. Apart from suppressing public opinion and voice by civic groups, or allowing mass emigrations, the elite seems to have also found alternative ways to respond to the pressure of (mainly urban) consumers. These include substitute institutions like state controlled markets supplied by imported food and special shops for hard currency.

Property rights over land and market incentives for producers, traders and consumers alike have been only partially recognized in Cuba and solely during times of extreme crises when external shocks or internal conditions resulted in threats to the elite's permanence in power. However, these half hearted reforms have been reversed whenever the pressure from consumers over the elite decreases, or when the bureaucracy or other groups have blocked or opposed the reforms as their political power is weakened by these changes. Clearly, a more efficient agriculture based on liberalized markets and private property rights would increase the power of most of the private agricultural producers, and also give political power to new and emerging groups, such as the UBPC farmers, land usufructuaries, or private transporters and distributors of agricultural produce and inputs. This political power redistribution would occur at the expense of the bureaucracy in state farms and agricultural or food distribution state enterprises, but the less productive private producers are also potential losers in the reforms. These political actors voice their opposition or support to reforms through legal representatives as in the case of private producers (associations of farmers), or, in the case of the bureaucracy, through organized or unorganized actions that cause the delay, reversal or alteration of the reforms.

The recently announced reforms suggest that the political elite has chosen to sacrifice the agricultural bureaucracy with massive lay-offs, the elimination or merging of state farms and enterprises and the gradual elimination of the food rationing system. While

these appear to be certainly steps in the right direction on the reform pathway, it remains to be seen whether these reforms are being implemented and defended by the elite. Moreover, the results presented in this paper suggest that to increase agricultural production and decrease food losses without the danger of political opposition and the blocking of reforms, a political compromise might be needed between the elite and other political actors. The bureaucracy and other groups may need to be given a compensation for their losses in terms of income, business opportunities, and political capital. Such compensations (for example for early retirement, training for alternative jobs in an emerging private agricultural sector) could be financed by taxes on additional income generated from a liberalization of agricultural input and output markets and the recognition of property rights in land use and agricultural and food marketing. Cuba may as well carefully weigh the consequences of reforms in terms of poverty and vulnerability if the country does not want to tarnish its remarkable social security system. These consequences might be especially important among the political losers and among those labourers, farmers and consumers that will not (at least initially) gain from the reform process.

Outlook for research

The results presented in this dissertation leave more questions open than the ones it answers. Cuba, with its mixture of producer types, offers many possibilities to explore the effects of institutions on productivity, resource use, investments, or risk attitudes. But this is not only an opportunity, but also a necessity if agricultural problems will be solved. Since most of the agricultural research in Cuba is based on the examination of highly aggregated official statistics (Nova Gonzalez 2008) or is carried out under experimental conditions (Funes-Monzote 2008), the results lack the detailed information needed in order to evaluate the effects of the institutional framework on the various types of producers. One of the topics that should be further explored is, for example, the study of differences among private producers caused by their variety in land tenure, farm size, experience as farmers (traditional farmers as compared to new usufructuaries), and degrees of cooperation (from dispersed and landless farmers, to credit and service cooperatives or collective farms). Another topic that calls for further research is the use of penal legislation to control “cattle crimes” and its impact on livestock production costs, as well as in the illegal trade of beef.

However, the focus should not stay on production alone. The further study of its link with rural poverty, food security and nutrition are vital for the much needed policy reforms if the country wants to decrease its dependence on imported food while maintaining its social achievements. Poverty studies in Cuba are limited to income calculations based on either primary or secondary information on public or UBPC salaries, pensions and other permitted sources of income (Añé Aguiloche 2005; Leyva Remón 2006; Togores González 2004). However, the results obtained in my research show that rural households derive an important share of their income from other sources including home production for consumption and sale. These activities (and probably others as yet unknown) may be of great importance in defining poverty and inequality at household level as well as indicate a huge potential under improved property rights and liberalized markets, and they should therefore be further studied, especially in the poor rural areas. By disregarding all "unofficial" income sources, the income at household level is underestimated, main income sources overlooked and promising pathways for agricultural and rural development in Cuba are ignored.

Moreover, I consider that the agricultural sector of Cuba is extremely interesting because political and economic power are not in the hands of only one group. The coexistence of highly profitable pockets (for example in vegetable production in the outskirts of the city of Havana) and highly controlled and inefficient sectors provides a laboratory to evaluate theories of institutional change and political interactions.

Outlook for development aid

The findings presented in the three papers point to major problems in many rural development projects aimed at improving agricultural production in Cuba. I will describe these problems and propose some alternative paths that could, in my view, result in more sustainable and positive results.

Differences between producers

In the project used as a case study, as well as in others observed during data collection, it was apparent that rural development projects tended to treat private and UBPC producers as if their production problems were the same: lack of resources, technology, or training. However, my research results and the examination of secondary sources point to deep differences between these producers and the

challenges and opportunities they face. Based on secondary information, it seems that traditional private producers need technological and financial support in order to improve their productivity with their limited resources. In their case, the NGOs would need to function as service and input suppliers, substituting or complementing the state enterprises. On the other hand, the little information published regarding new land usufructuaries seems to indicate their need of support, but without further research it is not possible to know whether their apparent disadvantages stem from lack of resources, technology, or training in production and marketing.

The UBPC farms have completely different problems when compared with traditional or new private producers. The Welthungerhilfe project has a very good strategy to deal with the weaknesses of the UBPC farms, but some of their suppositions regarding the households are incorrect. The project is based on the – at first sight seemingly logic – idea that increasing the economic performance of the UBPC farm will result in an improvement of the living conditions of the workers and their families. This, however, does not hold true due to the legal regulations and informal rules that govern the UBPC's production and the distribution of their income. Moreover, any improvements in the UBPC production will probably not be sustainable once the project or the support stops due to pervasive incentive problems as the root cause that the project does not openly seek to change. In order to address the incentive structure – perhaps in a politically accepted way–, the NGO should better explore the needs of the UBPC workers and find ways to connect their wellbeing – for example via incentives for better or more work and responsibility – with the productive objectives of the UBPC farm. The current changes addressed by the NGO in seeking to open up private markets for UBPC produce is only effective if the workers participate in the gain from private marketing.

Losers from reforms and alternative livelihoods

The rural development project observed in Cuba focuses on producers as its main targets, however I consider that the identification of other actors in the agricultural sector that are expected to lose with reforms and the careful examination of their needs and opportunities should be a priority. For example, most of the rural development projects either ignore the state enterprises and farms, or treat them as input and service suppliers (like the Welthungerhilfe project). The bureaucrats that

control production resources, distribution and marketing of agricultural produce have a pivotal role in the present day functioning and future prospects of change of the agricultural sector. Moreover, recent official messages suggest that many will be made redundant if reforms to improve agriculture are implemented. This will put their living standards at risk, and they will, quite understandably, try to block these reforms. While it seems the government has no plan for the bureaucracy of state enterprises and farms during the present reform period, the NGOs could very well contribute by offering alternative occupations for the workers that will be laid-off, or even for the whole state enterprises. This could not only facilitate the transition to a more productive agriculture by decreasing the political opposition, but would also avoid the creation of more poverty and food insecurity in the country.

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ANNEXES

Mercedes I. Jaffé L. • Curriculum Vitae • June 2010

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Education

Since 2007	Universität Hohenheim, Germany. **Ph. D. candidate** in Agricultural Sciences at the Institute 490a: Rural Development Theory and Policy, Supervised by Prof. Dr. Zeller
2003 - 2005	Universität Hohenheim, Germany. **M. Sc.** in Agricultural Sciences, Food Security and Natural Resource Management in the Tropics and Subtropics (3.60 / 4), ranked 1st from 31 graduates. M.Sc. thesis: "Impact of cooperative membership on family income of smallholders: The case of coffee farmers in Venezuela". Supervised by Prof. Dr. W. Doppler (A-)
1997 - 2002	Universidad Simón Bolívar, Venezuela. **Licenciada** in Biology (4.3659 / 5), ranked 36 from 369 graduates. Licenciatura thesis: "Evaluation of organic certification of coffee as a strategy for watershed conservation as used by Palmaven, Venezuela". Supervised by Prof. Dr. M. Sebastiany (approved with honours)
1995 -1997	Colegio El Placer, Venezuela. **High School Degree** in Sciences (17.710 / 20)

Short courses and workshops

11/2008	Experimental Economics Methods, with Angelino Viceisza from IFPRI, Universität Hohenheim, Germany
05/2008	ESNIE 2008, European School of New Institutional Economics, Cargèse (Corsica), France
12/2005	Search, Processing and Analysis of Economic, Social and Agricultural

	Information. Centro de Estudios Agrícolas, Bolpriaven, Caracas, Venezuela
11/2005	The Logical Framework of Project Design. Inter-American Development Bank, online course

Practical training

05/2003 - 08/2003	Professional in training at the Laboratory of Rural and Agricultural Studies, Prof. Dr. Luis Llambí, IVIC, Venezuela. Responsible for data base management for the IVIC-FAO project "Public policies, transaction costs and access to markets: The impact of reforms on potato growers in the Andes High Valleys and on plantain growers in the Southern Maracaibo Lake, Venezuela"
04/2002 - 09/2002	Internship at the national oil company PDVSA, subsidiary Palmaven, Falcón, Venezuela. Responsible for the negotiation of organic certification for coffee produced by an association of coffee smallholders for the "El Falconiano Water Basin Conservation Project"

Work experience

10/2007 - 03/2008, and 04/2009	Expert in Monitoring and Evaluation for the Hivos-Welthungerhilfe-ACPA project "Desarrollo Productivo Integral del Sector Agropecuario en las Provincias Orientales de Cuba", Cuba. Responsabilities included: - Preparation of a baseline study for impact evaluation - Setting up a monitoring and evaluation system for the project - Training of local staff in data collection methods and data analysis
07/2007, 07/2008 and 07/2009	Lecture assistance for the M.Sc. level module "Project Evaluation Methods", Universität Hohenheim, Germany. Responsabilities included: - Assistance and lecturing during practical exercises - Correction of exams
04/2006 - 07/2006	Lecturer at the Laboratory of Plant Physiology, Universidad Simón Bolívar, Venezuela
01/2006 - 07/2006	Assistant of project leader in the consultancy: "Agricultural Competitiveness and Biotechnology in Venezuela", for Agro-Bio, Santa Fé de Bogotá, Colombia. Tasks included: - Collection and analysis of information - Methodological design - Report writing

04/2004 -03/2005	Academic assistant (Wiss. Hilfskraft) at the Institute 490c: Farming and Rural Systems in the Tropics and Subtropics, Prof. Dr. Werner Doppler, Universität Hohenheim, Germany. Tasks included: - Institute's publications data base management - Editing and correction of soon-to-be-published material - Design, editing and correction of lecturing material
10/2002 -03/2003	Extensionist at the national oil company PDVSA, subsidiary Palmaven, Falcón, Venezuela, for the "El Falconiano Water Basin Conservation Project". Extension related to organic certification of coffee and institutional strenghtening of an association of coffee smallholders
01/2001 - 12/2001	Research assistant in the Laboratory of Plant Ecology, for the IVIC-USB project: Atmosphere-Biosphere Interactions, Gran Sabana, Venezuela. Prof. Dr. Bibiana Bilbao, Universidad Simón Bolívar, Venezuela.
04/2001 - 07/2001	Teaching assistant in the Laboratory of Plant Physiology, for Prof. Dr. Mary Sobrado, Universidad Simón Bolívar
09/2000 - 12/2000	Teaching assistant in the Laboratory of Plant Biology, for Prof. Dr. Dilia Velásquez Universidad Simón Bolívar

Scholarships

Since 01/2007	**DAAD Scholarship** for Research / Studies for doctoral studies at the Institute for Rural Development Theory and Policy (490a), Universität Hohenheim, Germany
03/2005 - 06/2005	**Eiselen Foundation (Ulm) Thesis Research Grant** for data collection for M.Sc. Thesis: Impact of cooperative membership on family income of smallholders: The case of coffee farmers in Venezuela. Supervisor: Prof. Dr. Doppler, Department for Agricultural Economics and Social Sciences in the Tropics and Subtropics, Universität Hohenheim, Germany
09/2003 - 09/2005	**Eiselen Foundation (Ulm) Scholarship** for M.Sc. studies at Universität Hohenheim, Germany

Additional skills

Language skills	**Spanish:** Mother language **English:** Reading, writing and speaking – fluent **German:** Basic
Computer skills	Windows and Mac environment at user level Microsoft office and Open office software

Statistical software: SPSS

Reference management software: EndNote, RefWorks

Basic knowledge of: Stella Research, VensimPLE

Contributions to academic conferences

2008	Presentation of: Cattle Cooperatives in Cuba: How Will Policy Changes Affect their Members? At the Tropentag 2008, Universität Hohenheim, Germany. Paper available at: www.tropentag.de/2008/abstracts/full/713.pdf
2001	Presentation of: Nitrogen use efficiency and photosynthetic rates in functional groups in open savannas of Gran Sabana, Canaima National Park, Venezuela. IV Congreso Venezolano de Ecología (Venezuelan Congress of Ecology), oral sessions of the 2nd Ecophysiology Symposium, Mérida, Venezuela

Manuals, reports and unpublished papers

2010	Jaffé, M. and M. Zeller. Legal Regulations and Agricultural Production: The Case of Cuba's Cattle Sector. Submitted to Post-Communist Economies (05.05.2010).
2010	Jaffé, M. and M. Zeller. Poverty and Food Consumption among Workers in Collective Farms of Eastern Cuba. Submitted to World Development (08.05.2010).
2010	Jaffé, M. and M. Zeller. Agricultural Producers, Bureaucrats and the Political Elite in Cuba. Submitted to the Journal of Agrarian Change (07.06.2010).
2009	Jaffé, M. Resultados: Estudio de línea base para el proyecto Desarrollo Productivo Integral del Sector Agropecuario en las Provincias Orientales de Cuba. Welthungerhilfe y ACPA, Santiago de Cuba, April 2009: 58 pp
2009	Jaffé, M. Manual de metodología: Estudio de línea base para el proyecto Desarrollo Productivo Integral del Sector Agropecuario en las Provincias Orientales de Cuba. Welthungerhilfe y ACPA, Santiago de Cuba, April 2009: 39 pp
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AUTHOR'S DECLARATION:

I hereby declare that I have completed the dissertation independently, and this research is original. I have not been supported by a commercial agent in writing this dissertation. Additionally, no aids other than the indicated sources and resources have been used. This work has not been previously used neither completely nor in parts to achieve any other academic degree.

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