

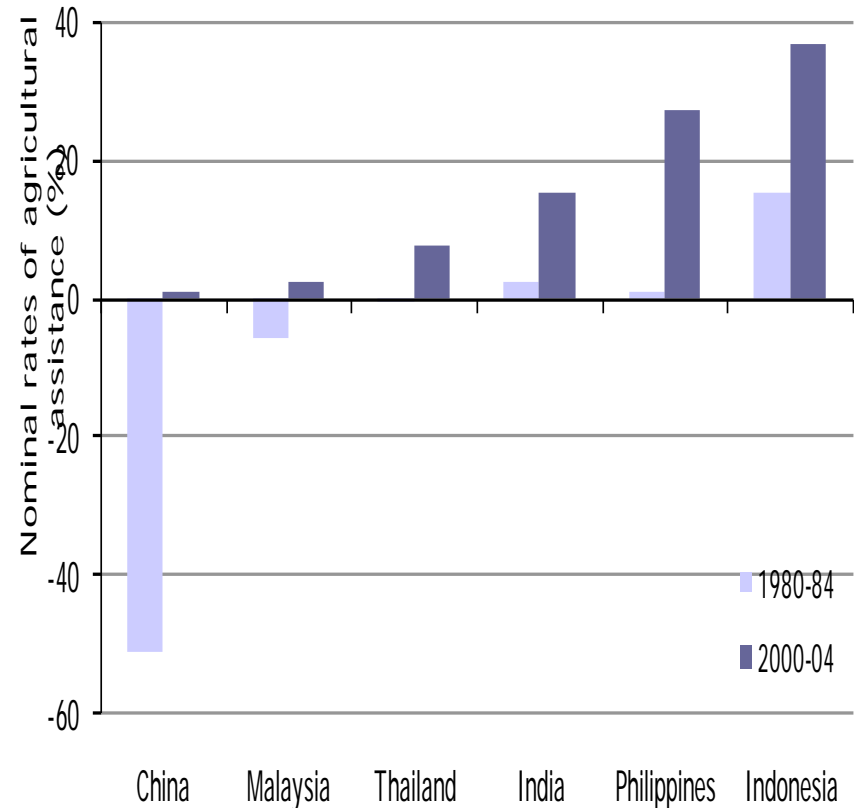
Pathways out of Rural Poverty – Evidence from Western China

Luc Christiaensen, Ruchira Bhattismara, Lei Pan, Sangui Wang,
presentation Sustainable Development Department, EAP, World Bank,
Beijing, 24 August, 2009

Motivation

Spatially unbalanced growth

- historical norm? (WDR, 2009)
- deep social and political tensions
- growth process itself jeopardized
- agricultural subsidies and protection



 Huge policy challenge without clear guidance



Move jobs to people or people to jobs?

WDR09 emphasizes people based policies

- Place based policies often ineffective and costly
- Agglomeration economies crucial for growth
- I for a D approach
 - Spatially neutral institutions (social services and factor mobility) to overcome distance
 - i.e. invest in portable goods to foster migration
 - Spatially connective infrastructure (trunk roads, ICT) to overcome population density
 - Spatially targeted incentives (infrastructure, subsidies) to overcome divisions (ethnicity, religion)

Room for place based intervention much smaller than currently practiced



But conclusion remains controversial and debate continues

- Efficiency the appropriate yard stick? Can political popularity of place based policies be ignored?
 - Compassion vs efficiency?
 - Immediacy vs trickle down?
- Even if appropriate, what about evidence? Rigorous empirical evidence remains limited (Nijkamp, 2009)
 - Data and methodological challenges
 - Is failure of policies to relocate formal manufacturing to rural areas correct yardstick if services make up 50-75% of RNFE?
 - Is there scope for local job creation in agriculture, agro-processing and (environmental) services beyond formal manufacturing ?



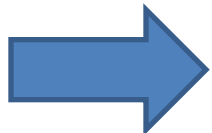
Evidence on poor area development programs is limited and results are mixed

- Rodriguez, Rejesus and Aragon (2007) (Philippines)
 - comprehensive agricultural development program increased net household income among farmers by 200-400 USD/year
- Jalan and Ravallion (1998) (South West China)
 - Vanished benefits! Control for initial conditions
- Ravallion and Chen (2005) (1995-2001 Southwest Pov Red Project)
 - Income increases by 10%; no consumption or poverty effect gains saved
 - Rate of return 9-10%
 - Positive income effect retained after 5 years only among the educated poor (targeting? Credit constraint binding constraint?)
- Park and Wang (2009) 2001-04 China poor area pgm
 - Inc/cons of better off in targeted villages increases by 6.6 (8)%
 - Inc/cons of poorer half does not increase
 - Presence of high quality vlg committees increases benefits for poor and rich
 - Program reduces likelihood of migration among the richer (not the poorer)



Evidence on poor area development programs is limited and results are mixed

- Programs successful in
 - providing some relief and income gains for some period of time
 - Slowing down migration
- But,
 - Not always the poorest that benefited
 - Targeting and governance structure matters for the within village distribution of the benefits
- In terms of cost effectiveness,
 - Not clear whether the benefits always outweighed the costs, b/c many benefits/costs are hidden
 - Opportunity cost (9-10% return vs other projects)
 - Would faster migration have led to better outcomes, i.e. even faster growth or simply urbanization of poverty with slum formation?
 - Whether original investment composition was optimal?



Many questions remain; more empirical evidence needed



This study

Three questions

1. What have been the pathways out of poverty in rural Western China (agriculture, rural nonfarm and urban labor migration)?
2. What has determined the pathway choice?
3. How has the project affected reduction in poverty and growth in welfare among participating households?

Data: 5 year household panel from 15 remote counties in Gansu and Inner Mongolia collected under the M&E plan of the WB supported Western Poverty Reduction Project

Household Livelihoods in Western Poverty Reduction Project of IM and Gansu

WPRP fights poverty through agricultural credit and local infrastructure

Category	Investment (US\$ million)	Share of total investment (%)
Land and household development (credit & technical assistance for increased agricultural output, livestock holdings and forestry development)	196.07	66.9
Irrigation and land improvement	42.72	14.6
Rural infrastructure (roads, drinking water facilities, electric power lines)	27.79	9.5
Rural enterprises	14.13	4.8
Institutional development and project management	10.69	3.6
Labor mobility (Gansu) ¹	1.36	0.5
Social sector services (improve basic educational services)	0.45	0.2
Total disbursement	293.21	100



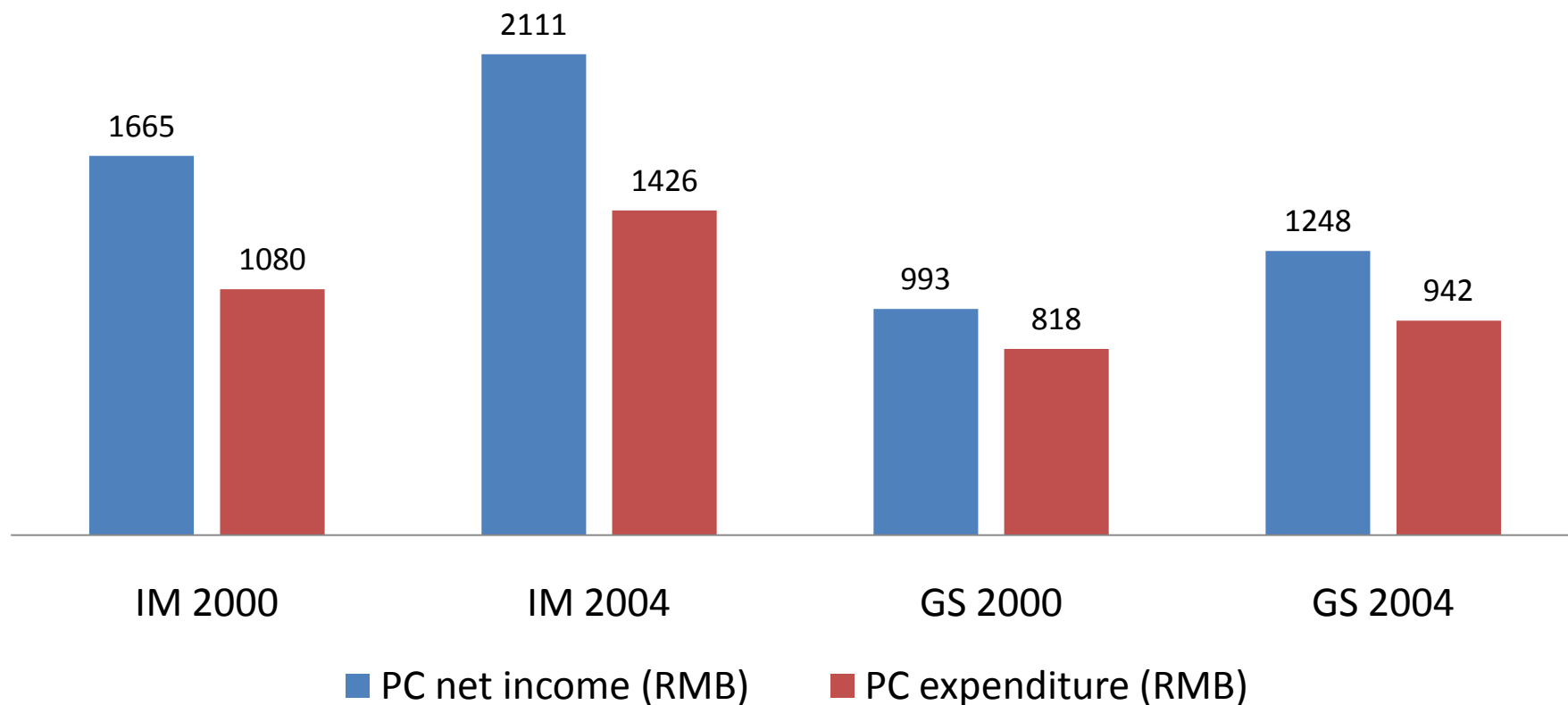
Data

- 1500 households per year (700 in Gansu, 800 in Inner Mongolia) in 15 out of 27 project counties during 1999-2004
- Within each sample county, 10 villages sampled (6 PV, 4 NPV) and 10 households randomly sampled per village
- PV randomly sampled from all project villages; NPV were purposively sampled as control group to ensure better match
- High quality data collection procedure conducted by NBS



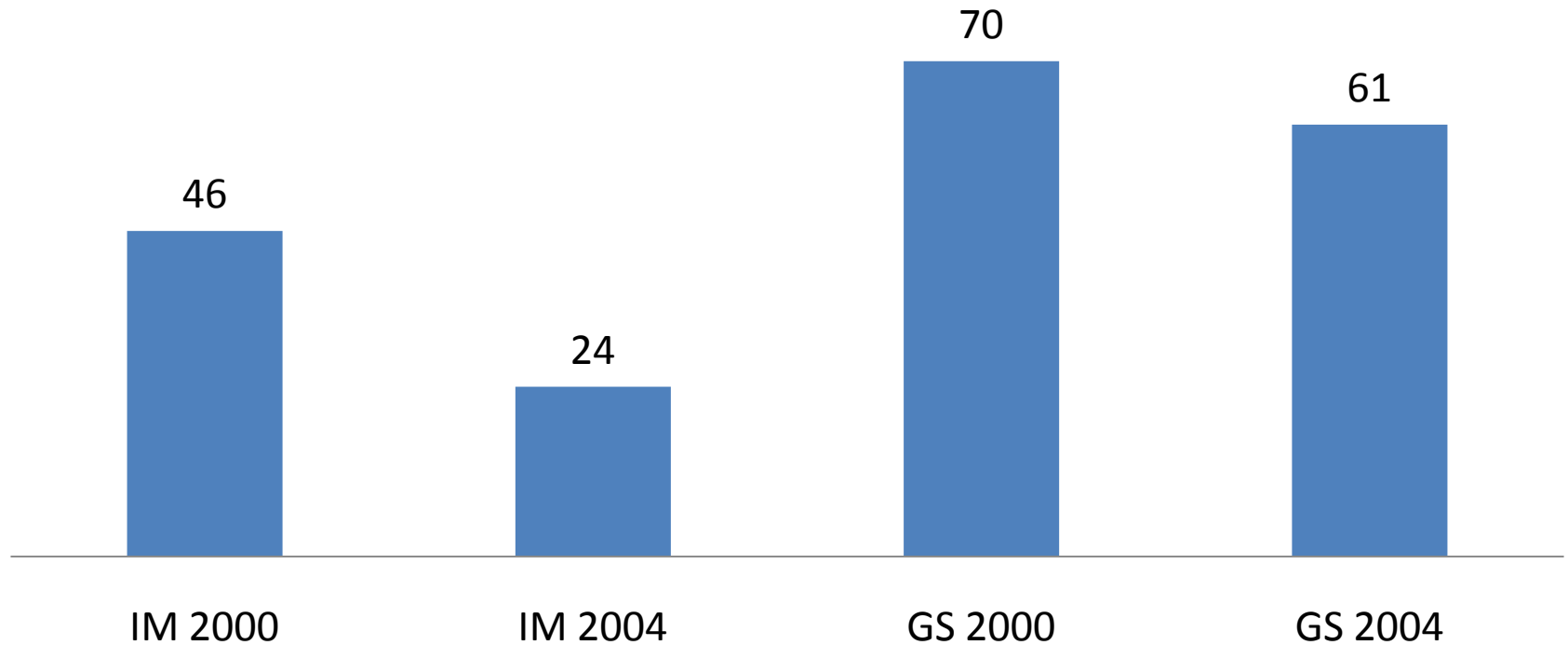
Household welfare rises in both regions, but more in Inner Mongolia

Income and expenditure 2000-2004



Poverty declines, but more in IM

Poverty headcount (%)
(2000-2004)



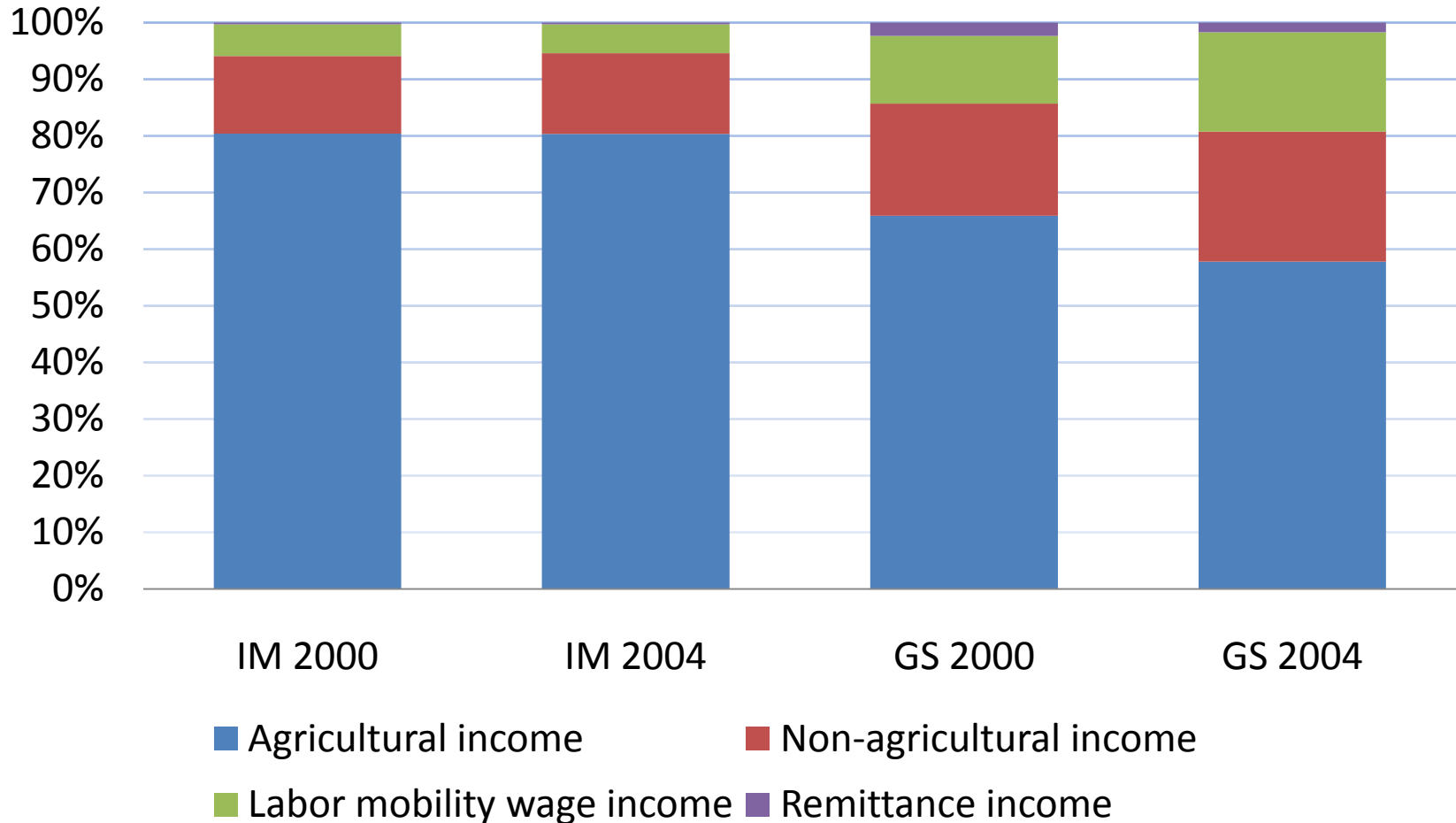
Household welfare rises in both regions, but more in Inner Mongolia

	PC net income (RMB)	PC expenditure (RMB)	Poverty Headcount (%)
Inner Mongolia			
2000	1665	1080	46
2001	1330	1148	37
2002	1669	1243	37
2003	2025	1306	31
2004	2111	1426	24
Diff 04-00	446	346	22
% Diff	27	32	-52
Gansu			
2000	993	818	70
2001	1030	831	72
2002	1162	823	72
2003	1280	893	64
2004	1248	942	61
Diff 04-00	255	124	9
% Diff	26	15	13

Agriculture dominates livelihoods, but more so in Inner Mongolia

Annual Net inc/cap (RMB)	Agricultural income	Non- agricultural income	Labor mobility wage income	Remittance income
IM 2000	1283	219	89	5
IM 2004	1601	283	102	6
GS 2000	613	184	111	22
GS 2004	684	271	208	20

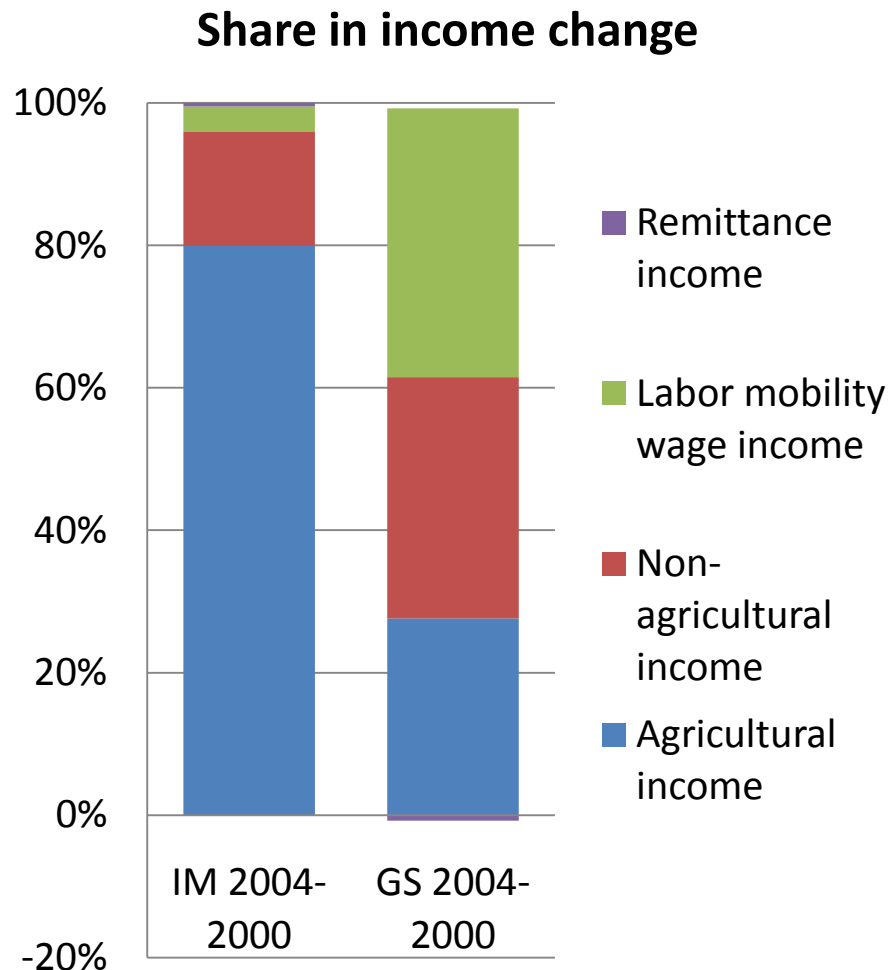
Agriculture dominates livelihoods, and continues to do so, also in Gansu



Agriculture drives income growth in IM and contributes in Gansu

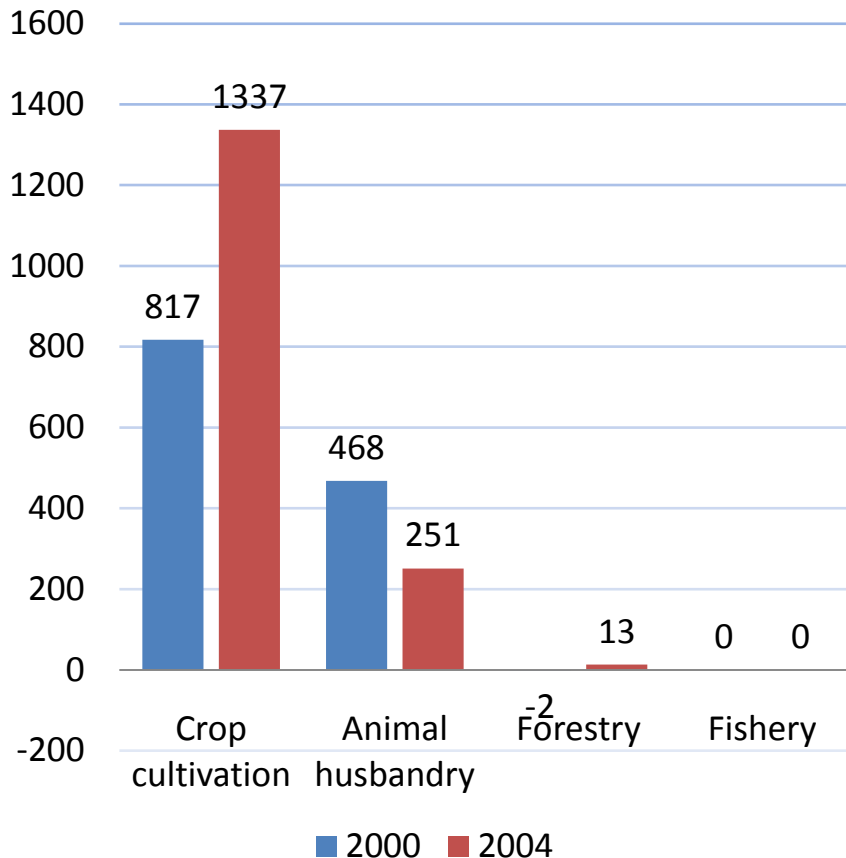
Net income change by source (RMB)	IM 2004-2000	GS 2004-2000
Agricultural income	318	71
Non-agricultural income	64	87
Labor mobility wage income	14	97
Remittance income	2	-2
Total income change	398	253

Note: all numbers in 1999 prices

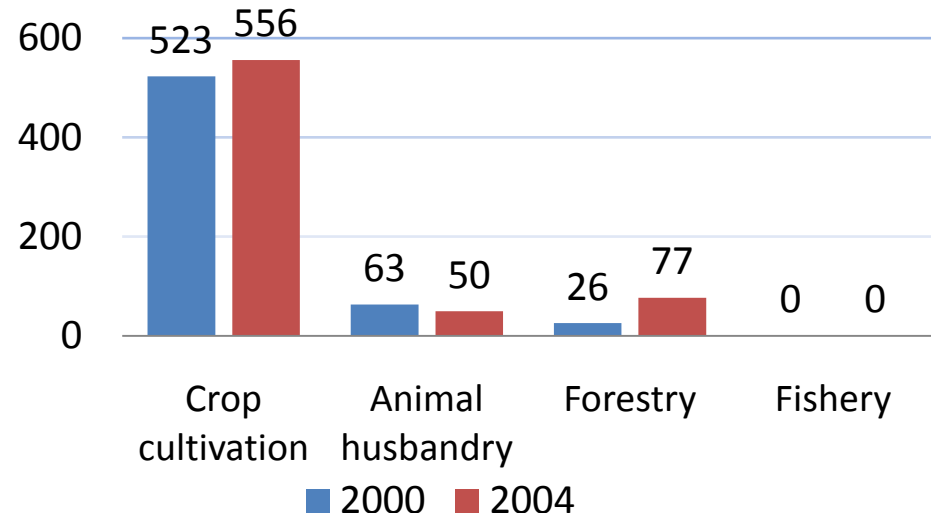


Crop income drives ag inc growth in IM & GS; some diversification into forestry in GS

Inner Mongolia - net income/capita



Gansu - net income/capita



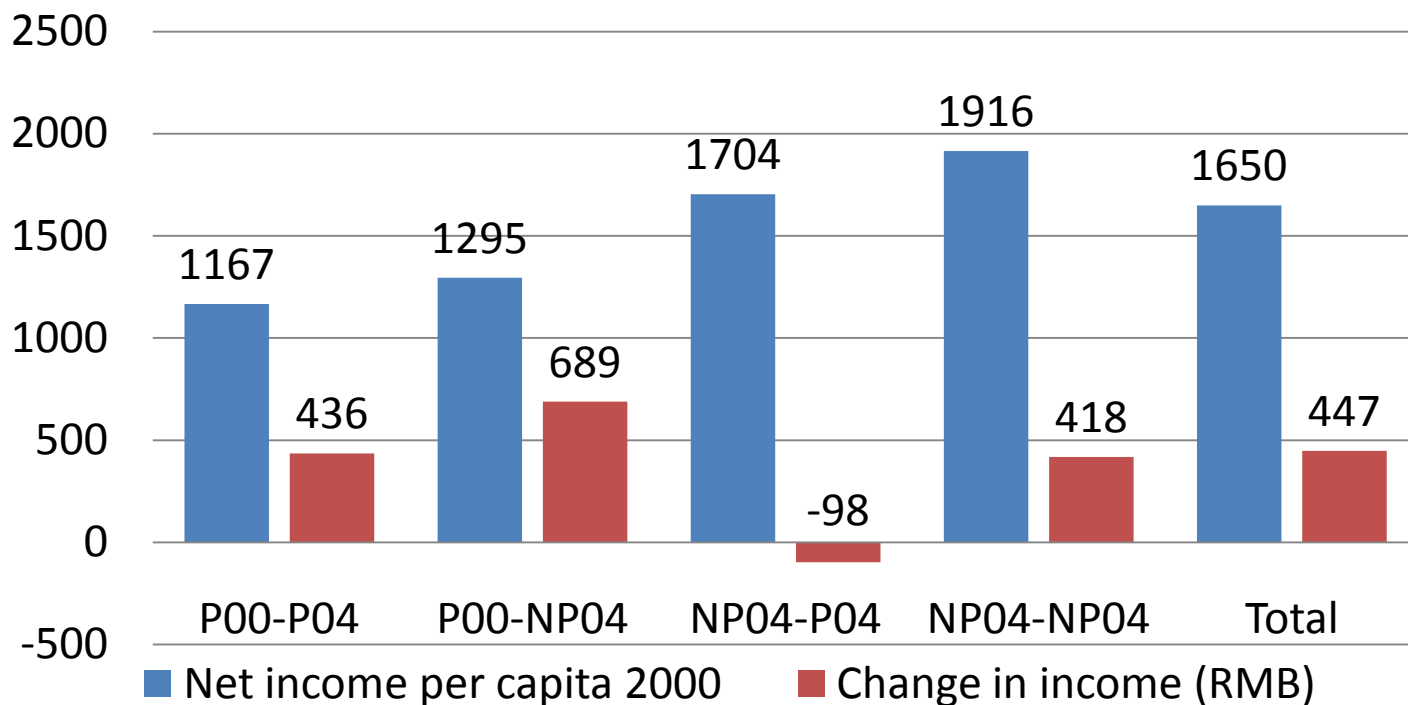
Pathways out of Poverty

Descriptive analysis

Econometric analysis

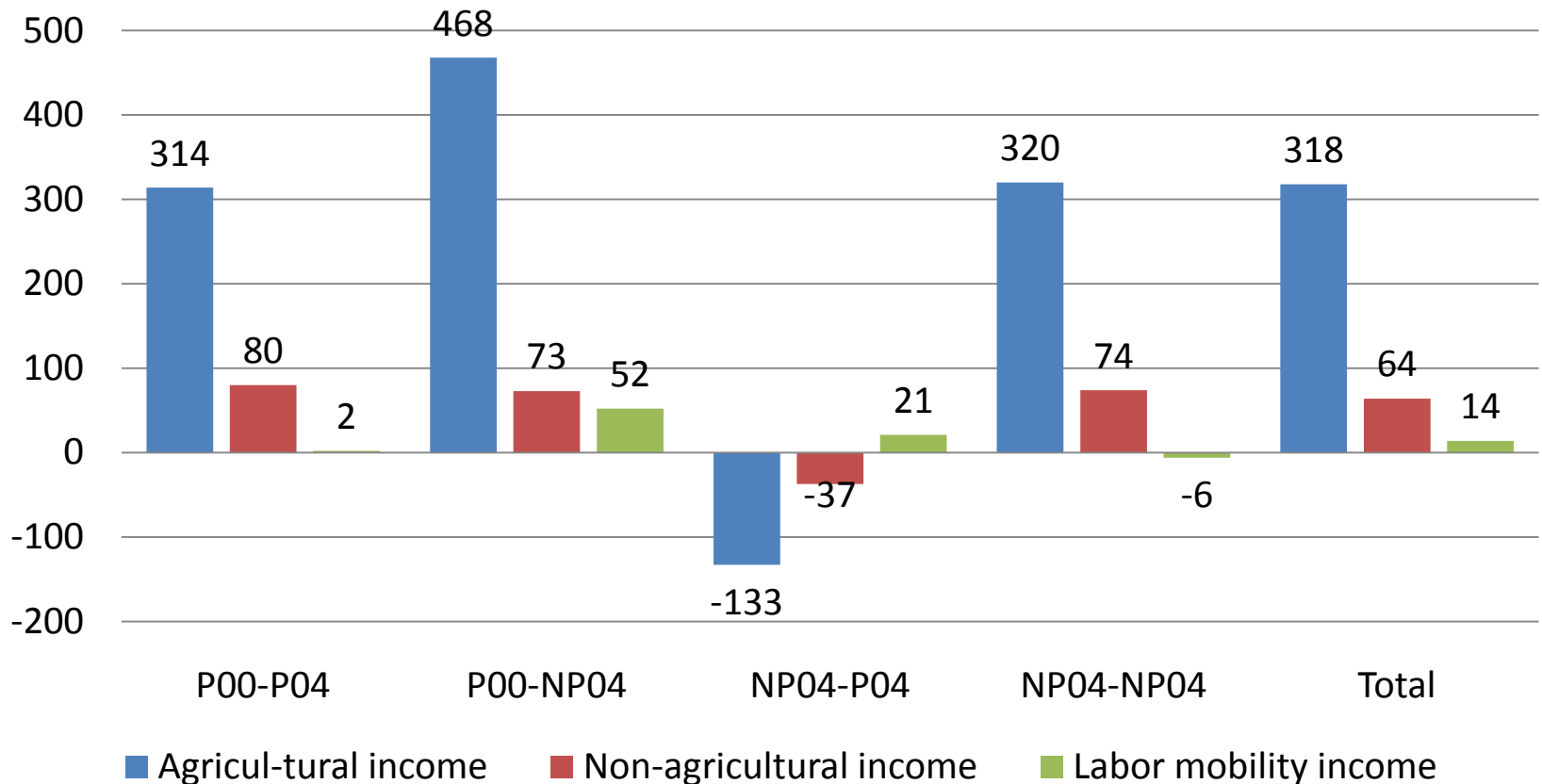
Agriculture drives poverty reduction in Inner Mongolia (1)

Net inc/cap and net inc/cap change across poverty groups in IM, 2000-2004



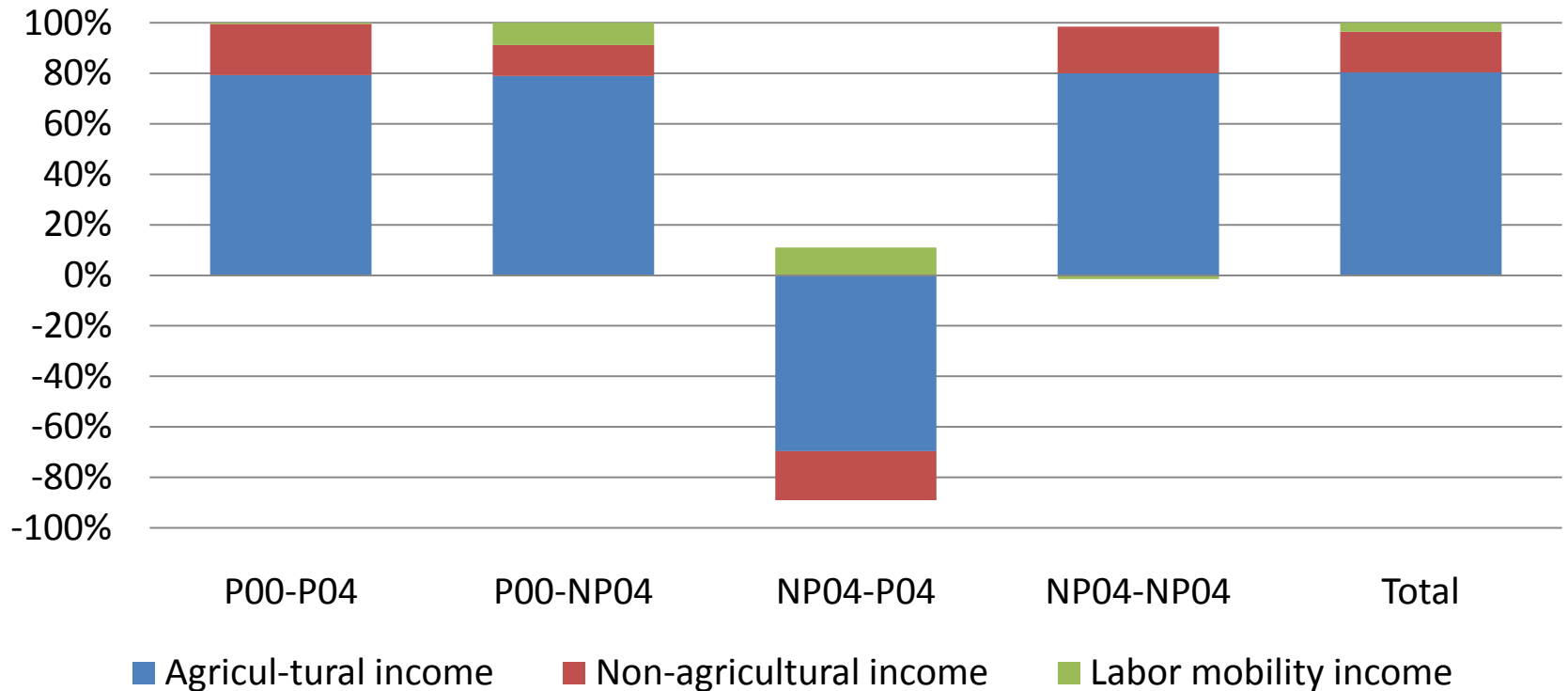
Agriculture drives poverty reduction in Inner Mongolia (2)

Income change (RMB) by source across poverty groups, IM 2000-2004



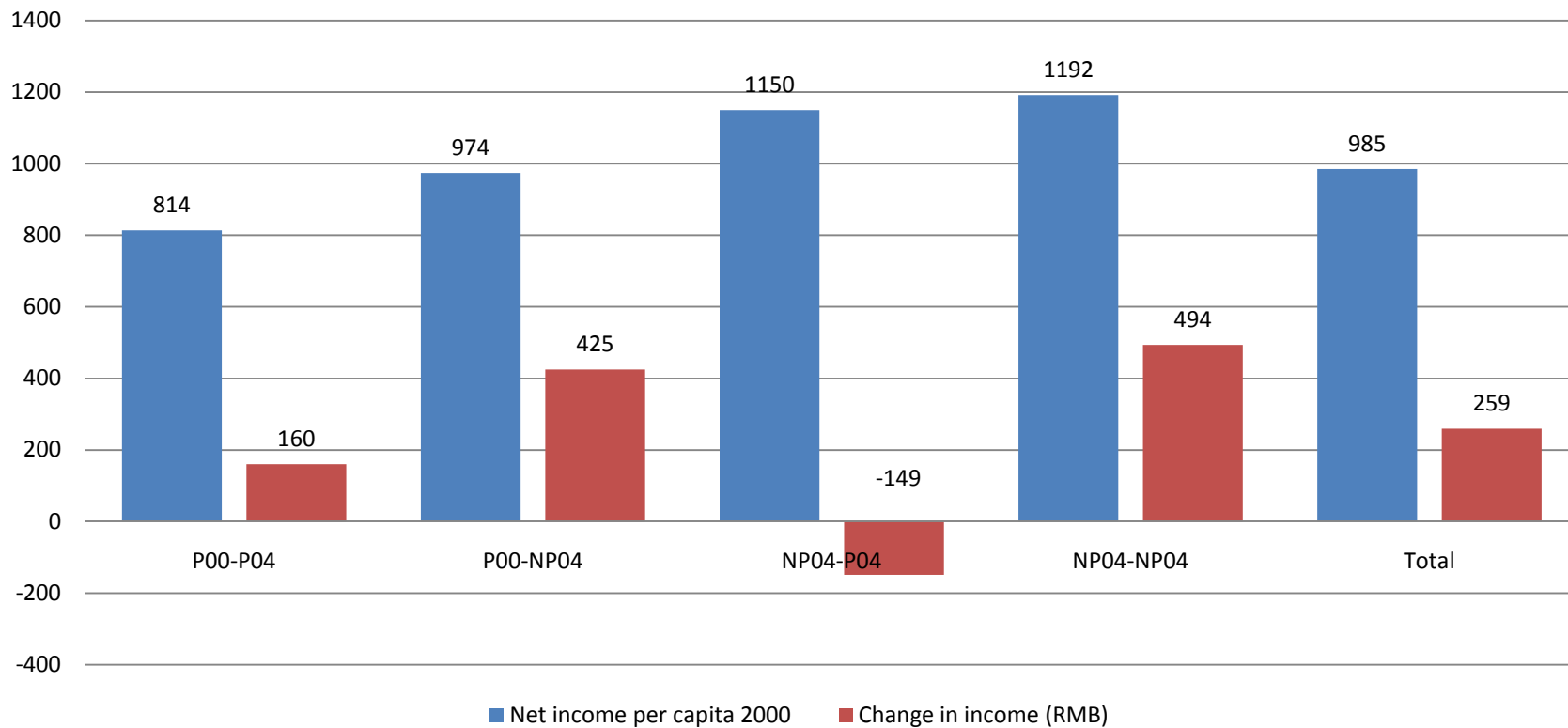
Agriculture drives poverty reduction in Inner Mongolia (3)

Share contribution to income growth of different income pathways across poverty group, IM 2000-2004



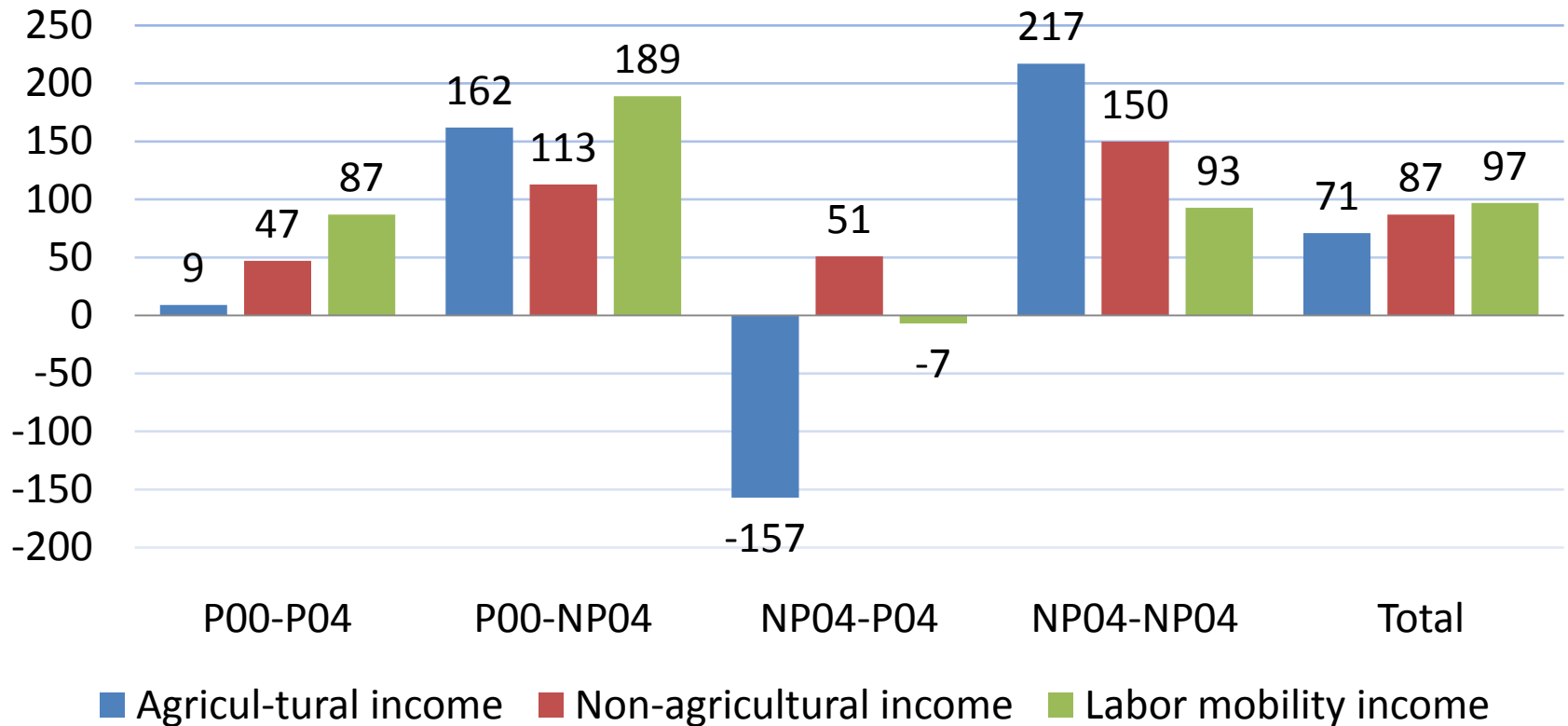
Both labor mobility and agriculture drive poverty reduction in Gansu (1)

Net inc/cap and net inc/cacp change across poverty groups in GS, 2000-2004



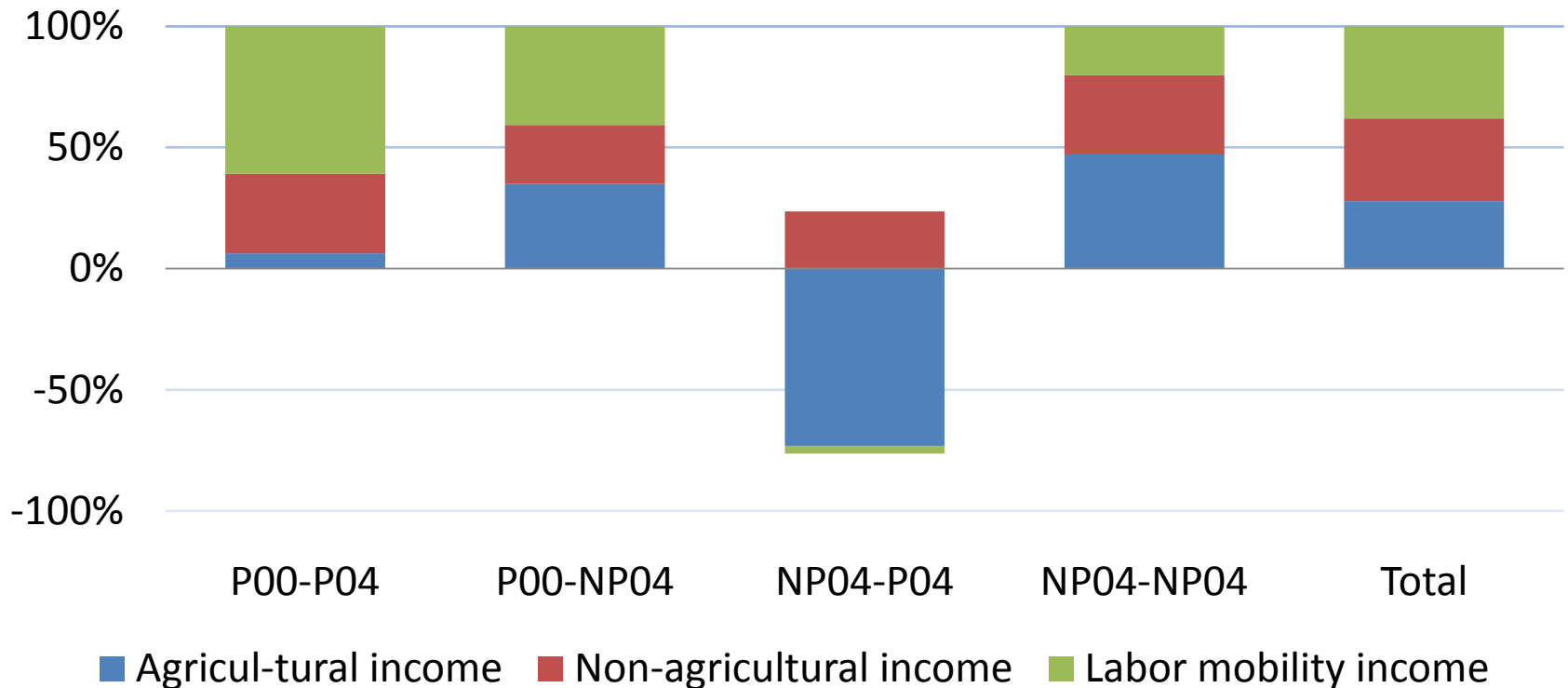
Both labor mobility and agriculture drive poverty reduction in Gansu (2)

Income change (RMB) by source across poverty groups, Gansu 2000-2004



Both labor mobility and agriculture drive poverty reduction in Gansu (2)

Share contribution to income growth of different income pathways across poverty group, IM 2000-2004



Tax reduction likely helped poverty reduction in IM

	Tot. income per capita before tax	Taxes per capita	Tot. income per capita after tax	Tax share in post tax income change
Inner Mongolia				
<i>Poor 2000- Poor 2004</i>				
2000	1167	133	1034	
Change 2004-2000	436	-99	535	0.23
<i>Poor 2000-Non-poor 2004</i>				
2000	1295	151	1144	
Change 2004-2000	689	-106	796	0.15
<i>Non-poor 2000-Poor 2004</i>				
2000	1704	211	1492	
Change 2004-2000	-98	-177	79	-1.81
<i>Non-Poor2000-Non-poor2004</i>				
2000	1916	187	1728	
Change 2004-2000	418	-148	566	0.35
<i>Total</i>				
2000	1650	174	1476	
Change 2004-2000	447	-134	581	0.3

Role of tax reduction in poverty more limited in Gansu

	Tot. income per capita before tax	Taxes per capita	Tot. income per capita after tax	Tax share in post tax income change
<i>Poor 2000- Poor 2004</i>				
2000	814	33	782	
Change 2004-2000	160	-13	173	0.08
<i>Poor 2000-Non-poor 2004</i>				
2000	974	47	927	
Change 2004-2000	425	-25	450	0.06
<i>Non-poor 2000-Poor 2004</i>				
2000	1150	47	1103	
Change 2004-2000	-149	-24	-125	-0.16
<i>Non-Poor2000-Non-poor2004</i>				
2000	1192	48	1144	
Change 2004-2000	494	-23	517	0.05
<i>Total</i>				
2000	985	41	944	
Change 2004-2000	259	-19	278	0.07



Emerging hypotheses

- Inner Mongolia
 - Agriculture has been driving poverty reduction, helped along a bit by non-ag incomes
 - Tax reforms likely also helped, especially to help soften the blow of ag inc shocks among the richer
- Gansu
 - Labor mobility more important, though agricultural performance remained critical
 - Nonag inc increased among all groups, though more among those escaping poverty (dual nature of RNFE?)
- Results hold when using lower poverty line, though role of labor mobility becomes a bit stronger in both IM and GS
 - labor mobility especially important for the poorest?

Are some pathways more likely to reduce poverty?

Growth in net income can be decomposed :

- 1) (income share weighted) growth of labor productivity in each of the different income sources
- 2) Growth in unearned income (or taxes) per laborer
- 3) Gains in productivity due to migration across sectors

$$\frac{dY}{Y} = s_G^A \frac{dY_a^A}{Y_a^A} + s_G^{NA} \frac{dY_a^{NA}}{Y_a^{NA}} + s_G^M \frac{dY_a^M}{Y_a^M} + s_G^R \frac{dY_a^R}{Y_a^R} + s_G^U \frac{dY_a^U}{Y_a^U} - s_G^T \frac{dY_a^T}{Y_a^T} +$$

$$(Y_a^{NA} - Y_a^A) \frac{s_{La}^{NA}}{Y_a} \frac{ds_{La}^{NA}}{s_{La}^{NA}} + (Y_a^M - Y_a^A) \frac{s_{La}^M}{Y_a} \frac{ds_{La}^M}{s_{La}^M} + \frac{ds_L^a}{s_L^a}$$

Are some pathways more likely to reduce poverty?

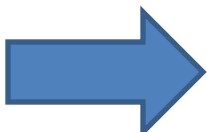
We can then test whether it matters where income comes from for poverty reduction

$$\Delta \ln P_t = \alpha + \sum_k \beta_k s_{Gt-1}^k \Delta \ln Y_{at}^k + \gamma_{NA} (Y_{at-1}^{NA} - Y_{at-1}^A) \frac{s_{Lat-1}^{NA}}{Y_{at-1}} \Delta \ln s_{Lat}^{NA} + \gamma_M (Y_{at-1}^M - Y_{at-1}^A) \frac{s_{Lat-1}^M}{Y_{at-1}} \Delta \ln s_{Lat}^M + \delta \Delta \ln s_{Lt}^a + e_t$$

If $\beta_k = \gamma_{NA} = \gamma_M$, then,

$$\Delta \ln P_t = \alpha + \beta \Delta \ln Y_{at} + \delta \Delta \ln s_{Lt}^a + e_t$$

It does not matter where income comes from for poverty reduction





Inner Mongolia: agriculture and labor mobility/migration equal poverty reducing potential

dlnpovgap (\$1-day)	OLS	OLS with time varying fe and household fe
ag labor productivity	-0.4343***	-0.8018***
nonag labor productivity	-0.2172*	-0.273
labor productivity in labor mobility	-0.4963*	-0.3499
remittances	0.0655	-0.4055
gifts	-0.0878	0.002
taxes	1.4240***	1.3678
migration to rural nonfarm	-0.0092	-0.3987**
migration to urban	-0.7619**	-0.9085**
dependency ratio	-0.6709*	-0.5414



But, given its share in income, elasticity of poverty to ag lab productivity largest; RNFE a far second

Inner Mongolia	Coefficient	Share or lab prod diff	Elasticity of poverty
ag labor productivity	-0.8018	0.65	-0.52
nonag labor productivity	-0.273	0.29	-0.08
labor productivity in labor mobility	-0.3499	0.03	-0.01
remittances	-0.4055	0.00	0.00
gifts	0.002	0.03	0.00
taxes	1.3678	0.03	0.05
migration to rural nonfarm	-0.3987	-0.02	0.01
migration to urban	-0.9085	-0.12	0.11
dependency ratio	-0.5414		-0.54



Gansu: labor mobility and agriculture have largest potential, followed by RNFE

dlnpovgap (\$1-day)	OLS	OLS with time varying fe and household fe
ag labor productivity	-1.1203***	-1.2541***
nonag labor productivity	-0.3419*	-0.6565***
labor productivity in labor mobility	-0.6839**	-0.7350*
remittances	0.0726	-1.1858*
gifts	-0.3236	-0.6063**
taxes	2.4658	-0.5208
migration to rural nonfarm	-0.2873	-0.655
migration to urban	-0.8309	-1.5572*
dependency ratio	-1.2088**	-1.5607**

GS: given its size, ag lab prod elasticity also largest, followed by labor mobility and nonag lab prod labor

Gansu	Coefficient	Share or lab prod diff	Elasticity of poverty
ag labor productivity	-1.25	0.56	-0.71
nonag labor productivity	-0.66	0.27	-0.18
labor productivity in labor mobility	-0.74	0.12	-0.09
remittances	-1.19	0.02	-0.02
gifts	-0.61	0.03	-0.02
taxes	-0.52	0.02	-0.01
migration to rural nonfarm	-0.66	0.05	-0.03
migration to urban	-1.56	0.06	-0.09
dependency ratio	-1.56		-1.56

Pathways out of Poverty - Summary

- Agriculture has largely driven poverty reduction in IM and has the continuing potential to do so looking forward; labor mobility of limited importance; taxes helped on the margin
- Labor mobility and agriculture contributed most to changing poverty situation in GS, with i ag labor prod having a larger elasticity of poverty due to larger share in income; tax reforms were less important given small size to start with
- Quite high elasticity of poverty to dependency ratio

Choosing pathways out of poverty
Analysis – to be completed

Project Impact on Household Welfare in Lagging Rural Regions

Methodological Considerations

- Methodological challenge
 - Ideally, one would compare the outcome of interest before and after the intervention for exactly the same person. Not possible.
- Comparison group as solution:
 - Randomized experiment:
 - Comparison is random subset of the eligible population
 - Pro: Gold standard
 - Con: Not always easy to implement
 - Difference in Difference (DID):
 - explore evolution of outcome of interest across treated group (before and after) and control for progress that would have occurred w/o intervention by subtracting progress among comparison group (with and w/o)
 - Pro: more feasible
 - Con: how to find credible comparison group

Methodological Considerations (2)

- Difference in Difference with Propensity Score Matching (DID-PSM):
 - PSM controls for all time invariant and observed time variant factors that may affect welfare or poverty changes

- Project Impact =

$$E(Y_t^1 - Y_{t-1}^1 | D = 1, P(X_{t-1})) - E(Y_t^0 - Y_{t-1}^0 | D = 0, P(X_{t-1})).$$

- Measures of impact:
 - Intention to Treat (ITT): effect of intervention on all members eligible for treatment (i.e. also those not treated)
 - Average Treatment on the Treated (ATT): effect on all treated members (i.e. excluding those eligible, but not treated)
 - ITT to avoid selectivity bias & spill over from public goods, i.e. average effect on the treated villages
- Project (PV) and non-project (NPV) villages, but compensation?

No contamination from non-project loans

Average loan size in per person terms	All loans		WPRP loans		Non-WPRP loans	
	#hhs	Size (RMB)	#hhs	Size (RMB)	#hhs	Size (RMB)
Inner Mongolia						
Non-WPRP village	98	602	47	216	66	740
WPRP village	389	1203	340	985	197	676
Gansu						
Non-WPRP village	62	332	0	0	62	332
WPRP village	353	407	299	326	175	263

- Amount of outside funding much larger in PV than in NPV
- Some IM NPV became PV (drought), but only small amounts received

Inner Mongolia:

No faster social svc infra development in NPV

Inner Mongolia Share of villages with:	PV (1999)	PV (2004)	PV 04-99	NPV (1999)	NPV (2004)	NPV (04-99)	PV(04-99)-NPV(04-99)
Kindergarten	0.64	0.56	-0.08	0.60	0.57	-0.03	-0.05
Primary school	0.98	0.82	-0.16	1.00	0.83	-0.17	0.01
Middle school	0.04	0.04	0.00	0.07	0.07	0.00	0.00
Library	0.32	0.20	-0.12	0.43	0.37	-0.06	-0.06
Clinic	0.50	0.60	0.10	0.56	0.69	0.13	-0.03
Hospital	0.06	0.08	0.02	0.07	0.17	0.10	-0.08
Health attendant	0.82	0.86	0.04	0.87	0.90	0.03	0.01
Delivery attendant	0.52	0.67	0.15	0.43	0.62	0.19	-0.04

Gansu:

No faster social svc infra development in NPV

Gansu Share of villages with:	PV (1999)	PV (2004)	PV 04-99	NPV (1999)	NPV (2004)	NPV (04-99)	PV(04-99)-NPV(04-99)
Kindergarten	0.17	0.24	0.07	0.25	0.43	0.18	-0.11
Primary school	0.88	0.86	-0.02	0.93	0.89	-0.04	0.02
Middle school	0.07	0.07	0.00	0.18	0.21	0.03	-0.03
Library	0.02	0.12	0.10	0.03	0.21	0.18	-0.08
Clinic	0.67	0.67	0.00	0.82	0.74	-0.08	0.08
Hospital	0.07	0.10	0.03	0.14	0.14	0.00	0.03
Health attendant	0.88	0.76	-0.12	0.89	0.86	-0.03	-0.09
Delivery attendant	0.57	0.57	0.00	0.53	0.61	0.08	-0.08

Loans (WPRP) for agricultural activities dominate

Number of loans (WPRP)	Farming	Animal husbandry	Forestry	Other production	Infra-structure	Education
	<i>of which: Grains</i>					
<i>IM</i>						
NPV	71	43	17			
PV	410	347	305	52	49	
Total	481	322	0	52	49	0
<i>Gansu</i>						
NPV	-	-	-	-	-	-
PV	264	123	201	109	9	107
Total	264	201	109	9	107	2

Loans (non-WPRP) for agricultural activities dominate

Number of loans (non-WPRP)	Farming	Grains	Animal husbandry	Forestry	Other production	Infra-structure	Education
	<i>of which:</i>						
	<i>Grains</i>						
<i>IM</i>							
NPV	40	40	25		1		18
PV	181	152	46			40	27
Total	221		71	0	1	40	45
<i>Gansu</i>							
NPV	44	38	8	1	2	16	
PV	130	86	83	31	7	39	
Total	174		91	32	9	55	0

Project improves welfare in IM, especially income, but also poverty

Inner Mongolia			Change (RMB or share) in PVs to 1999	Change (RMB or share) in NPVs to 1999	DID (PV-NPV)	t-stat
PC net income						
2003			606	310	296	2.92
2004			672	428	244	2.03
PC consumption						
2003			280	141	139	2.26
2004			368	312	56	0.87
\$1-day poverty incidence		PV	NPV			
2003		0.29	0.33	-0.13	0	-0.13 -2.95
2004		0.25	0.22	-0.17	-0.12	-0.05 -1.58

Limited project impact in GS, if any

			Change (RMB or share) in PVs to 1999	Change (RMB or share) in NPVs to 1999	DID (PV-NPV)	t-stat	
Gansu							
PC net income							
2003			358	180	178	2.93	
2004			285	210	75	1.07	
PC consumption							
2003			29	110	-81	-1.81	
2004			77	159	-82	-1.74	
\$1-day poverty incidence		PV	NPV				
2003		0.70	0.56	0.01	-0.10	0.11	1.98
2004		0.65	0.55	-0.04	-0.10	0.06	0.59

IM: project improves welfare mainly through agriculture, in particular farming (cereal output)

Inner Mongolia	DID-PSM 2003-1999	<i>t</i> -statistic	DID-PSM 2004-1999	<i>t</i> -statistic
PC real consumption	170.15	2.09	96.31	1.17
PC real net income	439.52	3.64	330.93	2.57
PC real remittances	1.32	0.21	-9.35	-0.74
PC real income from labor mobility	83.96	2.12	108.33	2.56
PC real net agricultural income	282.39	2.45	364.49	3.04
Of which: from farming	199.96	2.23	270.81	3.19
Of which: from animal husbandry	78.15	0.94	99.84	1.17
PC real net non-agricultural income (from wages and family business)	36.18	0.71	-13.4	-0.23
Of which: from family business	20.06	0.69	25.36	0.79
PC grain output	246.43	4.12	284.15	3.73
PC real investment in business expenditure	43.07	0.54	18.02	0.2
PC real investment in productive assets	-292.41	-1.56	-181.26	-1.29
Poverty incidence (\$1-day)	-0.17	-2.8	-0.06	-0.96

Gansu: project's pos. impact on agricultural net income not sufficient to turn the tide

Gansu	DID-PSM 2003-1999	<i>t</i> -statistic	DID-PSM 2004-1999	<i>t</i> -statistic
PC real consumption	86.96	1.27	84.53	1.08
PC real net income	307.43	3.18	170.4	1.25
PC real remittances	-11.15	-0.59	-5.75	-0.19
PC real income from labor mobility	137.87	2.73	42.83	0.79
PC real net agricultural income	167.78	2.63	193.12	3.15
Of which: from farming	111.71	2.35	138.45	2.39
Of which: from animal husbandry	-13.76	-0.65	-28.28	-1.24
PC real net non-agricultural income (from wages and family business)	-35.97	-0.58	-139.58	-2
Of which: from family business	-19.38	-0.36	-52.14	-0.94
PC grain output	41.09	1.15	5.55	0.12
PC real investment in business expenditure	87.28	2.86	53.77	1.21
PC real investment in productive assets	8.37	0.35	-13.46	-0.47
Poverty incidence (\$1-day)	0.03	0.53	0	0

IM: wheat declines, corn & beans gain

GS: wheat & corn gains, potatoes decline

	Total grain output per hh (kg)	Share of total grain output				
		<i>Wheat</i>	<i>Rice</i>	<i>Corn</i>	<i>Beans</i>	<i>Potatoes</i>
Inner Mongolia						
2000	2490.47	21.6	0.0	21.6	4.4	32.6
2001	2104.74	10.7	3.5	33.3	5.8	23.0
2002	2660.12	16.5	4.6	26.7	4.5	21.9
2003	3035.86	11.7	2.8	19.6	12.7	30.7
2004	3336.31	15.0	3.1	24.9	8.8	29.1
Gansu						
2000	1875.23	59.1	2.9	15.0	3.6	15.4
2001	1867.64	59.4	2.3	16.3	2.2	15.5
2002	1747.48	59.2	3.3	18.3	3.4	12.1
2003	1623.47	57.1	3.4	20.1	4.2	10.7
2004	2016.73	63.7	2.8	18.2	3.2	8.5

IM – project improves especially living standards of the poorer half

	Quantile	DID-PSM 2003-1999	<i>t-stat.</i>	DID-PSM 2004-1999	<i>t-stat.</i>
PC real consumption	1	208.65	1.81	50.4	0.46
	2	131.66	1.17	142.23	1.16
PC real net income	1	528.81	3.49	465.67	2.59
	2	350.22	1.86	196.2	1.07
PC real net agricultural income	1	342.69	2.49	413.39	2.58
	2	222.08	1.19	315.59	1.77
Of which: from farming	1	188.78	1.82	229.94	2.05
	2	211.15	1.45	311.68	2.43
Of which: from animal husbandry	1	148.02	1.35	180.82	1.6
	2	8.28	0.07	18.85	0.15
PC grain output	1	294.98	3.76	361.27	3.04
	2	197.89	2.19	207.03	2.18

Gansu – if project has an effect it is on the richer part of the village, mainly thru farming (& labor mobility?)

	Qua ntile	DID-PSM 2003-1999	<i>t-stat.</i>	DID-PSM 2004-1999	<i>t-stat.</i>
PC real consumption	1	78.36	1.15	80.95	1.31
	2	95.56	0.81	88.12	0.62
PC real net income	1	316.83	2.64	147.45	0.66
	2	298.04	1.97	193.35	1.27
PC real income from labor mobility	1	120.39	1.8	40.73	0.63
	2	155.34	2.07	44.93	0.53
PC real net agricultural income	1	104.35	1.32	144.47	1.72
	2	231.22	2.33	241.76	2.75
Of which: from farming	1	55.58	0.91	80.02	0.99
	2	167.83	2.33	196.88	2.38
Of which: from animal husbandry	1	-17.39	-0.62	-1.92	-0.06
	2	-10.12	-0.32	-54.64	-1.6
PC grain output	1	42.42	0.66	23.46	0.32
	2	39.76	1.21	-12.36	-0.24

IM: subjective perceptions of welfare change confirm pos. project impact

	PVs (1)	NPVs (2)	Difference PSM (1)-(2)	t-value
Improvement in household living condition:				
Housing	6.4	6	0.37	2.4
Power facilities	7.1	6.1	1.0	5.9
Water	6.9	5.8	1.1	6.1
Sanitation	6	5.7	0.3	2.0
Domestic appliances	6.7	5.9	0.8	5.3
Heating facilities	5.9	5.6	0.3	1.9
Fuels	5.9	5.6	0.3	2.2
Health of family members	6.6	6.5	0.1	0.7
Agricultural production technology	6.8	6.2	0.6	4.4
Improvement in village living condition				
Local school facilities	6.8	6.3	0.5	2.5
Medical facilities	5.8	5.8	0	-0.1
Roads	7.4	6.1	1.3	6.8
Overall village living standards	7.2	7.2	0	0.4

Gansu: subjective perceptions of welfare change confirm limited project impact

	PVs (1)	NPVs (2)	Difference PSM (1)-(2)	t-value
Improvement in household living condition:				
Housing	6.3	6.1	0.2	0.7
Power facilities	6.5	7.3	-0.8	-2.5
Water	6.0	6.3	-0.3	-1.1
Sanitation	5.4	5.2	0.2	1.0
Domestic appliances	6.1	5.9	0.2	1.0
Heating facilities	5.3	4.7	0.6	2.6
Fuels	5.2	5.0	0.2	1.0
Health of family members	6.1	6.1	0.0	0.2
Agricultural production technology	6.0	5.6	0.4	1.6
Improvement in village living condition				
Local school facilities	5.9	6.5	-0.6	-1.8
Medical facilities	5.1	5.1	0.0	0.2
Roads	6.1	5.4	0.7	2.6
Overall village living standards	6.4	6.9	-0.5	-2.6

Project Impact - Summary

- Inner Mongolia: project positively affected welfare
 - Clear and substantial income effects
 - Which translated in increased savings and at times in consumption increases and poverty reduction
 - Effects mainly through agriculture, especially crop farming
 - Effects concentrated among the poorer halves in the villages

Project Impact – Summary (2)

- Gansu: project effect not clear
 - Potentially some income effects, but not sustained in 2003
 - No consumption or poverty effects
 - Any effects largely through agriculture, crop farming as well
 - The richer halves seemed to have benefited most, even though likely not sufficient to increase their overall welfare

Concluding remarks

Pathways out of poverty in Western China

- Substantial poverty reduction 2000-2004, especially in IM, but also in Gansu
- Agriculture drove poverty reduction in IM and continues to have large potential to do so given its large income share
- Agriculture, labor mobility and rural nonfarm all contributed to poverty reduction in Gansu, though labor productivity increase in Gansu maintains large poverty reducing potential given its large income share

Project impact

- Inner Mongolia
 - Project benefited households substantially,
 - especially the poorer ones
 - mainly through agriculture (crop farming)
- Gansu
 - Project impact on welfare in Gansu less clear and systematic
 - richer parts of the villages potentially some income gains, likely due to strict enforcement of repayment
 - mainly through agricultural improvements; not

Investing in poor places or poor people?

- WPRP experience shows that:
 - Poor area development programs can work
 - Investment in productive activities can be successful and often this is through investment in agricultural activities
 - Project design key to ensure the poor benefit as well
 - More evidence on the cost-benefit ratio needs to be obtained