

IP Sustainable Pig Production

ECONOMIC ASPECTS

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Economic profitability

Social equity

**SUSTAINABLE
PRODUCTION**

Environmental health

HOW CALCULATE THE PROFITABILITY OF PIG PRODUCTION?

- ❖ Which data do we need?
- ❖ How analyze their determinants?

INTEREST OF THE CALCULATION OF THE PROFITABILITY?

Pig production is involved in the international competition and the producers need insights about advantages and disadvantages from different compared systems to have a competitive position.

PROFITABILITY DEPENDS ON

❖ Structural factors

Technical-economic management and efficiency



Knowledge of the farming systems

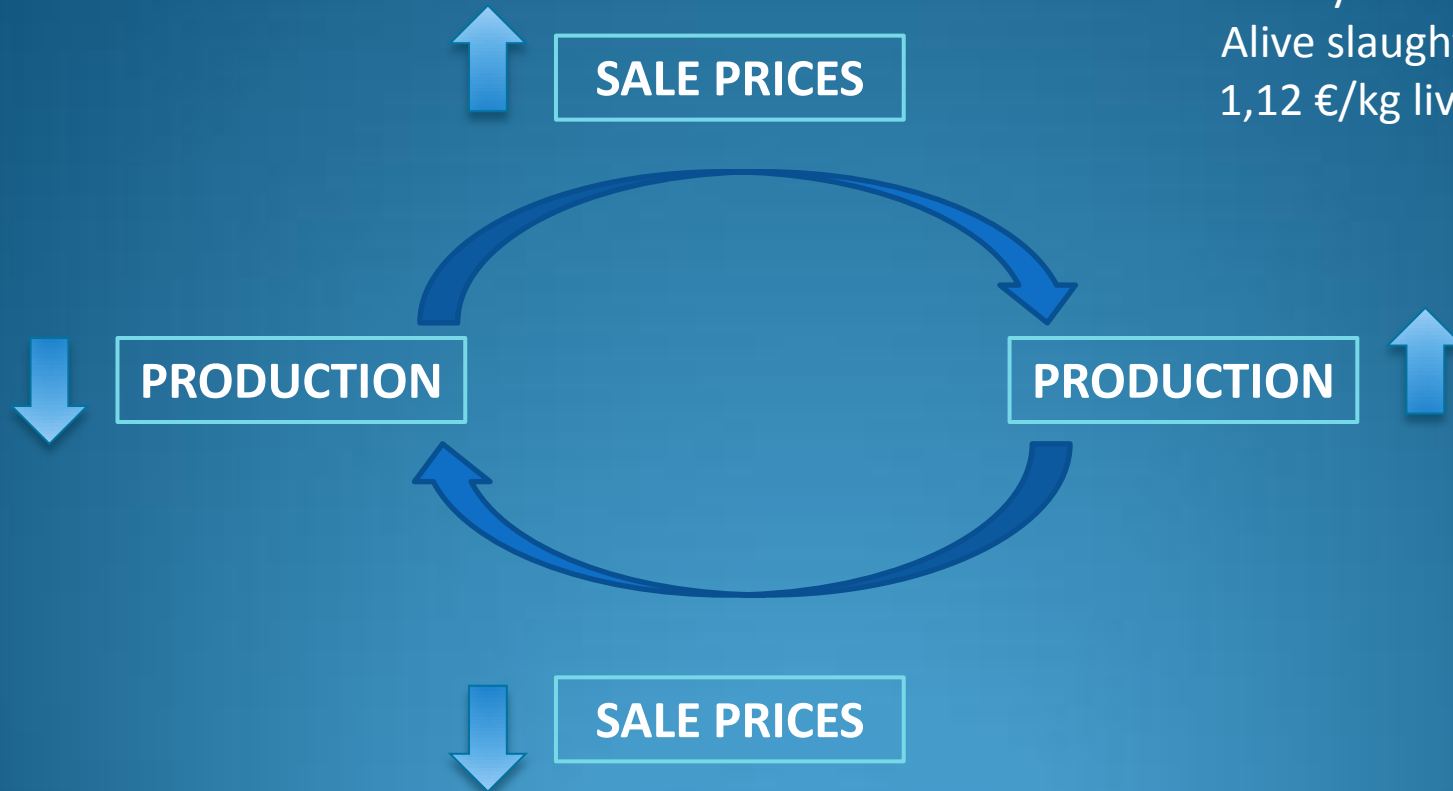
❖ Conjunctural factors

Economic and/or sanitary crises



To have an (anticipated) overview on Global Trade;
Balance supply / demand

Pigs cycle



February 2010: (France):
Alive slaughter pigs:
1,12 €/kg liveweight

PLAN

➤ Part 1

- International and European context of Pigs production and exchanges

➤ Part 2

- Farming systems

➤ Part 3

- Calculating the profitability of Pig Production

PART 1

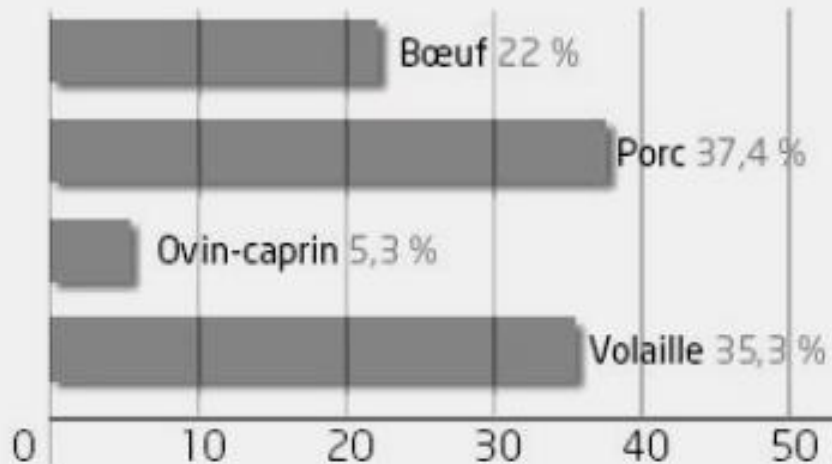


INTERNATIONAL CONTEXT

WORLD MEAT PRODUCTION (2008)

Monde
262,6 millions de tec

Monde



SSource : Les filières de l'élevage français, édition septembre 2009
source : Les filières de l'élevage français, édition septembre 2009

PORK:

**37,4 % of the total
meat**

PORK CONSUMPTION

	2004	2005	2006	2007	2008*	%08*/07
						1000 tec
Chine	43 042	45 150	46 051	42 726	44 875	+5,0
UE	16 540	20 372	20 139	21 284	20 909	-1,8
Etats-Unis	9 312	9 392	9 559	9 962	10 682	+7,2
Autres PECO ⁽¹⁾	1 489	1 560	1 552	1 610	1 694	+5,2
Russie	1 725	1 735	1 805	1 910	2 040	+6,8
Japon	1 272	1 275	1 247	1 250	1 245	-0,4
Brésil	2 600	2 710	2 830	2 990	3 055	+2,2
Taiwan	934	948	944	928	927	=
Corée du Sud	1100	1036	1000	1040	1045	+0,5
Pays sélectionnés	78 014	84 178	85 127	83 700	86 472	+3,3
TOTAL Monde	95 677	99 105	98 371	103 600	100 800	-2,7

* Estimations

Source : Office de l'Elevage d'après GIRA et FAO

⁽¹⁾ Ukraine, Croatie, Bosnie, République Fédérale de Yougoslavie

PORK CONSUMPTION/INHABITANT

	2004	2005	2006	2007	2008*	kg/hab/an %08*/07
Chine	33,1	34,6	35,0	32,3	33,7	4,3
UE	43,5	42,5	42,2	43,5	43,0	-1,1
Pays accédant à l'UE	43,9					
Etats-Unis	30,1	29,3	28,9	29,8	28,3	-5,0
Autres PECO ⁽¹⁾	12,8	11,6	11,7	15,4	16,2	5,2
Russie	15,9	17,0	18,2	19,4	20,8	7,2
Japon	19,9	19,7	19,2	19,4	19,6	1,0
Brésil	10,6	10,3	11,4	11,7	12,1	3,4
Taiwan	41,9	41,6	40,7	40,5	40,5	=
Corée du Sud	27,9	27,3	29,5	31,1	31,0	-0,3
Pays sélectionnés	30,6	30,8	31,2	30,6	31,3	+2,3
Total Monde	15,2	15,6	15,3	15,7	14,8	-5,9

* Estimations

Source : Office de l'Elevage d'après GIRA et FAO

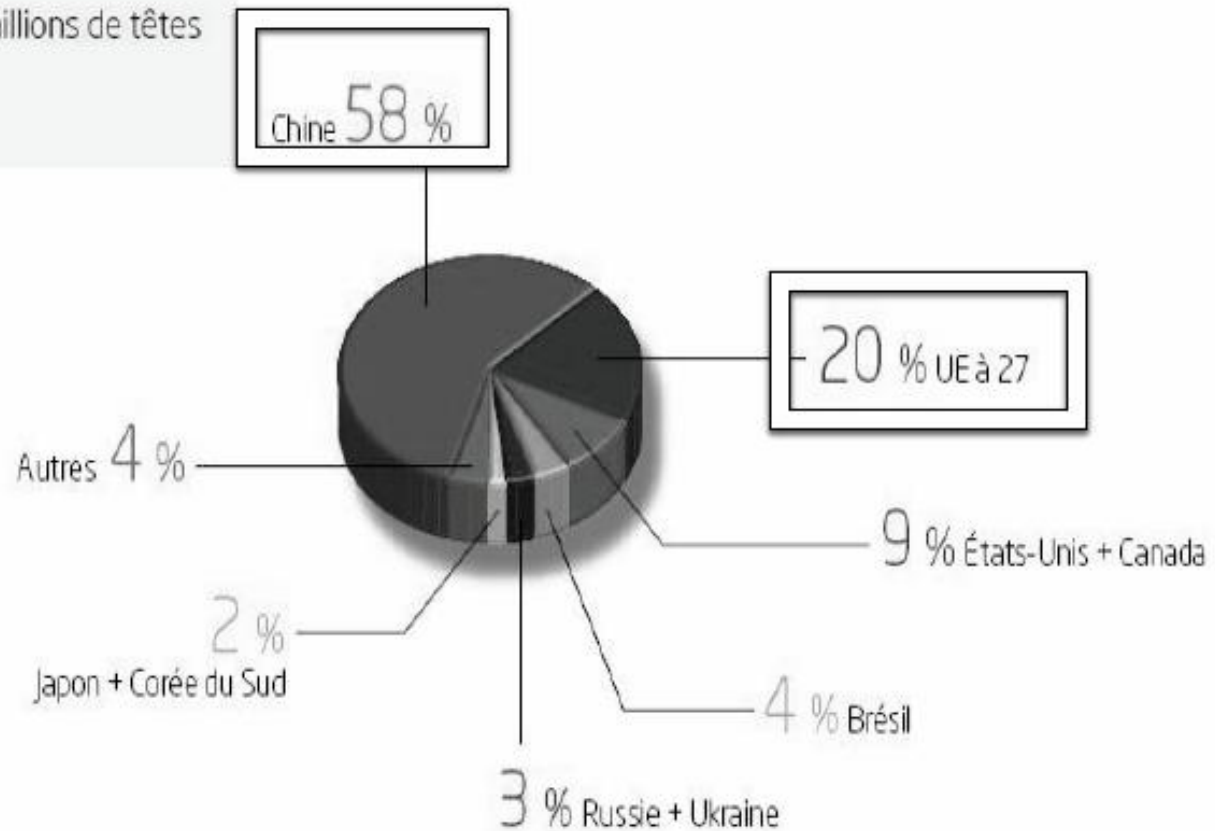
⁽¹⁾ Ukraine, Croatie, Bosnie, République Fédérale de Yougoslavie

PIG HERDS IN THE WORLD

Monde

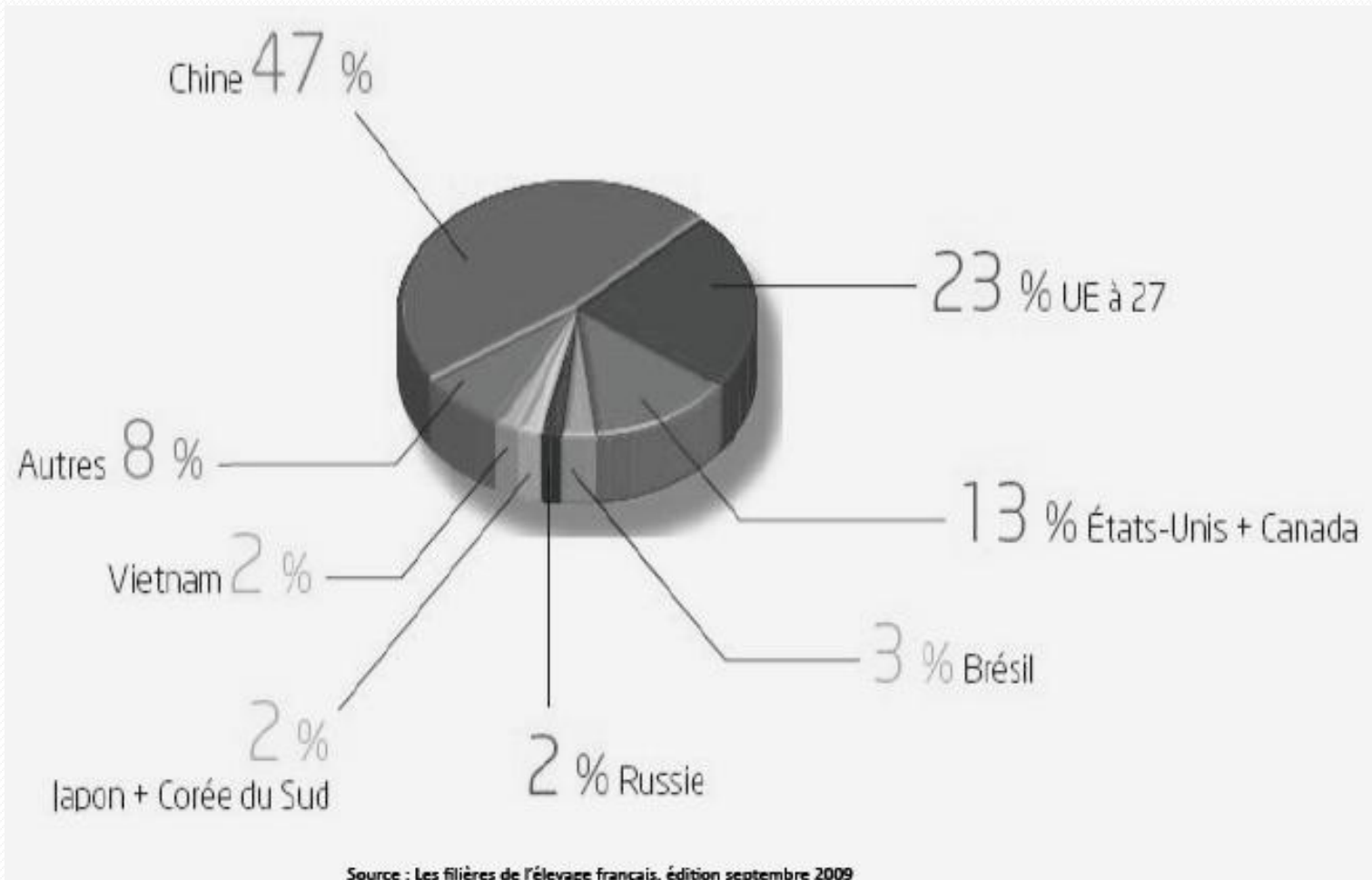


7725 millions de têtes

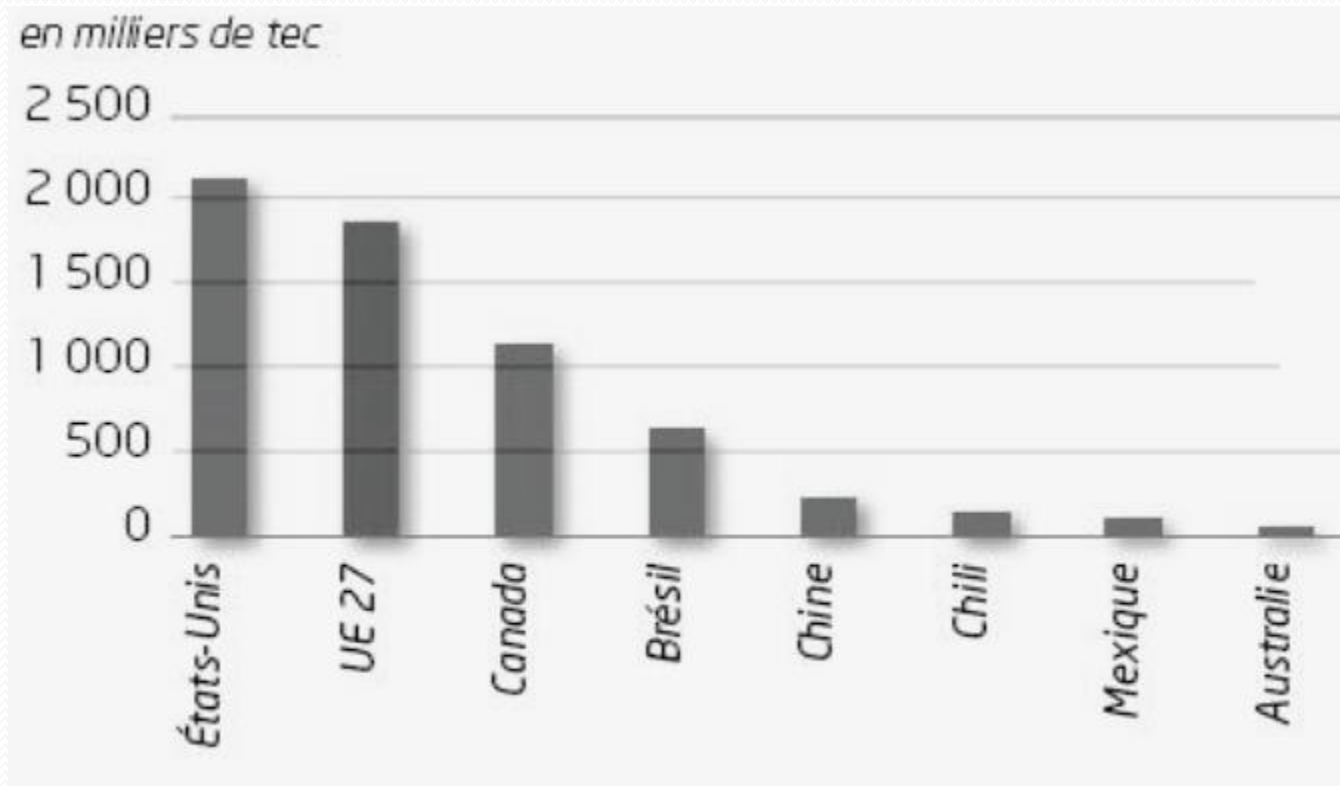


Source : Les filières de l'élevage français, édition septembre 2009

WORLD PIG PRODUCTION (2008): 106 million tec

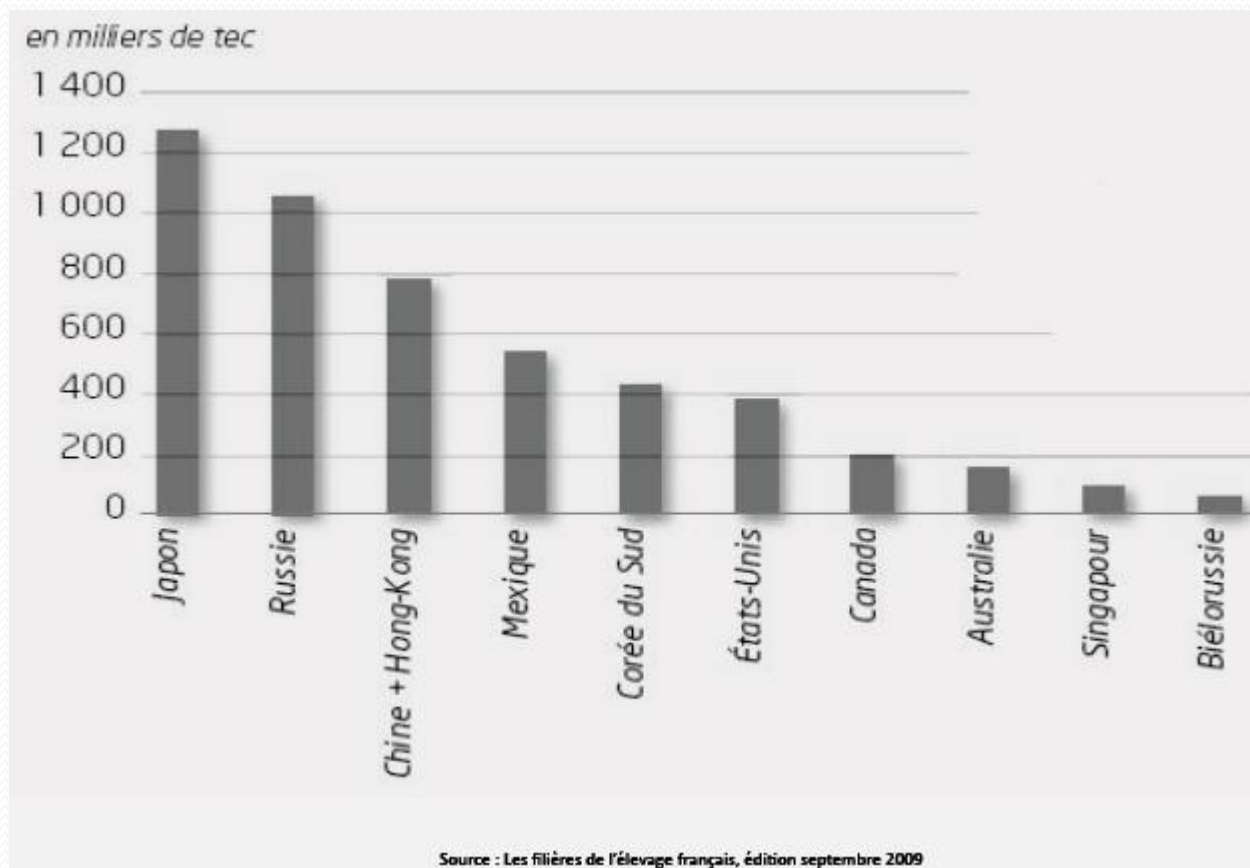


WORLD EXPORTS



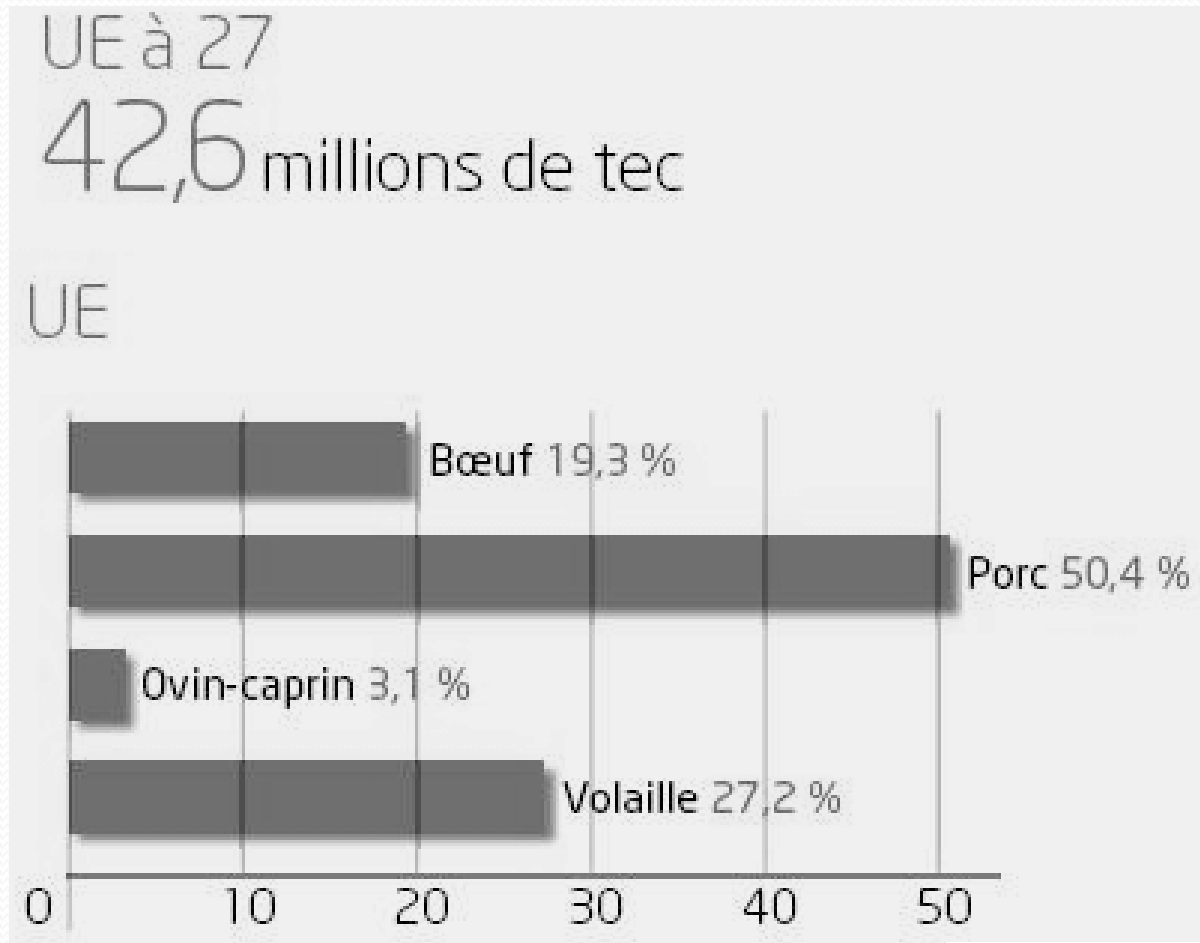
Source : Les filières de l'élevage français, édition septembre 2009

WORLD IMPORTS

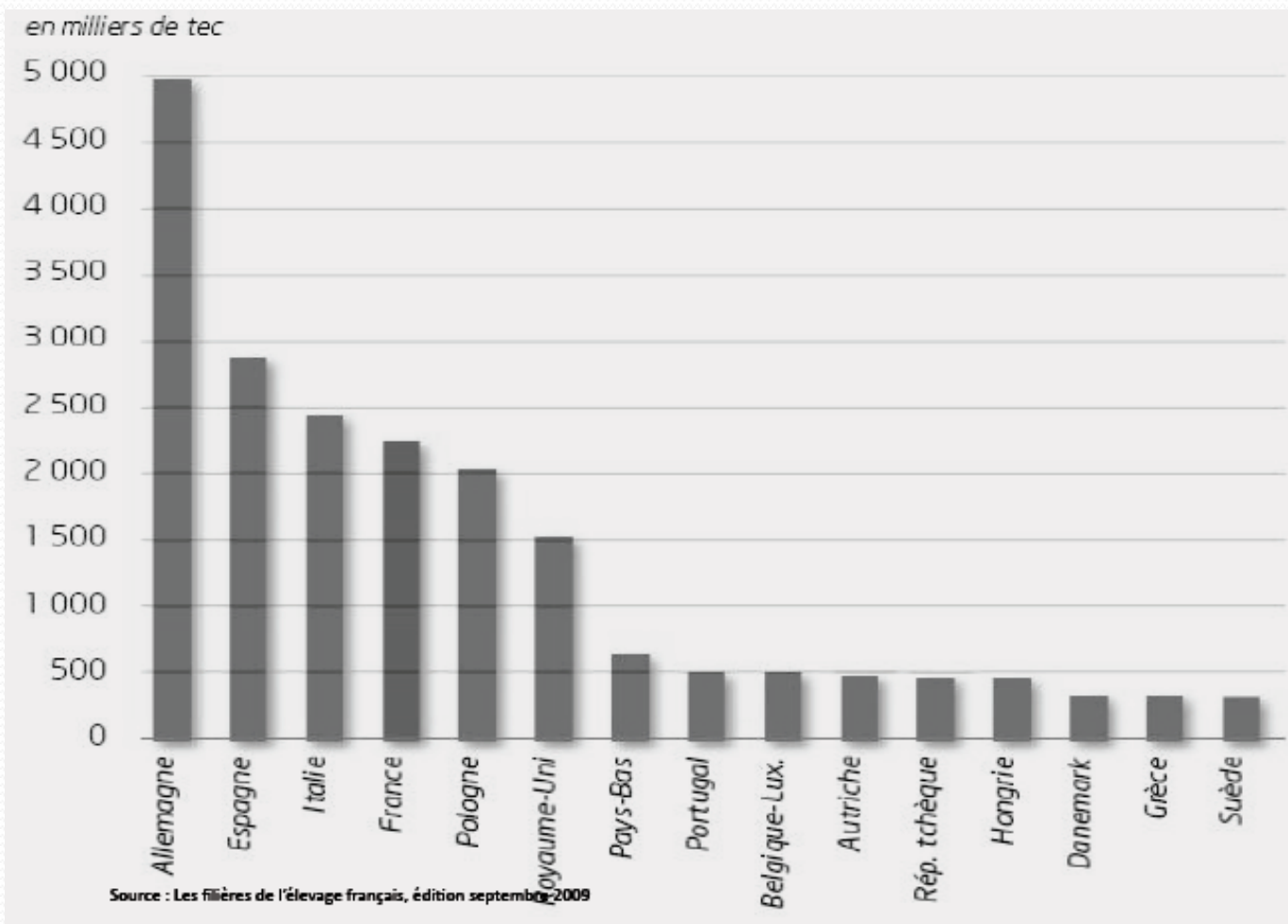


EUROPEAN CONTEXT

EUROPEAN MEAT PRODUCTION (2008)



EUROPEAN PORK CONSUMPTION (2008)



PORK CONSUMPTION/INHABITANT (EU 2008)

en kg/hab

Pays	Conso/hab
Espagne	63,6
Allemagne	60,5
Danemark	60,1
Autriche	58,4
Pologne	53,5
Portugal	48,4
Hongrie	46,0
Belgique-Lux.	46,0
Rép. tchèque	45,0
Italie	41,0
Pays-Bas	39,4
France	35,2
Finlande	34,7
Suède	34,6
Irlande	33,5

*Sources : SSP, Commission européenne,
Douanes*

EUROPEAN PIGS HERDS (2008)

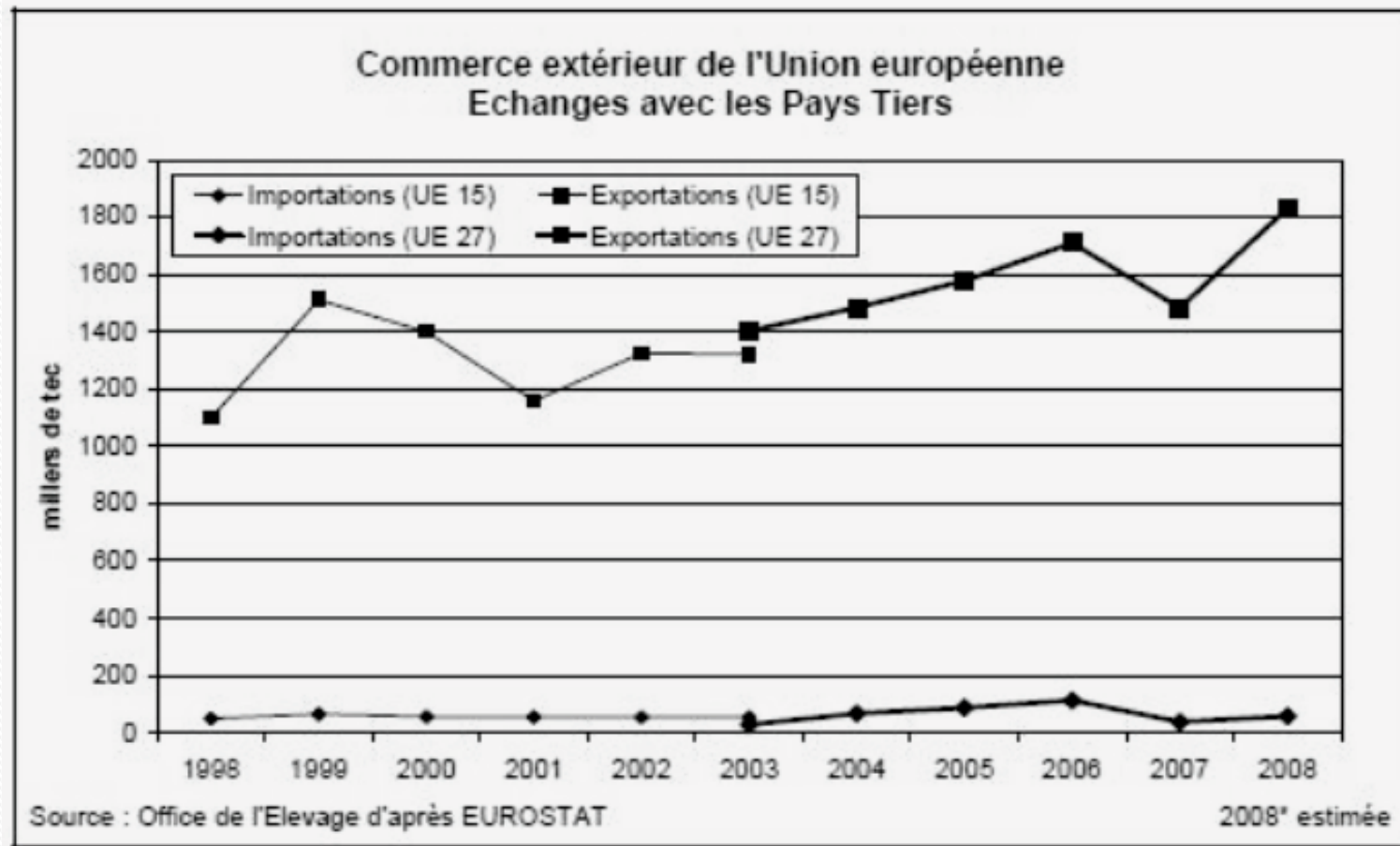


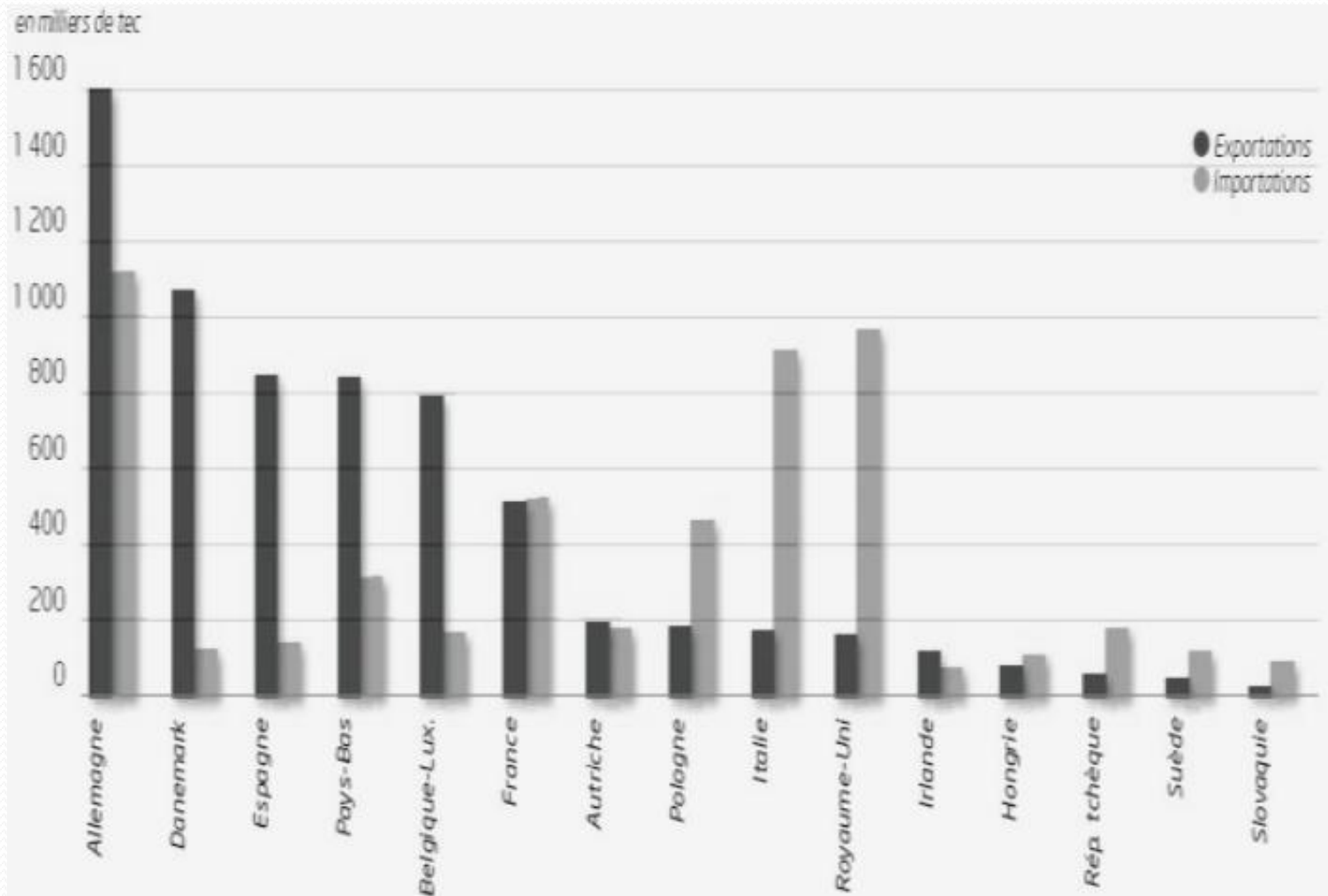
Source : Les filières de l'élevage français, édition septembre 2009

FROM 1994 TO 2006 (X 1000 HEADS)

		1994	2002	2003	2004	2005	2006	% variation 2006/2005	% de l'UE des 27
Allemagne	1	24.698	26.251	26.495	26.385	26.989	26.602	-1,43	16,5
Autriche		3.729	3.305	3.255	3.125	3.170	2.622	-17,28	1,6
Belgique	9	6.984	6.600	6.366	6.319	6.253	6.304	0,81	3,9
Danemark	5	10.864	12.879	12.969	13.407	12.604	13.613	8,01	8,5
Espagne	2	18.296	23.518	24.098	24.895	24.889	26.034	4,60	16,2
Finlande		1.295	1.423	1.394	1.435	1.440	1.435	-0,32	0,9
France	4	14.593	15.378	15.265	15.168	15.123	15.009	-0,75	9,3
Grèce		951	1.027	993	994	952	1.033	8,53	0,6
Irlande		1.498	1.782	1.732	1.758	1.678	1.620	-3,46	1,0
Italie	7	8.023	9.166	9.157	8.972	9.200	9.281	0,88	5,8
Luxembourg		68	76	76	77	77	87	12,84	0,1
Pays-Bas	6	13.931	11.154	10.766	11.140	11.000	11.220	2,00	7,0
Portugal		2.444	2.344	2.249	2.348	2.344	2.296	-2,07	1,4
Royaume-Uni		7.975	5.330	4.842	4.787	4.724	4.731	0,17	2,9
Suède		2.324	1.982	2.004	1.920	1.797	1.662	-7,56	1,0
UE (15 pays)			122.215	121.661	122.680	122.242	123.549	1,07	76,7
Bulgarie (2007)		1.986	997	1.032	943	933	1.013	8,58	0,6
Chypre		356	491	488	471	430	453	5,32	0,3
Estonie		460	341	345	354	352	341	-2,96	0,2
Hongrie		4.356	5.082	4.913	4.059	3.853	3.987	3,48	2,5
Lettonie		501	453	444	436	428	417	-2,59	0,3
Lituanie		1.260	1.061	1.057	1.073	1.115	1.127	1,11	0,7
Malte		55	78	73	77	73	74	0,92	0,0
Pologne	3	19.138	18.997	18.439	17.396	18.711	18.813	0,54	11,7
République tchèque		3.867	3.429	3.309	2.915	2.719	2.741	0,82	1,7
Roumanie (2007)	8	7.758	5.058	5.145	6.495	6.604	6.815	3,19	4,2
Slovaquie		2.037	1.554	1.443	1.149	1.108	1.105	-0,31	0,7
Slovénie		571	656	621	534	547	575	5,05	0,4
12 nouveaux membres		/	32.142	37.310	35.901	36.872	37.460	1,59	23,3
UE (27 pays)		/	160.411	158.970	158.562	159.115	161.008	1,19	100,0

EUROPEAN EXPORTS AND IMPORTS

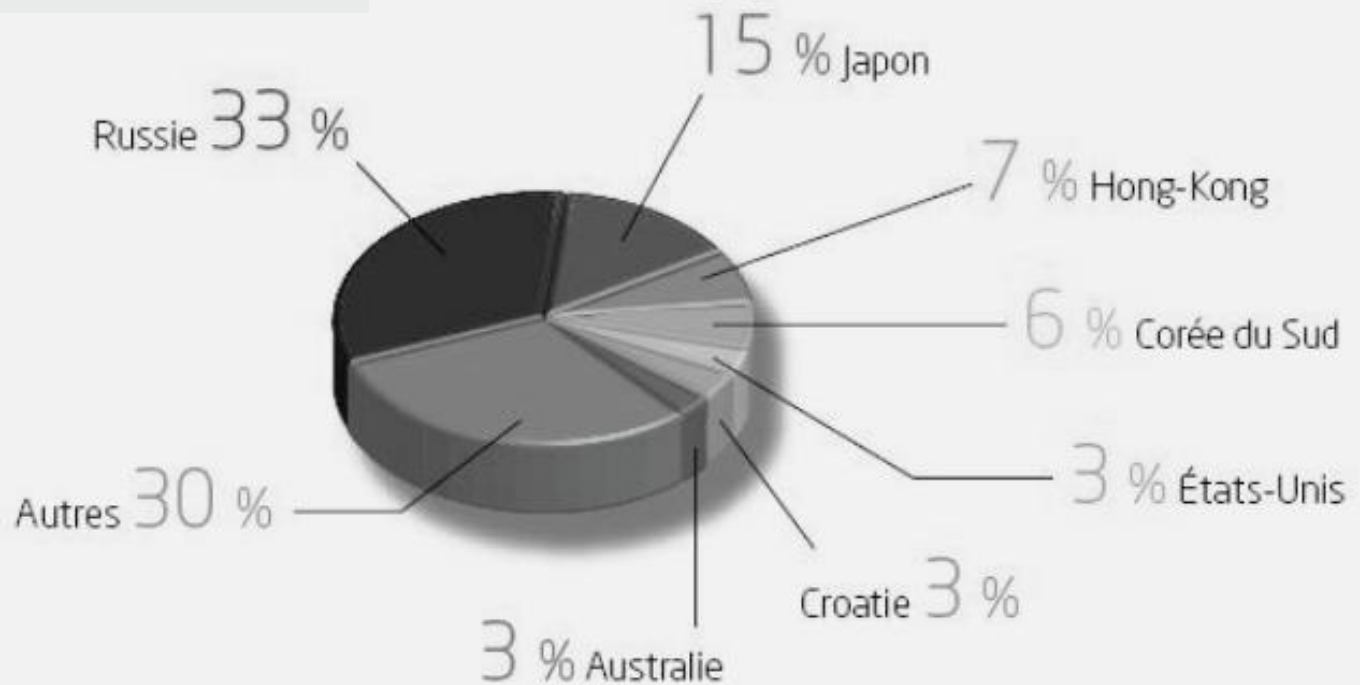




EUROPEAN EXPORTS (2008)



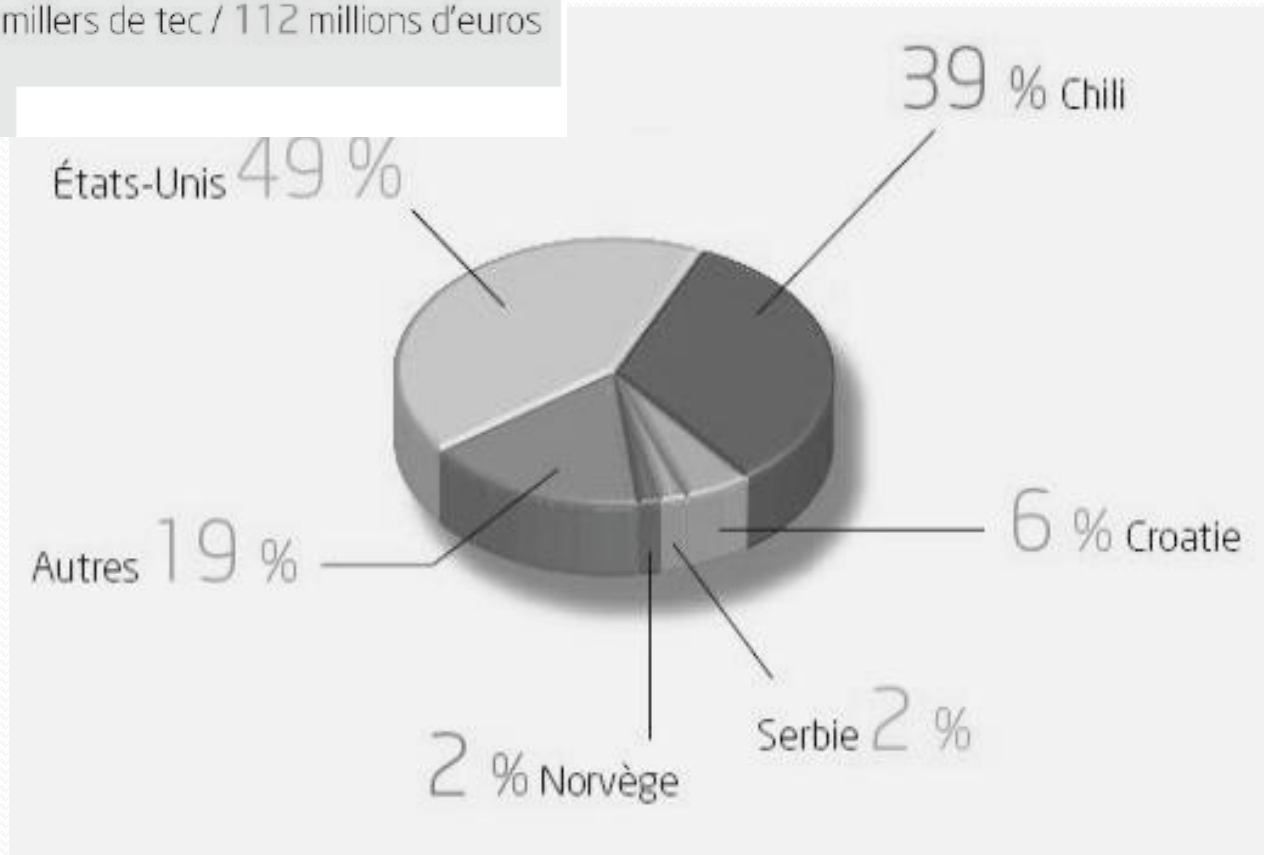
1,86 million de tec / 3,6 milliards d'euros



EUROPEAN IMPORTS (2008)



62 milliers de têtes / 112 millions d'euros

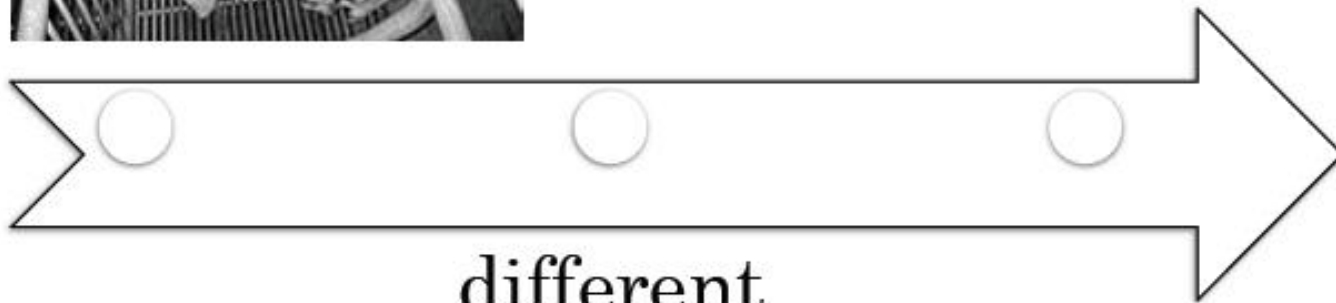


PART 2



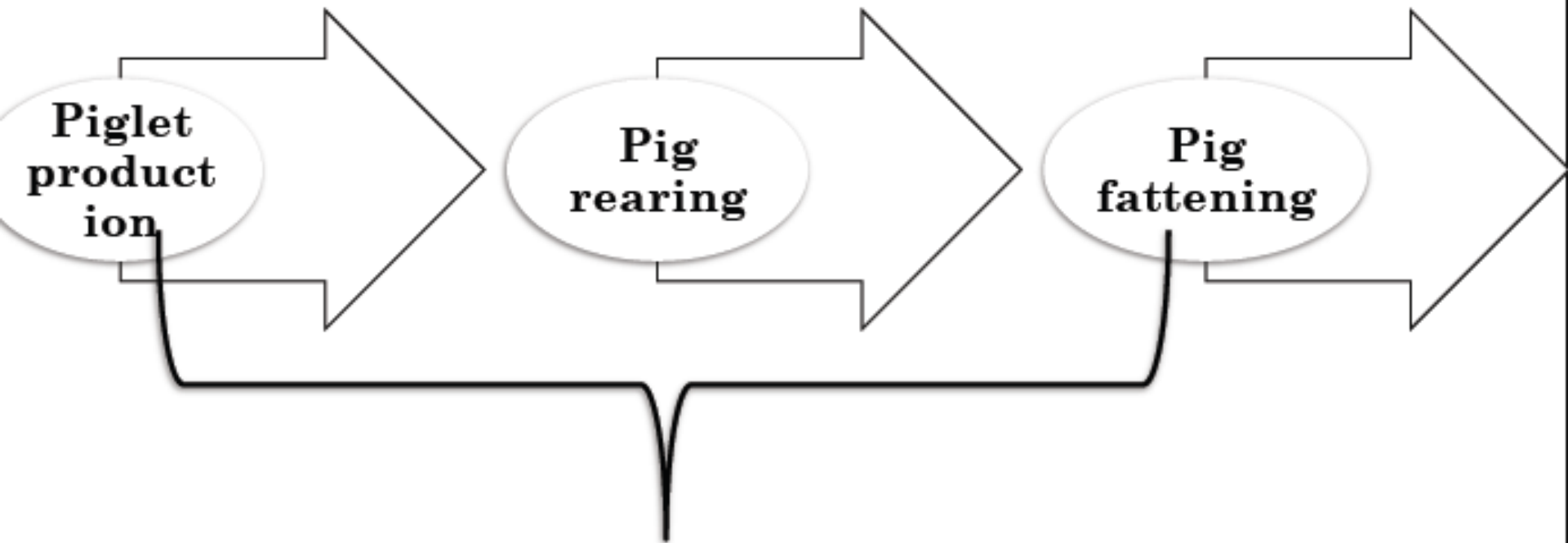
FARMING SYSTEMS

MODEL OF PIG PRODUCTION



different
farming systems

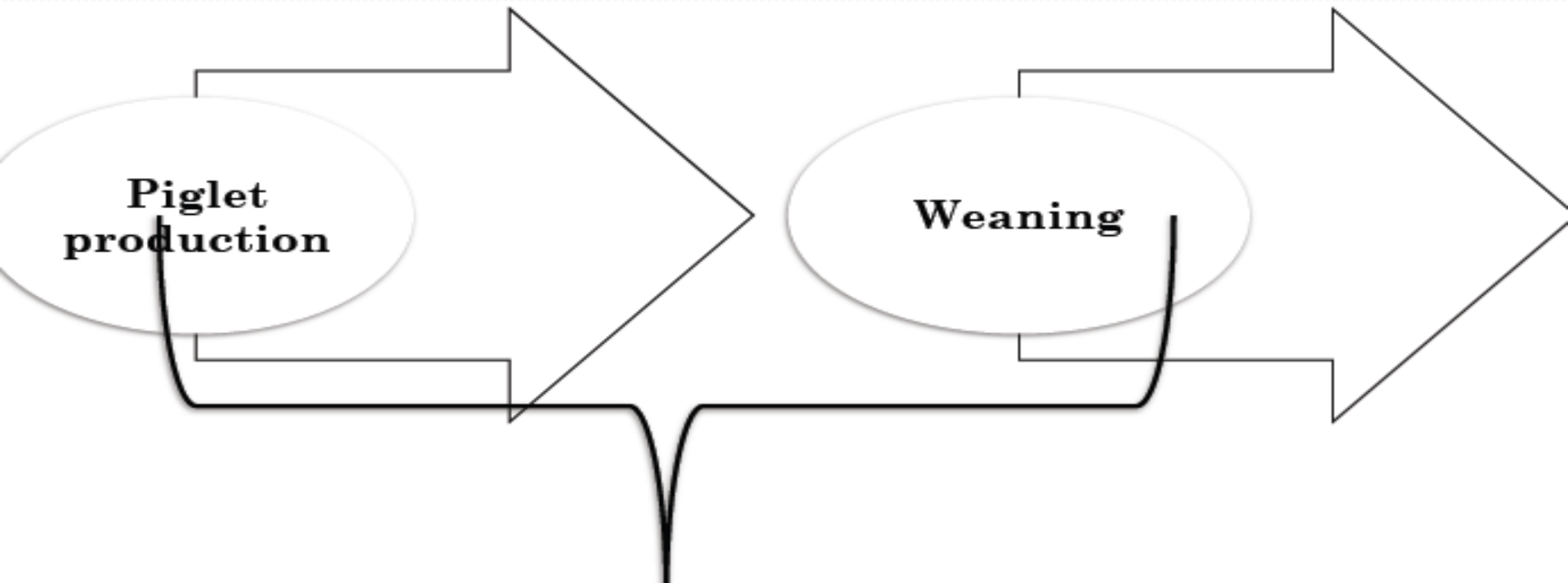
SYSTEM 1 (CLOSED SYSTEM)



FROM THE INSEMINATION OF THE SOW TO THE DELIVERY OF THE PIG FOR SLAUGHTER : SS

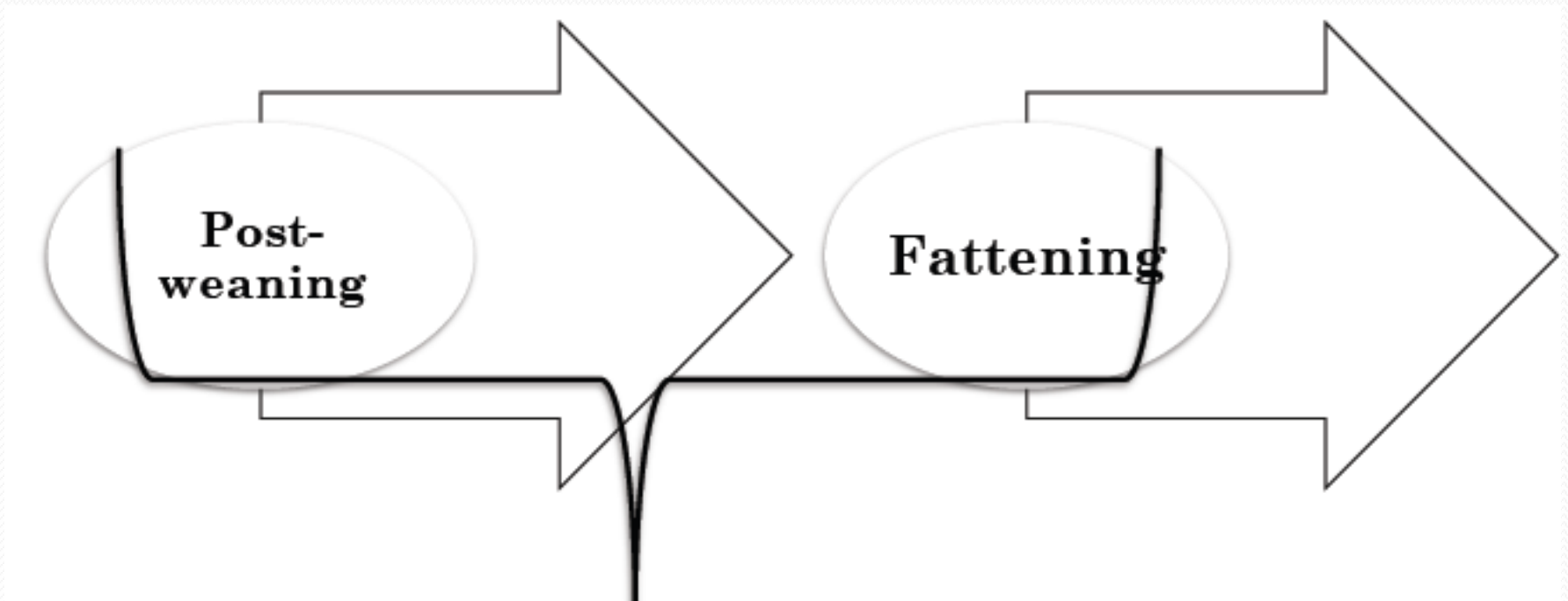
Rem : can be divided according to the size of the herd

SYSTEM 2



FROM THE INSEMINATION OF THE SOW TO THE SALE OF PIGLETS AT WEANING: SW

SYSTEM 3



SYSTEM 3: FROM THE BUYING OF PIGLETS AT WEANING TO THE DELIVERY OF THE PIG FOR SLAUGHTER: WS

Rem : Some systems can be specialised: « labelling production » (organic, certificated quality, ...)

PART 3





CALCULATING THE PROFITABILITY OF PIG PRODUCTION

DETERMINANTS OF PROFITABILITY

- ❖ I. Production efficiency
- ❖ II. Production cost
- ❖ III. Sale prices

I. PRODUCTION EFFICIENCY

Variables list of production efficiency

MANAGEMENT OF BREEDING HERDS

Average sizes

- ❖ Nb of present sows
- ❖ Nb of productive sows (1st insemination to slaughter)
- ❖ Nb of present boars

Litter results

- ❖ Piglets born alive per litter
- ❖ Piglets weaned per litter

} % Mortality

Reproduction rythm:

Farrowing interval (days), Pregnancy length(d), weaning age (d), Weaning to first service interval (d), Conception rate at first service (%)

Replacement:

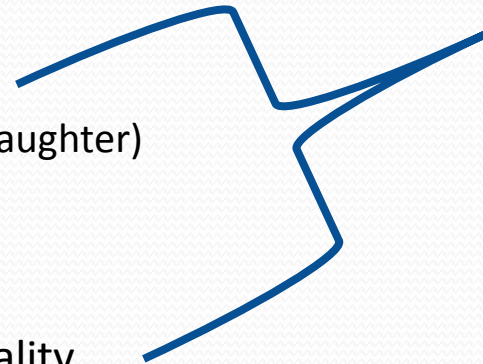
Annual replacement rate (%), Weaning to effective service interval (days)

Culling;

Annual culling rate (%); age of sows at culling

Feed consumption / present animal

Pigs produced
per sow per year



POST WEANING

- Weight at beginning
- Final weight
- Mortality
- Feed consumption/piglet/day (kg)
 - Daily liveweight gain (from 8 to 30Kg)
(g)
 - Feed conversion ration from 8 to 30
- Age at 30 kg (days)

FATTENING

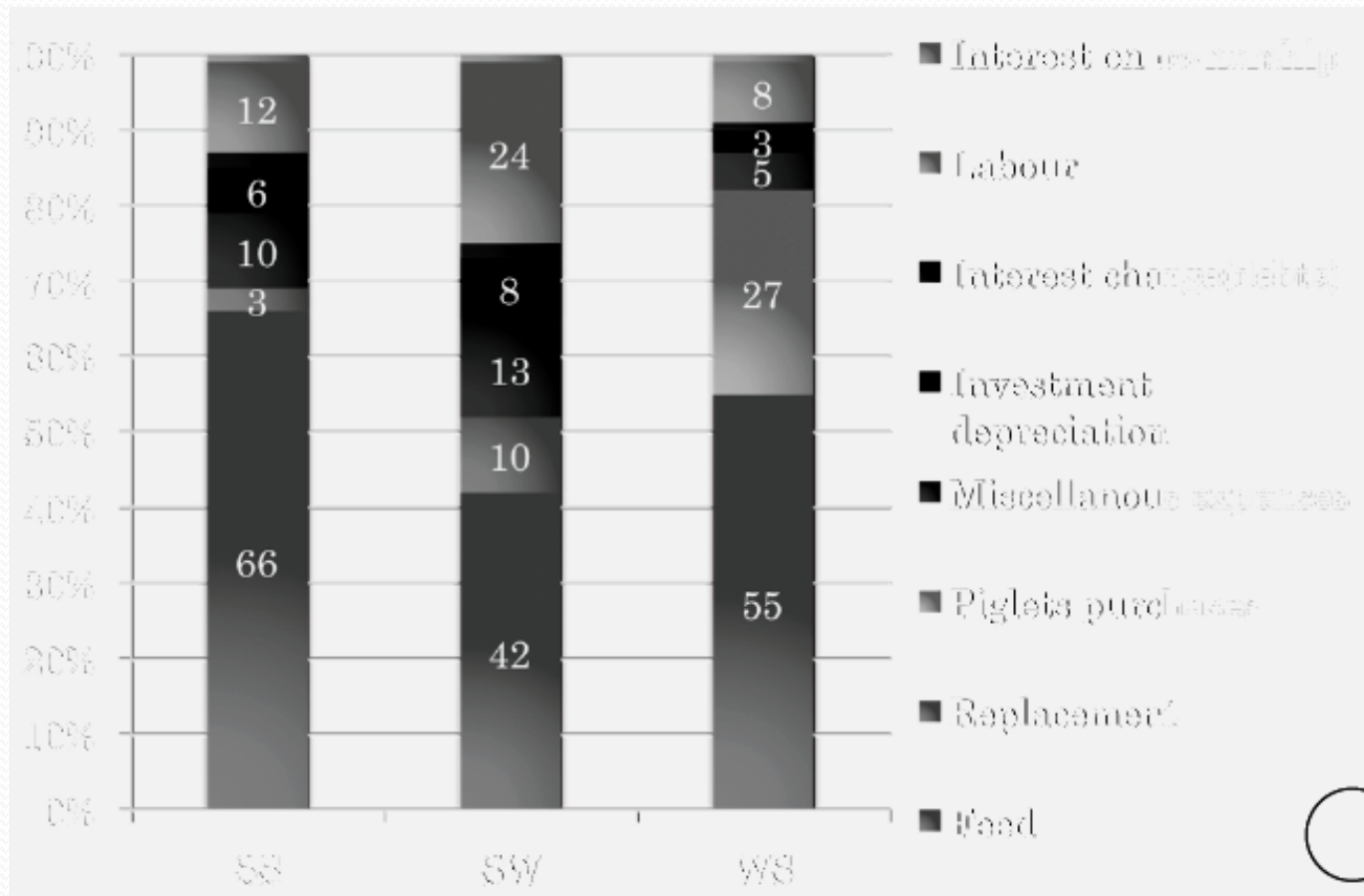
- Weight at beginning
- Final weight
- Mortality
- Feed consumption / pig /day (kg)
 - Daily liveweight gain (from 30 to 115 Kg) (g)
 - Feed conversion ration from 30 to 115
- Age at 115 kg (days)

II. PRODUCTION COST

VARIABLES LIST OF PRODUCTION COSTS

- Feed cost
- Replacement cost
- Pigs purchases
- Miscellaneous expenses
- Rent
- External labour
- Investment depreciation
- Interest charge on financial debts
- Total labour
- (calculated) interest charge on ownership

COMPONENTS OF PRODUCTION COSTS ACCORDING TO THE FARMING SYSTEM



III. SALE PRICES

SALE PRICES: ! VOLATILITY !

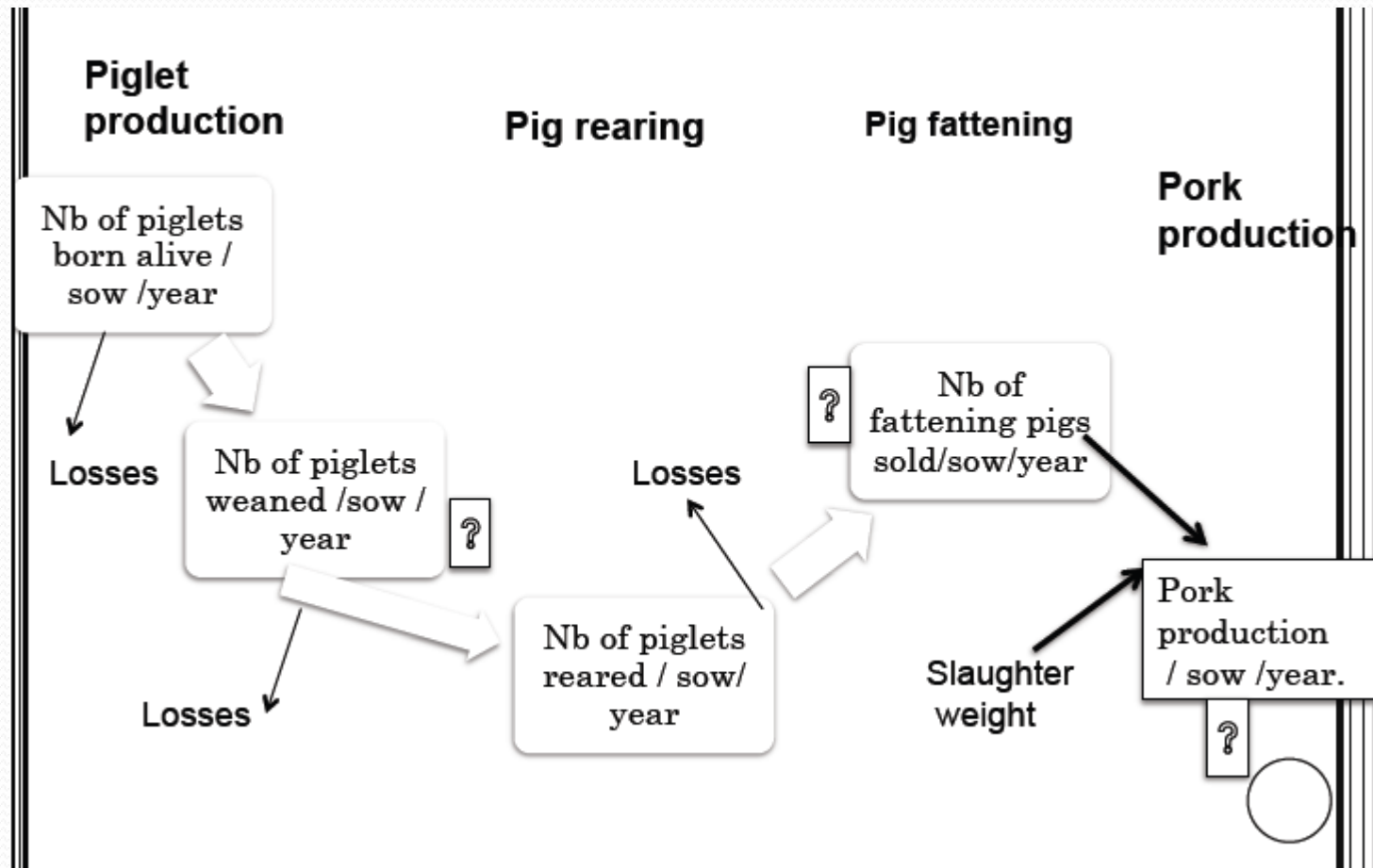
- Piglets at weaning (/pig)
- Piglets at 25kg (/kg)
- Alive slaughter pigs (kg liveweight)
- Slaughter pigs carcasses (/kg deadweight)
- Breeding animals (/animal)
- Culled sows or boared (/animal)

METHOD OF CALCULATION

**By the InterPig model: concerns the whole pig
production process**

(RASMUSSEN, 2004; UDESEN, 2003)

CALCULATION OF THE OUTPUT



Number of pigs entering fattening

=

(NB OF LITTERS PER SOW X NB OF PIGLETS
BORN ALIVE PER LITTER)

—

LOSSES DURING THE PERIODS OF WEANING

Number of finished pigs

=

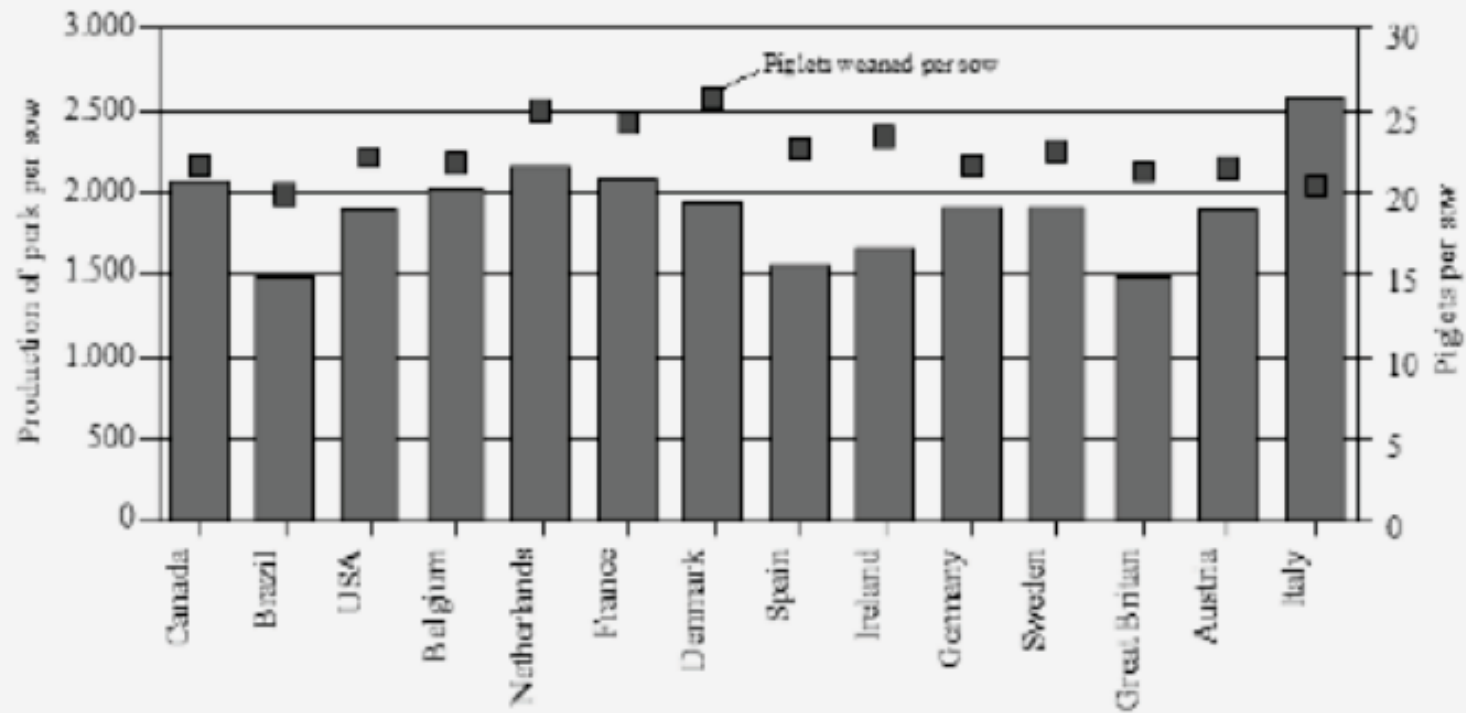
PIGLETS ANNUALLY WEANED

-

LOSSES (% MORTALITY) DURING WEANING AND FINISHING)

THE CARCASSE WEIGHT IS MEASURED AT THE COLD CARCASE
(CANADA, FRANCE, IRELAND, ITALY, SWEDEN AND USA)
IF IT IS MEASURED AT THE WARM CARCASE (AUSTRIA,
BELGIUM, GERMANY, BRAZIL, DENMARK, GR EAT BRITAIN,
THE NEDERLANDS AND SPAIN): THE MODEL APPLIES A
COEFFICIENT TO ADJUST HOT WEIGHT TO COLD WEIGHT
(-2%)

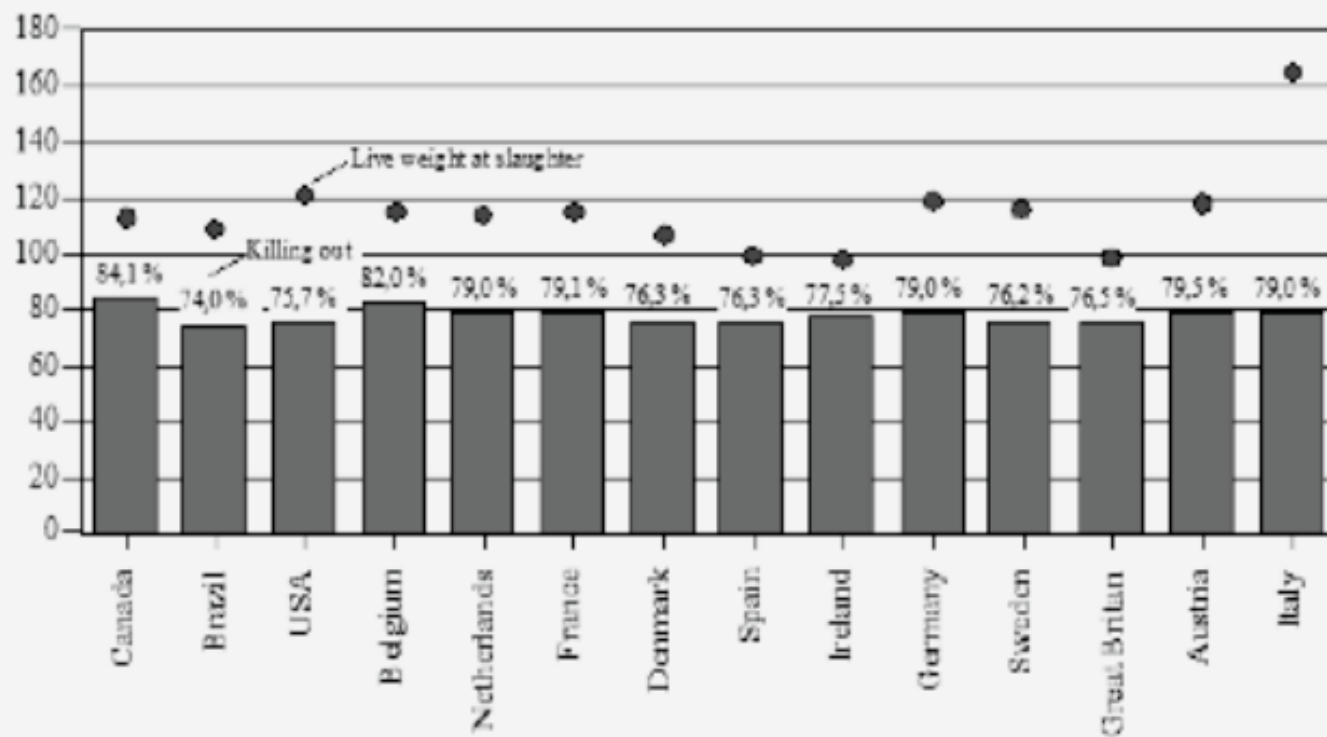
Figure 5: Number of piglets and production of pork annually 2006



Source: InterPIG 2007, own calculation.



Figure 6: Live weight at slaughter and killing out percentage 2006



Source: IntraPIG 2007, own calculation.



CALCULATION OF THE PRODUCTION COSTS

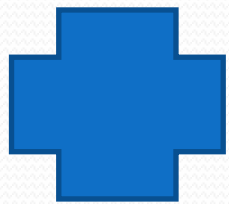
CALCULATION OF THE FEED (FC) AN LABOUR (LC) COSTS

FC or LC	Piglet production	Pig rearing	Pig fattening
Per animal Feed and labour costs	Input of feed/sow X Price(s) Input of labour/sow X wage/h	Input of feed/ rearing pig X Price (r) Input of labour/ rearing pig X wage/h	Input of feed/ fattening pig X Price(f) Input of labour/ fattening pig X wage/h
Feed costs and Labour costs per sold fattening pig	LC $\frac{FC/sow\ p.a}{Sold\ fattening\ pig /sow\ p.a}$	LC + FC/rearing pig	LC + FC/fattening pig
Feed and labour costs per kg Slaughter weight	labour $\frac{Sum\ of\ the\ feed\ costs}{Slaughterweight/fattening\ pig}$		



Data we need

- Quantity of feed /animal
- Feed prices
- Quantity of hours/animal
- Wage rate



Other costs ...



Veterinary services

Energy

Water

Straw and bedding

Miscellaneous charges, taxes, ...

Transport

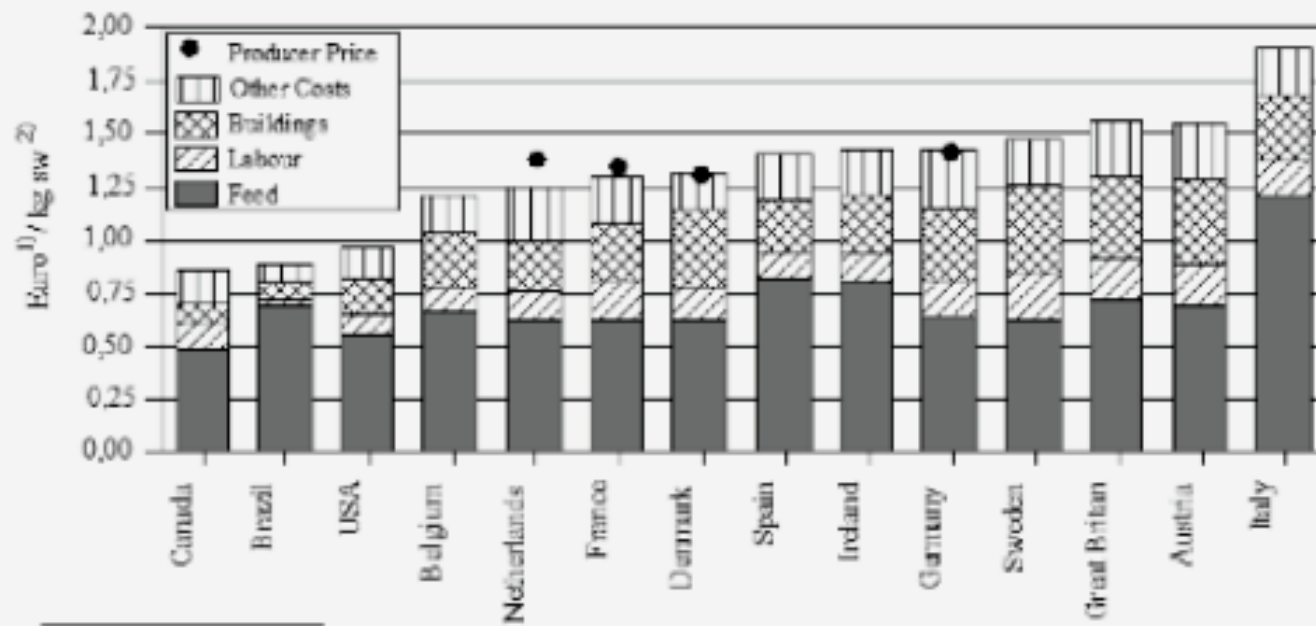
Building and equipments costs

Building and equipments maintenance

Interests (working capital, mortgage)

- The calculation of the building cost is based on the capital required for establishing a new place for a sow , a rearing pig and finishing pig .
- The annual costs are computed on the basis of a depreciation period of 20 years for buildings and 10 years for equipment.

Figure 4: International comparison of costs and revenues in pig production 2006



1) Without VAT

2) Slaughter weight hot

Source: InterPIG 2007; DMA 2006; own calculation.



Complementary information

Pig farming in the EU, a changing sector:

http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-10-008/EN/KS-SF-10-008-EN.PDF

Exercices: See « Template of the data »

