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Market Integration and Deforestation in the Peruvian Amazon

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Abstract

While deforestation in general is the result of the complex interaction of a variety of factors, land use change for the purpose of agricultural expansion is considered to be a main cause for deforestation in the Peruvian Amazon. Market growth, commercialization and in particular increased market integration in turn constitute important economic factors underlying and promoting agricultural expansion. As an initial step towards a more comprehensive analysis, we investigate the integration of the Department of Ucayali, located at the Western margin of the Amazon basin, into the agricultural markets of Peru's coastal areas which are the main consumption markets as well as the gateway to international markets. Cointegration analyses are carried out and, where indicated, vector error correction models (VECM) are estimated using wholesale price data for rice, cassava and papaya from different market places from the coastal capital of Lima along the trading route crossing the Andes to Pucallpa, the capital of the Department of Ucayali. In case of rice and cassava, there is cointegration between markets in the Andean highlands and Lima but markets in Ucayali are not found to be cointegrated with the coast, reflecting the fact that both staples are produced primarily for self-consumption. In case of papaya, markets of the department are found to be cointegrated with the coast. However, VECM analyses yield a low price transmission elasticity of 0.37, as compared to a price transmission elasticity of 0.64 between the highlands and the coast. This result highlights the importance of the mountain passage for the market integration of the Peruvian Amazon. The conclusion of this initial analysis is that, although the Peruvian Amazon already is integrated with national markets, efforts in infrastructure improvement and the strengthening of market institutions will have the potential to substantially increase market integration and, hence, commercial opportunities and the pressure for deforestation. We propose to extend the analysis to include palm oil, which accounts for a large share of the increase in agricultural area over the past years. We suggest to further explore the relative importance of market integration and other factors for deforestation.

Keywords: Amazon, cointegration analysis, deforestation, market integration, Peru, price transmission, vector error correction model