

**SURTAX REMOVAL, RICE SECTOR
AND MIGRATION IN THE RIVER AREA
IN SENEGAL :**
**a computable general equilibrium
approach**

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Outline

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Problem statement

- Before liberalizing rice imports in 1995, surtax was set by the Government to protect local rice production.
- For rice imports which price is greater or equal to 120 999 FCFA/tons \Rightarrow surtax of 30% applied.
- Surtax or TCI with TEC \Rightarrow tools allowed by WAEMU in the process of integration.
- Rate of surtax revised : passed from 30% to 20% because of the agreements carried out by Senegal toward WTO and WAEMU.
- Tariff dismantling is deepening and will affect rice sector ;
- Rice surtax removal \Rightarrow suitable case of study to analyze the link between agricultural liberalization, migration and remittances in Senegal.

Problem statement

- **Migration lead to loss of 0,3% population old of 15 years and plus (EMUS, 1997);**
- **Africa : 58% of Senegalese international migrants;**
- **France : main destination of Senegalese international migrants out of Africa (Mauritania, Ivory Coast, Cameroon, Gabon);**
- **First Senegalese international migrants in France : Soninke, Toucouleur, Mandjack;**
- **Some of reasons : collapse of local economy and removal of the interdiction for ships to offload seaman in French port like Marseille, Bordeaux, Le Havre and Dunkerque;**
- **Dakar : key role in the flow of River area migrants**

Problem statement

Table 3 : Destination of temporary and permanent Senegalese river migrants, 1992-1993

Destination	Temporary migrants	Permanent migrants
Saint-Louis	22,2	11,5
Other Senegalese regions	59	62,5
- Dakar	47,9	49,1
- Others regions	11,1	13,4
Foreign countries	18,8	26
Total	100	100

Source : Guilmoto (1997)

- **Long distance migration** \Rightarrow **fact of permanent migrants,**
- **Transitory migration** \Rightarrow **generally oriented toward closest destination (22% of them located in Saint-Louis region – Richard-Toll),**

Problem statement

Table 4 : Flow of remittances received by river area

Destination	Remittances (in millions of FCFA)	Remittances (in %)
River area	4037	11,84
Other Senegalese regions	18807	55,16
- Dakar	10229	30,00
- Others regions	8578	25,16
Foreign	11251	33,00
Total	34095	100

Source : MCS 1996

Methodology

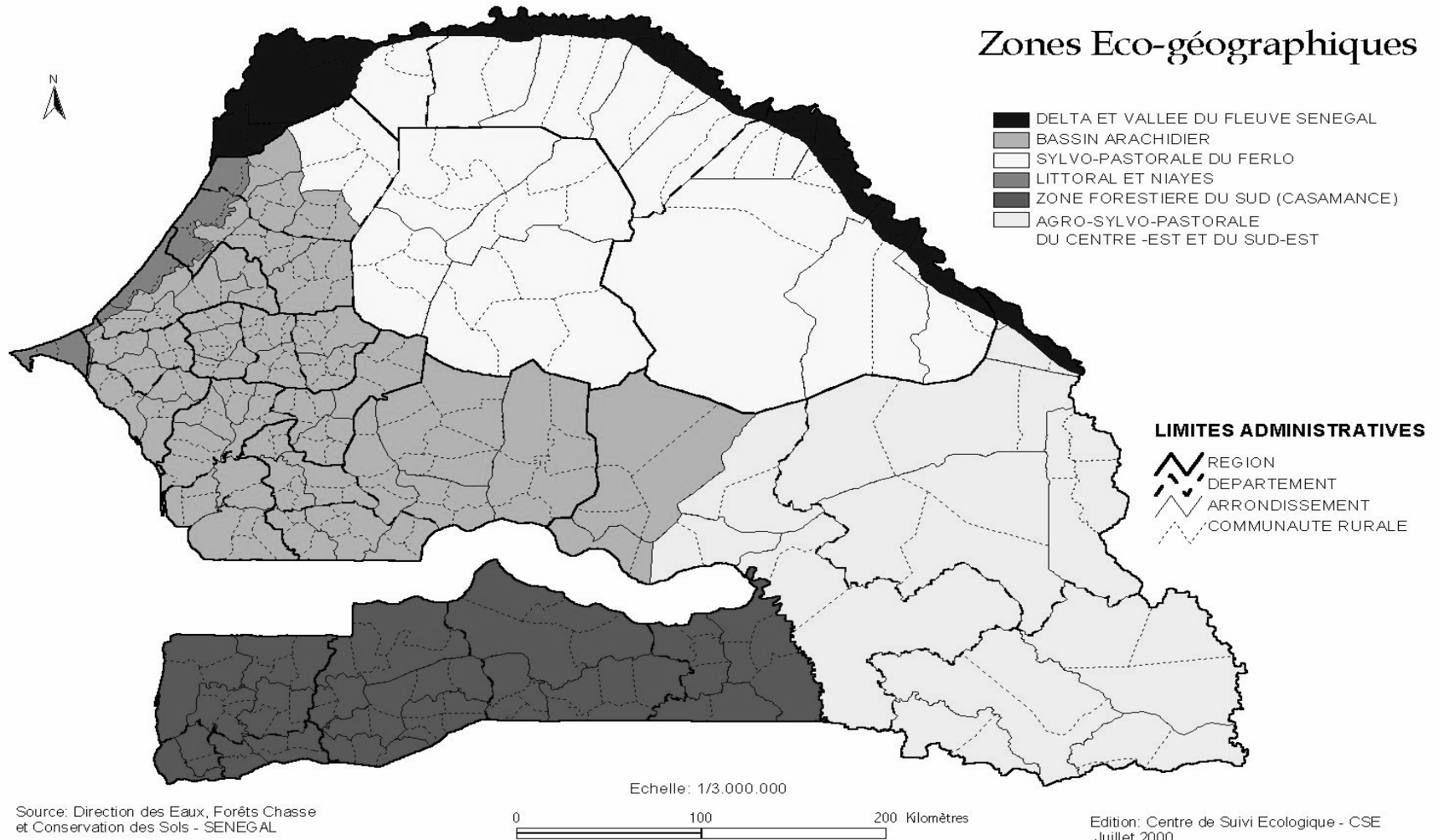
.SAM of 1996 with

- **3 activities/products :**
 - **River irrigated rice,**
 - **Other agricultural activities,**
 - **urban non agricultural activities,**
- **4 factors : capital, labour, land, water**
- **4 Households : River area, Casamance, other rural area, urban**

Methodology

REPUBLIQUE DU SENEGAL

Zones Eco-géographiques



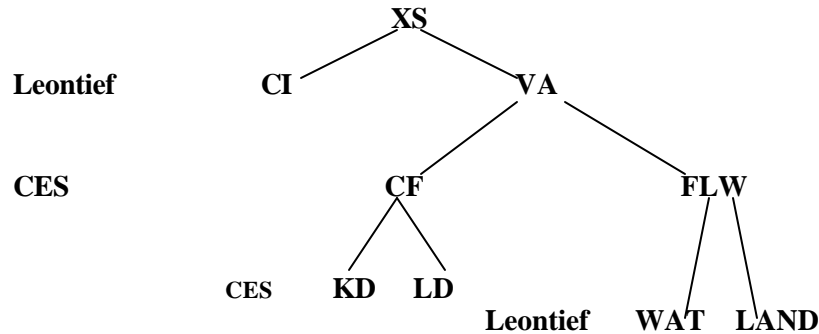
Methodology

- **CGE based on the SAM**

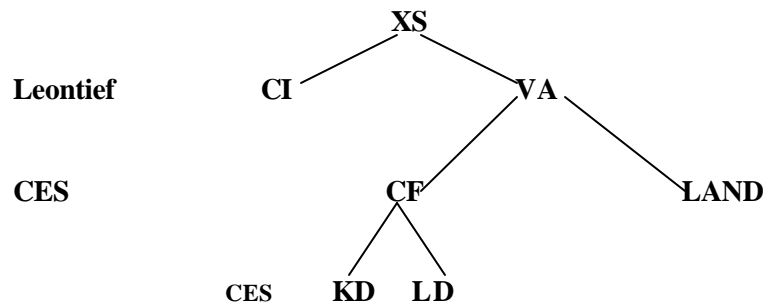
Exter-plus (Decaluwé, Cockburn et Robichaud, 2002) and Senrur (Cabral, 2005)

-VA non-agricole  technologie standard F(L,K)

VA AGRICULTURE IRRIGUEE



VA AGRICULTURE NON IRRIGUEE



Methodology

Modelling surtax

$$1. TI = tx * (P * XS - PE * EX) + tx * (1 + tm + sm) * e * PWM * M$$

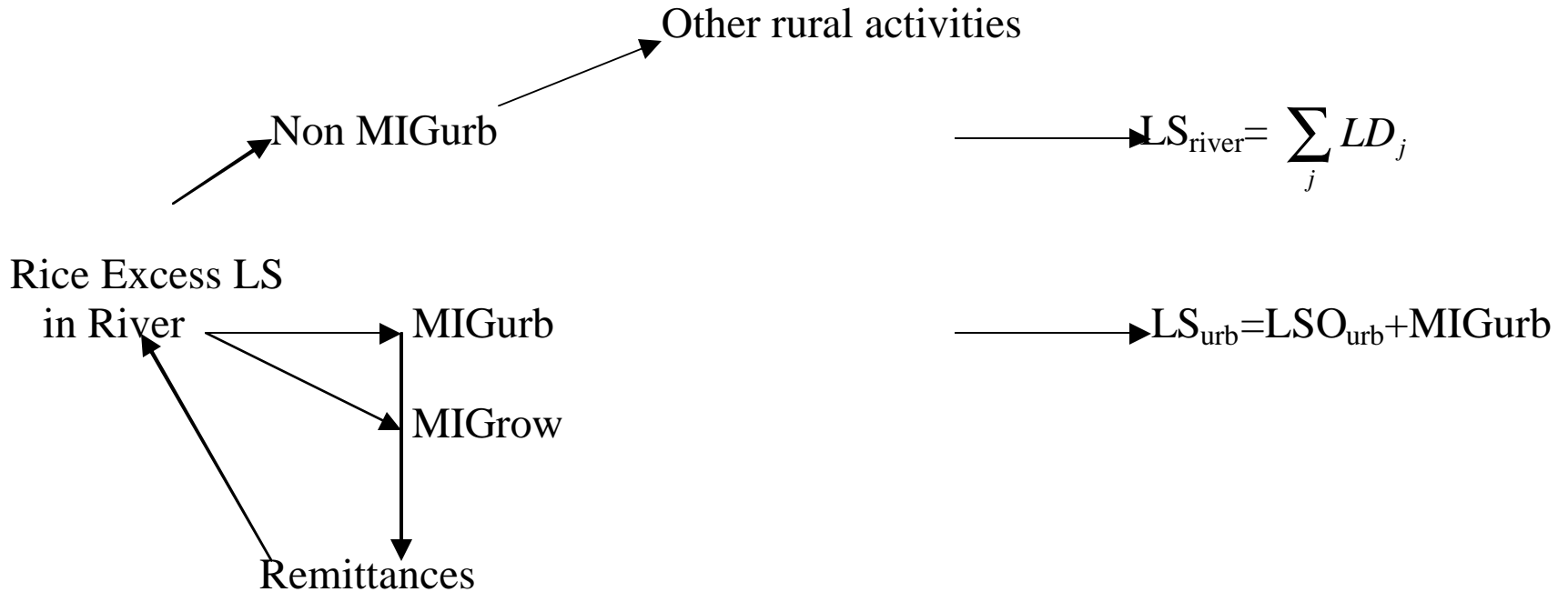
$$2. ST = sm * e * PWM * M$$

$$3. PM = tx * (1 + tm + sm) * e * PWM$$

$$4. YG = \sum_{tr} TI_{tr} + \sum_{tr} TIE_{tr} + \sum_{tr} TIM_{tr} + \sum_{tr} ST_{tr} + \sum_h DTH_h + DTF + TWG$$

Methodology

Introducing migration in the Model

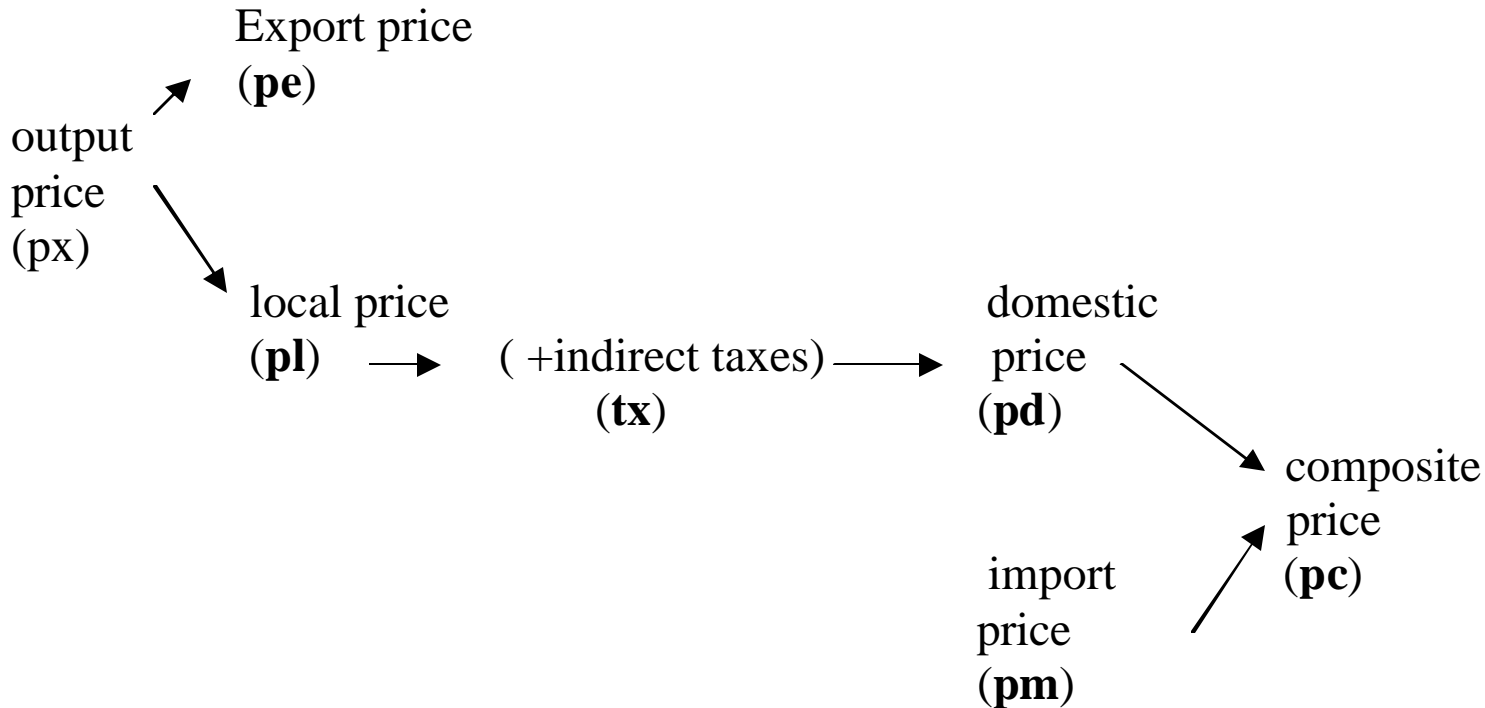


where $MIG_{urb} = MIG_{urb} \left(\frac{W_{urb}}{W_{river}}, \text{Excess rice labour supply}, \mathbf{m} \right)$

Labour market equilibrium in each area : $LS = \sum_j LD_j$

Price relationships

Basic Price Relationships in the Model



where $\mathbf{pm} = \mathbf{pwm} * \mathbf{er} * (1 + \mathbf{tm}) * (1 + \mathbf{tx});$

$\mathbf{pm} = \mathbf{pwm} * \mathbf{er} * (1 + \mathbf{tm}) * (1 + \mathbf{tx}) * (1 + \mathbf{st});$

pwm is world price of imports; er exchange rate; tm tariff rate; tx : indirect tax rate; st : surtax rate

Simulation Results

- **Sim 1 : surtax removal**
- **Sim 2 : surtax removal and supply of water for irrigation increase by 19%**
- **Sim 3 : surtax removal and world import and export prices of agricultural products rise by 3%**

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• **Tariff rate :**

- **River irg Rice** **8.89%**
- **Rur agri activities** **15.82%**
- **UrbNag** **26.00%**

• **Surtax rate :**

- **River irg Rice** **0.33%**

• **Shares in total imports & export intensity:**

	Mi/M	EXi/EX	Mi/Qi	EXi/XSi
–River irg Rice:	9.25 %	0.01 %	90.90 %	1.10 %
–Rur agri activities:	6.50 %	5.05%	11.91 %	7.02 %
–UrbNag:	84.25 %	94.94 %	23.55 %	20.00 %
–Total	100	100	23.03%	17.73%

- Sim 1

Macro level : no effects

Sim 1

Sectoral effects

- **Import price in local currency → down by 0.3%**
- **Imports → up by 0.08%**
- **Local sales → down by 0.02%**
- **Local sales (88.9% prod) so reduction of rice production riz (-0.02%)**
- **Reduction of local rice price compared to PE so TCR depreciation : Exports → up by 0.22%**

Sim 1

Effects on factor return, migration and remittances

- **rate of return to water → down by 0.84% because of decline of rice production**
- **rate of return to land constant because supply of “other agri area” which represent 94% of land revenue remains constant**
- **rate of return to capital: → down by 0.25%**
- **urban wage rate: → down by 0.01%**
- **river area wage rate: → down by 0.01%**
- **D travail riz irrigué : → down by 0.35%**
- **weak migration from river area to urban area (0.003% LS river) and ROW (0.001% LS river) then weak flow of remittances (0.001% river area wages) .**

Sim 1

Households well-being

	Urban area	Other rural areas	River area	Senegal
Change in nominal income	-0.01	0.00	-0.01	-0.01
Change in consumption prices	-0.01	-0.02	-0.02	0.00
Change in well-being	-0.01	0.02	0.01	0.00

No effect on Government budget

SIM 2

Macro effects

- **Prices:**
 - **Import price in local currency → down by 0.02%**
 - **Domestic price: → up by 0.11%**
 - **Local prices: → up by 0.08%**
 - **Consumer price: → up by 0.08%**
- **Imports in volume: → down by 0.02 %**
- **Exports in volume: → down by 0.03 %**
- **Local sales: → up by 0.02%**
- **Production: → up by 0.01%**

SIM 2

Sectoral effects

- **Rice import price in local currency: → down by 0.3%**
- **Domestic prices: down by 8.28% more than PM rice so**
- **Local sales: → up by 11.61% and Imports: → down by 0.62 %**
- **Sharp fall of rice local price compared to PE so RER depreciated: Exports → up by 17.32%**
- **Production: → up by 11.67% because of local sales increases(89.9% XS)**

SIM 2

Effects on factor return, migration and remittances

- **cost of water: down by 75.75%**
- **rate of return to land: → up by 0.67%**
- **rate of return to capital : → up by 44.86%**
- **river area wage rate: → up by 7.02%**
- **Labour D: → up by 57.47% for rice sector and 0.03% for river**
- **urban wage rate: → down by 0.05%**
- **Migration toward Dkr: → down by 0.41% of LS River.**
- **Migration toward ROW: → down by 0.14% of LS River.**
- **Remittances: → down by 0.17% of river wages.**

SIM 2

Households well-being

	Urban area	Other rural areas	River area	Senegal
Change in nominal income	-0.04	0.05	4.07	0.08
Change in consumption prices	0.08	0.10	0.08	0.08
Change in well-being	-0.12	-0.05	3.90	-0.01

No effect on Government budget

SIM 3

Macro effects

- **Prices:**
 - **Import price in local currency: → up by 0.4%**
 - **Consumer prices: → up by 0.26%**
 - **Producer price: → up by 0.17%**
- **Imports in volume : → down by 0.29 %**
- **Exports in volume: → up by 0.14 %**
- **Local sales: → down by 0.03%**
- **Production : → constant**

SIM 3

Sectoral effects

- **Rice import price in local currency: → up by 2.68%**
- **Imports: → down by 0.51 %**
- **Substitution between local sales and imports**
- **Local sales: → up by 0.06%**
- **Production: → up by 0.07%**
- **PE rise more than PD so RER depreciation then
Exportation : → up by 0.76%**

SIM 3

Effects on factor return, migration and remittances

- **rate of return to capital : → up for all sectors except urban non-agricultural sectors**
- **rate of return to land: → up by 2% (because of increase of other rural agri →94% land revenue)**
- **rate of return to water: → up by 6.15% (because of increase of rice production)**
- **river area wage rate: → up by 2.63% (because of activities expand in river area)**
- **urban wage rate: → down by 0.37%**
- **Migration toward Dkr: → down by 0.006% of LS River**
- **Migration toward ROW: → down by 0.002% of LS River**
- **Remittances: → down by 0.003% of river wages**

SIM 3

Households well-being

	Urban area	Other rural areas	River area	Senegal
Change in nominal income	-0.23	1.21	1.28	0.09
Change in consumption prices	0.32	0.52	0.50	0.26
Change in well-being	-0.40	0.71	0.56	-0.16

Effects on Government budget

- **Government income : → down by 0.14%**
- **Public consumption: → down by 0.19%**
- **Investment (in value): → up by 0.05%**

Conclusions & Policy lessons

- **Policy makers in WAEMU give a great importance to surtax as a tool to protect local producers but this instrument is not too efficient. TCI on imported rice: not efficient : → weak effect on river irrigated rice sector**
- **Reducing the cost of water (the main factor) have more impact on rice supply compared to the use of fiscal instrument (surtax)**
- **effects arise with increasing water supply or in a context of cut on grants to north agricultural producers subsidies**
- **Flow of migrants and, in turn remittances, when irrigated rice activity is affected**

Conclusions & Policy lessons

- **Price-effects more important so winners are river and other rural households**
- **If surtax is used, policymakers may address the pb of distortions effects induced by non uniform TCI in WAEMU with regard to TEC**

END