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The effects of non-contributory social protection on adults' labour decisions.

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Outline:

1. Economic effects of non-contributory social protection
2. Labour supply: context matter
3. Ecuador and the *Bono de Desarrollo Humano, BDH*
4. Empirical model and results
5. Conclusions and future steps

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Arguments for expanding social protection:

- Human rights
- Effective to reduce income poverty and inequality
- It is affordable: at least a basic "floor"
- Human development: health, education

¿Economic returns?

Rationale for economic analysis:

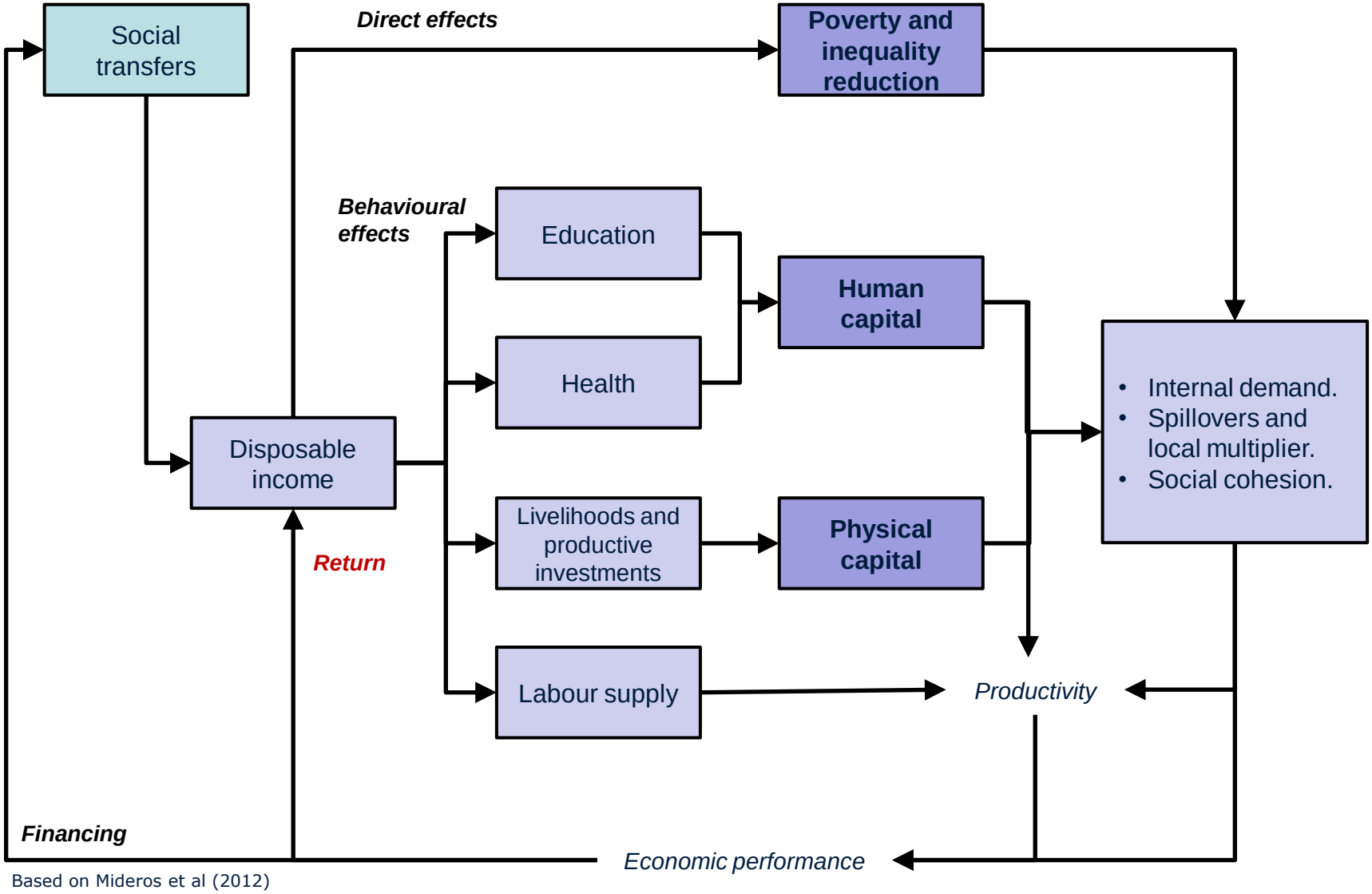
- Prejudices frequently prevail, difficult to fight
- Additional arguments are needed to move social protection up the national development agendas:
  - Demonstrate value for money
  - Analyze fiscal sustainability
  - Prove cost-effectiveness, capture multidimensional effects
  - Compare with alternative investments
- Develop economic argument for social protection:
  - Costs AND benefits
  - Short term AND long term
  - Direct AND indirect

Cherrier, Gassmann, Mideros and Mohnen (2013)

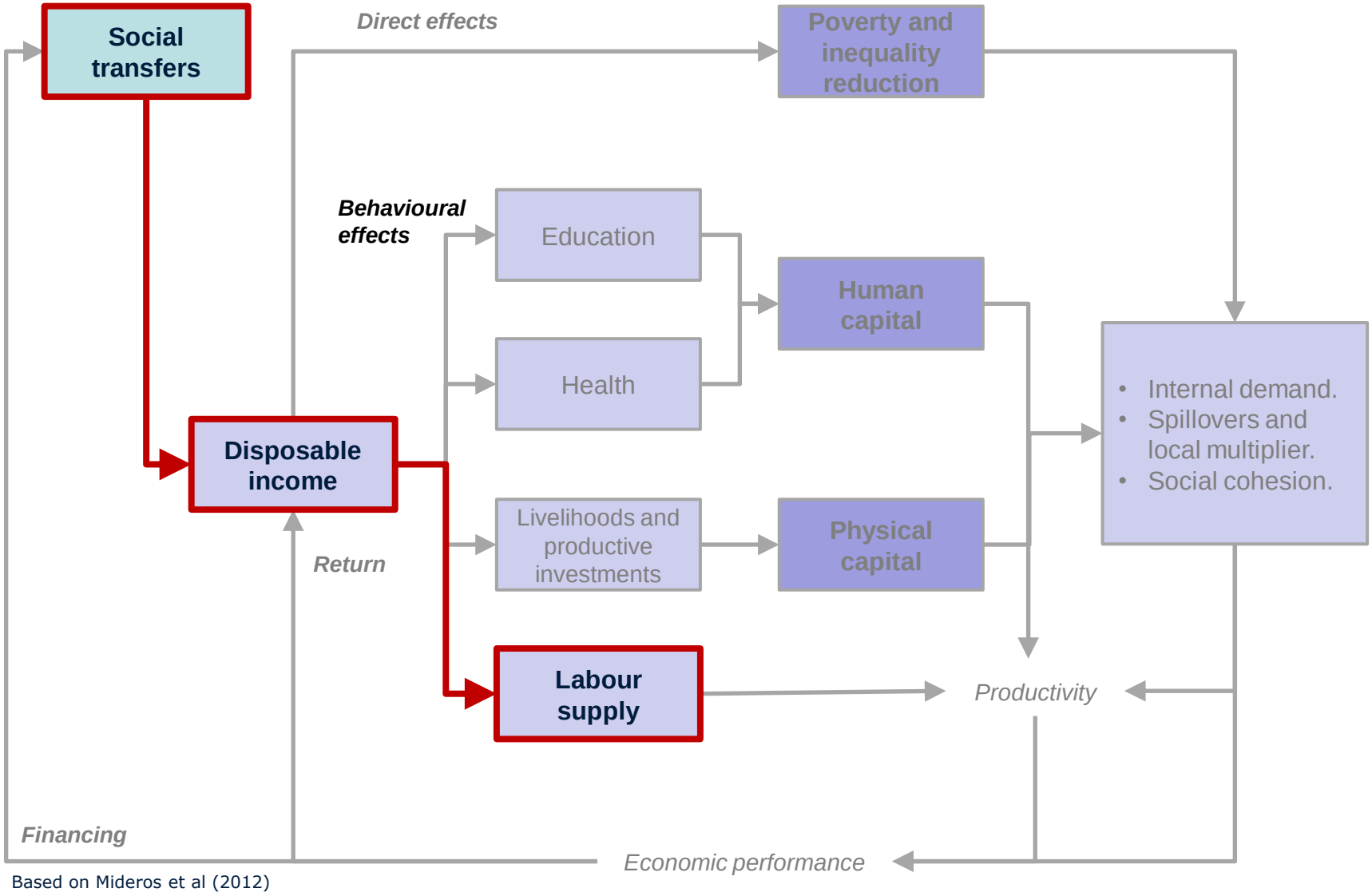
Non-contributory social protection and economic inclusion:

- Barrientos (2012):
  - To alleviate credit constrains: savings, investments, credit
  - Consumption and assets security
  - Local economy effects
  - Labour opportunities: increases labour supply

- Alderman and Yemtsov (2012):
  - Building and protecting human capital, productive assets
  - Enhancing community assets, infrastructure
  - Stabilizer of aggregate demand, improving social cohesion, making reforms feasible



Based on Mideros et al (2012)



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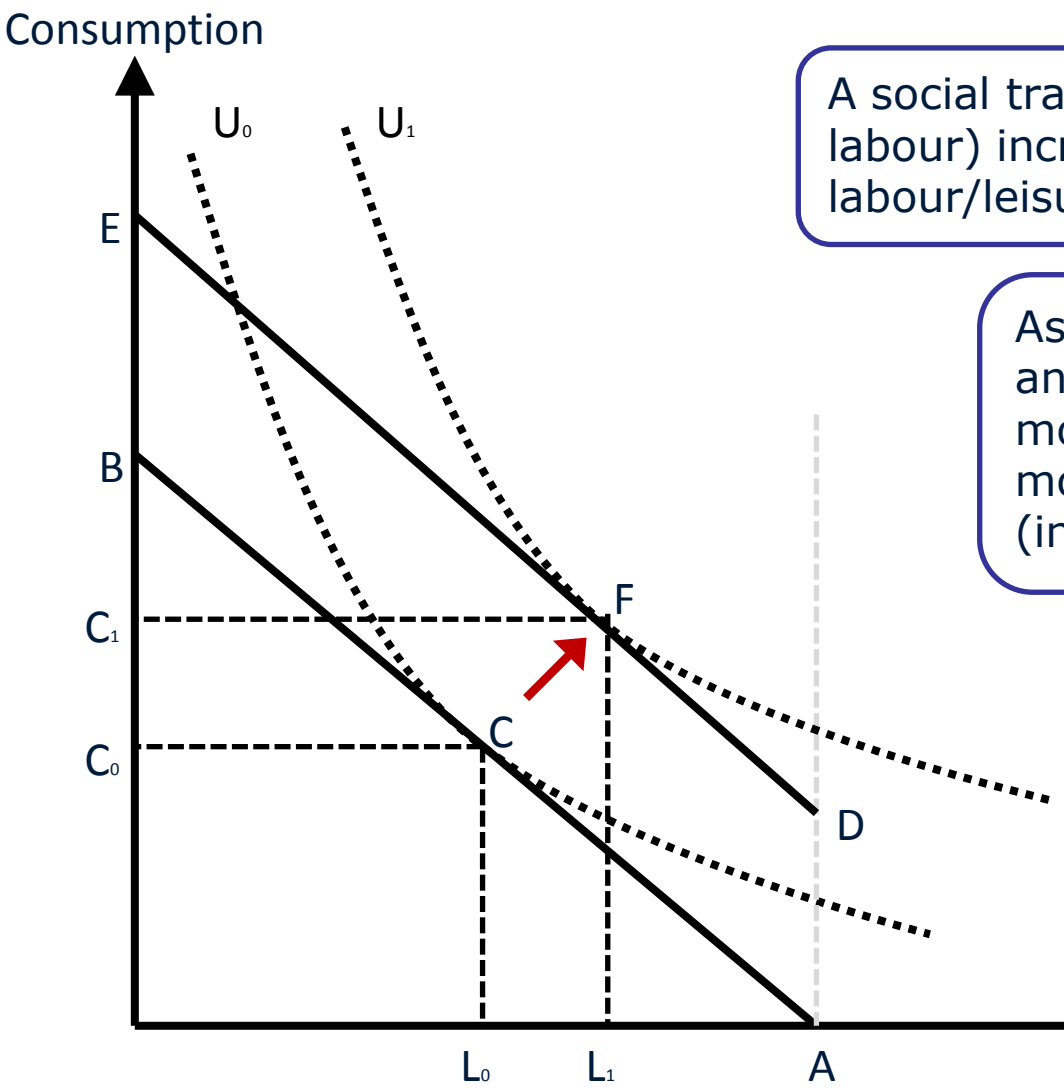
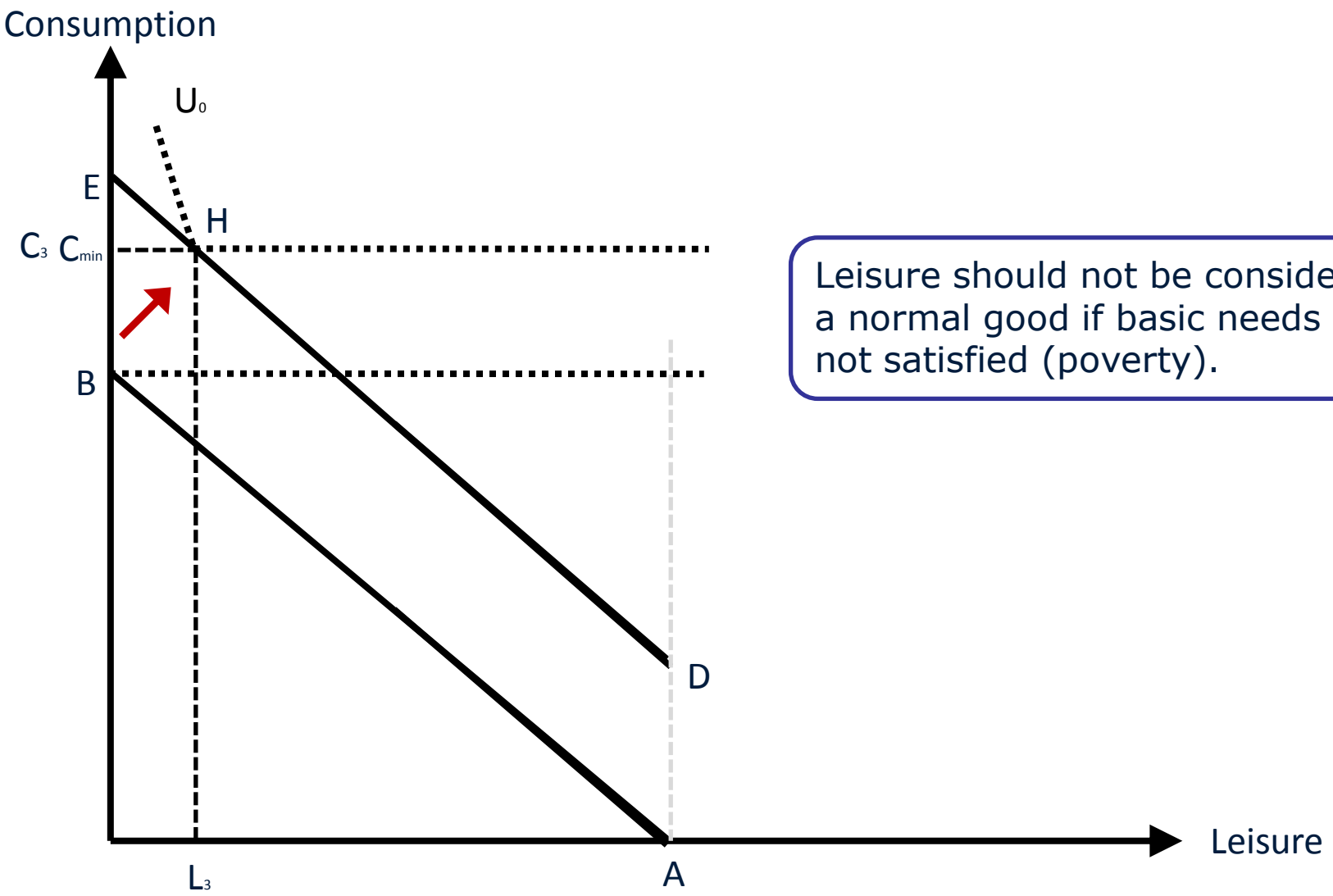


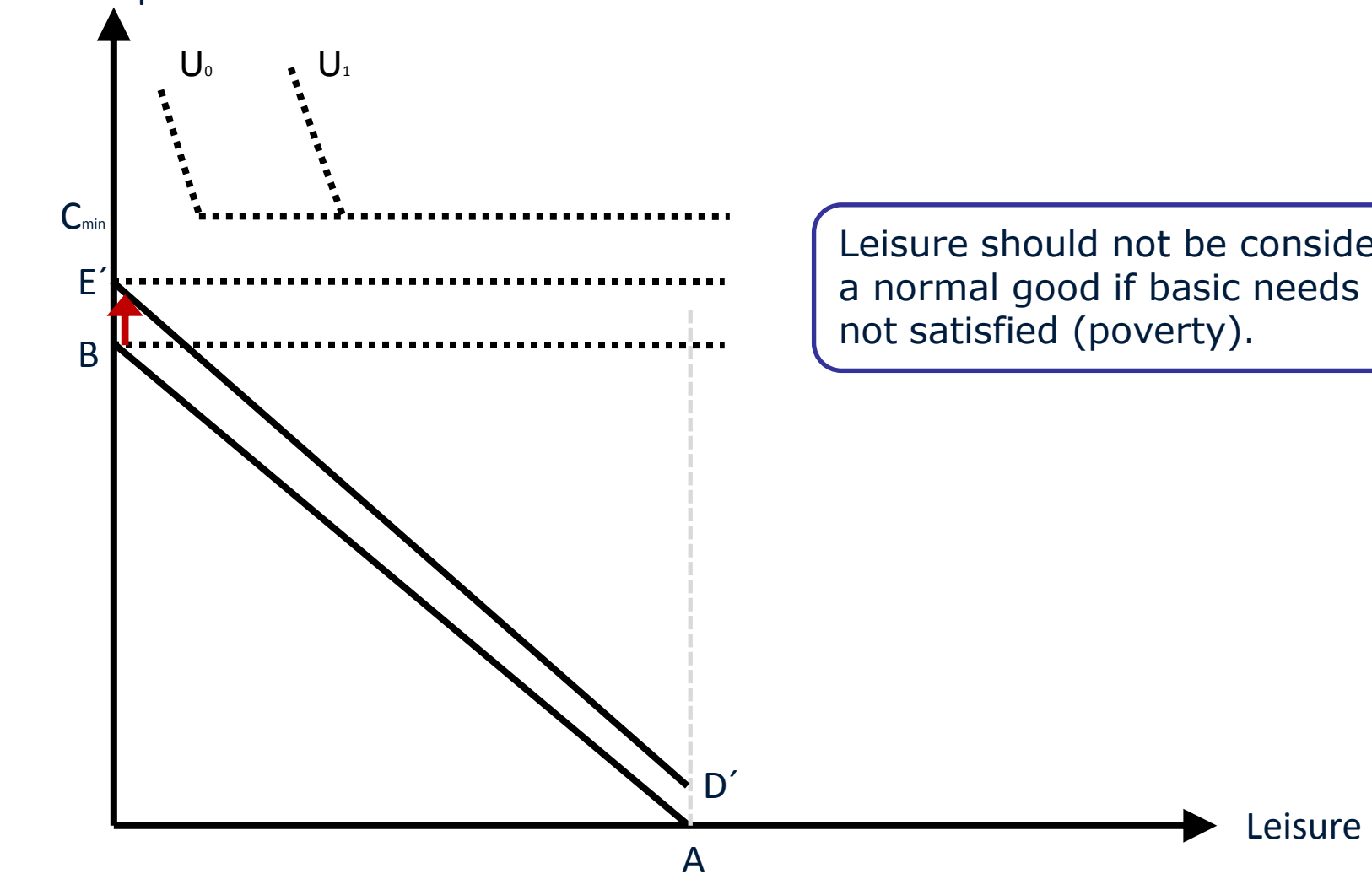
A social transfer (unconditional on labour) increases consumption at any labour/leisure level.

Assuming that consumption and leisure are normal goods: more leisure (less work) and more consumption is preferred (income effect).

There is no substitution effect if the social transfer does not affect real wage.



Leisure should not be considered a normal good if basic needs are not satisfied (poverty).



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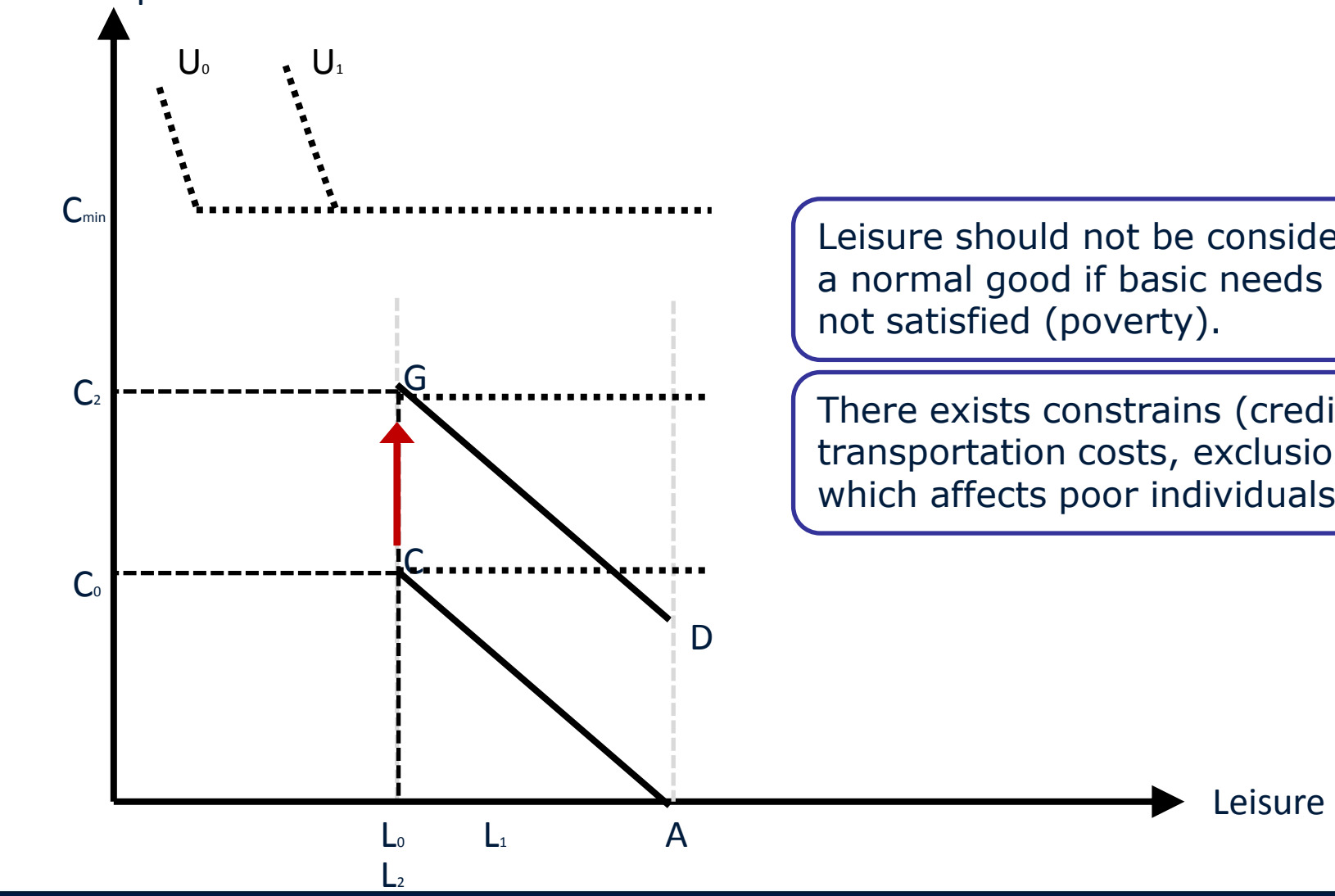

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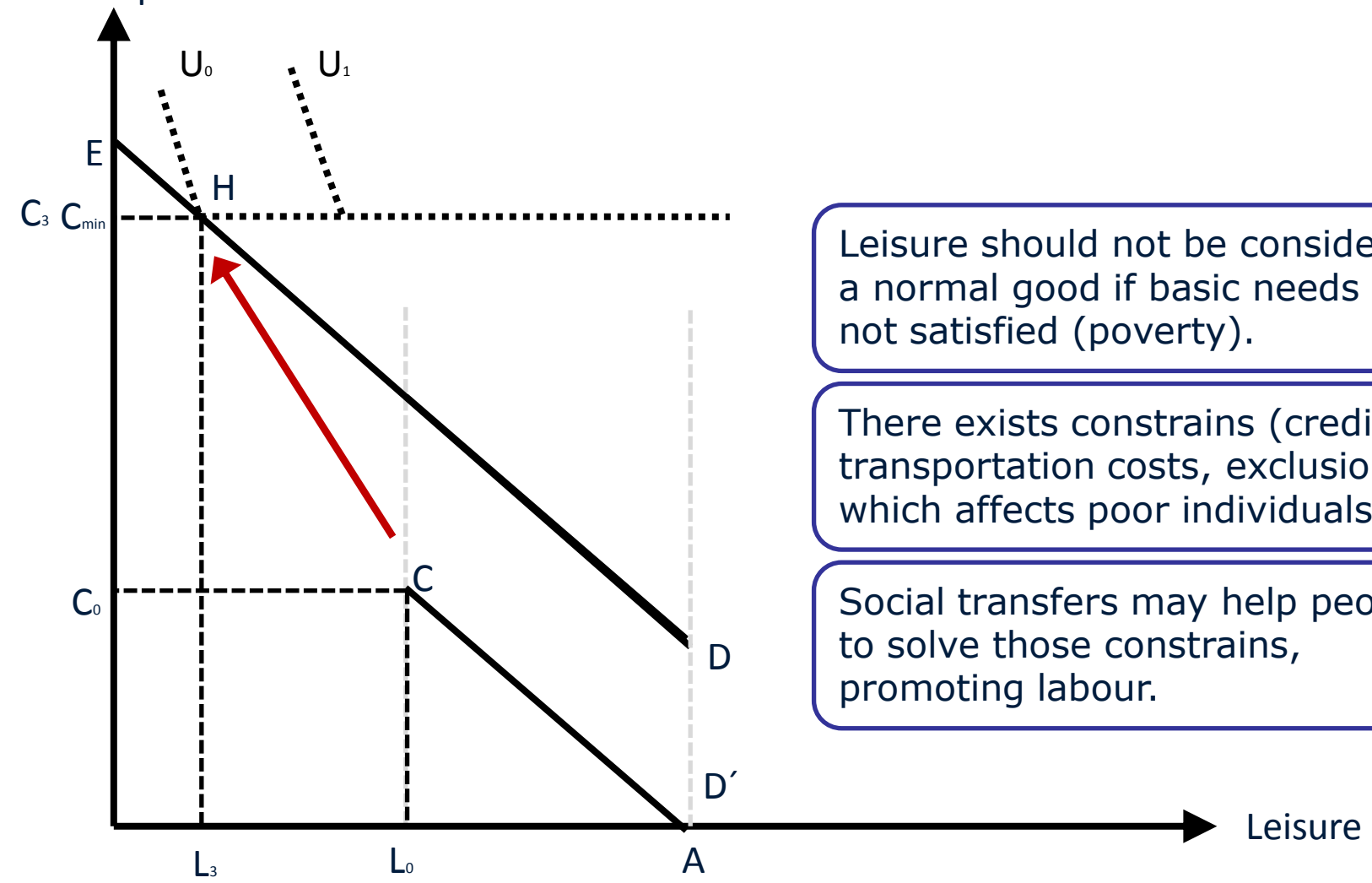
There exists constrains (credit, transportation costs, exclusion) which affects poor individuals.



Leisure should not be considered a normal good if basic needs are not satisfied (poverty).

There exists constrains (credit, transportation costs, exclusion) which affects poor individuals.

Social transfers may help people to solve those constrains, promoting labour.

International evidence:

- Posel et al (2006) – South Africa:
  - Higher probability of employment
  - Covering migration costs and help to children.
- Mideros et al (2012) – Cambodia:
  - Reduction on un-paid labour (poor persons), but higher paid-labour (poor rural persons)
- Foguel and Barros (2010) – Brazil:
  - Positive effect on male labour particiation.
- Gonzales-Rozada and Llerena (2011) – Ecuador:
  - Financing work search.
- No disincentives has been found in Brazil, Mexico, Argentina, Chile, Ethiopia, Bangladesh, Nicaragua y Honduras (Barrientos and Niño-Zarazua, 2010)(Alzúa et al, 2012)

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Data and programme information:

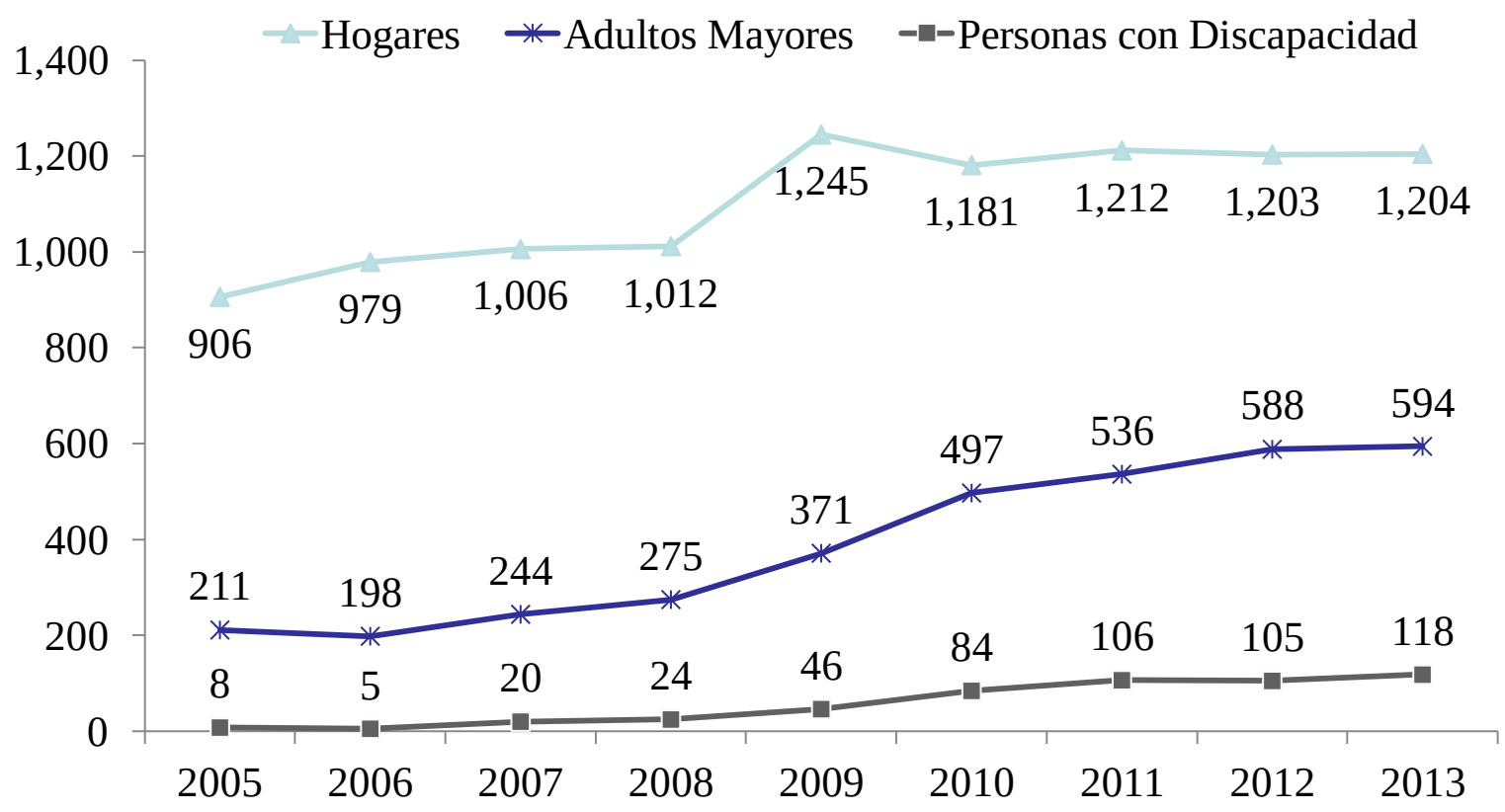
- Data is from the Urban and Rural National Survey of Employment, Unemployment and Underemployment (ENEMDUR).

- The *Bono de Desarrollo Humano*, BDH (cash transfer) was introduced in 1998.
  - To guarantee a minimum level of consumption.
  - To incorporate conditionalities to invest on health and education.
  - To protect old-age and disables persons.

- The BDH "is" targeted at poor households by a proxy-means-test mechanism (*Registro Social*) updated in 2008.

¿What is(not) known about the BDH?:

Number (thousands) of BDH recipients.



Source: Ministerio de Inclusión Económica y Social (December 2005-2012 and January 2013)

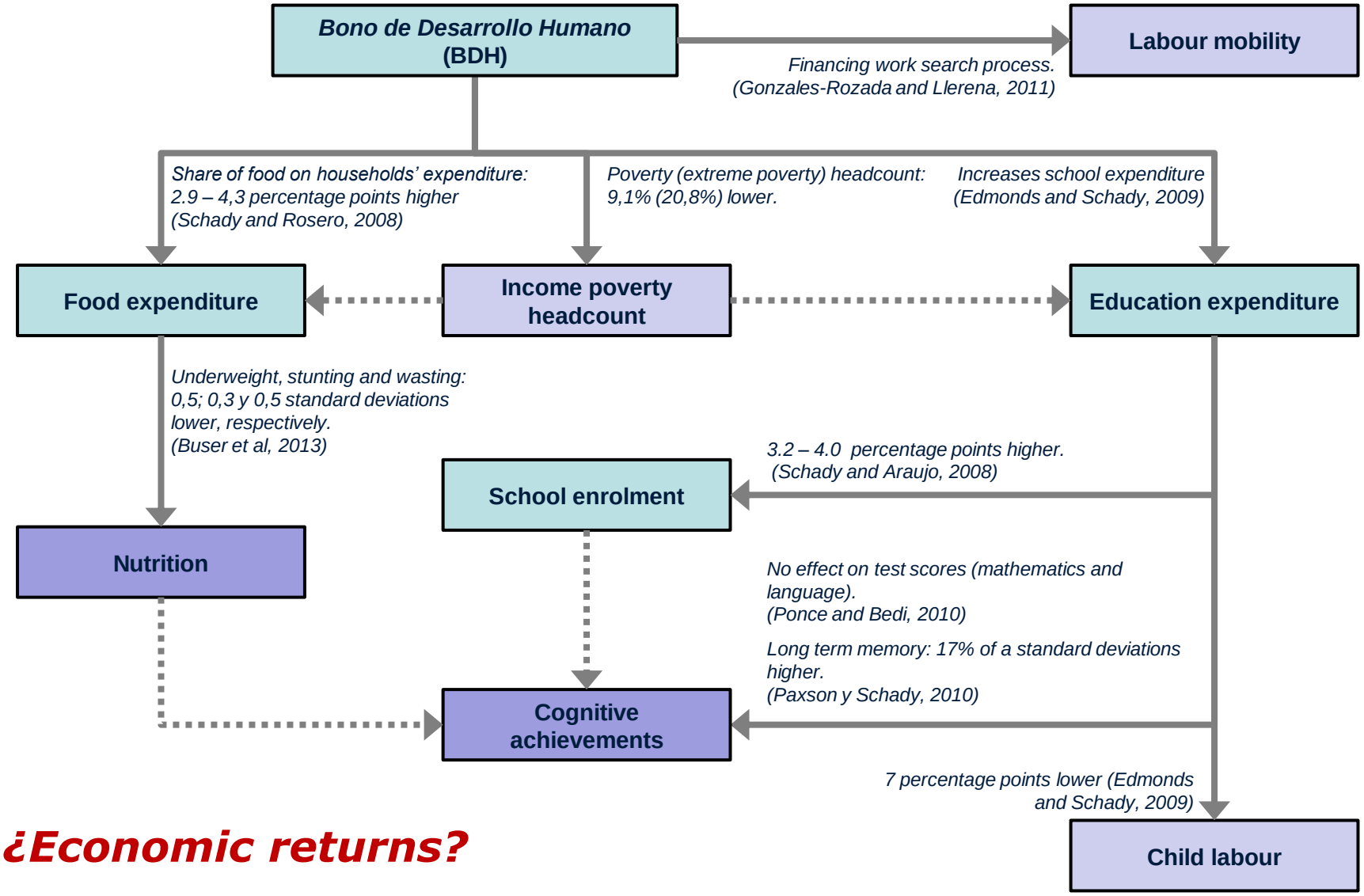
¿What is(not) known about the BDH?:

Effects of the BDH on poverty and inequality (ENEMDUR – December 2012)

	Before BDH	After BDH	Difference	Difference (%)
Poverty head count (%)	30.0	27.3	-2.7	-9.1
Extreme poverty head count (%)	14.1	11.1	-2.9	-20.8
Income Gini coefficient	0.486	0.476	-0.010	-2.0

Note: Poverty and extreme poverty lines are USD 76.35 (2.55) and USD 43.03 (1.43) monthly (daily) per-capita, at December 2012.

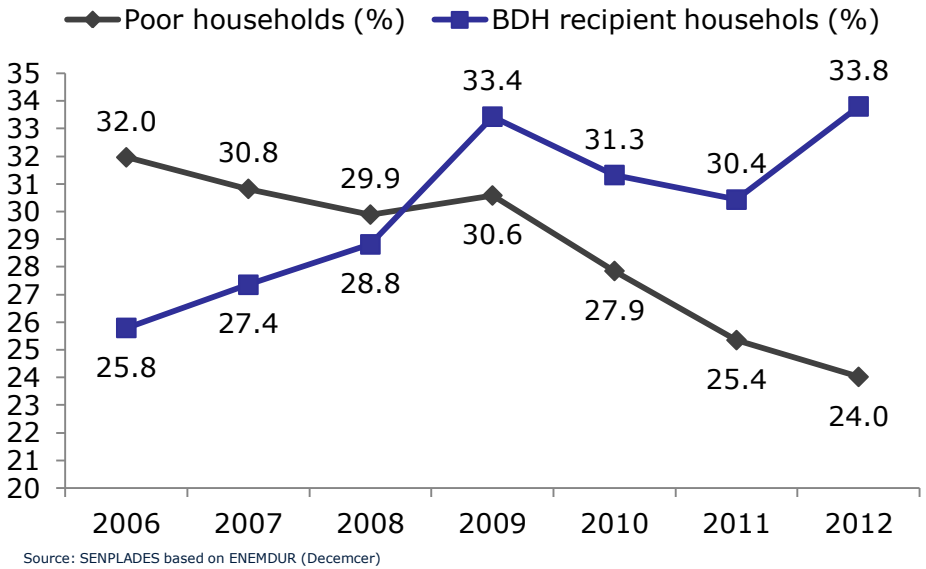
Source: Own calculation based on ENEMDUR – December 2012.



¿Economic returns?

Data and programme information:

- Flat transfer: USD 35 per-household each month in 2012. (USD 50 in 2013).
- Unconditional on labour.
- Increasing inclusion and exclusion errors:



Source: SENPLADES based on ENEMDUR (Decemcer)

- We exploit this!

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Collective labour supply setting:

$$max\ \mathrm{U_i}(1 - h_i, C_i)$$

$$subject\ to\ C_i = w_i h_i + p_i$$

$$with\ p_1 + p_2 = y$$

Two-stages budgeting problem
Bloemen (2009)

Three-stages empirical implementation:

$$\log w_i = \gamma_1 + \gamma_2 Sch_i + \gamma_3 age_i + \gamma_3 age_i^2 + \alpha_4 N_{i,j} \quad \text{(selection model)}$$

$$h_{1,j}(w_{1,j}, w_{2,j}, y_j \mid P_{1,j} = 1) = \alpha_1 + \alpha_2 \widehat{w}_{1,j} + \alpha_3 \widehat{w}_{2,j} + \alpha_4 y_j^o + \alpha_5 y_j^{st} + \alpha_6 X_{1,j}$$

$$h_{2,j}(w_{2,j}, w_{1,j}, y_j \mid P_{2,j} = 1) = \beta_1 + \beta_2 \widehat{w}_{2,j} + \beta_3 \widetilde{w}_{1,j} + \beta_4 y_j^o + \beta_5 y_j^{st} + \beta_6 X_{2,j}$$

Descriptive statistics (ENEMDUR – December 2012)

Variable	BDH recipients			All adults		
	Observations	Mean	Standard deviation	Observations	Mean	Standard deviation
Age	4371	42.590	(11.290)	10844	41.871	(11.363)
Age^2	4371	1941.373	(998.255)	10844	1882.271	(986.786)
Years of schooling	**4371**	**5.905**	**(3.509)**	**10844**	**9.014**	**(4.743)**
Female=1 (male=0)	4371	0.578	(0.007)	10844	0.490	(0.005)
Head of house=1 (other member=0)	4371	0.561	(0.008)	10844	0.670	(0.005)
Married=1 (single=0)	4371	0.836	(0.006)	10844	0.800	(0.004)
Indigenous=1 (white/mestizo=0)	**4371**	**0.148**	**(0.005)**	**10844**	**0.069**	**(0.002)**
Afroecuadorian=1 (white/mestizo=0)	4371	0.056	(0.003)	10844	0.043	(0.002)
Montubio=1 (white/mestizo=0)	**4371**	**0.106**	**(0.005)**	**10844**	**0.051**	**(0.002)**
Number of children (younger than 3 years old)	4371	0.176	(0.414)	10844	0.189	(0.422)
Number of children (between 3 and 5 years old)	4371	0.287	(0.516)	10844	0.245	(0.476)
Number of children (between 6 and 11 years old)	**4371**	**0.771**	**(0.857)**	**10844**	**0.594**	**(0.768)**
Number of children (between 12 and 17 years old)	**4371**	**0.792**	**(0.876)**	**10844**	**0.617**	**(0.794)**
Number of old age (older than 64 years old)	**4371**	**0.168**	**(0.408)**	**10844**	**0.103**	**(0.325)**
Number of unsatisfied basic needs	4371	0.965	(0.849)	10844	0.463	(0.726)
Number of televisions	4371	0.825	(0.507)	10844	1.236	(0.795)
Number of telephones	4371	1.290	(0.957)	10844	1.938	(1.173)
Rural=1 (urban=0)	**4371**	**0.678**	**(0.007)**	**10844**	**0.344**	**(0.005)**

Note: Standard errors are in brackets.

Source: Own calculation based on ENEMDUR – December 2012.

Income variables (ENEMDUR – December 2012)

Variable	BDH recipients			All adults		
	Observations	Mean	Standard deviation	Observations	Mean	Standard deviation
Labour income per-month	4371	$ 159.23	(261.073)	10844	$ 370.54	(558.773)
Labour income per-month (>0)	2707	$ 254.79	(291.070)	8746	$ 451.22	(586.355)
Labour income per-hour (>0)	2707	$ 1.63	(1.715)	8746	$ 2.76	(6.604)
Partner's labour income per-month	4371	$ 146.74	(255.249)	10844	$ 234.60	(427.940)
Social transfer (BDH) per-month	4371	$ 39.43	(12.582)	10844	$ 13.31	(20.030)
Other non-labour income per-month	4371	$ 13.07	(54.185)	10844	$ 50.07	(287.252)
Labour income per-month per-capita	4371	$ 43.71	(95.777)	10844	$ 117.26	(197.802)
Labour income per-month per-capita (>0)	2707	$ 69.94	(113.336)	8746	$ 142.79	(209.762)
Labour income per-hour per-capita (>0)	2707	$ 0.46	(0.686)	8746	$ 0.88	(2.245)
Partner's labour income per-month per-capita	4371	$ 38.50	(90.295)	10844	$ 71.26	(147.902)
Social transfer (BDH) per-month per-capita	4371	$ 11.29	(6.184)	10844	$ 3.81	(6.437)
Other non-labour income per-month per-capita	4371	$ 4.23	(17.070)	10844	$ 18.39	(101.942)
Poor=1 (non-poor=0)	**4371**	**0.495**	**(0.008)**	**10844**	**0.254**	**(0.004)**
Extreme-poor=1 (non-extreme-poor=0)	**4371**	**0.190**	**(0.006)**	**10844**	**0.095**	**(0.003)**

Note: Standard errors are in brackets. Income is expressed in current U.S. dollars (USD). Poverty and extreme poverty lines are USD 76.35 (2.55) and USD 43.03 (1.43) monthly (daily) per-capita, at December 2012.

Source: Own calculation based on ENEMDUR – December 2012.

Labour situation, working hours and labour-income (ENEMDUR – December 2012)

Labour situation	Frequency	Frequency	Working hours per-week		Labour income per-month	
			Hours	Standard deviation	USD	Standard deviation
BDH recipients						
Inactive	30.1%	30.6%				
Unemployed	**0.5%**					
Underemployed	50.1%	69.4%	37.2	(14.168)	$ 142.42	(124.802)
Employed	19.2%		46.8	(11.919)	$ 456.58	(429.347)
Total	100.0%	100.0%	39.9	(14.245)	$ 227.90	(286.195)
All adults						
Inactive	14.5%	15.2%				
Unemployed	**0.7%**					
Underemployed	40.2%	84.8%	37.4	(14.315)	$ 191.87	(183.691)
Employed	44.6%		46.3	(10.865)	$ 658.57	(715.326)
Total	100.0%	100.0%	42.1	(13.378)	$ 433.60	(581.398)

Note: Standard errors are in brackets.

Source: Own calculation based on ENEMDUR – December 2012.

- Inactive: lack of time (39.7%), family (39.2%), sickness (9.5%).
- Inactive: housework (91.0%), disabled (5.0%) , studying (3.0%)

Leisure is not an option!

Heckman selection model of labour income per-hour (ENEMDUR – December 2012)

Variable	BDH recipients			All adults		
	Coefficient		Standard error	Coefficient		Standard error
Years of schooling	**0.026**	***	**(0.005)**	**0.067**	***	**(0.004)**
Age	0.022	*	(0.013)	0.022	***	(0.008)
Age^2	0.000	*	(0.000)	0.000	**	(0.000)
Female=1 (male=0)	**-0.113**	**	**(0.052)**	**-0.183**	***	**(0.027)**
Head of house=1 (other member=0)	0.171	***	(0.063)	0.069	*	(0.037)
Married=1 (single=0)	0.115	*	(0.059)	0.100	***	(0.030)
Indigenous=1 (white/mestizo=0)	**-0.172**	*	**(0.088)**	**-0.117**	**	**(0.054)**
Afroecuadorian=1 (white/mestizo=0)	0.018		(0.112)	-0.120	**	(0.051)
Montubio=1 (white/mestizo=0)	**-0.149**	*	**(0.085)**	**-0.097**	*	**(0.055)**
Rural=1 (urban=0)	0.068		(0.061)	-0.043		(0.050)
Parish dummies	Yes			Yes		
	Selection equation			**Selection equation**		
Number of unsatisfied basic needs	-0.080	***	(0.023)	-0.223	***	(0.025)
Number of televisions	0.120	**	(0.048)	0.197	***	(0.041)
Number of telephones	0.069	***	(0.021)	0.145	***	(0.025)
Constant	0.199	***	(0.060)	0.540	***	(0.082)
Number of observations	4,371			10,844		
Wald test of independent equations (rho=0):	Prob. > chi2 = 0.0000			Prob. > chi2 = 0.0000		

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level. A specifications include as explanatory variables (even if not reported) number of household's members at different ag groups (0-3, 4-5, 6-11, 12-17 and 65+).

*** Significance at 1%, ** significance at 5%, * significance at 10%

Source: Own calculation based on ENEMDUR – December 2012.

Average marginal effects on labour participation of the head of household (ENEMDUR – December 2012)

Variable	(+) Total income			(+) Income per-capita								
	All			All			Poor			Extreme poor		
	Average marginal effect		Standard error	Average marginal effect		Standard error	Average marginal effect		Standard error	Average marginal effect		Standard error
Labour income (per-hour) (+)	-0.007	**	(0.003)	-0.011	*	(0.006)	-0.086	***	(0.026)	-0.119	***	(0.046)
Partner's labour income (per-month) (+)	0.000	***	(0.000)	0.000	***	(0.000)	-0.003	***	(0.000)	-0.005	***	(0.001)
BDH transfer (per-month) (+)	**0.000**		**(0.000)**	**-0.002**	*	**(0.001)**	**-0.002**	*	**(0.001)**	**-0.004**		**(0.002)**
Other transfers (per-month) (+)	0.000	***	(0.000)	-0.001	***	(0.000)	-0.004	***	(0.000)	-0.008	***	(0.001)
Female=1 (male=0)	-0.123	***	(0.021)	-0.119	***	(0.020)	-0.118	***	(0.018)	-0.177	***	(0.040)
Number of observations	2,407			2,407			1,180			429		
Pseudo R2	0.3932			0.4155			0.5857			0.5950		

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level and by the delta method. All specifications include as explanatory variables (even if not reported) age, age^2, years of schooling, dummies for married/single and urban/rural and for ethnic group (indigenous, afroecuadorian, montubio and white/mestizo) and number of household's members at different age groups (0-3, 4-5, 6-11, 12-17 and 65+).

*** Significance at 1%, ** significance at 5%, * significance at 10%

Source: Own calculation based on ENEMDUR – December 2012.

Effects on log working-hours of the head of household – income per-capita (ENEMDUR – December 2012)

Variable	BDH recipients (Head of house)									All adults (Head of house)		
	All			Poor			Extreme poor			Decile 1 and 2		
	Coefficient		Standard error	Coefficient		Standard error	Coefficient		Standard error	Coefficient		Standard error
Labour income (per-hour)	0.163		(0.118)	-0.419		(0.343)	-1.741		(1.189)	-0.232		(0.251)
Partner's labour income (per-month)	0.000		(0.000)	-0.005		(0.004)	-0.002		(0.014)	-0.007		(0.005)
BDH transfer (per-month)	**-0.016**	***	**(0.005)**	**-0.024**	***	**(0.007)**	**-0.007**		**(0.017)**	**-0.003**		**(0.005)**
Other transfers (per-month)	-0.001		(0.001)	-0.011	***	(0.004)	0.005		(0.014)	-0.009		(0.005)
Female=1 (male=0)	-0.171	***	(0.060)	-0.193	*	(0.106)	-0.272	*	(0.158)	-0.284	***	(0.092)
Number of observations	2,251			1,084			388			1,118		
Adjusted R2	0.2013			0.2994			0.3373			0.2174		

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level. All specifications include as explanatory variables (even if not reported) age, age^2, years of schooling, dummies for married/single and urban/rural and for ethnic group (indigenous, afroecuadorian, montubio and white/mestizo), number of household's members at different age groups (0-3, 4-5, 6-11, 12-17 and 65+) and dummies for 573 parishes.

*** Significance at 1%, ** significance at 5%, * significance at 10%

Source: Own calculation based on ENEMDUR – December 2012.

Average marginal effects on labour participation of the partner – income per-capita (ENEMDUR – December 2012)

Variable	All		Poor		Extreme poor	
	Average marginal effect	Standard error	Average marginal effect	Standard error	Average marginal effect	Standard error
Labour income (per-hour)	-0.240 ***	(0.087)	-0.407 ***	(0.137)	-0.385 **	(0.186)
Partner's labour income (per-month)	0.000	(0.000)	-0.002 ***	(0.001)	-0.002 **	(0.001)
BDH transfer (per-month)	**-0.004 ***	**(0.003)**	**-0.003**	**(0.004)**	**-0.007**	**(0.005)**
Other transfers (per-month)	0.000	(0.001)	-0.006 *	(0.004)	-0.019 *	(0.011)
Number of observations	1,964		981		377	
Pseudo R2	0.1144		0.1652		0.1649	

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level and by the delta method. All specifications include as explanatory variables (even if not reported) age, age^2, years of schooling, dummies for female/male, married/single and urban/rural and for ethnic group (indigenous, afroecuadorian, montubio and white/mestizo), and number of household's members at different age groups (0-3, 4-5, 6-11, 12-17 and 65+). *** Significance at 1%, ** significance at 5%, * significance at 10%

Source: Own calculation based on ENEMDUR – December 2012.

Effects on log working-hours of the partner – income per-capita (ENEMDUR – December 2012)

Variable	All		Poor		Extreme poor	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Labour income (per-hour)	1.079 **	(0.494)	0.038	(1.539)	1.300	(1.879)
Partner's labour income (per-month)	0.000	(0.002)	0.002	(0.004)	0.007	(0.007)
BDH transfer (per-month)	**-0.021 ***	**(0.008)**	**-0.009**	**(0.020)**	**-0.012**	**(0.030)**
Other transfers (per-month)	-0.004	(0.004)	-0.017	(0.056)	-0.045	(0.056)
Number of observations	744		325		157	
Adjusted R2	0.2661		0.2287		0.5122	

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level. All specifications include as explanatory variables (even if not reported) age, age^2, dummies for ethnic group (indigenous, afroecuadorian, montubio and white/mestizo), number of household's members at different age groups (0-3, 4-5, 6-11, 12-17 and 65+) and dummies for 573 parishes. *** Significance at 1%, ** significance at 5%, * significance at 10%

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Conclusions:

- Social transfers are largely being implemented as a poverty and inequality reduction strategy
- Recent literature develops an analytical framework to argue in favour of potential economic returns, specially at the micro-level, but there still a gap regarding empirical evidence
- Traditional labour supply intuition indicates that social transfers may discourage labour, income effect
- Leisure is not a normal good is basic needs are not satisfied. It is not an option.

Conclusions:

- We estimated a three stages labour supply model based on a collective setting, for adults receiving a social transfer
- In the case of Ecuador there is not a significant effect: there is not disincentives neither incentives. More can be done.
- Results are policy relevant:
  - Social transfers as an instrument for economic inclusion
  - Correct targeting
  - Complementary policies

Future steps:

- Robustness analysis
- Multidimensional estimation of rates of return.