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Rural poverties and innovation in agriculture

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Summary

With data and examples from Latin America we will show that there is a kaleidoscope of poverty dimensions that are specially prevalent in rural areas and that hamper the adoption of new crops and technologies. Agricultural R&D and extension efforts have to address these situations if they are to make a real impact on income poverty reduction.

The new orientation toward demand-led and co-financed agricultural R&D has some very positive underlying aspects. It has however to be accompanied with determined empowerment efforts if the poorer population is to have equal access to opportunities.

Introduction

Poverty can be seen from several angles. The most widely used descriptors are income (poverty and indigence lines) and unsatisfied basic needs, usually encompassing income, education, housing and access to health and basic services (electricity, potable water). Of those, income and education are certainly directly relevant to the capacity and willingness to acquire new skills and adopt new technologies. Electricity and potable water may be necessary inputs for those technologies, while adequate housing may be extremely important for well being, but is rarely directly relevant to technology adoption. In turn, access to and understanding of markets, access to credit, information, telecommunications and irrigation are usually crucial.

Latin American countries are characterized by having a large proportion of their population living in the capital city (often around a third), another important portion living in several much smaller cities, and rural areas with huge spaces with very low population densities. This makes most rural areas in Latin America quite different from those in Europe or Asia. Therefore, many of the experiences there with rural development are not necessarily relevant for Latin America.

"Rural" should not be used as a single, englobe-all, concept, but understood as distinct sets of spaces, each with its own characteristics. Rural poverty pockets

within otherwise dynamic areas should be differentiated from large proportions of poor rural people in stagnating areas.

The evaluation of poor area development programmes often suggests that they did little to help them catch up. The growth path in regions not covered by the programme is however not necessarily the relevant counter-factual if there are divergent tendencies in the regional economy. Thus, initially poorer regions could possibly have grown at an even slower rate if not for the poor area development programme. And, while poorest families may have a higher chance of receiving aid through targeting efforts, they may well get a low rate of return to that aid, because of lack of complementary assets, skills and non-conducive environment. (Jalan y Ravaillon, 1996)

Rural population and income in Latin America

Presently, some 125 million people live in rural[1] areas in Latin America. Due to migration and declining birth rates, the rural population has reached a kind of plateau in absolute numbers, with its mean shifting toward middle-aged people. The total economically active population (EAP) with agriculture as primary occupation is around 44 million (22% of the total Latin American EAP), of which some 35 million are rural dwellers and 9 million urban ones. (See figure 1) As to the 15 million rural non-agricultural EAP, the social, communal and personal services account for some 29% of the total, the manufacturing industries with another 22%, trade with 18% and construction with 11%. (Klein, 1992) Additionally, much of the agricultural EAP is involved in non-agricultural activities for part of their time and a relevant portion of their incomes. This is especially true for the poorer strata, although for them the

non-agricultural activities -such as the agricultural ones- mostly have a low labor productivity, generating low incomes.

The latest ECLAC (1999) poverty and indigence estimates for Latin America indicate that 62.5% of rural dwellers have an income below the poverty line (as established in each country) and, of these, 37.6% have an income below the indigence line. While the relative weight of poverty and indigence is much higher in rural than in urban areas, in absolute numbers, more urban people live in poverty than rural people (125,8 million and 78,2 million people respectively), the contrary being true for indigence (42,7 million versus 47,0 million people). (See table 1) Moreover, with hardly any exceptions, the rural average income is significantly below the urban one in each decile. (See e.g. figure 2 for Chile).

Within the rural areas there are clearly zones which have a richer resource base both of human capital and natural resources. Often, they overlap with a more developed transport, communication and services infrastructure and with less poverty and more diverse income opportunities. At the same time, as distance increases from urbanized zones or district capitals to deep rural hinterlands, a kind of gradient is observable of decreasing access to infrastructure, services and markets and (or because of it) of increasing poverty and indigence. The poorer regions seem to induce –if not a vicious circle, then- a kind of stagnation where the lack of opportunities lead to a sort of resignation. How monthly incomes of different types of occupations vary from place to place can be seen from the example of Bolivia in table 2.

Low income levels have rather obvious implications on the possibilities to save and make the required investments -especially in the absence of well-functioning credit markets- for the adoption of new technologies or the shift from one crop or activity to another. It is however the correlation between (lack of) wealth and attitude to risk that we would like to stress at this point. Indeed, technological change usually implies higher (perceived) risk because it means a transition from something known to something unknown or less known (be it a new product, activity, way to produce, inputs, market, etc.). The more precarious the condition of the farmer, the more adverse he will be to risk[2]. Risks that are perceived to exceed a threshold determined in accordance with the quantity and liquidity of assets owned are usually not accepted as this could endanger the very existence of the farm and the family members that live from it. (Figueroa, 1996)

Education

Of the 44 million EAP in agriculture, some 3 million are employers throughout the year. They definitely require managerial skills[3]. There are another 15 million self-employed farmers (more than half of which have incomes below the poverty line). This article is mainly geared towards them. The others are unpaid family members (some 12 million), and employees (some 9 million temporal and 5 million permanent workers). Some of the latter are farm administrators and therefore the education bit is also particularly relevant for them. (See again figure 1)

There is an ample literature[4] on the relationship between formal (school) education and farm productivity as well as between formal education and the capacity and willingness of the individual to adopt new technologies and adapt them to the

particular requirements of his land. Figueroa (1986) stresses the need of a good command of the four basic operations in mathematics in order to apply agricultural inputs correctly for which the minimum threshold is six years of schooling and not three a four years as for alphabetization.

School enrolment and the length of school attendance has improved substantially in Latin America and, as a result, there is a difference of several years of schooling between generations. Unfortunately, rural education lags well behind urban education, both in quantity and in quality. The average years of schooling of twenty to twenty-four year old rural dwellers was above 6 years (in descending order) in Chile (8.8 years), Panama, Costa Rica, Venezuela and Colombia, but below that figure for Honduras and Brazil (4.2 years). That of their parents was consistently below 6 years. Of the countries considered, Chile was again the best achiever with 4.4 years and Brazil and Honduras the worst with 2.0 years of average schooling. Contrary to previous generations, in almost all rural Latin America, young women now go longer to school than their male peers. As is clear from figure 3 though, 28% of Chilean farms are in the hands of the third generation (and the situation is quite representative of other countries too). This is a very important fact to take into account in technology transfer programmes.

Indeed, programmes tend to be discussed with and then transferred to the head of the farm household who, in educational terms, is usually the least apt to understand all the implications and, in attitudinal terms, often the least willing to change. This means that the process of transmitting knowledge, technological applications and feedback about experience on the ground, becomes more difficult or simply impossible. Thus, although it may go against the local idiosyncrasies, technology transfer

agents should make every effort to direct their message to the household, especially its younger members.

Access to credit and technical assistance

Practically by definition, when a household has an income which is below the poverty line it has little or no capacity to save. On the other hand, although there are some technological improvements which do not require additional working or investment capital, most do, often significantly so. Thus, in 1995, the cultivation of HoneyDew melons for export in El Salvador had a cost per hectare, which was six times that of traditionally cultivated corn. The net income per hectare, however, was more than twenty times higher. If poor households do not have access to credit (formal, informal[5] or through contractual arrangements with agribusiness) they are excluded from transiting to more remunerative crops and the poverty cycle is perpetrated. Indeed, a fair number of case studies identified credit (above know-how, technology and market access) as the main bottleneck restricting the expansion of non-traditional crops. (Dirven and Ortega, 1996) In general, access to credit has been low in rural areas. The disappearance of special provisions for the agricultural sector (agricultural development banks, special credit lines, etc.) due to new market oriented and sector neutral policies, and the already high level of indebtedness of many farmers, has caused a sharp drop of total loans to the sector in most Latin American countries as from the mid-eighties onward. Within this panorama of general credit constraint, the poorer households have even less chance than before to access credit. (studies on the structural adjustment policies and the agricultural sector in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica and Mexico, ECLAC, forthcoming)

We will illustrate the lack of credit access with information from Peru, Bolivia and Chile. In Peru, only 16% of rural households had access to credit in 1994. In the lowest per capita expenditure quintile, only 10% of households had access to credit. The households pertaining to the second lowest quintile also had a below average access to credit, while -surprisingly- the third quintile was the one with the highest proportion of households having access to credit, namely 20%. (Escoval, Saavedra and Torero, 1998) In Bolivia, out of a total of more than 600 thousand rural households, only 120 thousand rural clients had access to credit -through 106 rural branches of different credit institutions-mostly for amounts of US$ 230 to US$ 675. However, it is estimated that only 28% of rural microcredit was used for investment in agricultural activities. Most commercial bank lending to the sector went to the (fast growing) region of Santa Cruz. (Birbuet, 1997 cited by Crespo, 1999)

In Chile, access to credit is much better. Still, only 42% of the poor rural households of poor regions with some land (11 hectares average per household) received credit. For some substrata, only 23% had access to credit. Access to technical assistance was only somewhat better (50% of households). (Mideplan, 1999) An evaluation of Prodecop[6], a project oriented to farmers who fall below the conditions required by INDAP, the Government institution which assists small farmers, showed another interesting conclusion. With the exception of three farmers, the other Prodecop clients had never been the subjects of any technical assistance project. In the evaluation, only these three were critical of the project. The others were critical on some specific points, but their overall evaluation of the project was in the line of "better something than nothing". (Schneider, 1999)

Therefore, unless the proposed technology change has no additional costs, there is little point to do extension if it is not accompanied with (sufficient) credit. Additionally, there seems to be a learning process where clients become more demanding as their exposure to extension increases. This is especially important to take into consideration now that farmers are expected to participate in the choice -and then evaluation- of consulting firms and extension agents (as well as in their co-financing).[7]

Access to markets

Small farmers often- apparently- do not respond to market signals. To explain this, it is crucial to take transaction costs into account. Indeed, transaction costs (information, transport, time, etc.) are often fixed and high in relation to the amount of produce to be sold or bought. Production for selfconsumption is therefore often a rational choice even if -at first sight and without taking transaction costs into account- there are significant cost/price differences in favor of the market. (de Janvry and Sadoulet,1998)

Seen from the other side, transaction costs incurred by agroindustry, banking institutions, transporters, middlemen, etc. when dealing with a great many, geographically dispersed, small producers, often isolated from the road and telecommunications networks, are much higher than those incurred when dealing with a few larger, modern, producers. This constitutes a significant barrier in the relations between different operators and small producers and is often the reason for (apparent) price discrimination or other biased attitudes towards them. Therefore -and it could not be stressed enough-, the smaller producers are, the more essential it is

for them to organize. There are a number of reasons for this, ranging from the need to gather a volume that is sufficiently interesting to other operators, to the advantages of increased negotiating power, economies of scale and lower transaction costs. The other agents are however often unaware that they can benefit from this organization in a number of ways, not least by a significant reduction in transaction costs, thus achieving a win-win situation (the farmers winning a better negotiating position).

Renkow (1998) uses the term "economic distance" to convey much more than just physical distance. He concludes that both the types of rural nonfarm[8] firms and their size will depend on their access to (often urban) labor, capital, product, and input markets (or lack thereof) and that the impact of infrastructure investment and other actions designed to reduce the cost of economic distance -depending on the underlying microeconomic issues- may well lead to inadvertent "crowding out" of more remote firms and industries by virtue of lowering the cost of distance of urban firms and thus lowering the competitiveness of local firms.

In the already mentioned municipality of Lolol, paved road connection to a nearby small town improved incomes because it permitted an easier and cheaper access to different sources of labor and thus to multiply short spans of temporary work by commuting. On the other hand, this additional cash income led some to abandon cultivation for selfconsumption. (Schneider, 1999 and conversations with the author)

Curruchiche (1995) relates that when there were only two main sales points for fresh produce, namely one agroindustry and La Terminal market, both near Guatemala City, negotiations with the intermediaries was the only market experience most farmers had. In 1995, however, there were 35 agroindustries in different regions of the country. Therefore more farmers or their organizations now

sell directly. This has sharpened their knowledge and understanding of how markets work (the concept of quality and its importance, changes in requirements and consumer demand, prices and price setting mechanisms), which in turn has given them better conditions to negotiate.

The importance of market knowledge was also one of the findings of Salcedo (1999) when evaluating the impact of more market oriented agricultural policies in Mexico. Indeed, the managerial capacity of the farmer (his education level, access to information, organization and his knowledge and experience as to how markets function) was found to be essential for his adaptation to shifts in price structures and the new "rules of the game". Those that were able to adapt (and have access to the required capital and inputs), have modernized and gained efficiency, as well as often increased the scale of production. They are however the minority. Some other farmers, with less managerial capacity, have rested on their vertical coordination links with agribusiness for market knowledge. At the other side of the spectrum, farmers who produce for their own consumption and use very little inputs have been relatively little touched by more market oriented policies and the shifts in price structures that accompanied them. They have however suffered from the retreat of Government services, as they do not represent an attractive pool of clients for the private, profit-oriented sector.

Unfortunately, more often than not, extension agents give little attention to commercialization issues and markets and the knowledge of the recipients of their technical assistance have of their workings. This is definitely an area to emphasize more since there are too many experiences of producers that have made the effort to change their produce or production methods, only to find out that there was no

market or that the market was shallower than expected and that prices collapsed. They then have relapsed to their previous way of producing, sometimes poorer pecuniary speaking and "richer" with yet another disillusionment, therefore less open to future new experiences.

Access to telecommunications, roads and other infrastructure

A recent survey of 240 rural settlements in different regions of Peru categorized as respectively small (400 to 600 people), intermediate (601 to 1000 people) and larger (1001 to 3000 people) settlements gives a particularly pertinent image of the lack of access to all kinds of infrastructure. The preponderance of agriculture as the main activity declines somewhat as the settlement increases in size. Somewhat less than 50% of agricultural production is selfconsumed in all three types of settlements. The rest is sold in its great majority to transporters and intermediaries and in a smaller proportion to local people although ninety percent of the settlements have no adequate market place. Only 13% of surveyed settlements have direct access to a paved road, while road infrastructure is better around the larger settlements. It still takes more than an hour to get to the district capital for 20% of the population of the larger settlements and for 45% of the population of the intermediate and smaller settlements. The most frequent non-agricultural activity are small shops that sell a limited amount of goods of first necessity and low perishability. In the small to intermediate settlements, these shops purchase some 30% of their merchandize in the same district, some 40% outside the district but within the province and 20% in other provinces. In the larger settlements some 40% of merchandize is bought in other provinces. (Fitel, 1996)

None of the small rural settlements has a post office and half of them are more than an hour away from the closest post office. Most of the intermediate and larger settlements (98% and 95% respectively) have no post office either but it takes usually less than an hour to get to one. Only 25% of the larger settlements have a public telephone. Where it exists, it usually functions some 12 hours and the communications are of good quality. In average however, most people live 15 km away and a 20% of them live more than 30 km away from the nearest public telephone. Those that use telephone services mostly do so to contact family members for private issues and, to a much lesser extent they use it for business-related issues. The means of communication are, in descending order of frequency of use: the public telephone (once a month in most cases); through friends or family; by letter or parcel post by a transport agency or the post office; and finally, by the local radio, when it exists. Some 13% of the surveyed population do not use any communication service at all. No public motorized vehicles get to respectively 43%, 32% and 13% of the smaller to larger settlements and there is no electricity in respectively 82%, 76% and 61% of the smaller to larger settlements. Most settlements do not have a police station, bank branches, radio station, nor a place where to eat prepared foods, stay overnight or meet. Most settlements do not either have access to the services of a doctor, a nurse or a pharmacist. (Fitel, 1996)

Interestingly, perceptions as to the most important restriction to development differ with settlement size. While in the smaller settlements water and roads are considered the major impediments, technology, electricity and communication services take the upperhand in the larger ones. (Fitel, 1996)

In Chile, poor households of poor rural regions live, on average, some 5km away from a main road, the access road is in bad condition in 26% of the cases and 40% of their houses are not connected to electricity. (Mideplan, 1999)

Irrigation is often a sine qua non-for the timely application of inputs and the possibility to produce at the extremes of the growing season, when prices are much higher. Again, poorer farmers are usually in a disadvantaged position as to access to irrigation.

Clearly, rural infrastructure is highly deficient and the more so, the less concentrated the population and/or the poorer the area. What is not so clear sometimes is which is the cause and which the effect, although Mamingi (1996, p.13) is adamant on the subject stating that: " … deficient rural infrastructure can wipe out all other production incentives". Indeed, it can be questioned whether extension efforts can have a positive outcome -meaning here not a marginal improvement of income or living conditions but a manifold one that really moves a significant proportion of the population out of poverty- without removing simultaneously the development stalling effects of several types of deficient infrastructure. Therefore, extension efforts should go hand in hand with a coordinated effort at the municipal or other public or private level(s) to enhance infrastructure at least till the minimum required to ensure the success of the extension. If this is not possible, then it is better to invest the scarce extension resources somewhere else.

The basic premises of the new agricultural policies

There have been important structural changes in Latin American agriculture over the last two decades as can be visualized in figure 4. By far the strongest increase has been in oilseeds, while tubers have stagnated. The changes indicate a further polarization of rural production, since the most dynamic products are being produced in relatively large-scale, modern farms while the least dynamic ones tend to be produced by small-scale, traditional farmers.

The policy reforms intended to get to more sustainable macro-variables (external debt, public debt, inflation) and, at the same time, responded to a new development paradigm, where the market and the private sector were to play a more protagonistic role. In the agricultural sector, the reforms were often carried out later than in other sectors (in many countries in the late eighties or early nineties) and in more partial ways (higher tariffs for more "sensitive" products; maintenance of research, extension, credit, commercialization programmes, etc.). In most countries, there was a first period of drastic changes to the previous policies and then a reinstatement of more active government intervention, although much more market-oriented, demand-driven and decentralized than the pre-80's policies and programmes.

The growing tendency to decentralize administrative functions and devise projects on the basis of local participation are promising and open up new possibilities in terms of identifying problem areas and bottlenecks more effectively and resolving them more successfully. Likewise, joint action at local level and "strategic alliances" between different local operators such as private firms, different public bodies, non-governmental organizations and small producers can lead to novel initiatives for developing agriculture and agroindustry and linking up the two. The fact is that the actions of a single public or private entity, restricted by its mandate, its knowledge, its

organization, working methods, interests or financial capabilities, are often inadequate to respond to the complex problems of rural development and fill in all the gaps that prevent productive activity from taking off. In many cases it is only thanks to alliances between different bodies, each one with its specific area of expertise, interests and contribution, that change can be achieved. (Dirven and Ortega, 1996) Decentralization policies also usually mean that there is increased competition for firm location through lobbying with the central or local Governments, local tax relief and subsidies, public investments in infrastructure to lower costs, etc.. (Reardon y Stamoulis, 199"8) "Relating agro-industrialization intermediate cities and farm/non-farm linkages: an instrument perspective with Latin American Examples.

In a very summarized way, our main doubts concerning the gist of some of the new policies revolve around the following: as we have seen earlier, rural dwellers -and specifically the poorer segments of the rural population- do face a series of very serious deficiencies and inadequacies as to their own human capital (basically reading, writing and mathematical skills), as to the physical capital of their surroundings and as to the distance to markets and services, including decentralized Government services. Information flows therefore are not good and their capacity to formulate requests and projects in the required time, format and contents is limited. Their possibilities to participate in -and winning- project proposals submitted to competition (and often co-financing) such as for decentralized project funds, investments in infrastructure and services, research, technical assistance, etc., is therefore also limited. Thus, although the policies are apparently neutral and often were intended to be neutral, in fact, they usually are extremely excluding, because they failed to take the specificities of the agricultural sector and rural areas into account, the serious imperfections of its markets, the

high transaction costs and the lack of physical, financial, human and social capital of most of its agents. Their results are however politically -and morally- justified as "responses to demand". (Dirven, 1999) Thus, from highly centralized, bureaucratic, clientelistic, often corrupt Government programmes in the previous decades, the region went through a period of dismantling of institutions and programmes, and then to the generation of new ones which sound nice on paper, have several advantages over and above the previous programmes, among which the much closer attention to local needs and demands, but at the same time have their own very serious flaws in real life.

A decided action toward the "empowerment" of the rural poor -individually, but also oriented at future group action- is definitely very necessary as such and the more so within the context of the present policies. To be really effective, they have to be accompanied by funds to permit minimal administration costs and also travel to meetings and to the decision taking institutions. (Durston, 1998) If research institutes do not take empowerment into account (as well as other possible shortcomings or distortions that competitive funding may have -see a.o. Echeverría, 1998, for a discussion on the topic-) then, inadvertently, they may well fail to reach but the better off and better organized strata. These are usually not the rural poor.

Conclusions

People -and researchers are no exception, whatever their field- have a tendency to see problems and their solutions through their own, specialized interests, preoccupations or knowledge-tinted eyeglasses. They tend not to pay attention or to forget to pay attention -even when they know the issues are important- to those issues not directly in their field.

Rural areas are very different from one another and rural development and poverty issues are very complex. The more so when -more accentuated probably than before- trends in the 90s seem to point to increasing agglomeration and scale-economies, which pull economic activities toward larger-scale agents and more urbanized centers.

When doing agricultural research first, and extension next, the different types of poverty dimensions, deficiencies and inadequacies in rural areas definitely have to be taken into account if these efforts really are to bear fruit. In the previous pages we have tried to -quite succintly- describe some of the "poverties" to be found in rural Latin America, starting with income, but continuing with lack of reading, writing and mathematical skills, lack of access to markets, to roads, to credit, to communication services, to information, to water, to electricity, etc. and how this influences the capacities and willingness to acquire new knowledge and apply new technologies or shift products.

If all these issues -and many others that we did not touch because of lack of space and also because our own eyeglasses- are not taken up seriously, unfortunately, many research and extension efforts will be wrongly directed, will be directed to the less needy agents, will not have the expected results and, in the end, will not make a serious dent into poverty and lack of well-being.

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Table 1

LATIN AMERICA 1997: POVERTY AND INDIGENCE

	Urban area (a)		**Rural area (a)**		**Total population (b)** Urban	Rural	**Poor urban population**	Indigent urban population	**Poor rural population**	Indigent rural population
	Poverty (%)	Indigence	**Poverty (%)**	Indigence	(in housands)	(in thousands)				
Argentina a/	18	--	--	--	31940.9	3959.2	5749360	--	--	--
Bolivia	52	--	79	--	4931.6	2939.6	2564456	--	2322299	--
Brazil c/	31	--	56	--	130056.6	35094.3	40317533	--	19652835	--
Chile	22	--	31	--	12510.8	2200.1	2752372	--	682027	--
Colombia b/	40	--	60	--	29644.5	10787.0	11857811	--	6472189	--
Costa Rica	23	--	25	--	1877.0	1911.7	431700	--	477934	--
Cuba	--	--	--	--	8728.1	2354.4	--	--	--	--
Ecuador	56	--	--	--	7357.3	4695.8	4120082	--	--	--
El Salvador	56	--	69	--	3222.6	2749.7	1804666	--	1897296	--
Guatemala	53	--	78	--	4168.6	6512.1	2209347	--	5079401	--
Haiti	--	--	--	--	2898.5	5090.8	--	--	--	--
Honduras	73	--	84	--	2818.0	3251.5	2057135	--	2731268	--
Mexico	45	--	62	--	70751.4	24261.9	31838133	--	15042374	--
Nicaragua	72	--	--	--	2596.8	2153.1	1869703	--	--	--
Panama	33	--	42	--	1555.7	1187.7	513378	--	498820	--
Paraguay d/	39	--	--	--	2808.2	2354.2	1095215	--	--	--
Peru	--	--	--	--	17657.0	6939.7	--	--	--	--
Dominican Republic	37	--	39	--	4788.4	3370.9	1771717	--	1314650	--
Uruguay	10	--	--	--	3019.7	258.0	301967	--	--	--
Venezuela	48	--	56	--	19938.4	3068.7	9570430	--	1718486	--
Others	**--**	**--**	**--**	**--**	**--**	**--**	**--4.974.997**	**42.700.000**	**20.310.422**	**47.000.000**
Latin America c/	**34.6**	**11.8**	**62.5**	**37.6**	**363.270.0**	**12.5140.5**	**125800.000**	**42.700.000**	**78.200.000**	**47.000.000**

Source: Calculated on the basis of a) CELADE (1999) Demographic Bulletin No. 63 (simple average of 1995 and 2000 population); b) ECLAC (1999) Social Panorama tables p.36 and p.277 to 279

Notes: a) greater Buenos Aires; b) eight principal cities; c) figures still in discussion; d) Asunción; e) estimate of sum of population for which no individual country figures are available.

Table 2

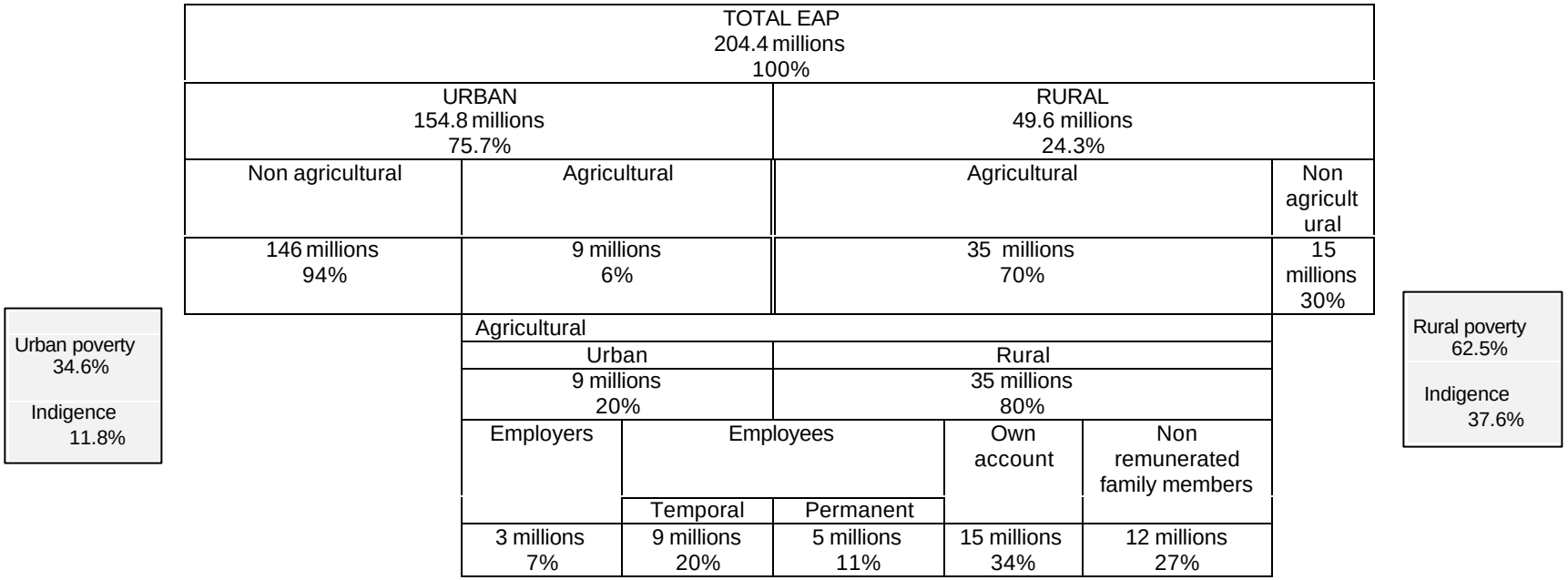
BOLIVIA 1996: MONTHLY INCOME OF THE RURAL POPULATION PER ECONOMIC ACTIVITY AND REGION (in US$)

	Chuquisaca	La Paz	Cochabamba	Oruro	Potosí	Tarija	Santa Cruz	Beni	Pando
Agriculture	25	28	42	28	18	45	89	103	143
Forestry		61	101	16	15	116	129	202	140
Mining	70	80	139	142	214	58			
Manufacturing Industry	11	52	77	36	56	68	205	124	135
Electricity and construction	114	105	140	114	88	445	146	90	141
Commerce	60	66	113	43	48	78	141	52	320
Hotels and restaurants	110	83	214	24		26	78	161	211
Transport	110		229	86	273	190	200	134	87
Finances						39			
Business		39		374	116	77			
Public administration	188	164	193	90	194	126	125		164
Teaching	99	124	131	145	102	105	117	104	105
Social services	148	78	84		127	120	77	97	
Community activities	42	67	103	174	58		61	8	
Private households	29	48	24	50	30	30	48	39	8

Source: Crespo, (1999), based upon the Bolivian Institute of National Statistics' National Employment Survey II of November 1996

Figure 1

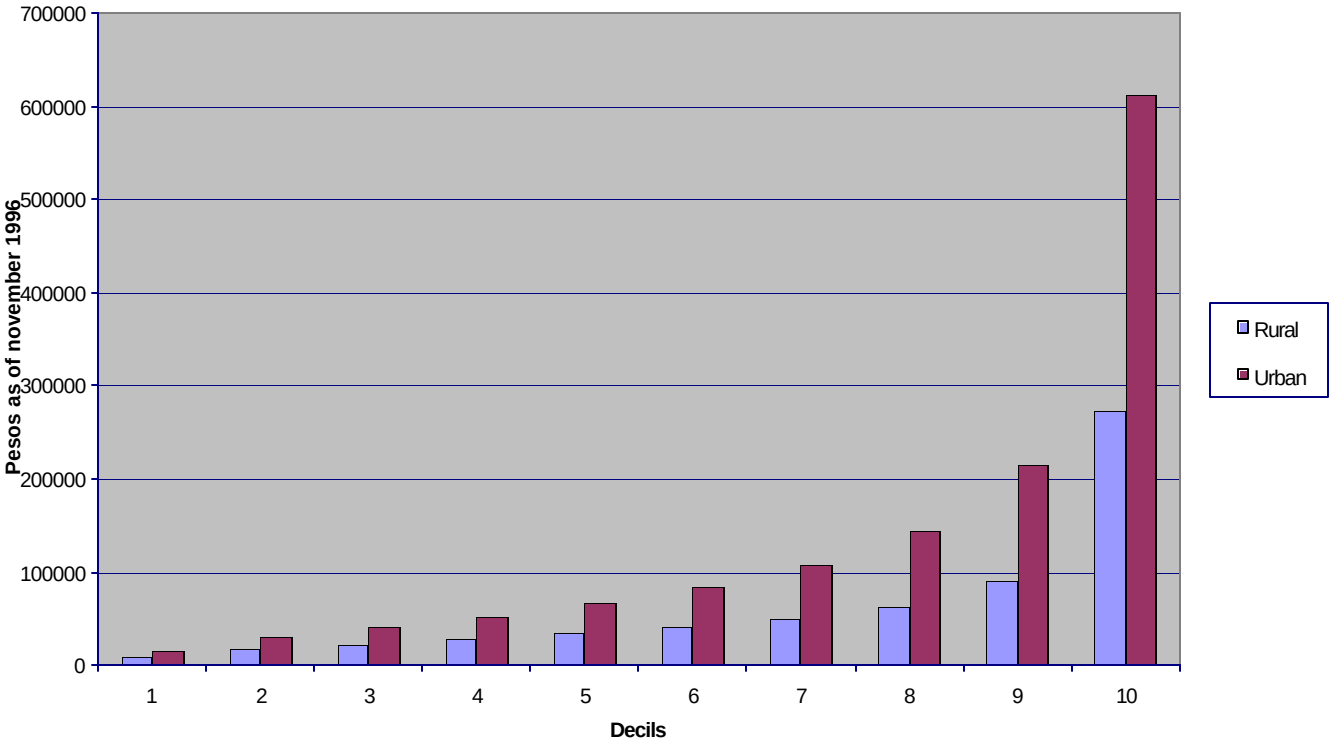
LATIN AMERICA, 1997: ORDERS OF MAGNITUDE OF THE ECONOMICALLY ACTIVE POPULATION (EAP)



Source: Martine Dirven, Agricultural Development Unit, ECLAC, on the basis of CELADE (Demographic Bulletin No 63 and preliminary EAP figures, 1999), FAO (Production Yearbook 1997), Klein (1992), Household Surveys of several countries (1992), ECLAC (Social Panorama 1998) and Dirven (1997)

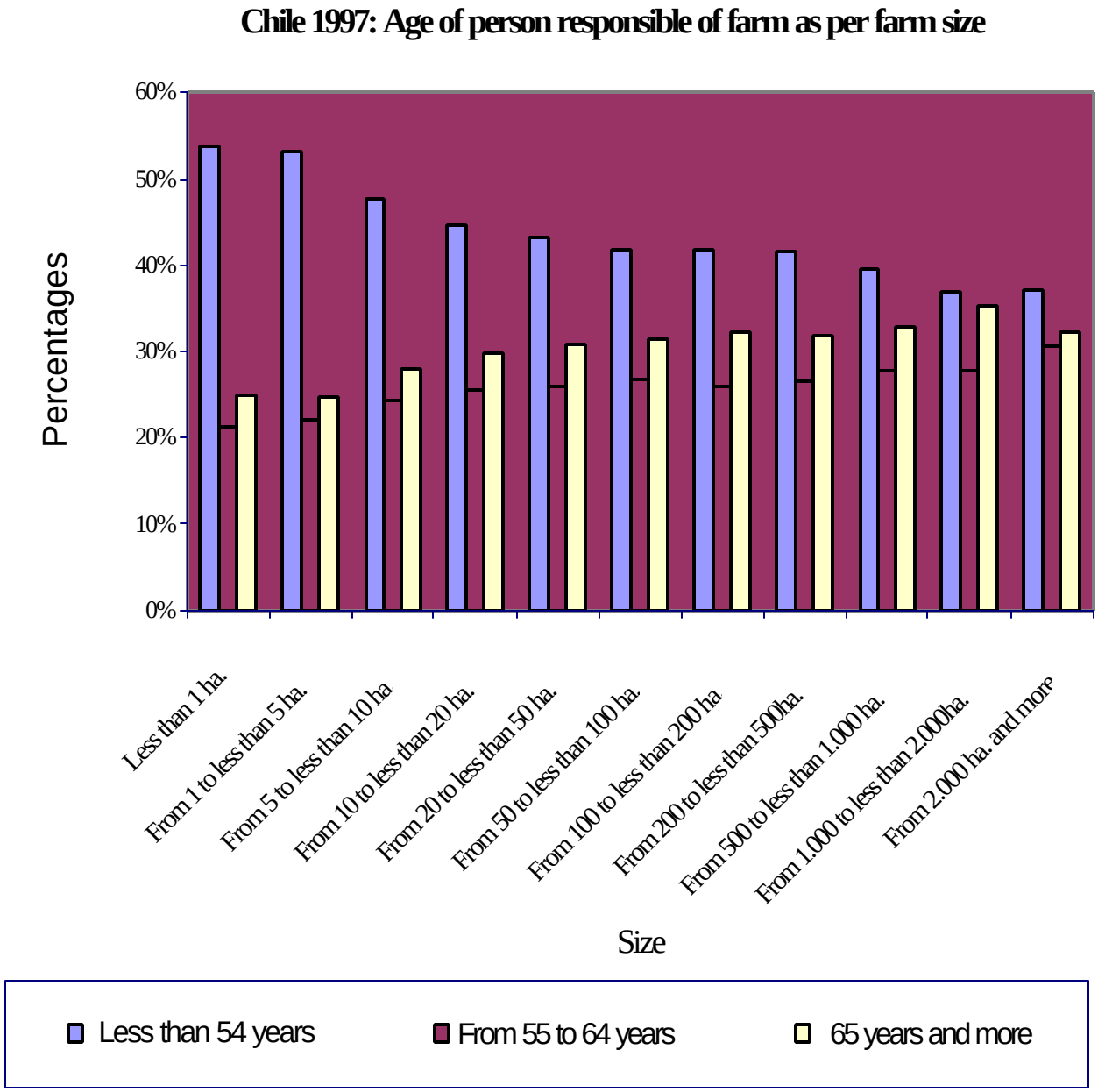
Figure 2

Chile 1996: Household average per capita income



Source: ECLAC (1997) : “Evolución reciente de la pobreza en Chile”

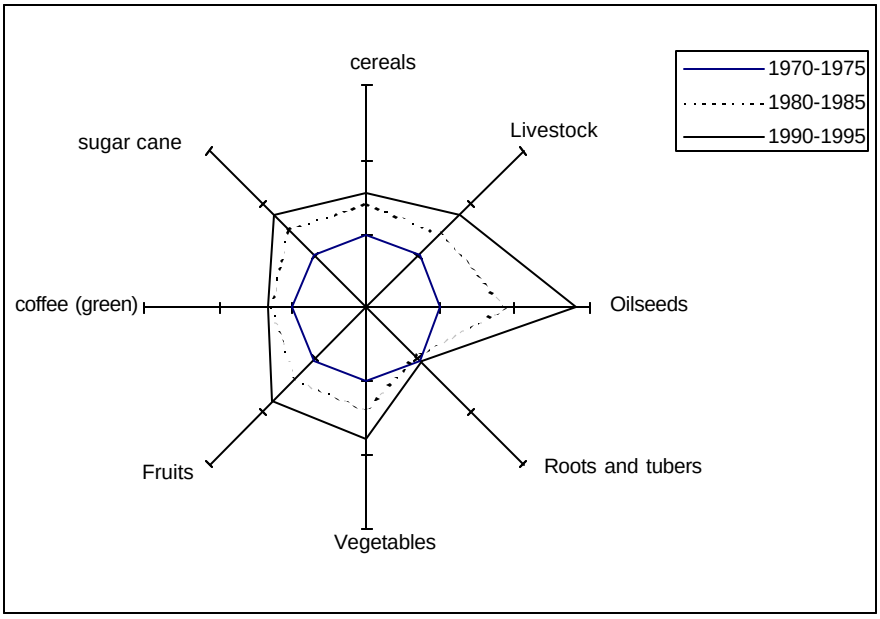
Figure 3



Source: INE: VI National Agricultural Census 1997, Chile

Figure 4

LATIN AMERICA AND THE CARIBBEAN: CHANGES IN THE STRUCTURE OF PRODUCTION
(data based on yearly average for 1970-75=100)



Source: Agricultural Development Unit, ECLAC, based on FAO Production Yearbook figures.

[1] As per the definition of "rural" in the last population census of each country. There are however seven different types of definitions presently in use in the region and hardly any of the countries uses exactly the same definition. Definitions have also changed over time in most countries.

[2] An example of how risk aversion affects decisions (and the possibility of maintaining smooth relations in vertical coordination agreements) is provided by the small melon producers of El Salvador who, when offered three different payment options by the agroexporter, namely: ex-ante fixed price; base price plus a share in profits; and a commission, preferred the first option, which in turn is the most difficult to maintain when -as in the melon

market and most other agricultural markets- high price fluctuations are the norm and third parties often offer more attractive sale or buying conditions. (Ortega, 1996)

[3] The OECD considers that: "Running a commercial farm is a highly knowledge-intensive activity in which a farmer uses some skills that are specific to the farm sector (agronomic and marketing know-how needed for the choice of cropping patterns and of production techniques as well as for the evaluation of new technologies -these are often related to the production of particular crops in particular regions-) and some that would be used in almost any sector (general management techniques such as cost and financial accounting, investment analysis and financial planning). This combination of sector-specific and general management skills probably places the average commercial farm operator well up in the skills-attainment hierarchy" (OECD, 1994, p33-38)

[4] Starting with the seminal work of Schultz, Theodore (1964): *Transforming traditional agriculture*, New Haven, Yale University press.

[5] Middlemen continue to play a crucial role in the rural economy and they often play a crucial role as lenders in situations where formal credit markets are non-existent, inaccessible due to lack of surety, or expensive because of the procedures they involve. Although it is true that they take advantage of their monopsony position, it is precisely because of it that this informal market can work, as the middleman can ensure repayment by threatening to stop buying or lending in future.

[6] Project carried out in the municipality of Lolol, considered extremely poor as per the poverty map drawn by the chilean authorities

[7] For a discussion on efficiency measurements of paid extension services, farmer willingness to pay for them and the learning process on the subject, see Dinar and Keynan, 1998.

[8] The von Thünen land gradient explains why for agricultural entreprises, size and low intensive use of land and inputs, often increase with distance from the urban center.