The Economic Journal, **115** (*April*), 477–504 © Royal Economic Society 2005. Published by Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA.

CITIES AND SPECIALISATION: EVIDENCE FROM SOUTH ASIA*

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Using survey data from Nepal, we examine the relationship between proximity to urban centres and the organisation of labour. We show that wards located in and near cities have more diversified and more market oriented activities. This suggests the presence of returns to market specialisation in cities. We also find some evidence of returns to hierarchical specialisation. These effects are felt up to four hours of travel time from large cities. Urbanisation is associated with lower female labour market participation and with a more pronounced specialisation of women either in market-related activities or in strictly home-based chores.

Since Adam Smith's comment about specialisation being driven by the extent of the market, economists think of cities as resulting primarily from a combination of returns to specialisation, market size and agglomeration effects (Henderson, 1988; Dicken and Lloyd, 1990; Ades and Glaeser, 1999; Fujita *et al.*, 1999). From a historical perspective, manufacturing is thought to have played a central role in the formation of large cities because of returns to scale and linkages with specific segments of the service sector (Myrdal, 1957; Hirschman, 1958; Maddison, 1982).

Similar processes need not account for Third World cities where the proliferation of microenterprises supplying identical goods and services is striking. There are few large production units, suggesting that returns to scale are not captured (ILO, 1980; Fafchamps, 1994). The GDP share of manufacturing in a typical developing country is small, even in large cities. This stands in contrast with developed country cities which mushroomed with industrialisation. Given the limited level of technological development, skill specificity is low and labour market externalities are expected to be low as well. Finally, since micro-enterprises do not purchase financial, warehousing, or marketing services, there is little specialisation in the provision of industrial services.

Taking together, these simple observations cast some doubt on the idea that Third World cities benefit from strong agglomeration externalities. An alternative theory emphasises the redistribution of surplus from the countryside to an urban elite. In his study of pre-industrial societies, Braudel (1986) gives several examples of what he calls 'princely cities', such as ancient Rome, Imperial Beijing, Ottoman Istambul, and Vijayanagar in South India. All these cities reached a very large size without industrialising.[1] Judging by historical records, they had many features

* We thank two anonymous referees, the editor, and participants to various seminars for their excellent comments and suggestions. We would like to thank the Central Bureau of Statistics of the Government of Nepal and especially Mr Karmacharya, for making the data available to us and for graciously computing geographical coordinates for all 719 wards in the survey. We would also like to thank Jyotsna Puri for her help in computing travel times, Qinghua Zhao for his assistance with data and Misuzu Otsuka for excellent research assistance. Financial support from the World Bank is gratefully acknowledged.

[1] There are other theories as well. Rural market towns, for instance, can be explained without reference to returns to specialisation: a small number of crafts and services would naturally gravitate around the rural market simply to economise on transport costs (von Thunen, 1966; Fafchamps and Helms, 1996). This phenomenon, however, cannot explain large cities.

similar to present-day Third World cities, such as a large number of small traders and artisans and little focus on manufacturing.

The distinction between these two sets of theories has deep policy implications. Endogenous growth theory emphasises the role of diversification and specialisation in the development process (Romer, 1990; Aghion and Howitt, 1992; Rodriguez-Clare, 1996; Fafchamps, 1997). If urbanisation is necessary to capture returns from specialisation, then it may be a prerequisite for growth and is to be welcomed. If, in contrast, Third World cities are an artificial by-product of bloated bureaucracies, urbanisation is parasitic and should be combatted.

Although cities have been extensively studied in developed countries (Jacobs, 1969; Henderson, 1974; Glaeser *et al.*, 1992), there is surprisingly little empirical work in developing countries, especially at the disaggregated level. This paper is an effort to fill this vacuum. We focus on two sets of related issues: the extent of specialisation at the household and local level, and the form that specialisation takes, i.e., through the market or within firms. We also discuss the marketisation of domestic chores. The empirical analysis uses a detailed household labour survey from Nepal. The choice of Nepal as a study country is appropriate because, given its mountainous terrain, proximity to cities – measured in travel time – varies dramatically across space. As discussed in Jacoby (2000), the layout of the population is simple compared to other, more densely populated regions of the world. These features enable us to tease out of the data the effect of town proximity on the organisation of work.

Regarding specialisation, we find that proximity to large urban centres is associated both with more specialisation at the individual and household level and more diversification at the local level. In contrast, households living in isolated areas tend to divide their time among a large number of distinct activities. In spite of this, the rural economy itself is less diversified. These results are consistent with claims that the concentration of population in cities favours the division of labour through the market (Jacobs, 1984; Ades and Glaeser, 1999; Ellison and Glaeser, 1997; Glaeser *et al.*, 1992). The unambiguous relationship between urbanisation and increased specialisation does not carry over to household chores. While households living close to cities allocate less time to chores such as fetching water and firewood – presumably because they purchase them from public providers – they allocate more time to cooking, cleaning, and shopping.

One important contribution of this paper is to show that specialisation effects are not limited to cities themselves but spill over to neighbouring towns and villages. Cities do not 'steal' non-farm jobs away from surrounding areas, quite the contrary: towns and villages close to a large urban centre tend to enjoy a more diversified local economy. The reach of cities is also broader than often thought: their effect is felt up to three to four hours of travel time away.

Proximity to urban centres is associated with a higher proportion of wage employment and hierarchical workers. Much of this relationship is due to differences in sectoral mix – cities emphasise sectors of activity where wage work is more prevalent and hierarchical workers more needed. Within sectors, we only find weak evidence of an association between proximity to cities and either wage work or hierarchies. Firm size and the prevalence of wage employment also affect

employment strategies; the nature of unemployment and the behaviour of the unemployed therefore vary with proximity to cities. These finding are consistent with standard models of urban unemployment in poor countries (Lewis, 1954; Harris and Todaro, 1970; Basu, 1997).

Our findings cast an indirect light on agglomeration externalities in Nepal. The data show that sectors with a high public employment component are concentrated in cities. It is therefore likely that some of the observed urban diversification is due to the presence of a relatively better paid bureaucracy with a taste for a diversified range of consumer products and services. While income effects may account for diversification, they do not, by themselves, imply specialisation (although they may facilitate it): just as rural dwellers produce many different goods, so could urban dwellers. Specialisation at the individual level is thus indicative of one specific type of agglomeration effect, i.e., that when the market is large enough, returns to market specialisation kick in.

Diversification also does not, by itself, require hierarchical organisation of production: many ancient princely cities discussed by Braudel had diversified consumer products but no (or few) large firms. The presence in cities of large hierarchies other than government can thus be construed as indirect evidence of returns to hierarchical specialisation. Our evidence in this respect is not overwhelming, at least within many sectors. From this we conclude that returns to market specialisation are present in Nepal but returns to hierarchical specialisation are weak.

Before delving into the details of the analysis, it is useful to take a minute to reflect on the issue of human capital and causality. This paper documents an association between specialisation and proximity to cities. The question of causality arises whenever specialisation requires specific skills. In Adam Smith's pin factory example, skill is not important because each task can be learned easily. In this case, specialisation can be thought of as the result of some equilibrium process; manpower quality does not matter.[2] Many of the activities we study in this paper fall in this category: they require minimum skill and can be learned quickly and easily. But other activities require skill.

Some activities, such as specialised crafts, require considerable skill which is typically not learned in school. Unfortunately, the level of detail available in our survey does not allow us to identify such skills. Hierarchical organisation of production requires educated manpower. This is because literacy and numeracy are necessary for information to circulate within large organisations through accounting, budgeting, reporting etc. To the extent that illiterate workers cannot receive or transmit information in written form, they are less employable in large organisations. Moreover, highly educated managers and supervisors are necessary to run large organisations. An immediate implication is that specialisation within organisations – and hence the size of hierarchies – may be limited by the education level of the labour force.

[2] Except for basic functionings, such as physical strength and cognitive ability which are known to depend on nutritional and health status. Since within each studied location there is no shortage of people with basic functionings, this issue can be ignored here.

This may be a constraint in Nepal, where the literacy level remains low. Within the country, however, the constraint on specialisation that the availability of educated manpower represents is somewhat mitigated by migration. If, as one would expect, returns to education are higher in cities because large hierarchies require better education manpower, then educated workers will relocate there. Moreover, we would also expect urban parents to respond to higher returns to schooling by educating their children better. Both processes may thus relieve the manpower constraint to urban specialisation, as least as far as basic education is concerned. Specific skills may nevertheless remain in short supply but, given the data at hand, specific skills are beyond the scope of this paper.

We are now in a position to reflect better on causality. It is widely believed that a country's stock of human capital plays an important role in the growth process. One possible reason is that a better educated labour force is required to man large organisations. To the extent that specialisation helps growth and that large organisations allow for more specialisation, a shortage of educated manpower may stunt growth. This reasoning may very well apply to Nepal as a country. But within Nepal, internal migration should ensure that cities within Nepal do not locate where more educated workers reside, but the other way round.

1. Conceptual Framework

There are several theories of why cities exist (Dicken and Lloyd, 1990). Some, like Braudel's concept of 'princely cities', view cities as the result of a political economy process whereby a 'prince' channels surplus to a geographically concentrated elite. The geographical concentration of purchasing power may affect the sectoral structure of production because of income or relative price effects – city dwellers may demand more luxury crafts, for instance. But princely cities need not exhibit returns to scale or to specialisation. Such cities are costly to maintain – if only because of congestion – so that, once the prince's power vanishes, the city shrinks or disappears. New technology (e.g., higher buildings, public transportation) may enable modern princely cities to grow larger than in pre-industrial times without necessarily changing their fundamental nature. Other explanations for the existence of cities revert around the presence of agglomeration externalities: cities exist because certain types of economic activity benefit from being close to each other (Jacobs, 1984; Henderson, 1988; 1994).

Whether cities are of the first or second type is important for economic policy. Because of congestion, princely cities are inefficient. Output and welfare could be expanded by spreading purchasing power and factors of production over a larger area. In contrast, cities based on agglomeration externalities need not be inefficient if gains from externalities compensate losses from congestion. The purpose of this paper is to throw some light on this question by looking for telltale signs of agglomeration externalities.

We know very little about the type of agglomeration externalities that are most relevant for developing countries today. One source of agglomeration externalities is increasing returns to firm size. By definition, cities concentrate people. To the extent that a larger market enables larger firms to operate, one would expect firm

size to increase with proximity to large urban centres. A corollary is that wage employment – a prerequisite for a large firm size – should also increase with proximity to cities. This should be true not only in aggregate but also within each sector of economic activity.

A second possible source of agglomeration externalities is returns to specialisation. The idea is that geographical proximity enables individuals to specialise in the production of specific goods and services (Becker and Murphy, 1992). They no longer have to be self-sufficient in a whole range of items they consume, but can focus on the few activities they are good at, and rely on the market for their other consumption and input needs. Specialisation should therefore increase close to urban centres, and with it the diversity of goods and services produced. A further implication is that reliance on the market should increase with proximity to cities (Fafchamps and Shilpi, 2002). Urban households should therefore produce fewer things themselves and spend less time on chores such as fetching water, repairing the house, processing food products and the like.

An increased division of labour through specialisation can take two forms: across firms and within firms. Specialisation across firms is associated with increased reliance on the market: people specialise in a single commodity or skill that they sell to others. Specialisation within firms is best exemplified by Adam Smith's parable of the pin factory. It is associated with larger firm size and therefore an increased reliance of wage employment. Larger firms mean a more hierarchical organisation of production, with some workers specialising in the monitoring of other workers. The circulation of information within large firms is also more problematic, hence the need for accounts, internal reports and the like (Aoki, 1988). We would expect these features to yield a different occupational structure, with more workers defining themselves as managers and clerks – those we call hierarchical workers for the purpose of this paper.[3]

A rigorous treatment of agglomeration externalities is beyond the scope of this paper and has been covered elsewhere – see for instance Fujita *et al.* (1999), Henderson (1988) and Dicken and Lloyd (1990). The theory predicts a systematic relationship between market size, firm size, specialisation at the individual level and diversification at the economy level. Larger economies are expected to be more market oriented – agents purchase goods from the market instead of producing them themselves – but also to have larger firms because of returns to scale. In contrast, agents operating in smaller economies are more diversified because they produce more goods themselves. For a more rigorous treatment of these issues, the reader may refer to Brueckner's (1987) discussion of urban equilibria.

We expect self-sufficient producers to under-report the range of activities they are involved in. This is because some unspecialised activities take too little time to be noticed or are combined with other activities. For instance, transporting purchased consumer goods from the nearest town to the village is typically not counted as a separate activity if it is self-provided. But it is recorded as a distinct

[3] This is a simplification since many hierarchical workers also have specific skills. The proportion of hierarchical workers is very small in all sectors, precluding a breakdown of hierarchical workers into various sub-categories.

activity if the respondent is a specialised agent, e.g., a village shopkeeper. For this reason, we expect larger economies to have a more diverse set of reported activities, i.e., to be more diversified. This is so even though individual agents are less diversified. Testing these implications and the proposition above is the object of the remainder of the paper.

2. Data

Home to the Everest, Nepal is located nearly entirely at the foot of the Himalaya mountains. It is largely rural, with 86% of its 21 million inhabitants living in villages or towns of less than 10,000 people. In the early 1990s, Kathmandu, the capital city and largest urban centre, had a population of around half a million people.[4] In the last published census, there were only 34 cities and towns of 10,000 inhabitants or more. Given the mountainous terrain, communications are difficult within Nepal. People living in the remote Northern part of Nepal must trek for many hours by foot or bullock cart before reaching the nearest road. Nepal thus offers a perfect testing ground to examine the effect of proximity to cities on specialisation.

The data we use come from the Nepal Labour Force Survey (NLFS) of 1998/99. The data were collected by the Central Bureau of Statistics of Nepal (CBS). The questionnaire and survey methodology were designed in collaboration with the International Labor Organization, drawing from survey experience in similar countries (Government of Nepal, 1999).[5]

Geographical coverage is extensive. The survey covers 14,355 urban and rural households spread among 719 villages or 'wards' distributed over 73 of the 75 districts of the country. Wards are administratively classified as urban and rural on the basis of their sectoral specialisation relative to neighbouring wards. Rural wards are those that emphasise agriculture; urban wards are those that do not. Some urban wards are located in moderately large cities; most belong to small towns and district-level administrative centres. By design, half of the surveyed wards were selected in areas classified as 'urban'; the other half were selected in rural areas. Urban areas are thus overrepresented in the sample, a feature that suits our purpose perfectly. Since the administrative classification of a ward is endogenous to the very process we seek to understand, we generally ignore it.

Twenty households were selected at random in each ward and employment-related information was collected on each household member except small children (i.e., below the age of 5). There are some 74,622 individuals identified in the sample. We focus on the 45,422 of them who are aged 14 and above and for whom employ-

[4] 421,000 inhabitants in 1991. Current estimates put the 2000 Kathmandu population level at around 1 million. A population census was conducted in 2001 but the results were not available at the time this article was written.

[5] As far as we know, the NLFS has not been used by other researchers, apart from the above mentioned ILO/CBS report. This is a strength to the extent that the work presented here is less subject to data mining bias. But it is also a weakness because the validity and reliability of NLFS have not been tested by other researchers. The reader will find comfort in the fact that, three years prior to the NLFS, the Central Bureau of Statistics of Nepal conducted a Living Standard Measurement Survey (the Nepalese Living Standard Survey or NLSS). The results from this earlier survey can easily be compared with similar LSMS surveys in other countries. This comparison suggests that the work done by CBS is of high quality. This is also the opinion of the World Bank staff in Katmandu.

ment data were collected.[6] Information is available not only on employment by sector and occupation but also on household chores, subsistence activities and unemployment. Two different recall periods were used – one week and one year. Our analysis is based on annual data whenever possible. Information on income is available only for the 26% of the sample whose main employment is wage work.

Table 1 summarises respondents' answer to the question 'What is your main activity?' Categories have been aggregated for presentation purposes. Farming is the main activity of 62% of the sample. Manufacturing – including handicrafts – accounts for less than 10% of the sample. Trade and trade related activities such as hotels/restaurants and transport together account for over 12% of the sample. Services account for the rest.

Respondents were asked to describe how much time they worked over the seven days preceding the survey. They were also asked to distribute their hours of work into 16 different activities which can be divided into three categories: market work, that is, work done primarily or exclusively for the market; what we call subsistence-related work, which may in part be for the market but is largely for self-consumption; and household chores, which are not for the market. Table 2 summarises this information.

The overwhelming majority of those surveyed work in one way or another. On average, total work represents 47 hours per week. Women work more than men but most of their work time is devoted to a variety of household chores. In contrast, men allocate most of their work time to market and subsistence-related activities. Wage work represents one quarter of all male work, agriculture over one third and non-farm self-employment close to one fifth.

Respondents were also asked to describe their employment and job search experience during the 12 months preceding the survey. Information from this part of the questionnaire is summarised in Table 3. In case of multiple activities, we focus on the main activity of the respondent. A breakdown by sector is provided. To economise space in the Table, we have combined similar sectors – agriculture

Table 1

Sectoral Distribution — Main Activity

	Number	%
Agriculture	22,740	62.0
Manufacturing	3,510	9.6
Construction	1,461	4.0
Trade	2,961	8.1
Restaurants and hotels	907	2.5
Transport	806	2.2
Private services	1,072	2.9
Public services	1,945	5.3
Domestic services	1,263	3.4
Number of observations	36,665	

Note: Based on answers to the question 'What is your main activity?'

[6] 2,527 household members have no employment data, probably because they were absent at the time of the survey.

Table 2

Labour Supply and Type of Work (based on a one week recall questions)

	All	Male	Female
Labour supply			
Percentage who work	89.9	86.5	93.2
Hours of work per week	47	42	51
Number of observations	45,422	22,116	23,306
Of those who work:	%	%	%
A. *Market work*			
Wage job	14.7	25.5	5.3
Non-farm self-employment	11.8	18.8	5.7
Handicrafts	0.7	0.5	0.9
Total:	27.3	44.8	11.8
B. *Subsistence-related work*			
Agriculture	33.6	37.2	30.4
Food processing	1.0	0.4	1.4
Construction	0.6	1.0	0.2
Other work	0.4	0.5	0.4
Total:	35.6	39.1	32.5
C. *Chores*			
Cooking	13.9	2.5	23.9
Cleaning	9.0	2.4	14.9
Minor repairs	0.8	0.6	1.0
Shopping	2.9	4.3	1.7
Care for the old	0.5	0.5	0.5
Childcare	6.8	3.2	9.9
Volunteer community service	0.4	0.7	0.1
Water collection	1.1	0.6	1.6
Firewood collection	1.7	1.4	2.1
Total:	37.2	16.2	55.7
Number of observations	40,837	19,122	21,715

Note: Based on answers to the question 'What did you do over the last week?'.

with domestic services, manufacturing with construction, and trade with hotel/restaurants and transport.

Results show that wage work is not equally prevalent in all sectors. Employment in the public service sector – which include health and education – is primarily salaried. In contrast, self-employment is the norm in agriculture and, to a lesser extent, in trade and trade-related sectors such as transport and hotel/restaurants. The data shows that sectors with a high proportion of wage employment are also those in which workers are least likely to work from home.

The occupational structure of the labour force can be used to identify individuals involved in managerial or administrative tasks. The presence of such workers can be viewed as an index of hierarchy in the production process. The data show that the extent of hierarchical production varies dramatically across sectors: while close to a quarter of those employed in private or public services are in management or administration, figures are much lower for all the other sectors – and close to zero in agriculture.

The next panel presents the information available on firm (or organisation) size. In Nepal most employment is found is very small enterprises. The overwhelming majority of surveyed individuals work in firms without employees – i.e., microenterprises. This is true in all sectors except in personal and public services.

Table 3

Sample Characteristics

	All	Agriculture	Manuf. & construction	Trade & transport	Personal services	Public services	Male	Female
A. *Wage employment*								
% in wage employment	26.0	10.7	60.4	25.9	67.3	95.1	36.1	14.5
B. *Location of work*								
% who work away from home	31.3	11.1	62.9	63.1	86.3	95.0	43.6	17.9
Number of valid observations	35,083	22,639	4,861	4,583	1,057	1,940	18,573	16,510
C. *Hierarchy:*								
% in managerial or clerical position	2.9	0.1	3.9	2.8	23.6	24.2	4.7	1.0
Number of valid observations	36,667	24,003	4,971	4,674	1,072	1,945	19,195	17,472
D. *Firm size:*								
No employee%	88.7	98.2	77.5	85.2	52.7	9.8	82.4	95.4
One to four employees %	3.6	1.2	8.9	11.3	10.4	1.7	5.5	1.6
Five to nine employees %	0.6	0.1	2.8	1.1	1.2	0.9	1.0	0.3
Ten or more employees %	7.1	0.5	10.9	2.3	35.7	87.6	11.2	2.8
Number of valid observations	32,613	22,332	3,714	4,125	824	1,618	16,783	15,830
E. *Unemployment:*								
% who searched for a job last year	3.8	2.2	3.9	1.9	3.7	1.2	4.1	2.3
% who did not search for a job	4.1	3.7	3.3	1.3	3.4	1.0	3.3	3.5
Unemployment rate (*)	8.0	6.1	7.8	2.7	5.5	1.6	8.3	7.7
Number of valid observations	37,503	23,914	4,952	4,665	1,071	1,943	19,549	17,954

(*) Time available for work/(work time + time available for work)%.
Based on questions relative to employment and unemployment over the 12 months preceding the survey.
Headings A, B, C, and D report the percentage of employed adults in the various categories.
Heading E refers to the percentage of unemployed in the active population, that is, among those employed plus unemployed.
We distinguish between those who actively looked for a job over the last 12 months from those who did not.
The breakdown by sector depends on the primary sector of activity declared by the respondent.

In personal services, close to half the sample works in firms or organisations with at least one employee. In the public service sector, work in large organisation is the norm because health and education workers, who constitute the bulk of public service workers, work for the government. The data also suggest that private firms are small. The only large employer is the government.

The bottom panel of Table 3 displays unemployment levels for the entire sample and by sector. An individual whose previous main occupation was in a given sector is defined as unemployed in that sector. Unemployment is divided among those who actively searched for a job in the month preceding the survey, and those who did not. The two categories are roughly equivalent, except that search unemployment is less frequent in agriculture. Men are more likely to be looking for work than women. Unemployment is lowest in public services, probably because most workers in that sector are civil servants and are thus less likely to be laid off.

We complement these LFS data with information about the urban population in Nepal using the 1991 population census. For our purpose, a town is defined as a settlement of more than 10,000 inhabitants. There were 34 such towns in 1991. We first compute the distance between each of the 719 surveyed wards and each of these towns. Distances are normally taken along existing roads, except when roads do not exist, in which case we calculate the shortest arc distance to the nearest road, and then the distance to various cities along the road.[7] Distances are then converted into travel time using available information about trucking and walking speeds along various types of roads in Nepal.[8] Off the road travel is assumed to take place by foot – a reasonable assumption for Nepal given the nature of the terrain.

Available information on distance to towns is summarised in Table 4. Certain wards classified as urban for the purpose of sampling are not large enough to qualify as town according to our definition. The average distance from surveyed wards to the nearest town is around 3 hours, with large differences across wards. Around 30% of surveyed wards are located either within towns or very close to towns. A little over half the surveyed households live at most two hours travel away from a town or city; the median distance is 1 hour and 35 minutes. Compared to more nationally representative surveys (Fafchamps and Shilpi 2002), this sample is

[7] This is a very time consuming process that requires a combination of various techniques. e.g., visual inspection of maps, statistical information on road grades, calculation of arc distances, comparisons across various measurements to identify shortest distances, etc. The assistance of Jyotsna Puri (GIS lab, Department of Research of the World Bank) was essential to the success of this operation.

[8] Travel speeds are calculated for various terrains and types of road. Assumed travel times are as follows, in km/hour:

	Highway	Provincial road	Secondary road	Off road
Terai	60	35	10	5
Siwalik	51	29.75	8.5	4.25
Middle mountain	42	24.5	7	3.5
High mountain	36	21	6	3
High Himalayas	30	17.5	5	2.5

These figures were obtained through discussion with various transportation experts and South Asia operations staff at the World Bank. Travel on highways and provincial roads is assumed to take place by truck; travel on secondary roads is assumed to be by cart.

Table 4

Distance from Nearest City

	Wards no.	%	Individuals no.	%
At most one hour	202	29.7	13,460	31.9
One to two hours	169	24.9	10,266	24.3
Two to three hours	80	11.8	4,598	10.9
Three to four hours	68	10.0	4,146	9.8
Four to five hours	39	5.7	2,387	5.6
Five to six hours	37	5.4	2,246	5.3
Six to seven hours	23	3.4	1,365	3.2
Seven to eight hours	8	1.2	496	1.2
Eight to nine hours	12	1.8	720	1.7
Nine to ten hours	9	1.3	560	1.3
Ten to eleven hours	5	0.7	304	0.7
Eleven to twelve hours	5	0.7	317	0.8
Twelve to thirteen hours	6	0.9	385	0.9
More than thirteen hours	16	2.4	1,008	2.4
Number of observations	679		42,258	

slightly more urban in the sense that more sample households live in or near towns than in the country as a whole. However, there also are many households living far from towns and cities in the sample, a reflection of the mountainous and isolated nature of much of Nepal. A quarter of surveyed individuals are located more than 4 hours travel time from the nearest town; 5% are more than 10 hours away. The extent of this variation makes it easier to identify the effect of distance on economic activity. It is the main reason why Nepal was chosen.

3. Empirical Estimation

We are interested not only in testing the effect of proximity to cities on specialisation but also in identifying the reach of cities, that is, the distance over which the effect of proximity can be felt. To this purpose, we opt for a non-parametric approach and conduct empirical estimation as follows. Consider a measure of specialisation y_i for individual i. Urban population residing at various distances h from household i is denoted $\{p_i(h)\}$. We want to test the effect of city proximity on variable y_i. This relationship is expected be non-linear, with unknown inflection points. It can therefore be written:

$$y_i = \int_0^H g(h)p_i(h)\mathrm{d}h + \boldsymbol{\beta}\boldsymbol{z}_i + u_i \tag{1}$$

where $\boldsymbol{z}_i$ is a vector of regional dummies and u_i is an error term. A similar approach is adopted by Chomitz and Gray (1996) in their analysis of land use in Belize. Estimating function $g(\cdot)$ non-parametrically provides a simple way of testing various hypotheses about the effect of location. In addition, the estimated shape of the fitted $g(\cdot)$ function provides useful information about the reach of cities.

The fact that function $g(\cdot)$ is multiplied by population $p_i(h)$ and the presence of censoring in the dependent variable make estimation by conventional

non-parametric techniques difficult. To turn the above equation into an estimable regression model, we discretise functions $g(\cdot)$:

$$y_i = \sum_{h=1}^{H} \gamma_h P_i^h + \boldsymbol{\beta z}_i + u_i \tag{2}$$

where P_i^h is the urban population residing within, say, h and $h-1$ hours of travel from household i, i.e., $P_i^h == \int_{h-1}^{h} p_i(s)\mathrm{d}s$. Parameter H is chosen large enough that proximity effects die out, that is, such that $g(H) \simeq 0$.

To construct these P_i^h variables for $h = 1, \ldots, H$ hours, we combine information on distance to towns with data on population in these towns. The resulting variables give the urban population at various time distances from each ward. Consequently, they only vary from ward to ward. The variables are organised as follows. Suppose that a ward i is 3 hours away from the nearest town, which has a population of 30,000. The next nearest town is 7 hours away and has a population of 100,000. In this case we have, for each household in the ward, $\{P_i^1; \ldots; P_i^{10}\} = 0; 0; 30,000; 0; 0; 0; 100,000; 0, 0, 0$. Table 5 summarises our constructed P_i^h variables. The average surveyed ward has an urban population of 74,000 inhabitants located within an hour of travel time. The median, however, is zero. In the regression analysis, population is measured in millions.

Estimation efficiency can be improved by requiring that the estimated γ_h parameters generate a smooth approximation for function $g(\cdot)$. One such method is the so-called roughness penalty method suggested by Good and Gaskins (1971) and Silverman (1982). In the case of ordinary least squares, the estimator is obtained by minimising:

$$\sum_{i=1}^{T}\left(y_i - \sum_{h=1}^{H}\gamma_h P_i^h - \beta z_i\right)^2 + \sum_{h=2}^{H-1}\lambda^2[(\gamma_{h+1} - \gamma_h) - (\gamma_h - \gamma_{h-1})]^2 \tag{3}$$

where T is sample size and λ is a penalty parameter.[9]

Table 5

Proximity to Urban Population (population expressed in thousands)

Travel time category:	Mean	Median	Minimum	Maximum
Up to one hour	74	0	0	547
One to two hours	70	10	0	679
Two to three hours	67	19	0	679
Three to four hours	66	20	0	773
Four to five hours	67	20	0	750
Five to six hours	84	39	0	750
Six to seven hours	109	54	0	693
Seven to eight hours	77	24	0	788
Eight to nine hours	62	21	0	687

[9] These estimates of the γs can easily be obtained using the regular OLS command by adding $H-2$ artificial observations at the end of the sample such that dependent variable and regressors are zero, except for $P_n^{n-T-1} = \lambda$, $P_n^{n-T} = -2\lambda$, and $P_n^{n-T+1} = \lambda$ for $n = T+1$ to $T+H-2$.

We experimented with bootstrapped standard errors. In our case, given the large sample size and the low penalty parameters used in the estimation, bootstrapped confidence intervals are indistinguishable from the OLS or tobit reported estimates.

In the analysis that follows, various measures of specialisation are used, some of which are limited dependent variables. In case y_i is dichotomous so that OLS is inappropriate, the sum of squared residuals in (3) can be replaced with the required likelihood function.[10] The penalty parameter λ must be adjusted accordingly. When the estimating function is a likelihood function (and provided some other conditions are satisfied), Silverman (1984) has shown that the roughness penalty approach yields a kernel estimator.

The purpose of the rest of the paper is to estimate the above model using data on Nepal. In all regressions, four regional dummies and two agro-ecological dummies $\boldsymbol{z}_i$ are included as regressors to control for geographical factors not due to proximity to cities.[11] Coefficient estimates are not reported here since they are not the focus of our analysis. All reported standard errors are robust (White) standard errors corrected for possible correlation within survey clusters.

Before proceeding with the analysis, we must correct for the possible endogeneity of urban population and travel time. It is indeed conceivable that towns are larger whenever they produce more things. Observing that wards located to large towns are more diversified could then be the result of reverse causation. The same reasoning applies to road construction: public authorities might be more inclined to build roads to farming areas that specialise in specific commercial crops. Since travel is faster on roads, this would result in specialised rural areas being closer to towns in terms of travel time.

To address these concerns, we instrument city population and travel time as follows.[12] Predicted urban population is obtained by regressing the log of actual population on physical characteristics of the district in which the town is located: the log of its size in square kilometers; the log of its arable land area; the log of the distance to the nearest river; its mean elevation; the standard deviation of the elevation within the district; and a dummy if the district is the mountainous part of the country. By limiting our instruments to physical features, we minimise the risk of that instruments are themselves endogenous.[13] Size is included because larger districts can hold more people. Arable land area proxies for food production potential. Distance to the nearest river proxies for accessibility, as roads often follow valleys. Elevation controls for climate: towns are less likely at higher elevations. The standard deviation of elevation is a measure of roughness in the terrain; towns are more likely in flat districts. The mountain dummy is included for the same reason. Regression results are presented in Appendix 1 available from its authors. The R^2 of the regression is 0.27. Regressors in general have the expected sign but are

[10] The linear regression model is used for censored dependent variables. This approach is justified since what we are interested in is the effect of distance to towns on $E(y)$.

[11] The five regions are Eastern, Central, Western, Mid-western, and Far Western. The three agro-ecological zones are Mountain, Hills and Terai.

[12] We should point out, however, that we obtain very similar qualitative results whether we instrument population and distance or not. Results are also insensitive to the choice of instruments. The results presented here use a conservative list of instruments least suspect of endogeneity. We also obtain similar qualitative results if we use the 1971 population census instead of 1991 figures.

[13] We also experimented with a longer list of instruments, including area of irrigated land and the like. This results in a better fit for town population but the rest of the analysis is unaffected. Additional regressors are omitted in the analysis presented here to minimise the risk of endogeneity and overfitting.

multicollinear (mean VIF of 8.7), which explains why regressors are not individually significant.[14] Since we are only interested in predicting population, multicollinearity does not matter.[15]

Travel time between a ward and a town is instrumented using foot travel time as well as physical characteristics of the ward and town: size of the district; arable land; mean elevation; distance from the nearest river (available only for the town); standard deviation of elevation; and regional dummies (East-West). Foot travel time is computed using iso-elevation curves to account for the mountainous nature of the terrain. The regression is estimated in log form. Results are presented in Appendix 2 available from the authors. As expected, foot distance is the major determinant of travel time. Other regressors are significant as well and usually have the expected sign. The R^2 of the regression is 0.84. Population variables P_i^h used in the subsequent analysis are constructed using predicted urban population and travel time instead of actual values.[16] As it turns out, results are virtually identical to those obtained with actual values, suggesting that endogeneity of town population and road construction is not a source of bias in our analysis.

3.1. *Sectoral Division of Labour*

To get a sense of what the spatial division of labour looks like, we begin by examining the sectoral composition of employment as a function of proximity to cities. For individuals covered in the survey, information was collected on the sector of their main occupation. This sector is coded using the two-digit International Standard Industrial Classification (ISIC), yielding 56 distinct sectors of activity. Some of these sectors are tiny; others, such as subsistence agriculture, include the majority of the sample.

We begin by grouping sectors into broad categories such as agriculture, manufacturing, and the like. Estimates of the γ_hs are reported graphically in Figure 1, together with the asymptotic 95% confidence interval. Not surprisingly, results show a strong increase in agricultural emphasis as one moves away from towns, but at distances of less than three hours of travel time other activities tend to predominate. Employment in all non-farm sectors decreases slowly with distance from towns but the effect is hardly significant for private services.

[14] The Variance Inflation Factor or VIF is an informal check for the presence of multicollinearity among regressors. A VIF value of 10 or above is considered a symptom of high multicollinearity.

[15] One referee raised the possibility that urban workers have more human capital than rural workers and thus higher returns to specialisation. This, by itself, may trigger more specialisation in cities even in the absence of agglomeration externalities. This possibility should be kept in mind when interpreting the results. Of course, it is also conceivable that cities attract better educated workers precisely because they need them for more specialised tasks and in larger firms. Disentangling the respective effects of human capital and agglomeration effects is left for future research.

[16] Standard errors are not corrected for the use of predicted regressors. Doing so would be extremely difficult given the way in which regressors are constructed. The fact that instrumented and uninstrumented results are very similar suggests that inference is very unlikely to be affected.

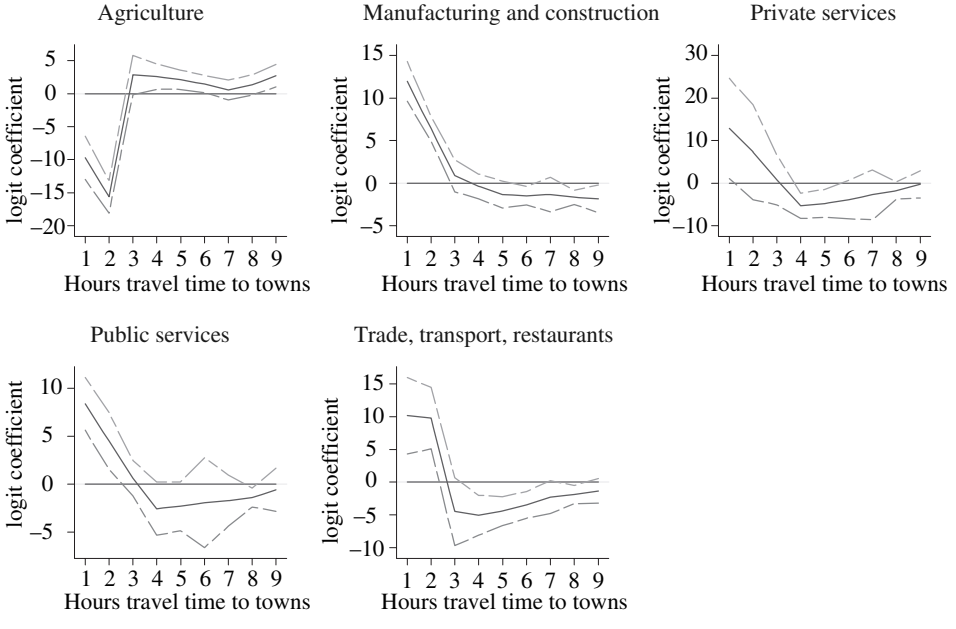

Fig. 1. *Agricultural Employment in Urban and Rural Wards*

In terms of sectoral division of labour, the reach of towns extends further than we had anticipated. Most areas located within one to three hours of large cities are classified as rural, yet they display a specialisation pattern comparable to that of neighbouring urban areas. It does not appear, therefore, that cities 'steal' non-farm jobs from neighbouring villages. Similar results are reported in Fafchamps and Shilpi (2002). It is, however, possible that the proximity effect evidenced in Figure 1 is due to an urban hierarchy phenomenon: large cities may be surrounded by satellite towns that serve as relay with the countryside. Figure 1 may thus be picking a satellite town effect.

3.2. *Individual and Local Specialisation*

Having clarified what the general pattern of activity looks like, we examine the extent of individual and local specialisation. We begin by constructing a simple specialisation index as follows. Let n_{ij} denote the number of hours of work spent on activity j by individual i and let $N_i \equiv \sum_{j=1}^{M} n_{ij}$. Then the specialisation index S_i is defined as:

$$S_i \equiv \frac{\sum_{j=1}^{M} n_{ij}^2}{N_i^2}.$$

The index is basically a Simpson index. With complete specialisation, the index takes the value 1: individual i allocates all of his or her time to a single activity. With perfect diversification – equal time spent on each activity – the index takes the value $1/N_i$. The index is insensitive to size effects or choice of unit – i.e., it does not change if all n_{ij}s are multiplied by the same constant.

Index S_i was computed for each surveyed individual using data on hours spent working in each of seven different production activities – wage work, non-farm self-employment, agriculture, construction, food processing, handicrafts and other work. Average values for S_i are 0.94 for men and 0.92 for women if we exclude household chores; 0.80 and 0.42 if we include them. We thus see that most individuals specialise in a single market or subsistence-related activity but are usually involved in household chores as well. When chores are included in the index, women appear more diversified than men. This is in part because chores are finely defined in the questionnaire.

Estimates of the γ_hs for the specialisation index are reported graphically in Figure 2*a*.[17] Household chores are excluded as they are discussed below. Results show that individuals residing close to large population centres have a higher specialisation index, meaning that they are more focused on a few productive activities.

This finding might be due to the fact that individuals within a household specialise more near towns albeit households remain equally diversified. To verify this possibility, we construct a similar index at the household – rather than individual – level and repeat the procedure. The results, not shown here for the sake of space, are virtually identical. Both sets of results indicate that the effect of proximity is felt up to four hours travel time away from urban areas, which is a longer distance than we expected. Cities shape more of the surrounding rural areas than is typically recognised.

Next we construct a similar index for wards and re-estimate the γ_h coefficients. The average indices are 0.27 and 0.52 with and without household chores, respectively. Results, shown in Figure 2*b*, display the opposite pattern: wards located in and near cities are more diversified.[18]

We repeat the analysis with another, more detailed way of measuring diversification at the ward level. By definition an individual has a single main occupation, so that an individual specialisation index by occupation cannot be computed. But we can use the 56 ISIC codes to construct a more precise measure of economic specialisation at the ward level. The ward specialisation index is computed as:

$$S_k \equiv \frac{\sum_{j=1}^{M} p_{kj}^2}{P_k^2}$$

with p_{kj} is the number of sampled working individuals in ward k whose main activity is activity j and P_k is the total number of sampled working individuals in ward k. If all surveyed individuals in a ward have the same main occupation (e.g., farming), the index takes value 1.

The average of this index across all wards is 0.26. Since farming is the main activity of over 60% of the sample, we also compute a non-farm occupation

[17] Because of heavy censoring, we use a tobit estimator for this regression. To control for possible correlation of errors within wards, we use a ward-level random effect tobit.

[18] For each ward, the specialisation index measures the extent of specialisation among 20 randomly selected households. Given that the same number of households is surveyed in each ward irrespective of ward population, we do not have to worry about population size affecting the ward specialisation index.

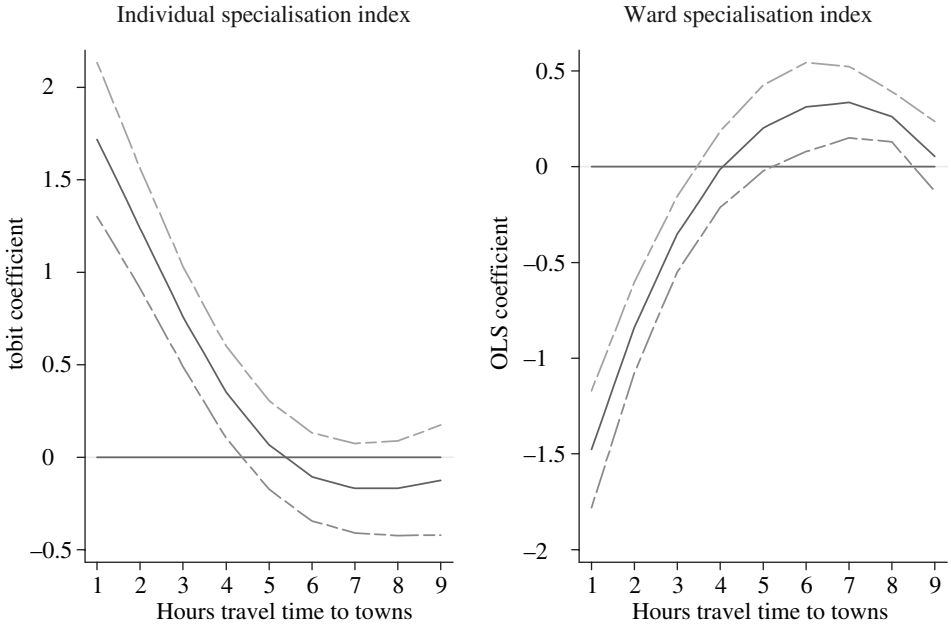

Fig. 2. *Specialisation Index*

diversity index for each ward. Its average value is 0.47. Regression results are presented in Figures 3*a* and 3*b*. Figure 3*a* includes all sectors; Figure 3*b* excludes agriculture. Both Figures show a strong upward trend, indicating that wards located in or near cities are more diversified in general and have a larger portfolio of non-farm activities. The effect of urban proximity is felt up to four hours of travel time.

3.3. *Division of Labour and Household Chores*

We then investigate whether specialisation carries over to household chores. We expect that many activities described as household chores in rural areas are taken over by market providers in cities. Firewood and water are good examples of commodities that are typically self-provided in villages but purchased from specialised suppliers in towns and cities. Similar principles can apply to other household chores: home cooking can be replaced by restaurants and pre-cooked foods; the time spent cleaning the house cleaning can shortened by purchasing household appliances or hiring outside help etc. (Becker, 1965).

Whether or not specialisation carries over to household chores depends on other factors as well. The physical size of homes, for instance, is likely to be smaller in cities because land prices are higher. Consequently, we would expect households to spend less time cleaning their home, in which case it may not be necessary to rely on market providers. Urban households are also likely to have higher incomes. To the extent that good food and a clean home have a high income elasticity, one would expect urban dwellers to spend more resources on cooking and cleaning. If, at the

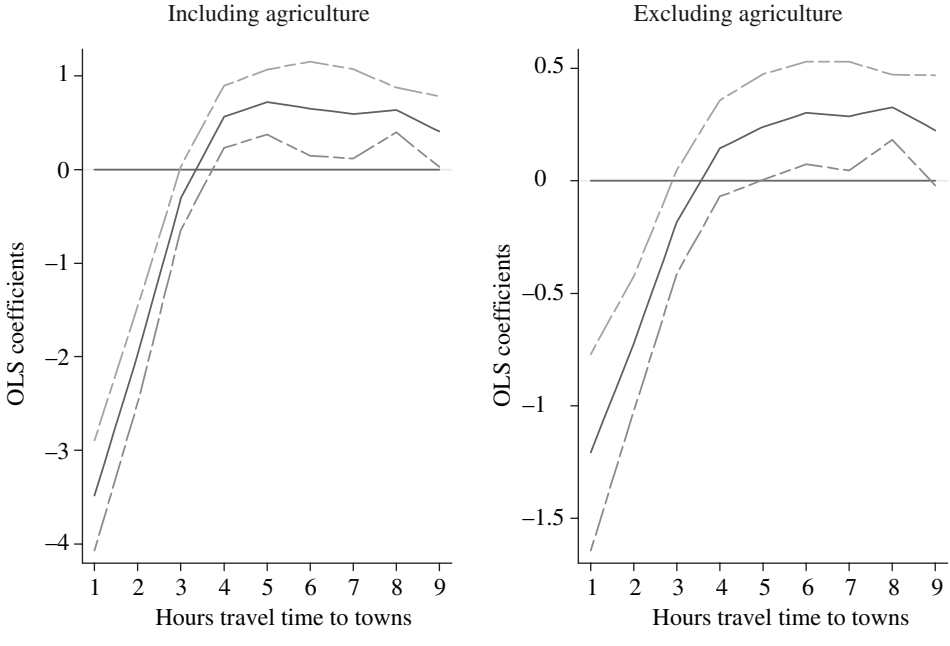

Fig. 3. *Occupational Diversity in Wards*

same time, wages are higher in urban areas so that domestic help is more expensive, urban households may decide to self-provide cooking and cleaning.

We already saw that employment in hotel/restaurants and domestic services is more prevalent in and around cities. We now investigate whether this is sufficient to reduce the time spent on household chores. Each surveyed individual was asked to detail the number of hours spent in 16 categories of activities during the seven days preceding the survey. These 16 activities can be divided into three groups: predominantly market-oriented activities (wage work, non-farm self-employment, and handicrafts); activities pursued partly for the market, partly for self-subsistence (agriculture, food processing, construction and repairs, and miscellaneous work); and predominantly self-subsistence activities (cooking, cleaning, minor repairs, shopping, caring for the old, childcare, fetching water, collecting firewood, and volunteer community services). The third category is what we call household chores. We focus on the share of total work time reported in each of these activities and groups of activities.

Wage work and non-farm self-employment display a strong urban proximity effect. This effect tapers off around four hours away from large cities. The results are not shown graphically for lack of space. Agricultural and food processing work increases strongly with distance from cities. Other market and subsistence activities do not display strong proximity effects but they represent only a small proportion of total work. In contrast, strong proximity effects are found in household chores (Figure 4). As anticipated, the share of work-time spent fetching water and firewood increases rapidly with distance from cities. The same pattern applies to time allocated to minor repairs and childcare. We also see that

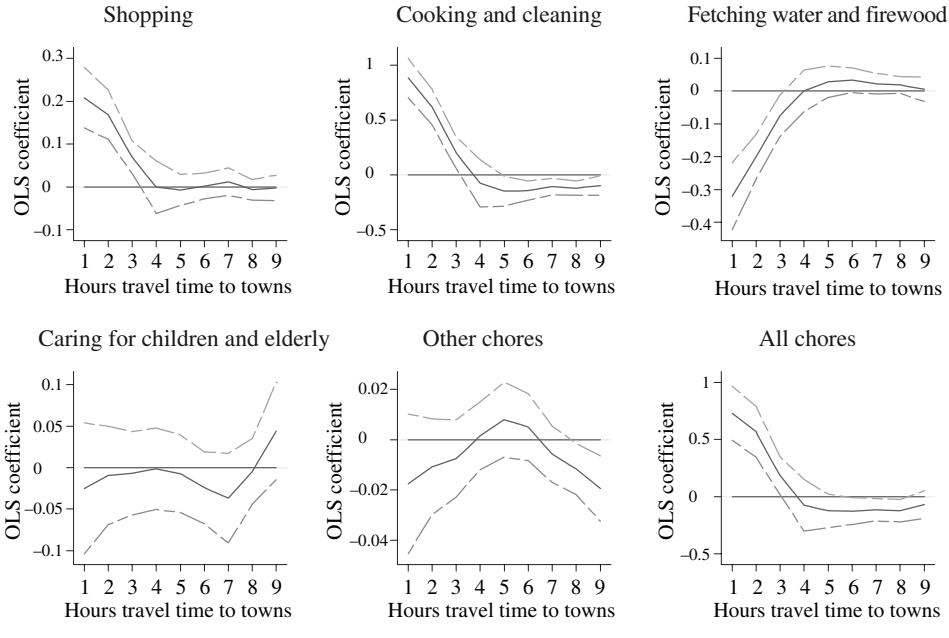

Fig. 4. *Household Chores*

the share of time spent shopping drops dramatically with distance. This confirms that reliance on self-subsistence increases with distance from cities (Fafchamps and Shilpi, 2002).

Results for cooking and cleaning, however, do not fit this pattern: the share of total work time spent on these two activities is much larger close to cities. Together, the effect of cleaning and cooking is so strong that the share of household chores in total work is larger in and around cities (last panel of Figure 4).[19] Although market specialisation applies to some household chores such as water and firewood provision, it does not extend to more 'bourgeois' chores such as cooking and cleaning. For these chores, self-provision absorbs an increasing share of total work time as proximity to cities rises. This result may be due to a high income elasticity for home food and a clean house coupled with a female wage effect. This issue deserves more research.

Since cooking and cleaning are also activities most subject to gender casting, urbanisation turns out to be associated with a sharper distinction of gender roles. Further analysis (Figure 5) indicates that urban women tend to specialise more than their rural counterparts, and that they specialise primarily in household chores. Urban women also spend more time in market-related activities, principally small businesses. In contrast, they spend much less time in subsistence activities such as farming. As a result, women's share of unpaid work in total work tends to decrease with proximity to cities. These findings present a mixed picture regarding the effect of town proximity on women. They suggest that, for a small

[19] The same pattern is obtained if shopping is excluded from the list of household chores.

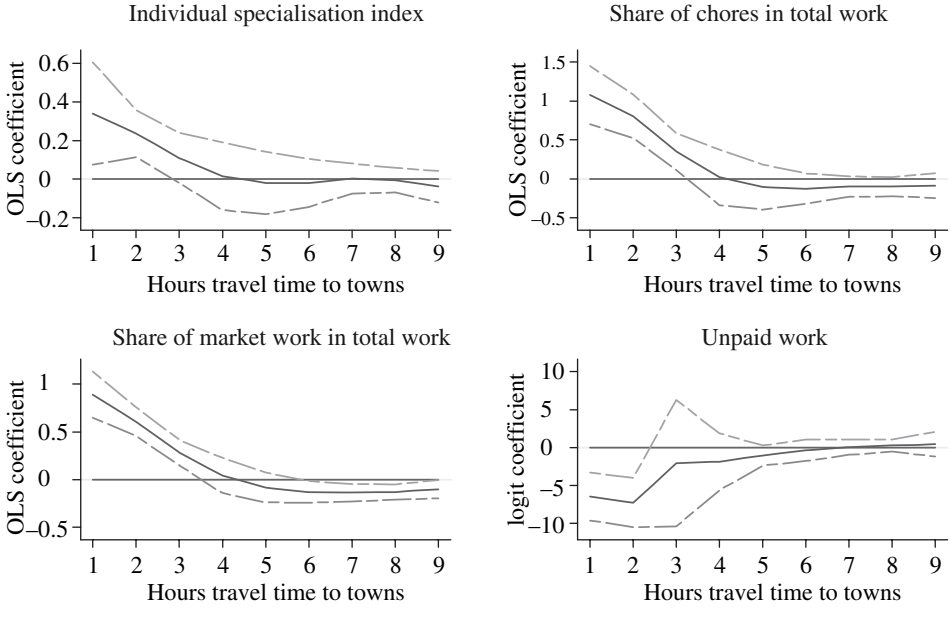

Fig. 5. *Female Specialisation*

percentage of women, town proximity is associated with more market-related work – wage employment, small businesses – and hence more financial independence. For many women, however, it is synonymous with less work outside the home and more emphasis on household chores. These findings thus contradict the perception that 'traditional ideas' and 'backwardness' are to blame for allocating household chores to women. If anything, women spend more time working in and around the home in urban areas. These issues deserve more research.

3.4. *Wage Employment, Firm Size and Hierarchies*

Specialisation may take two forms: through the market or within firms (Williamson, 1985). So far we have examined specialisation through the market. We now investigate whether specialisation is also related to increased firm size. The first indicator we use is the proportion of wage employment in total employment. Surveyed individuals were asked to describe their employment status in their main job. We divide the sample between salaried and self-employed workers.[20] Urban population is our measure of market size.

Results show a strong relationship between proximity to cities and wage employment (last panel of Figure 6). The cut-off distance again is four hours of travel time. This constitutes preliminary evidence that town proximity is associated with larger firm size. Wage employment is closely related with work outside the

[20] Employers are put in the same category as wage worker since they rely on salaried labour. They represent a very small proportion of the sampled population, however, so that they do not really affect results.

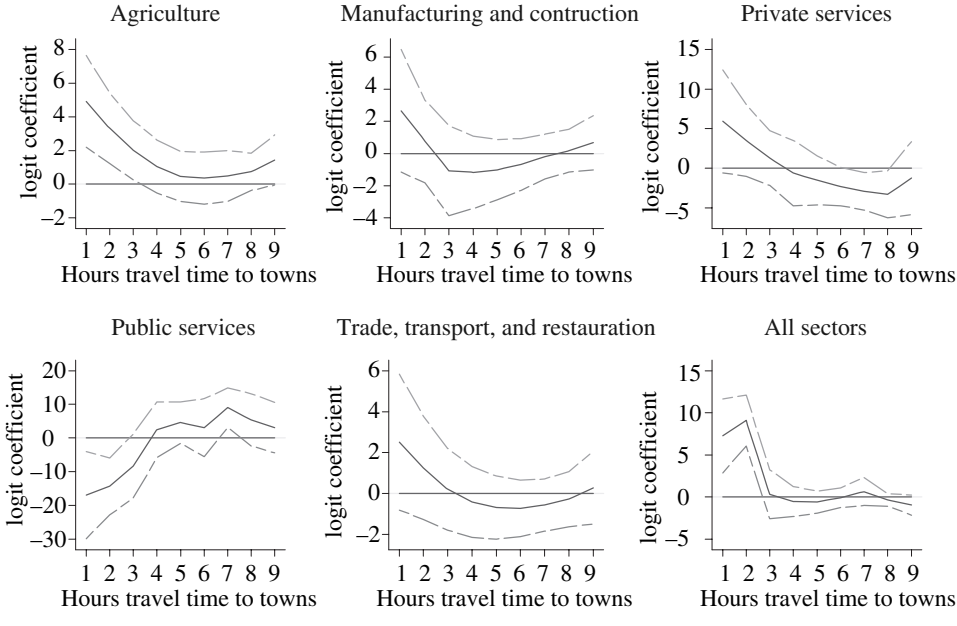

Fig. 6. *Share of Wage Employment*

home: 87% of the self-employed work in or around the home while 89% of wage workers work outside the home. The difference is strongly significant. Regressed on distance to cities, work outside the home also displays a strong proximity effect. To the extent that larger firm size requires assembling many individuals and equipment under a common roof, work outside the home is another indicator that firm size increases with town proximity.

These effects might, however, be due to differences in the sector mix. Wage employment is indeed more prevalent in certain sectors than others (Table 3). To investigate this possibility, we re-estimate Figure 6 for each of 5 broadly defined sectors. Results, shown in the first five panels of Figure 6, show a negative relationship between distance and wage employment in four of the five sectors. The effect, however, is only significant for agriculture. This suggests that much of the relationship between cities and wage employment is due to sectoral effects. In the public services sector, wage employment actually increases with distance from towns and cities. This is probably due to the fact that, in cities, there exist small-scale private providers of health and education while, in rural areas, these tasks are predominantly performed by government employees.

The respective roles of wage and self-employment indicates whether people work in microentreprises or in larger firms, but it does not make any further distinction by firm size. Respondents were asked how many regular paid employees were employed at their place of work. Data were collected as categories – no paid employees, 1 to 4, 5 to 9, and 10 or more. Ordered probit regressions applied to the data uncover a strong proximity effect: firms are larger in the proximity of cities (last panel of Figure 7). But the effect is again much weaker within individual

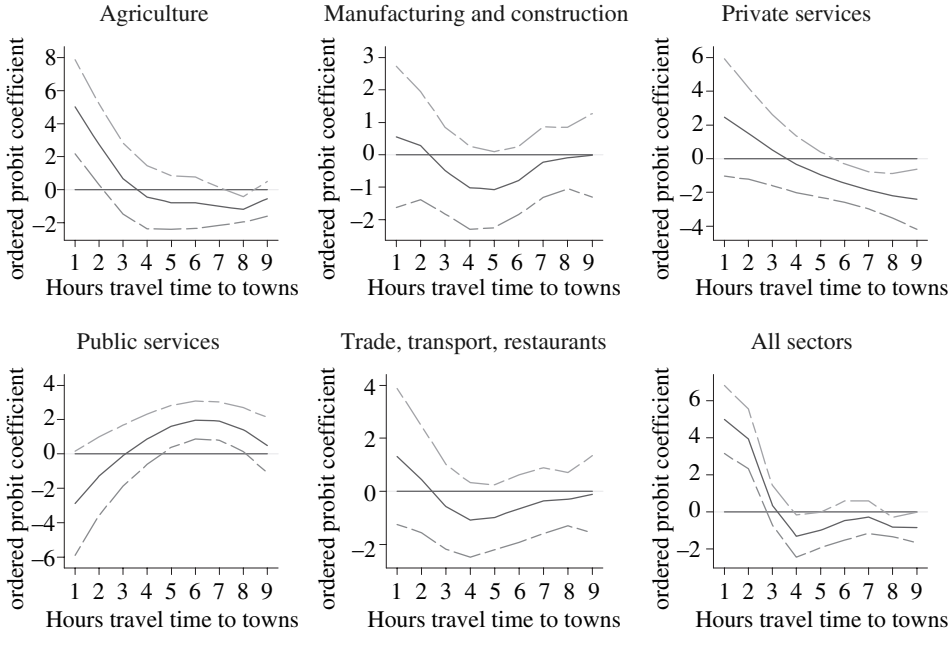

Fig. 7. *Firm Size*

sectors. As for Figure 6, the effect is only significant for agriculture. Public services again display the opposite pattern.

Finally, we seek clues about the existence of hierarchies in the occupational structure of the sample. Large firms require managers and administrative personnel to supervise their workers and ensure the circulation and preservation of information within the firm. Figure 8 shows that respondents are more likely to describe themselves as managers or clerks if they work close to cities. The shape of the relationship is reminiscent of Figures 6 and 7, confirming the association with firm size. Within sector, however, the relationship between urban proximity and hierarchical occupations is loose and mostly non-significant, except for agriculture and trade.

Taken together, these results indicate that cities have larger firms because they harbour more activity in sectors where firms are large. Within sectors, firm size is only weakly associated with distance to and size of urban markets.

3.5. *Unemployment, Labour Supply, and Labour Market Participation*

The urban and peri-urban emphasis on wage employment has implications for the nature of unemployment and the behaviour of the unemployed. The availability of wage work should encourage an explicit search for wage employment. In contrast, if the primary mode of employment is self-employment, searching for a job is irrelevant. Unemployed individuals must instead search for the means to initiate

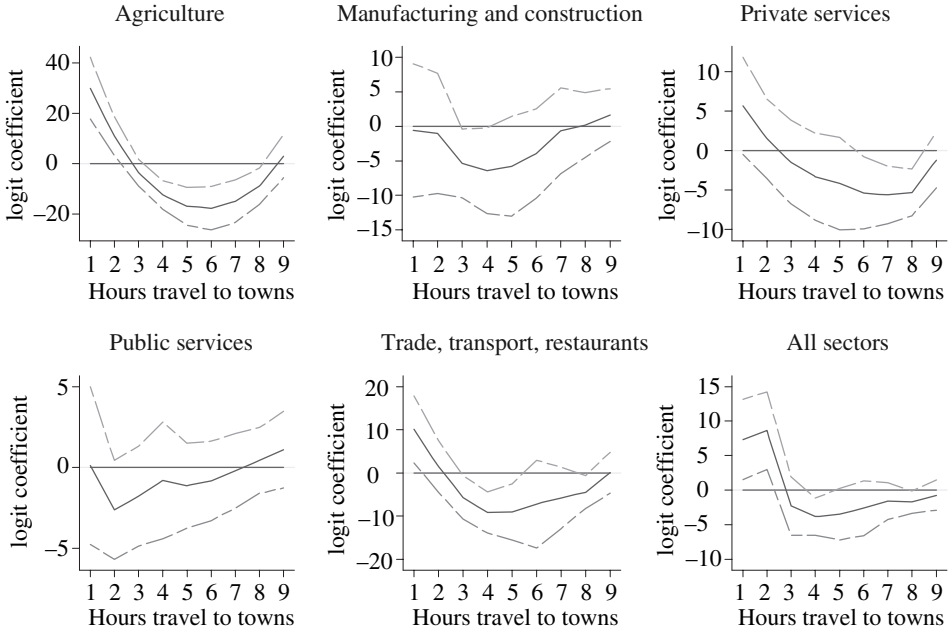

Fig. 8. *Share of Managers and Clerks in Employment*

self-employment – land, bullocks, trade skills or start-up capital. Unemployment is thus expected to take a different form depending on the relative importance of wage employment – and thus on the proximity to cities. Proximity to wage employment may also change people's perceptions. Individuals not looking for work may nevertheless declare themselves as unemployed if they think that they might one day be faced with a wage employment offer.

Respondents were asked whether they 'wanted to work more' and whether they 'looked for work' in the month preceding the interview. We treat responses to the first question as a measure of unemployment (or underemployment) and responses to the second question as indicative of job search. Using these data, we construct two variables: search unemployment (those looking for a job) and non-search unemployment (those unemployed who did not look for a job). Regression results are summarised in Figure 9. As anticipated, we find a strong relationship between city size and search unemployment. But, contrary to our expectation, the relationship between non-search unemployment and proximity to city is similar in significance and magnitude. Results nevertheless confirm that unemployment is more prevalent close to large cities.

It is instructive to compare unemployment to labour supply. Respondents were asked how many days they were working or available for work in the 12 months preceding the survey.[21] We use this information as our measure of labour supply.

[21] To minimise recall bias, the information was individually collected for each of the 12 months preceding the interview and subsequently combined.

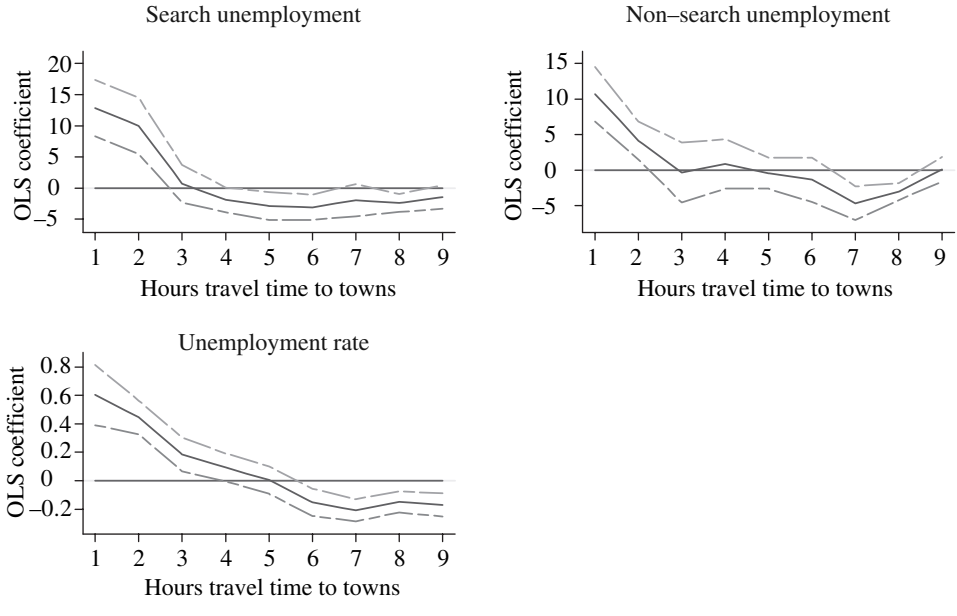

Fig. 9. *Unemployment*

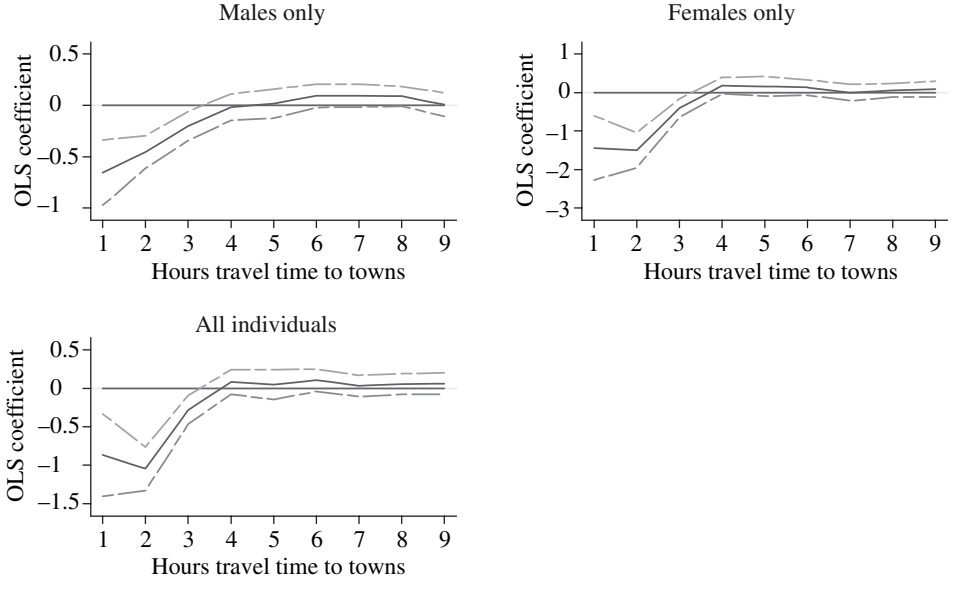

Fig. 10. *Labour Supply*

Results show a dramatic increase in labor supply as one moves away from urban areas (Figure 10*c*). In other words, unemployment is higher in and near cities, but labour market participation is lower.

This result, however, masks a sharp difference between male and female labour supply: while male labour supply shows a mild increase with distance, female labour supply sharply drops in the vicinity of urban centres (Figures 10*a,b* – note the difference in the scale of the graphs). This again reflects the channelling of female labour towards home-based chores.

4. Conclusion

We have examined the relationship between proximity to cities and specialisation. We found that individuals living close to large urban centres are more specialised while the local economy is less specialised. The precisely what one would expect if the concentration of population in and near cities favours the division of labour. Results also show that specialisation effects extend beyond the immediate boundary of cities themselves and affect surrounding villages and towns. Proximity to cities favours rural diversification.

The results presented here indicate that urban and peri-urban areas have more wage workers, larger firms and a more hierarchical organisation of production. Much of this relationship, however, is due to differences in sectoral mix – cities emphasise sectors of activity where wage work is more prevalent and hierarchical workers more needed. We also find evidence of increasing returns due to market size within sectors, but the magnitude of the effect is much smaller and often non-significant. The distinction is important because it is often believed that the geographical distribution of firm size is primarily a consequence of firm-specific returns to market size (Bain, 1956; Sherer, 1973; Pryor, 1972). Our analysis suggests instead that firm size depends primarily on sector – and thus on technology. Cities have more wage work mainly because the sectors of activity that are found there are composed of firms whose technology favours large size and a hierarchical mode of organisation.

What do these results tell us about why there is more specialisation in cities? We can divide possible explanations into two main categories: endogenous and exogenous. Exogenous explanations emphasise locational advantage, such as the presence of the central administration. By increasing the size of the market, the presence of bureaucrats may trigger specialisation in the form of a multitude of artisans and craftsmen. This is the concept of princely city developed, for instance, by Braudel (1986).

Endogenous explanations rely on various forms of agglomeration externalities. It is widely thought that modern cities exist thanks to agglomeration externalities. This is, for instance, the approach taken by Jacobs (1984), Glaeser *et al.* (1992), Ades and Glaeser (1999), and Ellison and Glaeser (1997). As in these other studies, our results provide evidence that specialisation and the ensuing division of labour are present in Nepalese cities. But they fail to provide evidence of strong agglomeration effect, as would have been the case, for instance, if we had found large hierarchical production units in all sectors. Our work suggests that the large number of microenterprises often found in Third World cities is due to returns to market specialisation but that returns to hierarchical specialisation are present but weak. Of course, it is possible that the division of labour among microenterprises

through the market is a historical prerequisite for further specialisation through large hierarchical organisations. Being a cross-section, our data do not permit us to answer this question.

Firm size and the prevalence of wage employment also affect employment strategies. If wage jobs are easier to find in and around cities, urban residents who are unemployed or underemployed are more likely to search for wage employment instead of engaging in self-employment. Because search takes time, we expect active job search to be concentrated in and around cities. This is confirmed by the data: unemployed individuals searching for a (wage) job are predominantly located close to towns and cities. In contrast, there is no relationship between proximity to cities and the number of unemployed individuals *not* searching for a job. The nature of unemployment and the behaviour of the unemployed therefore vary with proximity to cities. These finding are consistent with standard models of urban unemployment in poor countries (Lewis, 1954; Harris and Todaro, 1970; Basu, 1997).

Our analysis also brings to light the fact that specialisation does not extend to all household chores. While households living close to cities allocate less time to chores such as fetching water and firewood – presumably because they purchase them from public providers – they allocate more time to cooking, cleaning, and shopping. As far as shopping is concerned, this finding is consistent with the marketisation of the urban economy. In contrast, the increased time spent cooking and cleaning represents a move away from the market. It probably reflects an increased demand for better meals and a cleaner house, without a proportional increase in the marketisation of domestic services (e.g., through restaurants, domestic servants, and the like).

This has implications for the gender division of labour. For a small percentage of women, proximity to cities means more market-related work in the form of wage employment and small businesses. But in general, town proximity is associated with lower female labour market participation and a more pronounced specialisation of women in strictly home-based chores. This suggests that towns favour a shift in preferences towards a more 'bourgeois' life-style. Since we do not have information on income, we cannot tell whether this only reflects a high income elasticity for home cooked meals and a clean home, or whether living in towns affects preferences independently from income. But it is proximity to towns, not isolation or backwardness, that decreases female work outside the home and favours a sharper division of labour between men and women. Urban women who work are an exception: increased specialisation in and around cities makes them more financially independent as less emphasis is put on unpaid work on the family farm.

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Date of receipt of first submission: November 2001
Date of receipt of final typescript: February 2004

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