

C01

Smallholder productivity, market access, and international linkages in rubber and palm oil production in Jambi Province

Bernhard Brümmer (PI), Zulkifli Alamsyah, Dedi Budiman Hakim, Rina Oktaviani, Anna-Mareike Holtkamp, Thomas Kopp and Raja Sharah Fatricia

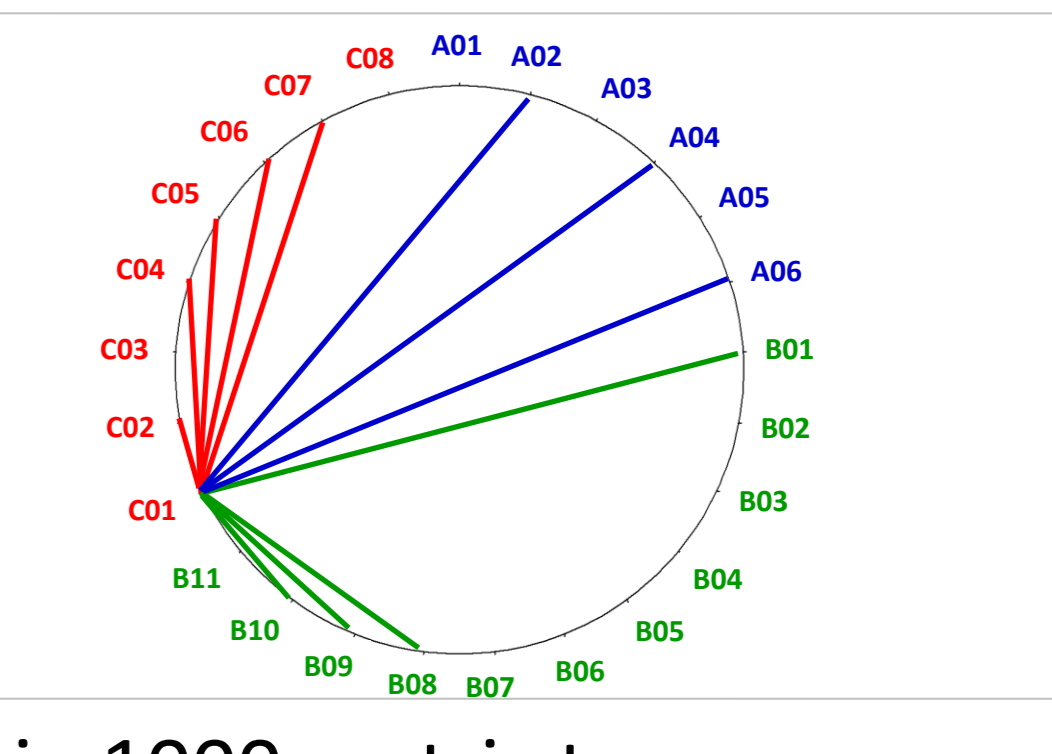
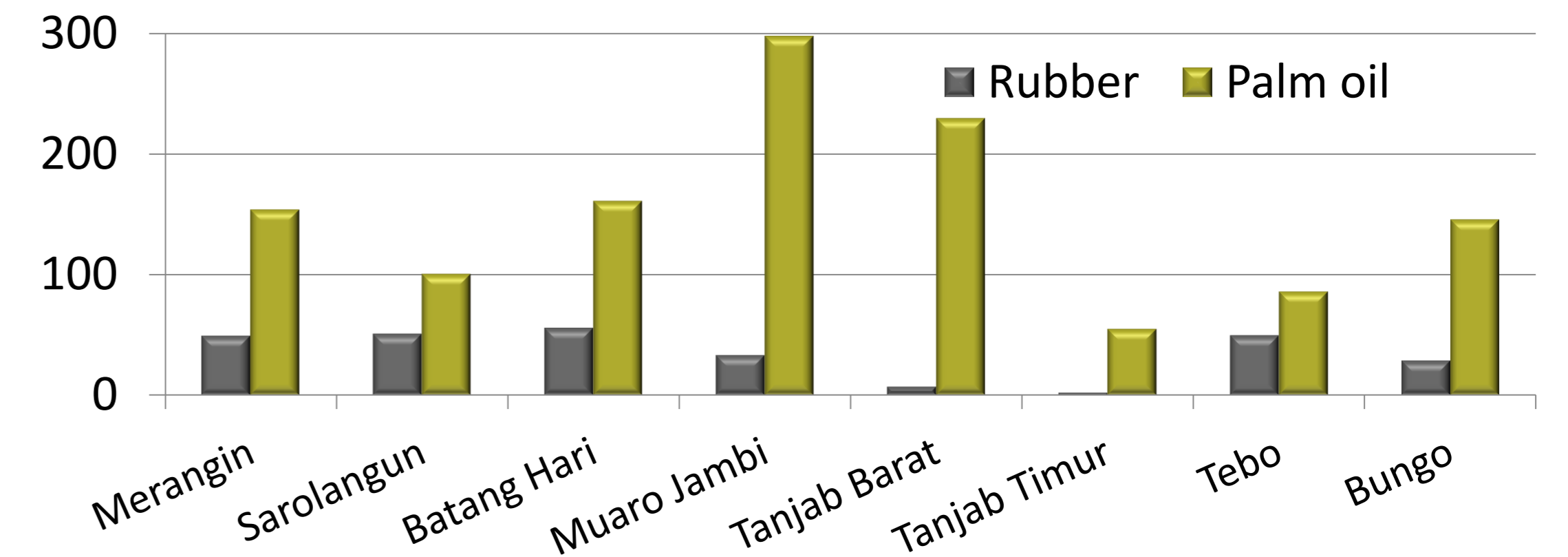


Fig. 1: Production 2008, in 1000 metric tons



Project summary

Key effects of two important transformation systems, rubber and palm oil, will be analyzed at three levels along the value chain:

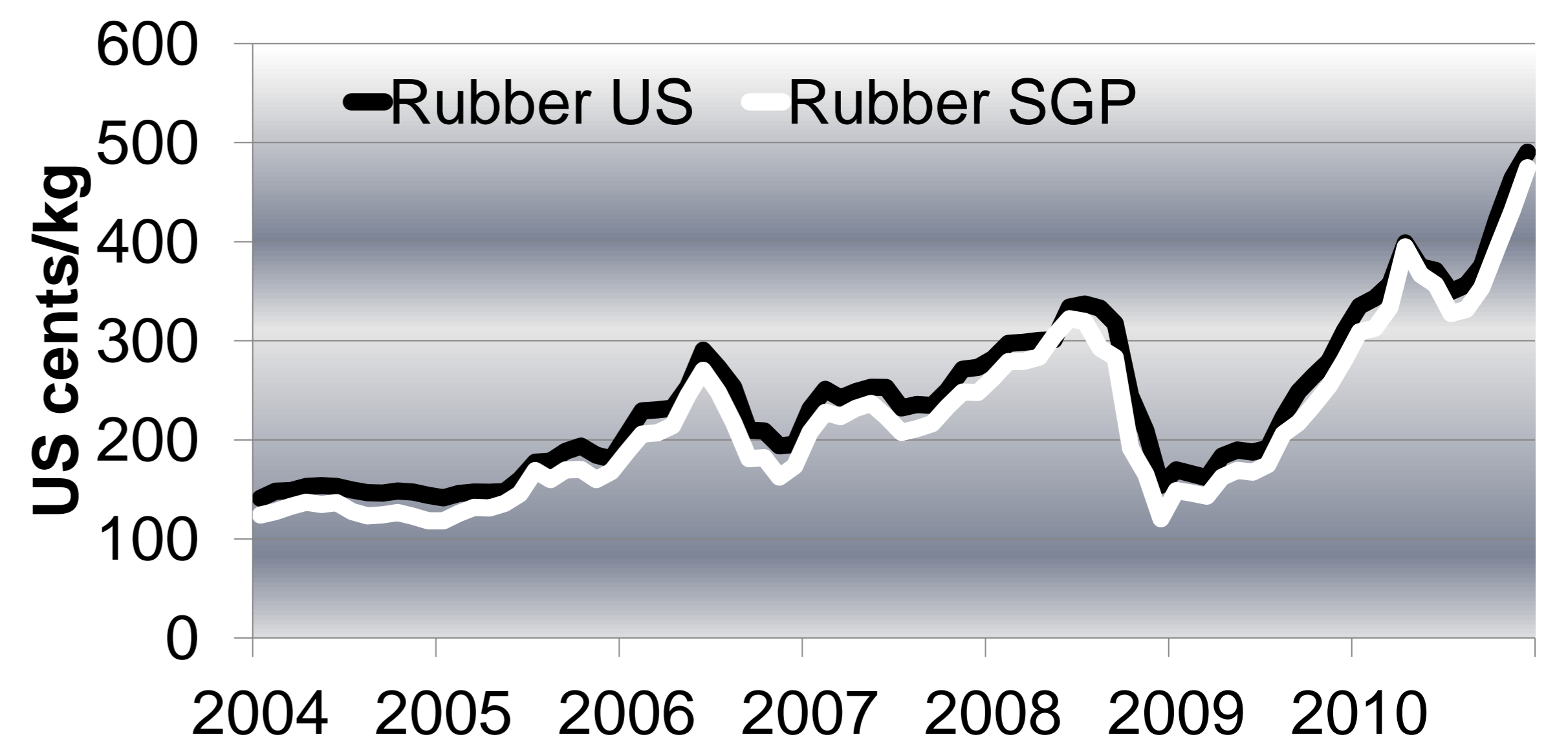
- Smallholders: Productive and environmental efficiency
- Traders: Value chain analysis
- Global markets: Price transmission and trade flow analysis

Smallholder production

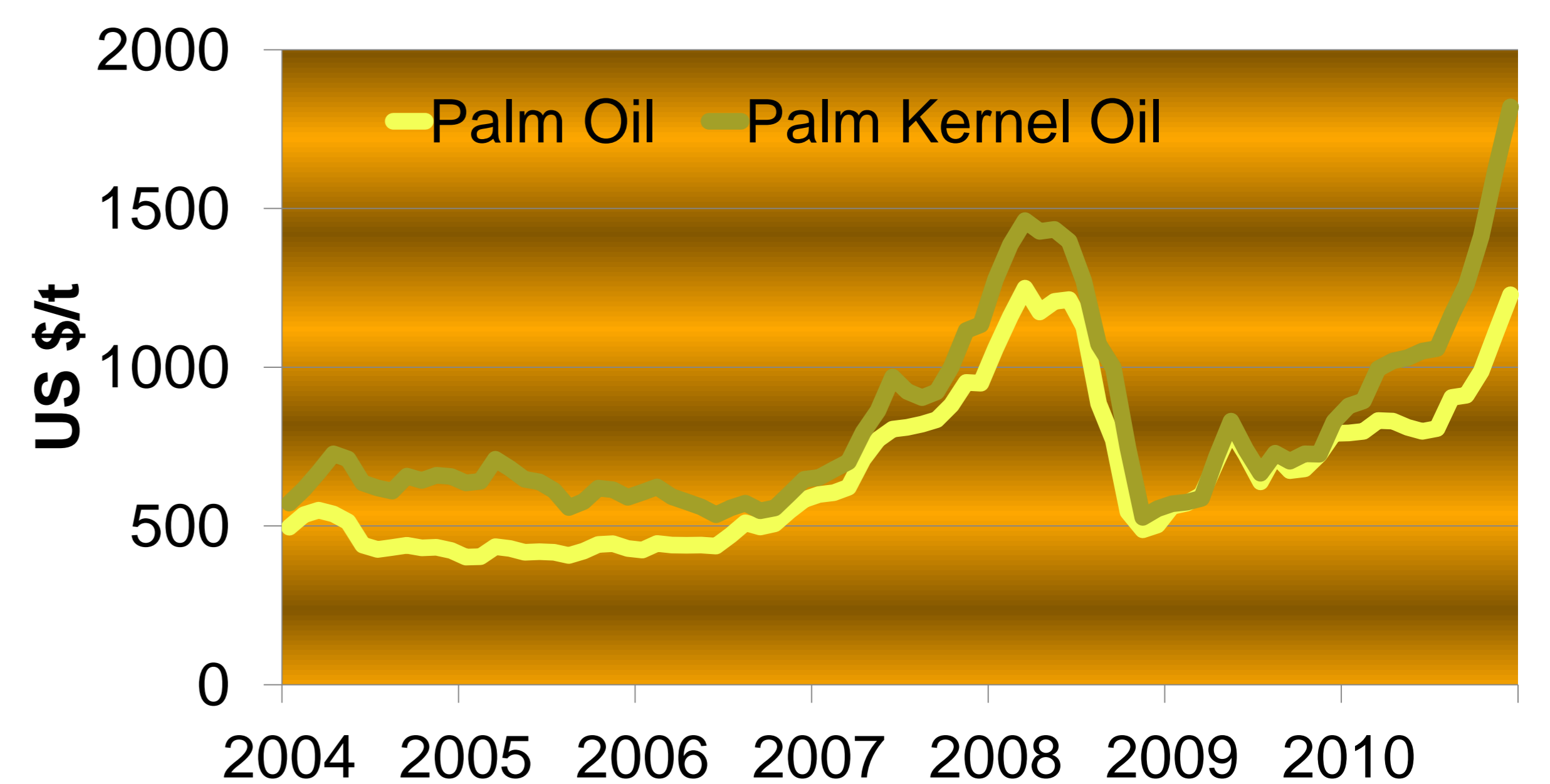
Local traders

Global markets

Rubber



Palm oil



Smallholder production

Local traders

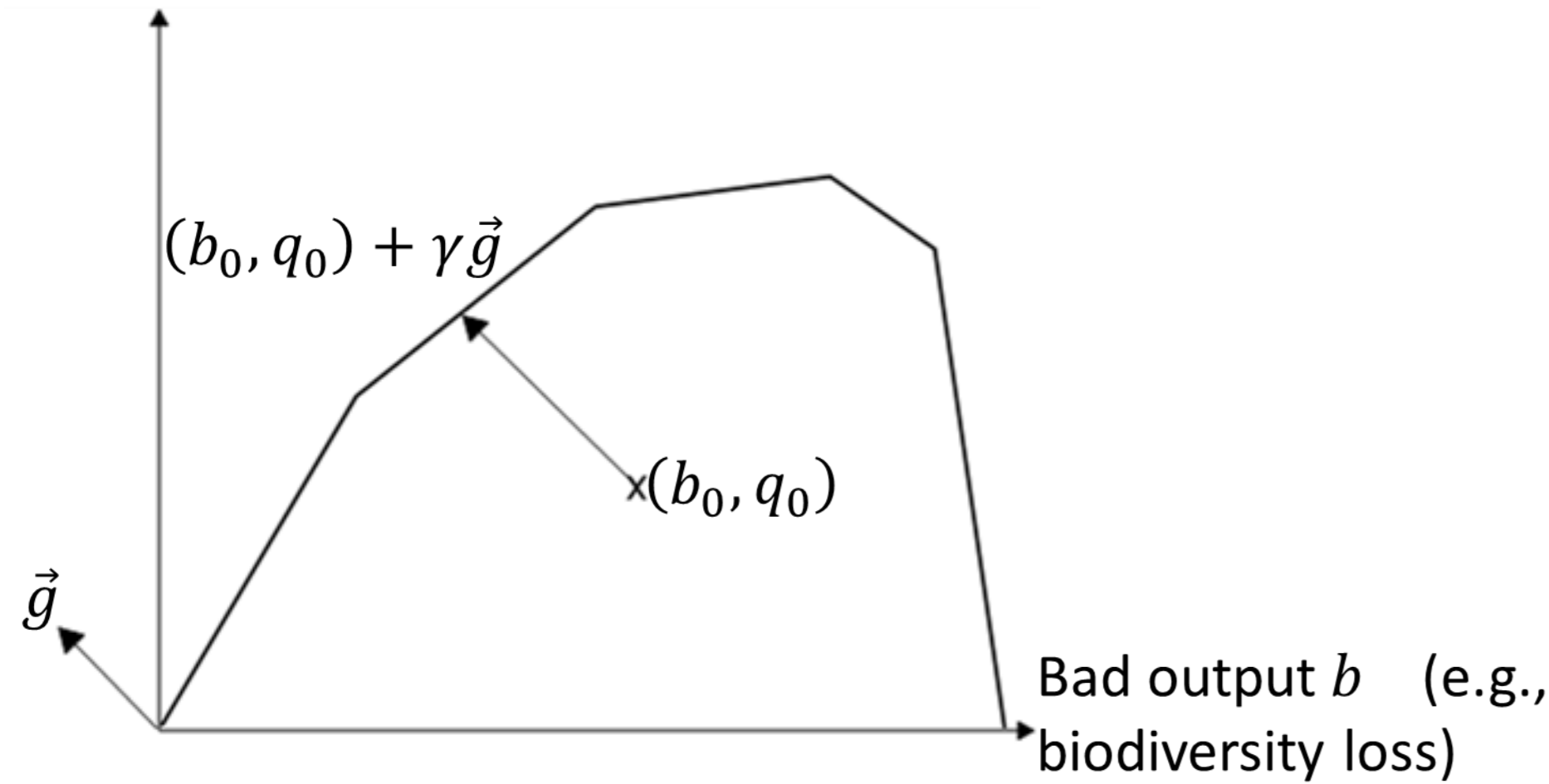
Global markets

WP1: Technical and environmental efficiency of smallholder palm oil and rubber production

Data: Household sampling framework
Methods: Stochastic frontier analysis
Multilevel modeling
Shadow price estimation

Hypotheses: Substantial differences in technical and environmental efficiency

Figure 2: Directional efficiency measurement
Good output q (e.g., rubber)



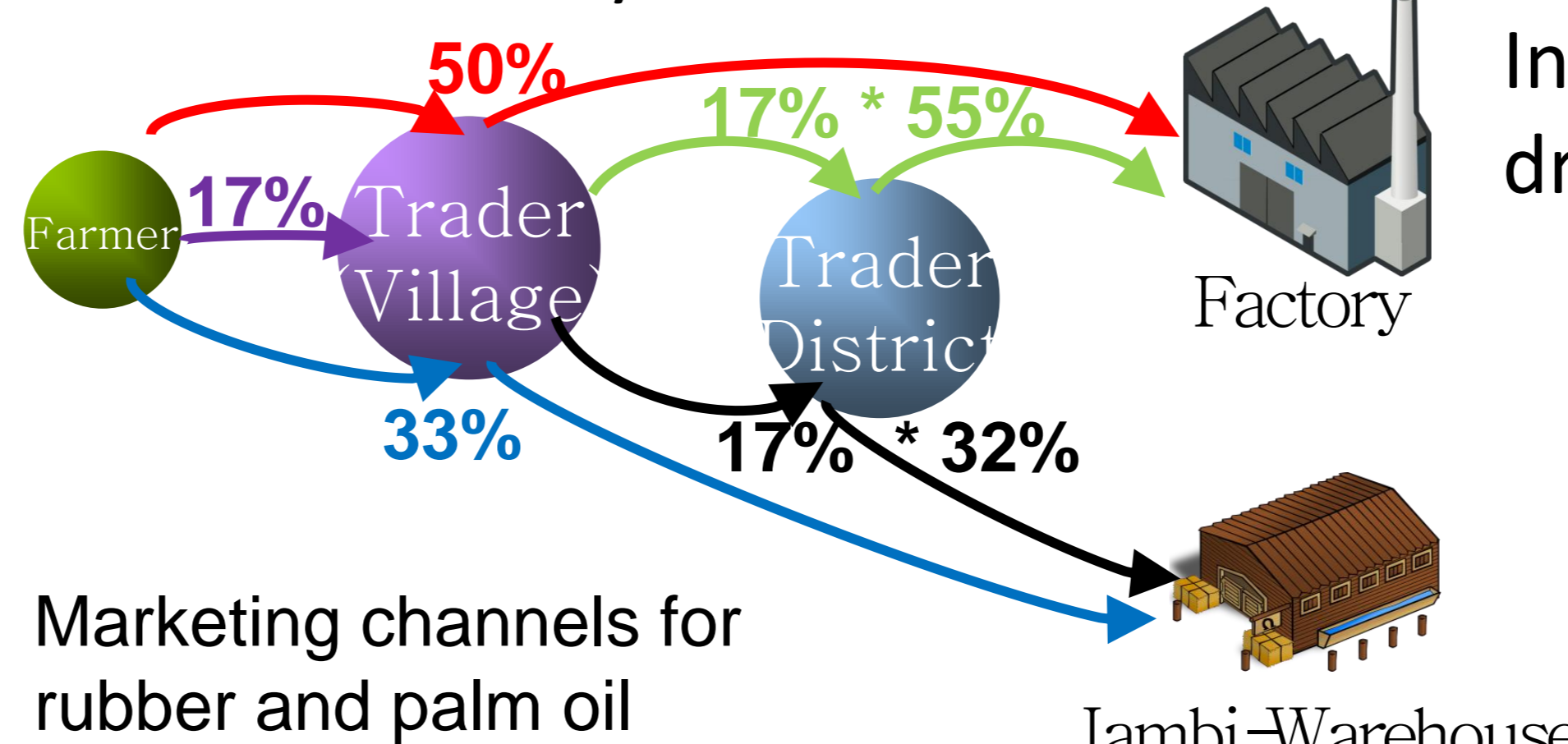
Preliminary results:

Slightly negative correlation between $\log(\text{revenue})$ and Biodiversity index of -0.6403 for oil palm plantations
High variance of biodiversity index on plantation with equal revenue

WP2: Functioning of the value chain at the village level

Data: Survey of 335 traders in five districts, focusing on the complex interactions between smallholders, local middlemen, regional traders, and processors
Methods: Appraisal of institutions
Marketing margin analysis

Results: rich diversity of value chain properties do exist, tremendously affecting traders' marketing margins
Further hypothesis: traders exercise market power due to farmers' credit constraint and asymmetric information



WP3: Linkages to international markets for oilseeds and rubber

Data: Daily data on buying and selling prices of crumb rubber factories; trade value data

Methods: Price transmission analysis based on Asymmetric Vector Error Correction Models
Gravity modeling of trade flows for identifying drivers of trade costs

Results: asymmetric price transmission does occur at processor level of the rubber value chain, strongly indicating market power due to cartelization. International price developments are key drivers for rubber value chains in Jambi

