Measuring the benefits and costs of language policies: methodology illustrated with data from Canada and Europe

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Outline

- Analysing public policy
- Cost of public spending
- Cost of public regulation of private sector
- Benefits of public policy
- Distributional issues

Tools of policies

- Budgetary spending to change behaviour
- Tax expenditure: reduced taxes in exchange of change in behaviour
- Regulatory requirement to change behaviour: expense is incurred by the regulated (producers, employers)

Tools of analysis

- **Impact analysis**
  - Policy X has reduced / increased the level of indicator A by so much
- **Cost effectiveness analysis**
  - Policy X spent x$ on increasing/decreasing A
  - Policy Y spent y$ on same goal
  - Which policy yielded highest effectivness : (change in A)/$
- No comparison between A and B outputs possible

Tools of analysis (2)

- **Cost benefit /analysis**
  - Policy to change A
  - What is the $ value of the change in A
  - What is the S cost of the change in A
  - What is the Benefit/ Cost ratio
  - What is the Internal rate of return (benefits flow over time)
- Comparison between policies in various areas (A,B,C) are now possible

Tools of analysis (3)

- Impact measurement: avoid confounding effect or correlation is not causality
- Issue is measuring intangibles such as value of life, value of culture..
- What if surveys are one source of info; observation of behaviour another
- Costs are usually more easily measured ;some data extraction may be required (direct, indirect, overhead)

Public spending costs(1)

- Observable costs or not?

  If not top down inference

- If observable differentiated by majority and minority or not

  If not then use as such

- If differentiated ensure that true cost of minority is calculated

Public spending costs (2)

- Choosing a **counterfactual** (what would have been if?) to evaluate adding/subtracting one language for public services .
- Calculate the **marginal/additional cost** of one more language Measurement of costs for observable expenditures .Differentiate between total and marginal: what is it below?

New York City … has expanded the city's bilingual education program. the city will spend $20 million to allow students to take their core courses in their native tongues.

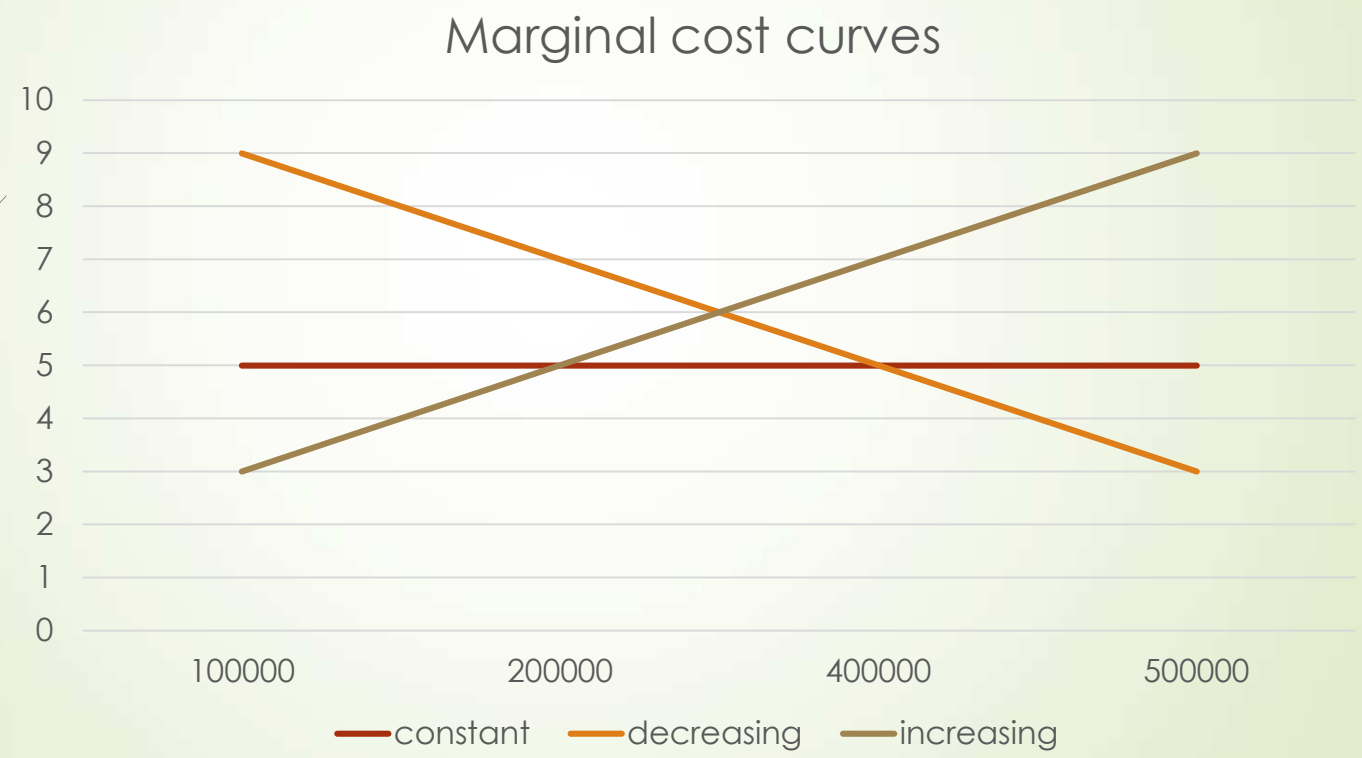
Public spending costs (3)

- Calculate the per capita cost of service S in Maj language : total cost S Maj/ Maj population yields average unit cost **AUCMaj**;
- Calculate the cost of S to Min at the unit cost of Maj: **AUCMaj** X Min population=> notional cost
- Actual expenditure for S to Min minus notional cost => excess cost of S in the Min language

Public spending costs (4) who benefits; what affects costs

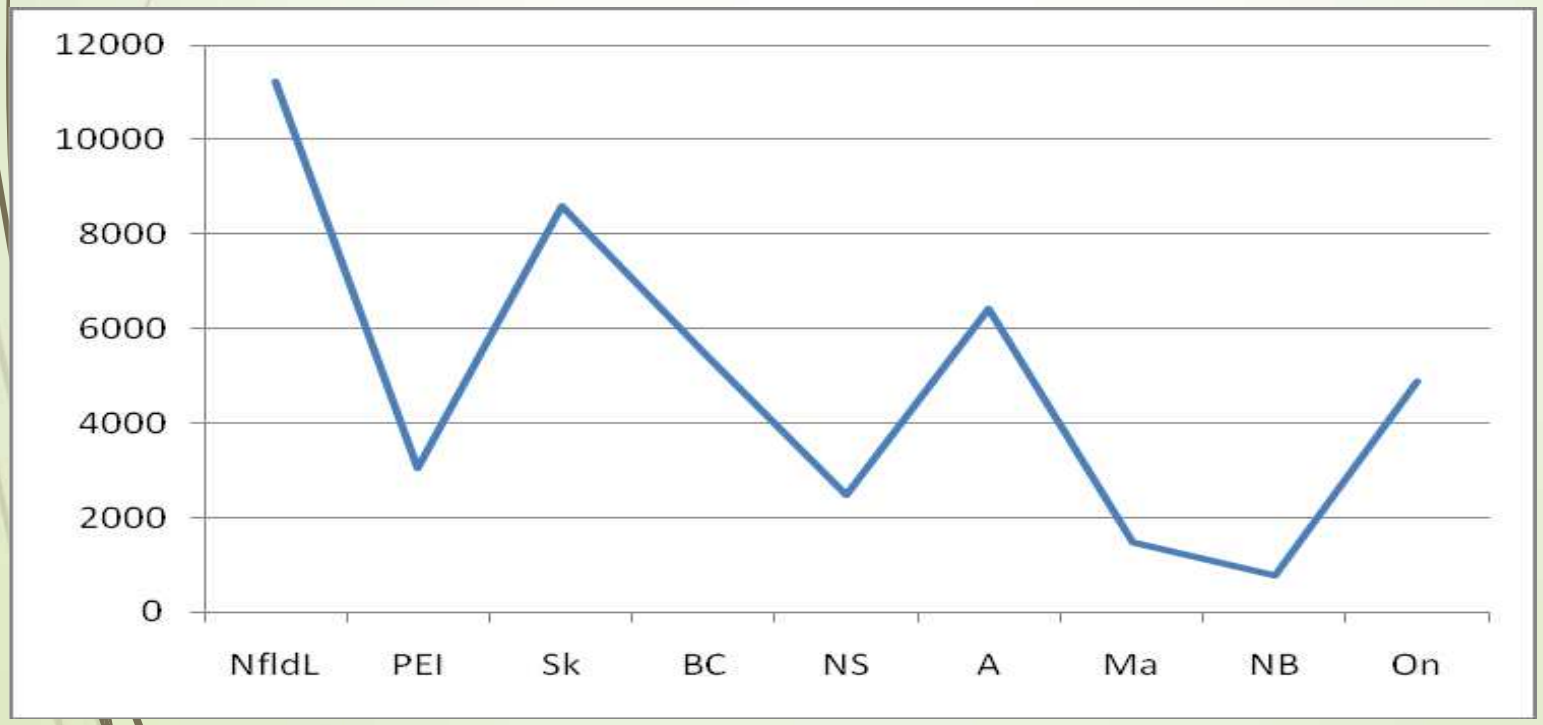
- How do we define Maj and Min groups?
  - Mother tongue? Language spoken at home? Self identity?
  - Should Min services target unilinguals (in Min) or bilinguals(Min+ Maj)
- Smaller minority # yields higher cost of minority S since:
  - per-capita cost of majority is lower **and**
  - number of minority is lower
- Does average cost = marginal cost? Or is it increasing /decreasing

Public spending costs (5)Marginal cost cost vertical; quantity horizontal



Public spending cost (6): quantity cost relation:K-12 education,provinces Canada

- Cost per francophone minority student K-12, provinces↑ size(#) of minority



Public spending marginal costs(7) K-12 central admin Canada ,provinces

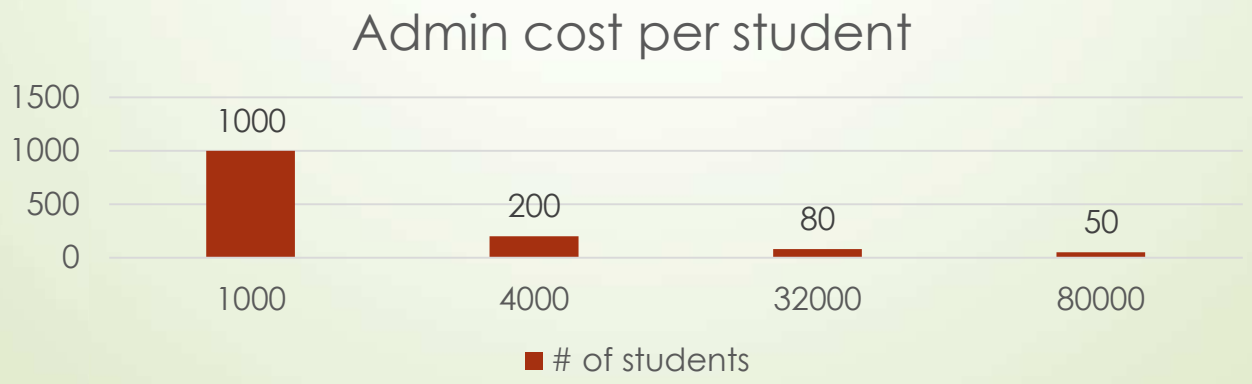
Cost per student:

Saskatchewan: $1,000 for 1,000

Nova Scotia $200 for 4,000 students

New Brunswick $80 for 32,000 students.

For Ontario we **project** $50 per student for 80,000



Public spending costs: numerical example (8) constant marginal cost

- Service two budgets: maj $60,000,000 and min $40,000,000;
- Population: maj =800,000 or 900 000 min=200,000 or100 000;
- spending per capita for the maj is $75 or 66,5 ($60,000,000 ÷ 800,000 or 900 000);
- total **notional** spending for the minority group is $15,000,000 or 6,500 000 (i.e., 200,000 X 75 or 100 000 X 66,5);
- Total *true* cost of minority spending is $25 000 000 or $33 500 000= $40,000,000 (budgeted spending) minus $15,000,000 or $6 500 000 (notional spending)

Public observable costs(9)Canada federal

Total Observable Cost of Bilingualism in the Federal Administration, 2006-2007 (1$= 0,6euro-=0,7$)

	Minimum	Maximum
Transfer payments and direct spending notional	674 360 054$	843 223 924$
Translation and interpretation observed	279,300,738$	279,300,738$
Cross cutting spending observed	100,836,955$	100,836,955$
Total	***1,054,497,747$***	***1,223,361,617$***

Public unobservable costs(10)

- costs imbedded in general departmental spending(reports in two languages…)
- reduced productivity from time spent undergoing language training, listening to translation,…
- Top down approach/ subtractive

Public spending unobservable costs derivation Canada federal (11)

- Total federal spending $222.2 billions
- Remove spending with no language costs(LC):

  - Public debt –$33.9 spending

  -Transfer payments to individuals, governments, businesses–$124.9 etc

Remains

- Salaries $32.9: $100 million LC assumed
- Professional and special services $6.8: X5% LC= $340 million

Private costs of language policies(1)

- Established using survey data
- Actions required to comply: change signs, teach language to staff, translate documents ..
- Cost of each action: cost of m^2 of signage, of one hour of teaching or translation
- QuantityX unit cost summed for all actions
- Distinguish implementation and ongoing costs
- Distinguish optional (response to public bids) and imposed (collective agreements for example)

Private costs (2): language related cost of large firm patent application (EPO)

- A: English French German: B: Other
- Simulated costs: market prices+typical EPO documents
- Source: Gazzola

Type of costs or fee reduction	A	B
Admission translation costs (1)	0	1,700
General fixed costs (2)	5,500	5,500
Granting translation costs (3)	680	680
Interaction translation costs (4)	0	483
Total cost for large companies	6,180	8,363

Private costs(3):regulate (Bill 14) small employers (25-49) Québec

- Establish universe: = 12 000 employers
- Allocate employers to low, medium of high French Intensification Need (FIN) group depending on mother tongue of owner, outside Q markets, outside Q supplier,
- Establish need and cost of: language training…

FIN	low	Medium	high
# employers	6000	3720	2280
# employees needing L training	0	2300	7000

Private costs (4) Bill 14) key item is language training(70%)

- Language training of existing employees
- 9 300X 100h= 930 00 h of employee time
- if six employees per learning group= 155 000 teaching hours
- (930 000X 25,5$) + (155 000X 50$)= 32 000 000$
- Maximum amount as some employees know enough French so **16 000 000$ is assumed** (1/2)
- Total implementation was 23 000 000$

Private costs (5) of language policies 2016, Québec (mixed data interpolated)

- 1)Wages and salaries of *Writing, translating and related communications professionals* are 966 M$; translators are 25% Canada ≈ 250 M$X1,5 ≈ **375**M$(Census 2016)
- 2)a)Cost of all regulations for businesses is 6,9 billion (F-P-M): relative importance by type of G/regulations implies 2%-3% for Bill 101 ≈ 150$-**225** M$ (CFIB survey 2017) survey on Bill 101(2012)
- 3)Public bodies (OQLF ,CSLF)= **30** M$(reports)
- Total:≈**650**M$**≈ 0,15-0,2% GDP (375 billion $)**

Public spending Benefits(1)

- Size of the language industry: NO Benefits to society ≠ resources spent.
- Increases in exports of goods and services **Perhaps** if linked to public policy
- Value to society of language X: worth how much? or willingness to pay? **Perhaps**
- **Availability of services in ML to minority YES**

Public spending benefits (2); minority language use in public services

- Ascertain the number of hours the minority group interacts with public service providers
- Calculate the value of
  - an informal supply of services in minority language services by public employees);
  - a informal supply of minority language inputs by family/friends ;
  - a market supply of minority language services by interpreters/translators;
  - use an average of costs

Public spending Cost and Benefits (3) Canada (M$)Fed G

- Hours of interaction (U-B)F with Fed G: Time transformed in $
  - An informal supply of services in French by federal civil servants(600);
  - A informal supply of French(500);
  - A market supply of French (800);
- U+BF 700-1100 M$ < costs 1400-1600 M$
- C/B ratio 0,45-0,80
- Psychic benefits for F? for A? Survival of F?

Public spending (4) cost and benefits stylized facts,education: MT or LWC as MOI

- MT rather than LWC as MOI = higher annual costs 4-5% fixed+recurrent costs. Base unit cost= 100 (LWC)
- MT reduces repeating grade (- costs) and dropping out (+cost)
- Use observable data to simulate
- LWC to MT: change from 40% to 20% repeat (-$) and 15% to 10% dropout rates(+)

Year	1	2	2R	3	4	4R	5
Dropout	0	0	0	5%	10%	15%	15%

- Source Grin Vaillancourt 2000

Public spending (3a)total cost and benefits stylized facts,education: MT or LWC as MOI

Year	LWC cost profile 40% Repetition 15% Dropout	MT cost profile 20% Repetition 10% Dropout **7.5% Extra Costs**
1	**100**	**107.5**
2	**100**	**107.5**
2R	**100**	**107.5**
3	**95**	**107.5**
4	**90**	**102.1**
4R	**85**	**0**
5	**85**	**96.7**
Total	655	628.8

Public spending (3) European evidence(euros) cost effectiveness

Policy	Cost per hour (euro)	Number of speakers	Competency of speakers	Language use	Note
Welsh road signs	1,98	low	low	low	Capital annualised
Welsh TV	0,5	medium	medium	medium	
Basque education	0,1	high	high	Very high	Base of use
Source	Grin, François and François Vaillancourt The Cost-Effectiveness Evaluation of Minority Language Policies, ECMI,				
Note	Target is number of hours of use of minority language				

Estimates of benefits of French: Lousiana study(pending) impact study

- Tourism
  - Establish baseline measures of existing visitation
  - Comparison to benchmark cities similar to New Orleans
  - Potential economic benefits of additional markets
- Education
  - Produce French speakers for government, businesses
- Economic Development
  - Baseline assessment of ties to Quebec / France..
  - Assess potential benefits of strategy to recruit business from French-speaking places

Distributional issues One(central?) government spending

- Incidence methodology households
  - Allocate tax burden;
  - Allocate expenditure benefits;

Need household data with:

language skills;

proxies for use of public services;

indicators for taxes paid.

May require combining data bases

Distributional issues: results for benefits and taxes OLA Canada

	English MT	French MT	F knowing only F (KoF)
Average taxes paid by household	10 990	10 900	10 530
Taxes paid to finance OLA	130	130	125
Net benefits: taxes-services	-130	390	805

Distributional issues: 2+ governments (regional,local…)

- In federal countries some language services may be financed by regional governments (autonomous communities cantons, provinces, states…) from their own revenues for their own residents : easier to measure who pays /benefits
- Central funding may still be relevant for national unity goal

Conclusion

- Economic methodology can provide useful information to language policy makers
  - It allows them to estimate costs correctly
  - It allows them to interact with the guardians of the public purse using a language they understand
- Key aspects of **methodology** :
  - The use of cost-benefit to facilitate interaction
  - the use of Maj unit costs to calculate the real cost of Min targeted services;
  - the use of time and its cost to ascertain the benefits to society of Min services;

Addendum How to present results Federal bilingualism, Canada Low or high cost 2006

- Total cost OLA= 1.4-1.6 billion$
- 1% program spending ;
- 0.1-0.15% of GDP
- 50$ per capita all Canadians (household income=54 000$; per capita 21,600$)
- 220 $ per francophone mother tongue
- 360 $ per unilingual francophone

Danke/Gracias/Grazie/ Merci/Thank you

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