Extended Abstract for:

Revisiting the Kuznets Curve: Development and Inequality in Nang Rong, Thailand.

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The contemporary development process has become characterized by rapid change that has an inherently disruptive effect on both social and economic institutions. One of these changes that has attracted the most attention among scholars examining the implications of development is the emergence of greater levels of social and economic inequality in the early stages of development. In this paper, we use information on household asset ownership to examine patterns of inequality over a sixteen-year period between 1984 and 2000 in Nang Rong, a largely agrarian district in Northeastern Thailand. More specifically, we investigate the hypothesis that inequality has increased in Nang Rong as the changes associated with the development process have taken place, and explore some of the household mechanisms shaping this relationship.

A number of theories exploring the relationship between inequality and development suggest that the economic and social changes that are required at the earlier stages of development may result in increased levels of inequality. Of these, the most well known is that of Kuznets (1955, 1966), who argued that the relationship between income, or wealth, and level of development was curvilinear, following a general 'inverted U' pattern. Based on data from a small number of industrial countries, Kuznets argued that inequality increases in the earlier stages of development, peaks at an intermediate level of development, and finally declines only at higher levels of development. While this theory has been explored extensively over the fifty years since it was first formulated, the majority of research in this area has focused primarily on trends at the national or regional level, with relatively little research examining its implications at more micro levels of analysis. In this paper, we focus on inequality at the village and district level, examining trends in household wealth over time. Our primary questions are: What level of inequality in terms of household assets existed at different points in time? How have the levels of inequality within and between villages changed over time? How are these changes related to the development process as experienced in this region? Finally, at the household level, how do demographic characteristics influence whether the household improves its social and economic standing? Because these patterns may depend on a variety of factors, we examine both patterns of inequality on a broad, district-wide scale, and inequality both within and between villages over time.

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The period studied has been one of significant change in Nang Rong, with the region becoming increasingly integrated into the broader Thai and global economy. While paddy rice farming remains central to the Nang Rong economy, the past two decades have seen the gradual emergence of a non-agricultural sector of the economy, a greater emphasis on market oriented activities, and a marked increase in the social importance of wealth in the form of consumer goods. In addition, this period has seen the continuation of a series of dramatic demographic changes that have affected both the region and Thailand as a whole. In particular, this region has seen extremely rapid declines in fertility, and sharp increases in population mobility, particularly towards urban areas. As is the case for much of rural Thailand, much of this movement is circular (Fuller 1990; Guest *et al*. 1994), with migrants retaining strong ties to their home communities and households. As a result, migrant remittances have become an increasingly important part of the rural economy, with much of it spent on consumer goods (Guest 1996). As a result, migration has become an important strategy through which households maintain or improve their social and economic standing.

The data we use to examine the relationship between inequality and development comes from a series of linked surveys carried out in 1984, 1994, and 2000 in Nang Rong. In each wave, information on a selection of household assets was collected from every household in 51 villages identified in the 1984 wave of data collection, allowing a detailed picture of changes in asset ownership over time. Information was gathered on both agricultural and non-agricultural assets in all waves, although the list of assets changed over time, reflecting shifts in their prevalence in the area. As shown in Table 1, patterns of asset ownership changed substantially over the period studied. In particular, ownership of consumer goods, such as televisions and refrigerators, has increased steadily over the period studied. While the average household owned 0.08 televisions in 1984, by 1994 the average number of televisions (both black and white and color) owned was approximately 0.7. By 2000, television ownership was the norm, with well over half of the households reporting owning a color television. Important changes were also taking place in the types of agricultural assets the households owned, with the emergence of larger scale poultry and cattle farming.

Based on the information gathered from households regarding asset ownership, we use principle components analysis to create weights for each asset owned by the household, which enables an asset score for each household to be created by multiplying this by the number owned of that particular asset, following the approach adopted by Filmer and Pritchett (2001). The weights assigned to the assets in each wave of data collection are shown in Table 2. As expected, items that can be considered

to be associated with wealthier households, such as cars or refrigerators, carry considerably more weight than more commonly owned assets, such as water pumps. Other household characteristics, such as using biomass for cooking rather than electricity or natural gas, lower the value of the index. Filmer and Pritchett found that this asset score performed well in predicting wealth related outcomes in comparison with the income or expenditure data that are typically used when assessing household wealth.

Using the asset scores assigned to each household, we will be able to calculate a number of measures of inequality for each wave of data collection, including the Gini coefficient, the Theil index, and the coefficient of variation. These will be calculated first for all households in the sample, providing a broader picture of inequality in the area over the period studied. We will then examine patterns of inequality within and between villages over the same period. Based on these patterns, we will then discuss the social and demographic characteristics of the households that were poorer or richer in each wave, allowing for a discussion of the causes of poverty in the region over time. Finally, we will take advantage of the linked nature of the data to examine the social mobility of households over time, allowing us to examine how much movement there has been in terms of social and economic standing in Nang Rong, and the characteristics of households that have either been successful or unsuccessful in maintaining or improving their social and economic standing.

We expect to find that inequality has increased in Nang Rong over the period studied, reflecting in part the differing ability of households to take advantage of the opportunities presented by increased integration into the modern economy and other changes associated with development. We expect that both inter- and intra-village inequality will have increased, but that this will be more marked for comparisons between villages. We also expect to find that those households that have adapted by investing more heavily in education, are more integrated into emerging non-agricultural sector of the economy, and who have been able to send migrants to urban areas will have benefited the most from the development of the region. Those households who have remained focused on agriculture and have not been able to rely on migrants for external sources of income are expected to have fared poorly, and will have struggled to maintain their economic and social standing relative to other households in the sample.

This study has the potential to inform the literatures on international development and social stratification, as well as a broader literature on the role of the demographic characteristics of

households in shaping how well they are able to adapt to social and economic change. By examining the implications of these changes at a more micro-level than previous research in this area and focusing on households, we are able to provide a much more detailed picture of the relationship between inequality and development than has previously been possible. In addition, we are able to explore the characteristics of successful households, including the ways in which they have adapted demographically.

References

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Table 1: Means and Standard Deviations for All Variables Included in Calculation of 1984, 1994, and 2000 Household Wealth Indices.

Household Asset	Description	1984		1994		2000	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
PUMP	Number Of Water Pumps The Household Has	0.04	0.20	0.07	0.26	--	--
ITAN	Dummy Variable For Itan Ownership	0.01	0.09	0.02	0.15	0.13	0.34
LNLAND	Natural log of Land Area Owned (Rai)	2.46	1.30	7.35	3.02	--	--
LNCOW	Natural log of Number of Cows Owned	0.13	0.54	0.24	0.66	0.27	0.68
LNBUF	Natural log of Number of Buffalo Owned	0.98	0.75	0.72	0.77	0.25	0.56
LNPIG	Natural log of Number of Pigs Owned	0.24	0.52	0.17	0.49	0.12	0.50
LNCHICK	Natural log of Number of Chickens Owned	2.33	1.16	--	--	1.92	1.32
LNDUCK	Natural log of Number of Ducks Owned	0.42	0.83	--	--	0.98	1.23
HOUSETYPE	Dummy- Quality Of House (Good=Two Floors, Concrete Or Brick)	0.08	0.28	--	--	--	--
CKFUEL	Dummy- Cooks With Wood, Charcoal, Or Rice Husk (Not Electricity Or Gas)	0.99	0.07	0.96	0.20	0.93	0.26
BWTV	B&W Television Ownership	0.08	0.27	0.40	0.49	--	--
CTV	Number of Color Televisions Owned	--	--	0.30	0.46	--	--
SMLTV	Number Small Color Televisions Owned (Less Than 17in.)	--	--	--	--	0.52	0.52
BIGTV	Number Color Televisions Owned	--	--	--	--	0.20	0.42
VCR	Number of VCRs Owned	--	--	0.02	0.13	0.07	0.26
FRIDGE	Number of Refrigerators Owned	0.01	0.11	0.15	0.36	--	--
SMLFRIDGE	Number Of 1-Door Refrigerators Owned	--	--	--	--	0.41	0.50
BGFRIDGE	Number Of 2-Door Refrigerators Owned	--	--	--	--	0.01	0.10
CAR	Number of cars owned	0.02	0.13	0.04	0.21	0.01	0.09
MCYCLE	Number of Motorcycles Owned	0.09	0.31	0.32	0.52	--	--
BGMCYCLE	Number Of Big (>100cc) Motorcycles Owned	--	--	--	--	0.37	0.58
SMLMCYCLE	Number Of Small (<100cc) Motorcycles Owned	--	--	--	--	0.29	0.50
LATRINE	Household Has Latrine, Either Indoor Or Outdoor	0.16	0.36	--	--	--	--
SEWING	Number of Sewing Machines Owned	--	--	0.10	0.31	0.08	0.30
WINDW	Dummy- House has either Bug Netting or Glass Panes	--	--	0.08	0.28	0.18	0.38
ELECT	Dummy- household has electricity	--	--	0.93	0.26	--	--
LRGTRAC	Dummy - HH Owns Large Tractor	--	--	0.00	0.02	0.00	0.04
SMLTRAC	Dummy - Household Owns Iron Buffalo/Small Tractor	--	--	0.16	0.37	0.35	0.48

Household Asset	Description	1984		1994		2000	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
GENERATOR	Dummy - HH Owns Electricity Generator	--	--	0.00	0.04	--	--
THRESHER	Dummy - HH Owns Rice Thresher'	--	--	0.00	0.07	0.01	0.08
TRUCK	Dummy For Big Truck (6+ Wheels) Ownership	--	--	--	--	0.02	0.12
PICKUP	Number Of Pickup Trucks Owned	--	--	--	--	0.06	0.24
RICEMILL	Dummy - Household Owns Rice Mill	--	--	--	--	0.03	0.18
OWNSTORE	Dummy - Household Owns/Operates A Store, Stall, Or Sells From Car	--	--	--	--	0.08	0.27
MOBPHN	Number Of Mobile Phones Owned By HH	--	--	--	--	0.01	0.11
PHONE	Number Of Phones Owned By HH	--	--	--	--	0.02	0.13
COMP	Dummy For Computer Ownership By HH	--	--	--	--	0.00	0.06
SATDSH	Dummy For Satellite Dish Ownership By HH	--	--	--	--	0.00	0.03
MICRO	Dummy For Microwave Ownership By HH	--	--	--	--	0.01	0.07
WASH	Dummy For Washing Machine Ownership By HH	--	--	--	--	0.04	0.19
AC	Dummy For Owning An Air-Conditioner	--	--	--	--	0.00	0.06
Number of Observations		5726		6993		8638	

Table 2: Principle Components Index Weights Attached to Each Household Asset: 1984, 1994, and 2000.

Household Asset	Household Asset Weights		
	1984	1994	2000
PUMP	1.260	0.531	--
ITAN	1.073	0.851	-0.015
LNLAND	0.194	0.055	--
LNCOW	0.257	0.231	0.061
LNBUF	0.149	-0.149	-0.094
LNPIG	0.531	0.424	0.342
LNCHICK	0.130	--	0.018
LNDUCK	0.196	--	0.016
HOUSETYPE	1.088	--	--
CKFUEL	-1.440	-0.952	-0.805
BWTV	1.440	-0.275	--
CTV	--	0.822	--
SMLTV	--	--	0.054
BIGTV	--	--	0.570
VCR	--	1.836	1.026
FRIDGE	2.616	1.140	--
SMLFRIDGE	--	--	0.524
BGFRIDGE	--	--	1.390
CAR	2.108	1.493	2.374
MCYCLE	1.234	0.712	--
BGMCYCLE	--	--	0.199
SMLMCYCLE	--	--	0.294
LATRINE	1.071	--	--
SEWING	--	0.876	0.477
WINDW	--	0.903	0.584
ELECT	--	0.536	--
LRGTRAC	--	2.031	2.334
SMLTRAC	--	0.487	-0.040
GENERATOR	--	1.075	--
THRESHER	--	1.356	0.590
TRUCK	--	--	1.392
PICKUP	--	--	1.247
RICEMILL	--	--	0.674
OWNSTORE	--	--	0.645
MOBPHN	--	--	2.575
PHONE	--	--	1.571
COMP	--	--	3.701
SATDSH	--	--	3.245
MICRO	--	--	2.984
WASH	--	--	1.714
AC	--	--	3.581
Number of Observations	5726	6993	8638