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Tourism satellite accounts and modeling for business tourism

- Case of Denmark

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Presentation at International Input-Output Conference,
10 July, 2013, Kitakyushu, Japan



Two main issues in the paper

- Methodologies in compiling regional tourism satellite accounts for business tourism

Definition, data and survey, estimation of business tourist consumption, Regional TSA

- Measuring the economic and employment effects of business tourism by using a regional macroeconomic model

Danish interregional macroeconomic model, diagram and mathematical expression of the model, results of model for business tourism

Definition for business tourism

- Business tourism consumption is related to the expenditure made by business visitors. A business visitor is a visitor whose main purpose for a trip corresponds to the business and professional category (UNWTO, 2006).
- By purpose: professional business or MICE related business;
- By origin: domestic or international;
- By night stays, day visitors (from other regions /countries), or local (from the same region).

Data source for business tourism accounts

- National /regional supply-use tables
 - Supply table: sectors vs tourism-related commodities;
 - Use tables: consumption of tourism-related commodities by different accounts (fx intermediate consumption, private or public consumption).
- Tourism data
 - Number of tourist nights (yearly data) by Statistics Denmark by inbound and domestic by leisure and business
 - Regular tourist survey to obtain information for tourist spending by inbound and domestic by leisure and business
 - A special survey for meetings activities (2011)
 - a. Venue survey
 - b. Meeting organisers survey
 - c. Delegate survey

The organizers survey

Average daily spending

	Daily costs* (DKK)
Conference/congress	1,220
Trade shows	7,560
Courses	1,070
Other meetings	930

Notes: *Daily cost per delegate.

Source: Organizer Survey from Visit Denmark (2012).

The delegate survey

Average daily spending of participants

(in DKK)	Conference	Trade shows			
	/congress	Visitors	Exhibitors	Courses	Other
Domestic	1,070	310	920	680	1,110
Overnight stay	2,080	870	1,590	1,250	2,260
Day-participants	1,440	628	1,320	830	1,620
Local	780	190	430	230	870
International	1,360	700	1,540	1,090	1,190
Overnight stay	1,890	870	1,590	1,310	1,810
Day-participants	1,090	630	1,320	920	1,080

Source: Delegate survey from Visit Denmark (2012).

Estimation for business tourism expenditure

- Number of tourist nights by purpose (= business) at hotels and other accommodations
- Border survey for the international same-day visitors (=business)
- Transport survey for domestic same-day business travellers;
- Venue survey for number of meetings and delegates;
- Daily spending from tourism and delegate survey gives data to break down by region, consumption patterns and types of tourism (fx forms of nights, or day visitors).

From the above information, **business tourism expenditure** can be estimated by

- Types of business tourists
- Domestic or international tourists
- Night stay tourists, same-day or local MICE participants.

Business tourism expenditure compared with meeting expenditure

	Domestic	International	Total
Business tourism	22452	3009	25461
Leisure tourism	22558	26618	49176
Total tourism expenditure	45010	29627	74637
% of business tourism in total	49.9	10.2	34.1
Meetings costs	9674	1678	11352
Delegate spending	7606	1809	9415
Total meeting expenditure	17280	3487	20767
% of meetings expenditure	38.4	11.8	27.8

Source: CRT tourism model (2012).

Business tourism linked into use tables

- International business tourist consumption is a part of private consumption, the amount is accounted as exports;
- Domestic business tourist consumption is accounted as intermediate consumption;
- Expenditure by local residents relating to meeting sector activities is linked into local private consumption. For example, private persons participation into trade shows.

- Inbound business tourist consumption

$$ctu_{n,o,d} = CTUA_{n,o,d} * ctuN_{n,o,d} \quad \text{or}$$

$$ctu_{n,o,d,w} = QCTU_{n,o,d,w} * ctu_{n,o,d}$$

$$ctu_{d,w} = \sum_{n,o} \binom{n}{o} ctu_{n,o,d,w}$$

Where *ctu*, *CTUA* and *ctuN* stand for inbound business tourist consumption, daily spending and number of nights.

Subscript *n*, *o*, *d* and *w* denote for nationality, overnight forms, destination regions and consumption components.

$n=21, o=12, d=98, w=14$.

- Domestic business tourist consumption

$$cti_{b,o,d} = CTIA_{b,o,d} * ctiN_{b,o,d} \quad \text{or} \quad cti_{b,o,d,w} = QCTI_{b,o,d,w} * cti_{b,o,d}$$

$$cti_{d,w} = \sum_{b,o}^b \binom{b}{o} cti_{b,o,d,w}$$

In the same way, the local private consumption (denoted as $cpl_{d,w}$ regarding tourism consumption is estimated when domestic meeting participants are local residents

The variables $ctu_{d,w}$, $cti_{d,w}$, and $cpl_{d,w}$ will be transformed into $ctu_{d,v}$, $cti_{d,v}$, and $cpl_{d,v}$ by regionalized *USE matrices*, where v denotes for commodity.

- Domestic business tourist consumption is a part of intermediate consumption, therefore, $cti_{d,v}$ is renamed as an intermediate consumption part of tourism as $xrOv_{d,v}$ when it is night business tourist consumption; $xrTr_{d,v}$ when it is same-day business tourist consumption.
- The regional private consumption is broken down into three parts:

$$cp_{d,v} = cpl_{d,v} + cti_{d,v} + ctu_{d,v}$$

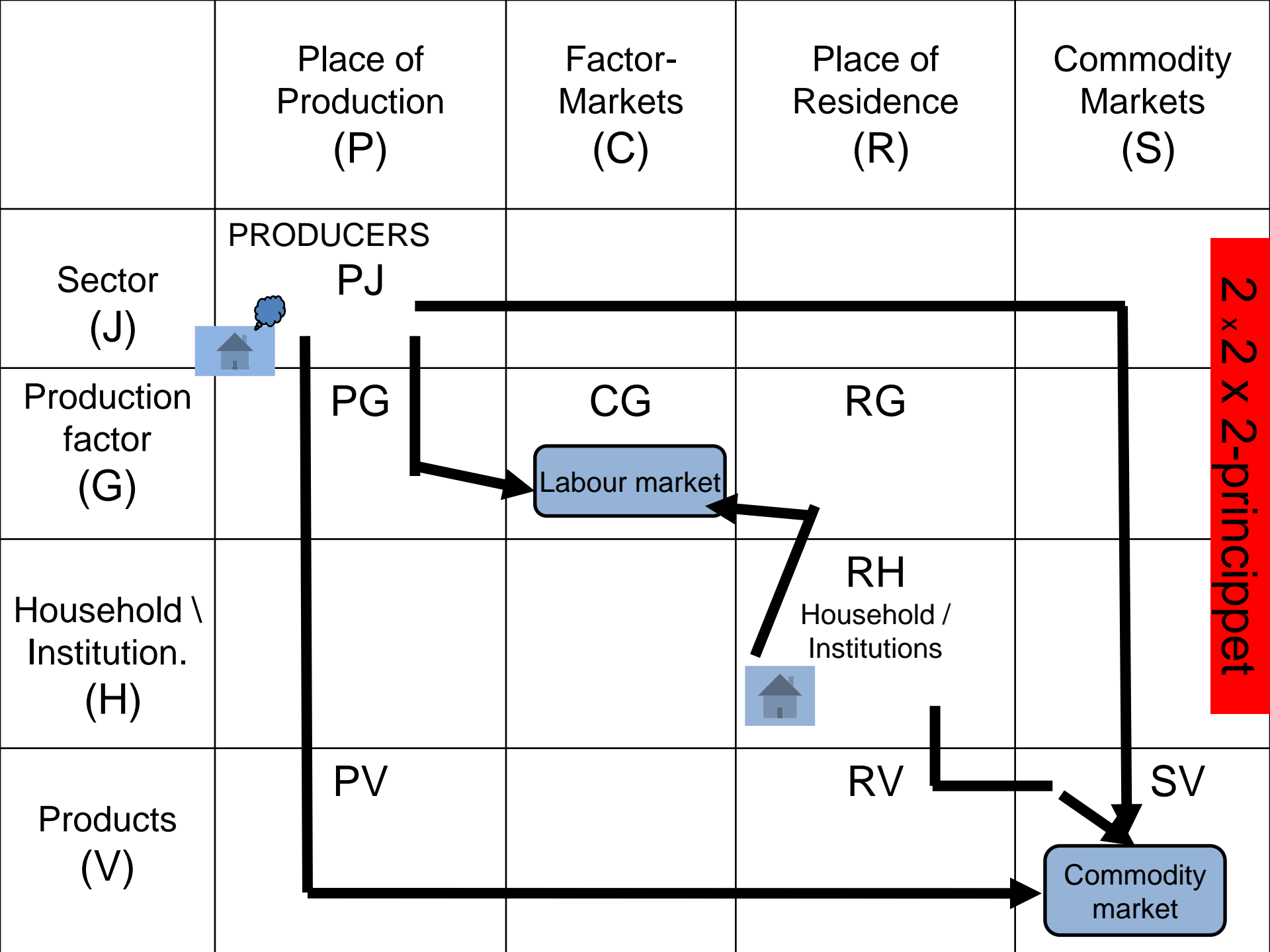
It is called LINE (Local Inter-regional Economic) model

Model structure is designed as

- Horizontal dimension is spatial, divided into 'place of production', 'place of residence' and 'place of commodity market (demand)'.
- Vertical dimension is divided by social accounting matrices (SAM), such as industrial sectors, factor of production (age, gender and education), household or institutions, and commodities.

2x2x2 principles:

- Two actors: producers and household (and institutions);
- Two markets: labour market and commodity market;
- Inter-reactions are connected by two circuits: a real circuit is product flow from producers to the commodity markets and a cost-price circuit that is generated from basic prices to the market prices.



2 x 2 x 2-principippet

Intermediate consumption in basic prices is estimated by

$$xrj_{d,v} = xr_{d,v} - (xrr_{d,v} + xrw_{d,v} + xrtc_{d,v} + xrtv_{d,v})$$

Private consumption in basic prices is estimated by

$$cpj_{d,v} = cp_{d,v} - (cpr_{d,v} + cpw_{d,v} + cptc_{d,v} + cptv_{d,v})$$

Total demand in basic prices (*MJ*)

$$MJ_{d,v} = xrj_{d,v} + cpj_{d,v} + co_{d,v} + corj_{d,v} + irj_{d,v} + ilj_{d,v}$$

Total retailing and wholesaling margin

$$mrm_{d,v} = xrr_{d,v} + cpr_{d,v} + corr_{d,v} + irr_{d,v} + ilr_{d,v}$$

$$mwm_{d,v} = xrw_{d,v} + cpw_{d,v} + corw_{d,v} + irw_{d,v} + ilw_{d,v}$$

The total demand in market prices

$$M_{d,v} = xr_{d,v} + cp_{d,v} + co_{d,v} + cor_{d,v} + ir_{d,v} + il_{d,v} + mrm_{d,v} + mwm_{d,v}$$

	Direct	Derived	Total	Multiplier
Business tourism:				
Gross value-added (bil. DKK)	7.3	6.2	13.5	1.9
Employment (1000)	21.1	10.6	31.7	1.5
% in total tourism impacts	30	27	29	
Meeting sectors:				
Gross value-added (bil. DKK)	8.5	6.7	15.3	1.8
Employment (1000)	25.8	12.1	37.9	1.5
% in total tourism impacts	37	31	35	

Source: CRT tourism model (2012).

CRT Economic contribution of meeting sectors by region

(mil. DKK)	Capital	Sjælland	Syddanmark	Midjylland	Nordjylland	Denmark
Production	12,643	2,890	7,941	5,385	2,202	31,061
Intermediate consumption	6,803	1,476	3,932	2,556	1,033	15,801
Gross value added	5,840	1,414	4,009	2,829	1,168	15,260
Compensation to employees	4,013	911	2,789	1,963	803	10,478
Employment (FTE jobs)	12,683	3,609	10,768	7,642	3,186	37,888

Source: CRT tourism model (2012).

Conclusion

- We draw attention on the difference between satellite accounts for business tourism and for meetings activities in the regional economies;
- Meeting activities are highly connected with business tourism;
- Meeting sectors are more interrelated with other business sectors, such as transport and other business services (e.g. advertising and catering services). The deep backward linkage makes a significant economic contribution to the local economies.
- The limitation in the analysis is lack of sufficient data.
 - National accounts;
 - Survey data.



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Thank you!

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