Conference Call: Innovation and Cooperation as Entrepreneurial Challenges

Identifying Entrepreneurial Innovation: The interaction of ICT networks structure and downstream trade flows in rural contexts (*IRuralNet)*

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Agriculture has recently received renewed attention in LICs as a majority of the population resides in rural areas (FAO 2005). Additionally, in these countries there are reduced opportunities to sustain livelihoods in rural areas and this is causing a large outflow of rural labour to urban areas (Bryceson 2009). Furthermore, climate change is likely to worsen future agricultural livelihoods due to increased ecological vulnerability in LICs (WDR 2010). In the light of these challenges new suggestions have been made, such as encouraging rural entrepreneurship to transition to a more diversified and dynamic agricultural economy (World Bank 2007); and the use of public private partnerships to permit risk sharing across households and facilitate agricultural innovation in smallholder agriculture (IFPRI 2008).

Despite the availability of such policy recommendations, LICs are struggling to find a new way forward to realise entrepreneurial and innovative solutions. One major obstacle to entrepreneurial innovation is the poor access to reliable and cost effective IP network infrastructure and related enterprise services in the rural sectors of developing countries (Telegeography 2013). The OECD (2013) reports that the price paid for IP transit can vary from between $2 to $150 per Mbit/s per month and that a crucial role in determining these differences is played by the presence and geographical distribution of Internet Exchange Points (IXPs). IXPs usually allow providers of IP connectivity to interconnect via peering agreements and to save on information transmission costs that can, in turn, make the supply of IP connectivity to local users more competitive. IXPs play a relevant advocacy role towards improved competition in the sector by reshaping the overall morphology of Internet access, reducing its hierarchical features and concentration levels (D'Ignazio and Giovannetti 2006, 2007 and 2009) hence lowering barriers to entry and increasing competition in the relevant connectivity markets.

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Our main research hypothesis is that improved terms of upstream connectivity, both in terms of its costs, reliability and quality, are becoming progressively more important for the economic viability of smallholder agriculture and ecotourism business activities. The increased relevance of upstream costs is also related to the prominent role played by the access to and the distribution of information about products and services in the relevant demand value chains. This is, in turn, due to the fact that a progressively larger proportion of the logistic costs for rural/ remote economic activities, often associated to service inputs, can be reduced through a substitution by new provision of information technology. Relevant input services where Internet connectivity plays a crucial role with regard to: availability of finance, insurance, market information, advertising and marketing. The persisting presence of high IP access cost differentials at different locations is due to the distance to the relevant connectivity hubs making this substitutability between real and information services more expensive. Consequently, any programme of IP connectivity expansion is hindered by rising costs that face rural households who already face considerable economic hardship for remote agricultural activities, leading often to a lower than optimal amount of insurance and credit uptake[3].

Our research methodology will be to concentrate on both: the upstream features of IP access and on the downstream needs, jointly determining the economic viability of the chosen cases. We will use existing datasets on IP connectivity (CAIDA 2012) and on IXP memberships and reach (OECD 2013), and perform a network analysis to assess the level of upstream market concentration and competitiveness identifying the costs and quality of IP access infrastructure in the chosen areas. On the demand side, we will use the data from developing countries (MIC and LIC) through both survey and interview tools, to identify the role played by IP connectivity in the ability to take part to global logistic chains shaping demand, both for ecotourism services and agricultural products. We will be conducting interviews with households within these rural communities to learn how they choose technologies that are offered by institutions (whether these are public, private or partnership forms. Our understanding is that that household technology choice is based on community norms and locally constructed attributes and values accorded to agricultural products and production techniques (Cornwall and Scoones 2011). Our focus will be on the human dimension of entrepreneurial innovation by emphasising the institutional and organisational aspects of IP connectivity provision in the design of our demand side tools to obtain a deeper sense of the complexity of household choice. This will be particularly useful in understanding how the community of households use cooperation and valuation in their choice of available entrepreneurial innovations.

[3] We will also consider the comparative advantage supplied by reliable connectivity for access to credit via innovative online credit channels, whereby organizations such as Bidnetwork provide online uploading facilities of business plans for SMEs in developing countries for matching with investors in developed ones (See for example bidnetwork.com)

These findings will be related to recent studies on the increased complexity in the networks of trade flows (De Benedictis, Tajoli 2011) and trade routes (Ercsey-Ravasz et al., 2012). Furthermore, the creation of a new database based on available upstream data with the new survey data collected downstream ones will allow a matching of the complexity features of both the downstream demand chain features and the upstream connectivity network ones and permit a particular focus on the appropriate policy interventions required to overcome inclusion obstacles of remote agricultural activities into the information trade flows.