

« Comparison of the Capacities-Social LCA Results for the Two Turkish Processed Tomato Sectors»

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4th International Seminar in Social LCA

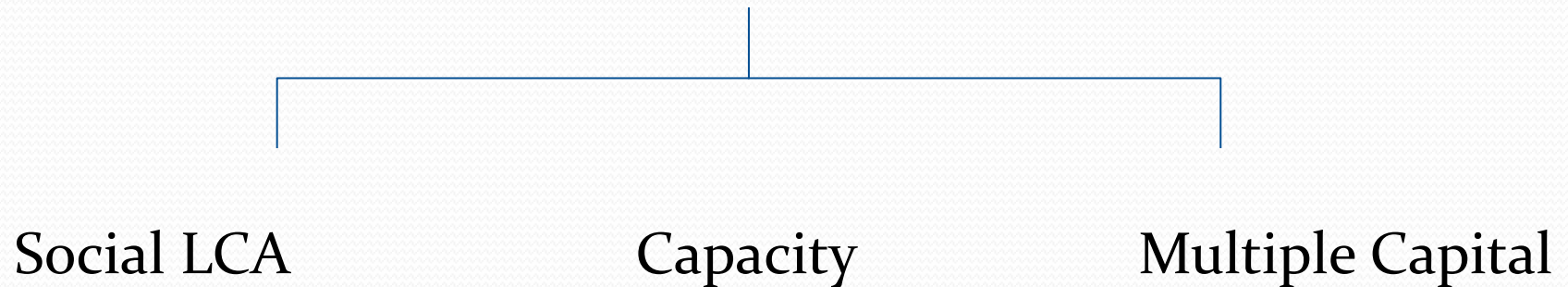
Friday, November 21, 2014

Introduction

- To analyze the socio-economic impact of the Turkish processed tomato sector
- **Methodology:** developed in University of Montpellier 1, CIRAD, Mediterranean Agronomic Institute (MAI) of Montpellier by Garrabé and Fescher (2013).
- Results are presented according to the indicators of five types of capital: human capital, technical capital, financial capital, social capital, institutional capital.

Methodology

Capacities-Social Life Cycle Analysis



Capacity is a function of action.

Capacity in Capacities-SLCA: “information translated in a homogenous manner in terms of increasing or diminishing capabilities” (Garrabé and Feschet, 2013)

Classes and Sub Classes of Capital

Human Capital	Technical Capital	Financial Capital	Social Capital	Institutional Capital
<ul style="list-style-type: none">• Education• Working Conditions• Health• Security• Parity	<ul style="list-style-type: none">• Firm• Infrastructure• Information• Market• Administration	<ul style="list-style-type: none">• Subsidies• Equities• Savings• Wages• Public Funds• Credits	<ul style="list-style-type: none">• Justice• Participation• Trust• Integration & Culture• Social Networks	<ul style="list-style-type: none">• Rules of Protection• Rules of Monitoring• Rules of Regulation• Rules of Coverage• Rules of Arbitrage

Purpose of the methodology

“to develop indicators which allow to measure corporate action (for each level of industry, for each category of actor and for each category of capital) on the transformation of individual endowments in terms of operating capabilities (Garrabé, 2012).”

Identification of indicators for « education » and « health »

Class of capital	Sub-classes of capital	Potential impacts on capacity	Indicators of potential impact on capacity
Human capital	Education	<ol style="list-style-type: none"> 1- Increase in education 2- Increase in internal education (seminars, training, etc) 3- Increase in external education (private courses outside the firm) 	<ul style="list-style-type: none"> • Aid, financing schools, creche, materials, professors • Supply of internal training: time, kind, theme, etc • Supply of external training: time, kind, theme, etc
Human capital	Health	<ol style="list-style-type: none"> 1- Increase in life expectancy 2- Decrease in job illnesses 3- Increase in preventive measure in work place 	<ul style="list-style-type: none"> • Minimizing negative impacts of the job activity on life expectancy • Characteristics of illnesses, their impacts on health, compensation, etc. • Supplying of preventive measure: kind, frequency, impact, etc.

Internal Information: Survey in the Firm

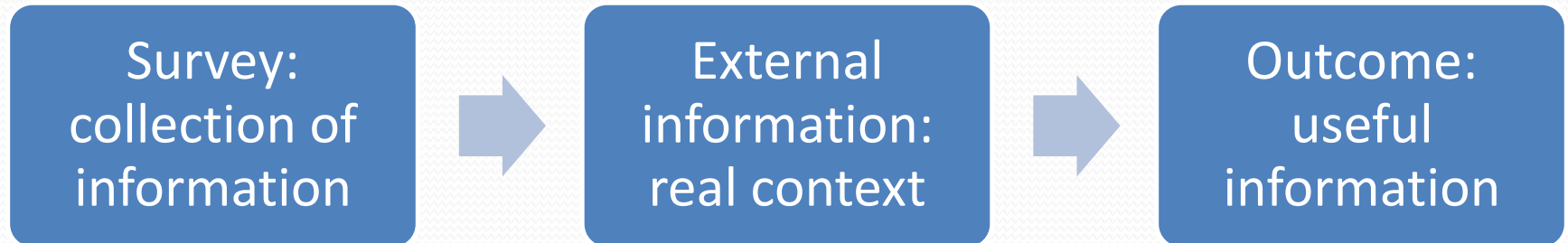
102 questions

Did your activity have an impact on	education (human capital)	by assigning scholarship, aid, school financing, nursery, educational materials, teacher, etc.
	integration and culture (social capital)	by adjusting work hours to facilitate cultural practice of workers, financing cultural activities, etc.
	social networks (social capital)	by increasing cooperation with non governmental organizations (NGOs):partnership, common action, sponsorship, etc.
	research and development(technical capital)	by introducing a new process, new product, new marketing, etc
	work inspection (institutional capital)	by implementing work inspection, taking into account irregularities, etc

Identification of external information sources:

- Standards and regulations at sectorial level: Turkish processed tomato industry
- Standards and regulations at national level: Turkish law
- Standards and regulations at international level
- Research and papers, interview with workers, union (Tek-Gıda Is), experts (Agricultural Insurance Pool-Manisa), academics from Ege University
- Observation of researcher

Processing of external information



Scoring

- Impact > 0 : more freedom to act
- Impact < 0 : less freedom to act
- Neutral impact = 0



Field Work



5 firms in tomato paste sector
5 firms in dried tomato sector
20 producers
3 logistics companies

- Individual contracts between firms and producers
- Six out twenty producers have income apart from agriculture.
- Inequality of salary between man and woman
- Wage (woman)= 12 - 14 € /day (Source: our survey, 2012)
- Wage (man) = 15 -19 € /day (Source: our survey, 2012)

Impact scoring by colors

Increase in Capacity

From 1 (+) to 3 (+) : an increase in the capacity at the **low** level 

From 4 (+) to 6 (+) : an increase in the capacity at the **average** level 

7 (+) and more : an increase in the capacity at the **high** level 

Decrease in Capacity

From 1 (-) to 3 (-) : a decrease in the capacity at the **low** level 

From 4 (-) to 6 (-) : a decrease in the capacity at the **average** level 

7(-) and more : a decrease in the capacity at the **high** level 

Neutral : no impact on the capacity 

Variations of Effective Potential Capacity in Capital for Tomato Paste Sector (Source: Surveys,2012)

		Human Capital					Technical Capital					Financial Capital					Social Capital					Institutional Capital								
		E	WC	H	Se	P	C	I	Info	M	Adm	Sbs	Eq	Sv	W	PubR	Cr	Jus	Pcp	T	IC	SN	RP	RM	RR	RC	RA			
Producers	P1	2+	4+	2+	0	0	3+	2+	0	0	0	4+	2+	0	0	1+	0	1+	0	2+	2+	1+	0	1+	0	2+	0			
	P2	2+	4+	3+	2+	0	4+	4+	0	0	0	4+	0	0	0	1+	0-	1+	0	2+	2+	1+	2+	0	0	2+	0			
	P3	2+	4+	2+	0	0	0	2+	0	0	0	4+	0	0	0	1+	0	1+	0	0	0	3+	2+	0	0	0	0			
	P4	0	3+	2+	0	0	2+	2+	0	0	0	4+	0	0	0	1+	0	1+	0	2+	2+	1+	2+	1+	0	2+	0			
	P5	0	4+	2+	0	0	2+	2+	0	0	0	4+	2+	0	0	1+	0	1+	0	2+	2+	1+	0	1+	0	2+	0			
	P6	0	2+	0	0	0	2+	2+	0	0	0	4+	0	0	0	1+	0	1+	0	0	2+	1+	2+	0	0	2+	0			
	P7	0	4+	2+	0	0	2+	2+	0	0	0	4+	2+	0	0	1+	0	1+	0	2+	2+	1+	2+	1+	0	0	0			
	P8	0	3+	2+	2+	0	5+	2+	0	0	0	4+	0	0	0	1+	0	1+	0	2+	2+	1+	2+	1+	0	2+	0			
	P9	0	4+	0	2+	0	6+	2+	2+	0	0	4+	0	0	0	1+	0	1+	0	2+	2+	1+	2+	1+	0	2+	0			
	P10	0	3+	2+	0	0	2+	1+	0	0	0	4+	0	0	0	1+	0	1+	0	2+	2+	1+	0	1+	0	0	0			
Firms	T1	5+	9+	7+	3+	5+	10+	5+	6+	6+	3+	3+	6+	6+	2+	2+	0	7+	7+	5+	4+	4+	9+	6+	4+	4+	3+			
	T2	3+	8+	3-	5+	3+	4+	5+	7+	4+	5+	1+	3+	2+	2+	1+	2+	3+	2+, 2-	2+	2-	2+	2-	2+	3+	2-	6+	4+	2+	3+
	T3	4+	12+	6+	3+	3+	7+	5+	7+	6+	2+	5+	6+	1+	3+	2+	4+	5+	6+	4+	3+	4+	8+	4+	3+	2+	3+			
	T4	1+	3-	5+	2-	4+	5+	3+	9+	4+	2+	5+	1+	3+	6+	4+	1+	2+	4+	4+	1+	2-	4+	2+	1+	4+	3+	1+	2+	2+
	T5	3+	2-	5+	4+	3+	6+	4+	5+	1+	5+	2+	3+	4+	2+	1+	2+	0	6+	3+	2-	4+	1+	3+	4+	3+	1+	2+	3+	
Logistics Companies	L1	5+	10+	7+	5+	7+	10+	8+	8+	7+	2+	3+	6+	6+	2+	2+	3+	7+	6+	5+	4+	5+	7+	4+	2+	2+	4+			
	L2	5+	10+	7+	3+	7+	10+	8+	4+	5+	2+	4+	6+	6+	0	2+	0	7+	4+	4+	1+	3+	5+	4+	2+	2+	4+			
	L3	0	7+	3+	2+	3+	4+	2+	2+	3+	2+	2+	4+	4+	0	2+	0	4+	2+	4+	1+	3+	3+	2+	0	2+	3+			

Education

Company and Infrastructures

No union, no social dialogue

Variations of Effective Potential Capacity in Capital for Dried Tomato Sector (Source: Surveys, 2013)

		Human Capital					Technical Capital					Financial Capital						Social Capital					Institutional Capital					
		E	WC	H	Se	P	C	I	Info	M	Adm	Sbs	Eq	Sv	W	PaR	Cr	Jus	Pcp	T	IC	SN	RP	RM	RR	RC	RA	
Producers	P1	0	1+	1+	0	0	4+	0	0	0	0	3+	1+	0	0	1+	0	1+	0	0	5+	2+	2+	1+	0	0	0	
	P2	0	1+	1+	0	0	3+	0	0	0	0	3+	1+	0	0	1+	0	0	0	0	4+	1+	2+	1+	0	0	0	
	P3	0	1+	1+	3+	0	3+	0	0	0	0	3+	1+	0	0	1+	2-	1+	0	1+	6+	0	2+	0	0	0	0	
	P4	1+	1+	2+	2+	0	5+	0	0	0	0	3+	2+	1+	0	1+	0	3+	1+	0	3+	1+	2+	0	0	0	0	
	P5	0	1+	0	1+	0	3+	0	0	0	0	3+	0	1-	0	1+	2-	1+	0	1+	3+	0	2+	1+	0	1+	0	
	P6	0	1+	0	1+	0	3+	0	0	0	0	3+	0	1-	0	1+	2-	1+	0	1+	3+	0	2+	1+	0	1+	0	
	P7	1+	2+	1+	0	0	4+	0	0	0	0	3+	2+	0	0	1+	0	2+	2+	1+	3+	1+	2+	2+	0	1+	0	
	P8	0	1+	1+	0	0	3+	0	0	0	0	3+	2+	0	0	1+	0	1+	0	1+	3+	1+	2+	2+	0	0	0	
	P9	0	1+	1+	4+	0	3+	0	0	0	0	3+	0	1-	0	1+	2-	1+	0	1+	3+	0	2+	1+	0	1+	0	
	P10	1+	1+	1+	3+	0	3+	0	0	0	0	3+	1+	1-	0	1+	2-	1+	0	1+	3+	0	2+	1+	0	1+	0	
Firms	Ts1	0	3+	2-	0	2+	1+	1+	0	2+	1+	2+	1+	3+	0	2+	0	2+	1+	2+	1+	1+	0	1+	2+	0	2+	0
	Ts2	4+	8+	2+	3+	3+	7+	2+	1+	2+	1+	2+	1+	1+	0	2+	1+	4+	1+	2+	3+	2+	4+	2+	0	2+	0	
	Ts3	1+	6+	1+	2+	1+	6+	3+	0	2+	1+	2+	2+	0	0	2+	0	3+	2+	2+	2+	4+	2+	0	2+	1+		
	Ts4	1+	6+	2+	2+	4+	6+	3+	0	1+	1+	2+	3+	1+	1+	2+	0	4+	2+	2+	1+	4+	2+	2+	2+	1+		
	Ts5	5+	8+	3+	3+	2+	8+	3+	1+	0	2+	2+	3+	4+	2+	2+	0	5+	1+	2+	4+	2+	4+	3+	2+	2+	1+	
Logistics Companies	L1	5+	10+	7+	5+	7+	10+	8+	8+	7+	2+	3+	6+	6+	2+	2+	3+	7+	6+	5+	4+	5+	7+	4+	2+	2+	4+	
	L2	5+	10+	7+	3+	7+	10+	8+	4+	5+	2+	4+	6+	6+	0	2+	0	7+	4+	4+	1+	3+	5+	4+	2+	2+	4+	

Credits

No union, no participation

Variations of Capacity

	Human Capital					Technical Capital					Financial Capital					Social Capital					Institutional Capital						
	E	WC	H	Se	P	C	I	Info	M	Adm	Sbs	Eq	Sv	W	PubR	Cr	Jus	Pcp	T	IC	SN	RP	RM	RR	RC	RA	
P1	2+	4+	2+	0	0	3+	2+	0	0	0	4+	2+	0	0	1+	0	1+	0	2+	2+	1+	0	1+	0	2+	0	
P4	0	3+	2+	0	0	2+	2+	0	0	0	4+	0	0	0	1+	0	1+	0	2+	2+	1+	2+	1+	0	2+	0	
P6	0	2+	0	0	0	2+	2+	0	0	0	4+	0	0	0	1+	0	1+	0	0	2+	1+	2+	0	0	2+	0	
T2	3+	8+	3+	5+	3+	4+	5+	7+	4+	5+	1+	3+	2+	2+	1+	2+	3+	2+	2+	2+	2+	3+	2+	6+	4+	2+	3+
T3	4+	12+	6+	3+	3+	7+	5+	7+	6+	2+	5+	6+	1+	3+	2+	4+	5+	6+	4+	3+	4+	8+	4+	3+	2+	3+	
T4	1+	3+	5+	2+	4+	5+	3+	9+	4+	2+	5+	1+	3+	6+	4+	1+	2+	4+	1+	2+	4+	4+	3+	1+	2+	2+	
L2	5+	10+	7+	3+	7+	10+	8+	4+	5+	2+	4+	6+	6+	0	2+	0	7+	4+	4+	1+	3+	5+	4+	2+	2+	4+	
L3	0	7+	3+	2+	3+	4+	2+	2+	3+	2+	2+	4+	4+	0	2+	0	4+	2+	4+	1+	3+	3+	2+	0	2+	3+	

E

Infrastructure

No union, no social dialogue

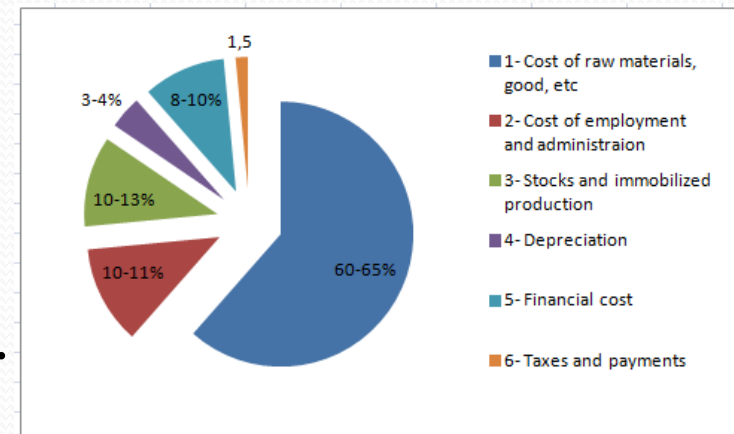
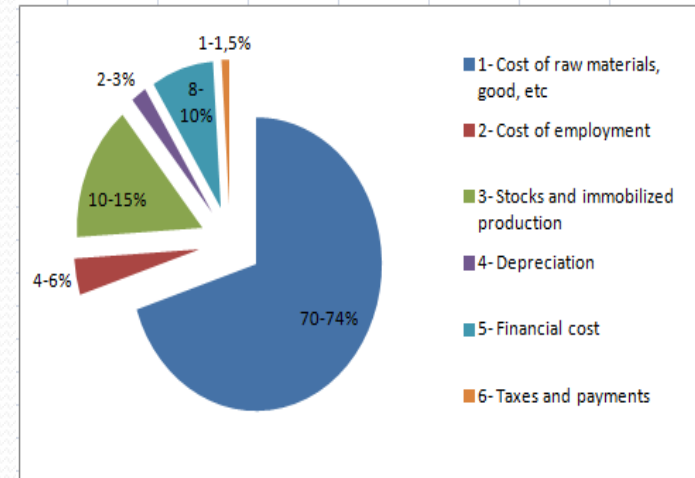
Tomato Paste Sector

	Human Capital					Technical Capital					Financial Capital						Social Capital					Institutional Capital					
	E	WC	H	Se	P	C	I	Info	M	Adm	Sbs	Eq	Sv	W	PuR	Cr	Jus	Pcp	T	IC	SN	RP	RM	RR	RC	RA	
P2	0	1+	1+	0	0	3+	0	0	0	0	3+	1+	0	0	1+	0	0	0	0	4+	1+	2+	1+	0	0	0	
P3	0	1+	1+	3+	0	3+	0	0	0	0	3+	1+	0	0	1+	2-	1+	0	1+	6+	0	2+	0	0	0	0	
Ts1	0	3+	2-	0	2+	1+	1-	6+	1+	0	2+	1+	3+	0	2+	0	2+	1+	2-	1+	1+	0	1+	2+	0	2+	0
Ts3	1+	6+	1+	2+	1+	6+	3+	0	2+	1+	2+	2+	0	0	2+	0	3+	2-	2+	2+	2+	4+	2+	0	2+	1+	
Ts5	5+	8+	3+	3+	2+	8+	3+	1+	0	2+	2+	3+	4+	2+	2+	0	5+	1+	2-	4+	2+	4+	4+	3+	2+	2+	1+
L1	5+	10+	7+	5+	7+	10+	8+	8+	7+	2+	3+	6+	6+	2+	2+	3+	7+	6+	5+	4+	5+	7+	4+	2+	2+	4+	

Dried Tomato Sector

Decomposition of Production Cost

- The production cost of one ton of ***concentrated tomato*** varies between 568 and 954 €.
- The production cost of one ton of ***dried tomato*** varies between 1600 and 2250 €.



Estimation of Some Economics Results

	T ₁ (Tomato Paste)	Ts ₁ (Dried Tomato)	P ₃
Total Value Added(TVA)	41.204.231 €	5.585.048 €	55.643 €
TVA per ton	824 €	1.117 €	86 €
Primary Income /ton	334 €	1.129 €	36 €
Secondary Income/ton	48 €	532 €	15 €
Total Net Income Created in Region /ton	242,07 €	1.776 €	53 €

Difficulties

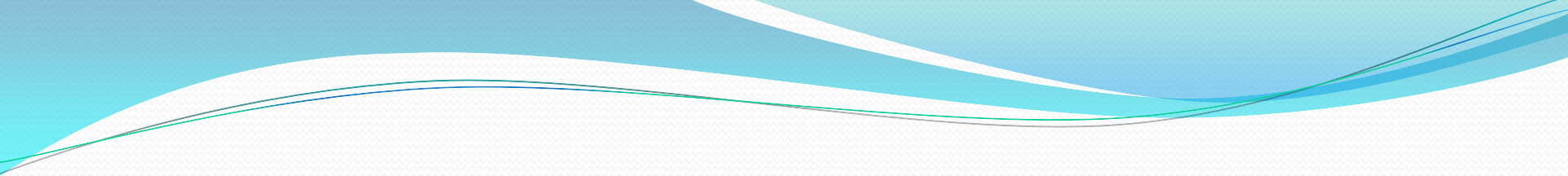
- Getting the balance sheets of firms, technical and financial data: majority of firms do not publish their balance sheets, confidentiality reasons, market competition.
- Scoring
- Goal of our research
 - 1- our method is recently developed .
 - 2- political reason (for the questions of social and institutional capital)

Conclusion

- Importance of analysing and estimating the impacts in terms of variation of capacity
- Place economic theory of development within the Social LCA framework
- First Capacities-Social LCA study in Turkey

Reference

- Garrabé M et Feschet P., 2013. Un cas particulier: l'ACV sociale des capacités. Cirad. (éd.), *ACV Sociales Effets socio-économique des chaînes valeurs*. Cirad, Montpellier, 87-117



Thank you for your attention

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