

Estimating Costs and Benefits
in
Regulatory Impact Assessment (RIA)

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Outline

- A quick summary of the general methodology of cost-benefit analysis (CBA)
- Quick recap of RIA (a type of CBA)
- Costs and benefits in RIA
- Calculating costs and benefits
- Telecom sector case studies
- Data collection strategies for RIA

Summary of CBA

Cost Benefit Analysis (CBA 1)

- Determine the money equivalent of benefits of an action (1)
- Costs: Monetised costs involved in the action + Net monetised benefits from the next best alternative (monetised benefits – monetised costs) (2)
- Net Benefit from the Action: $NB = (1) - (2)$
- Implement only if $NB > 0$
- Very difficult to implement; how do you identify the next best alternative?

Cost Benefit Analysis: An Easier Approach (CBA 2)

- List all possible actions that can be taken
- Find the monetised benefits and monetised costs of inputs associated with each of the actions
- Net monetised benefit: $\text{Monetised Benefits} - \text{Monetised Costs}$
- Rank all the net monetised benefits and select the action that yields the maximum net monetised benefit
- Equivalent to the last approach

Example

- You have two hours
- You have three options: take a nap; visit the local cinema; work as a research assistant for the professor next door who always needs help
- If you had nothing else to do and you could sleep, then you would value 2 hours' sleep at Rs. 40. $NMB = Rs. 40$
- The cinema provides you with Rs. 100 worth of entertainment at a ticket price of Rs. 75. $NMB = Rs. 25$
- You could always walk effortlessly to the Professor's house next door and he would pay you Rs. 40 per hour, when the minimum amount you would accept as compensation for the unpleasantness of work is Rs. 30 per hour. $NMB = Rs. 20$.
- NMB is the highest for napping. So you choose to nap.

Quick Recap on RIA

What is RIA?

- It is a process of conducting a cost benefit analysis of regulatory options so as to identify regulatory option with relative high benefits and relatively low compliance cost
- These analyses could be conducted ex-ante (for choice from amongst a set of regulatory option) or ex-post to identify desirable and undesirable regulations

What does RIA tell you?

- Whether it is worth regulating at all
 - Market failures or equity problems might not be of significant magnitude compared to the costs of compliance.
- Which one of the possible regulatory actions should be undertaken?

Why is RIA needed?

- Lobby groups with high benefits and low costs from a regulation might push the regulation through
- Those bearing a bulk of the costs might be large in number and dispersed, therefore lacking the coordination capacity and the will to block a socially undesirable regulation

Questions asked at the beginning of RIA (Continued)

- What is the problem?
 - Is it a market failure? If yes, which one?
 - Is it a problem of equity?
 - Is it a problem of poverty ?
- What are the immediate policy objectives?
 - Increase the consumption of a good or service
 - Decrease it
 - Remove information asymmetries so that markets can function well
 - Make certain public goods excludable, resulting in a decrease in congestion and financing of benefits

Questions asked at the beginning of RIA (Continued)

- What are the candidates for achieving these objectives?
 - Consider the policy objective of reducing road accidents
 - Speed limits and penalties for speeding
 - Compulsory use of safety belts
 - Better road conditions
 - Options can be no change, co-regulation, self regulation, partial regulation, entry barriers, operating restrictions, monitoring and supervision etc. Each option will have costs and benefits.

Costs and Benefits in RIA

Costs and benefits in RIA

- Regulatory net benefits must be as high as possible so as to aid the growth process or the generation of greater equality or poverty alleviation.
- Types of regulatory costs: compliance cost, administrative cost, impact on competition and through it on level and growth of income as well as price
- Possible benefits: Effect on consumer satisfaction and product quality, impetus to innovation, stimulation of provision of information and contributions towards a public good

Costs to be Considered While Conducting RIA

- Compliance on the part of firms or people
 - Real estate and overheads
 - Equipment and other non-labour inputs
 - Staff requirements (consultants, experts)
 - Required change in production processes
 - Required recording and storage of information
- Competition reduction costs
 - Requirements discourage entry
 - Quality requirements discourage price competition

Costs to be Considered While Conducting RIA

- Price effects as illustrated by the following example
 - Increased price, such as that of air tickets due to air safety regulation (1)
 - Often lead to substitution by the next best alternative (2): air safety regulation can increase ticket price, increase car travel and actually increase total deaths caused by travel
 - (1) and (2) change sales and reduce consumer benefits

Examples of Common Regulatory Costs

Affected Group	
Business	Familiarisation and planning how to comply
	Higher input and production costs
	Lost sales because of restricted markets
	Associated meetings, reporting and record keeping
	Internal Inspections and audit fees
Consumers	Increased price, reduced range, and delay in introduction of regulation compatible products
Government	Administration costs: provision of information, training and recruiting necessary government staff, granting licenses and processing product applications
	Verifying compliance and prosecuting non-compliance
Other	Impact on competition; effects on distribution of income; distribution of costs generated by the regulation

Examples of Common Regulatory Benefits

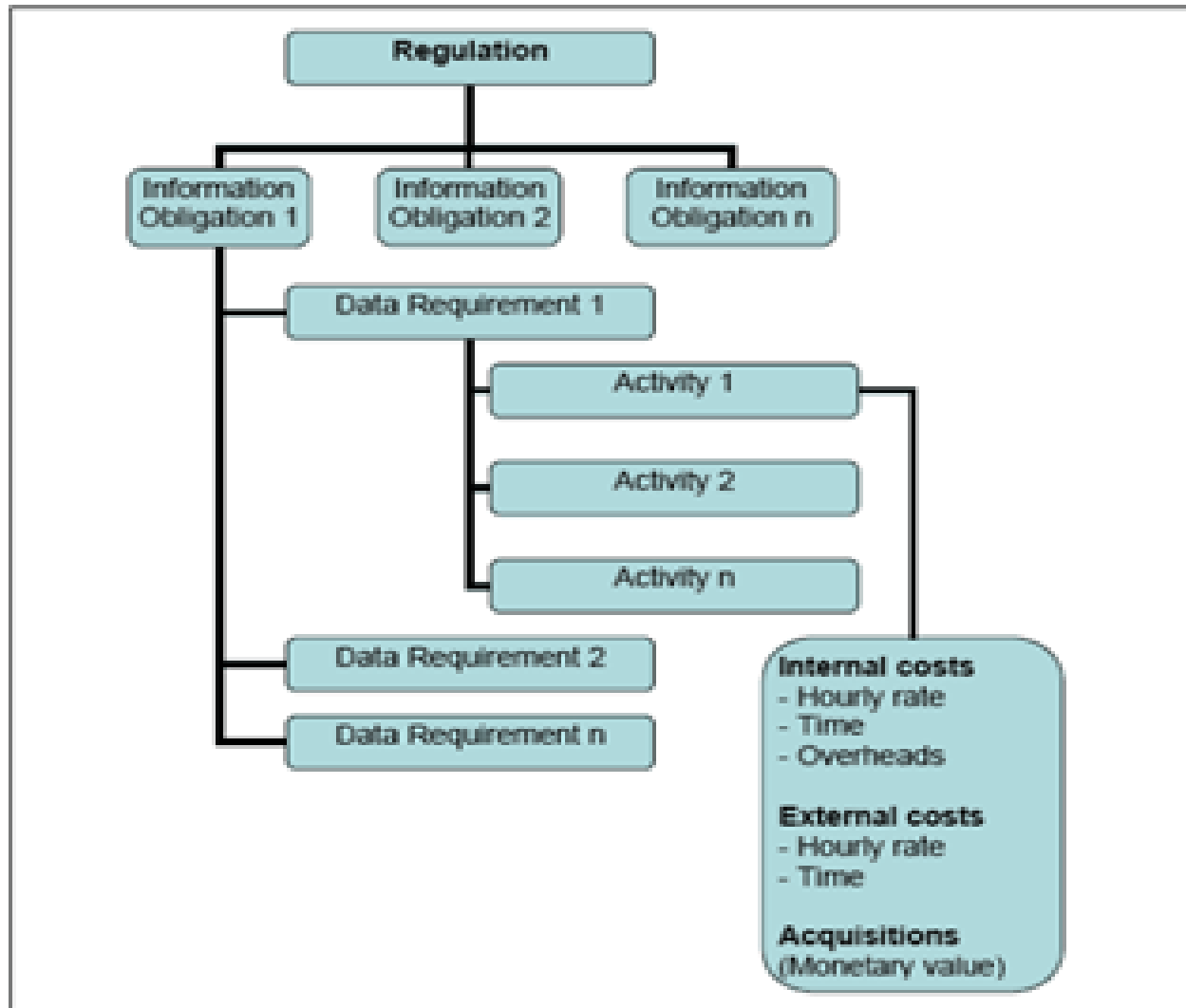
Affected Group	
Business and Labour	Safer working conditions; enhanced productivity (competition increase), increased profitability (greater consumer trust in products)
Consumers	Possible reduction in price; improved safety and better quality
Government	Improved public health, reducing health care costs; increased flows of information to the government
Other	Distributional Benefits

Calculating Costs and Benefits

Undertaking RIA

- Break the society or community into groups of homogenous individuals (strata of society)
- Take a random sample from each stratum and find the average NB_{ij} for the given 'regulatory candidate' j for each stratum i: n_i out of a population of N_i
- Determine (NB_{ij} * N_i) for each stratum
- Add up across all the M strata so as to generate the net benefit from j for the entire population, $NB_j = \sum_{i=1}^M (NB_{ij} * N_i)$;
the assumption is that there are M groups
- For a given regulatory candidate to be selected it should result in the maximum NB_j among all possible candidates; further NB_j>>0.

Measuring the cost of regulation



Example: Regulating Pollution (calculating costs)

- Monitoring emissions: $2 \text{ hours} \times 12 \text{ times a year} \times \$75 \times 2,000 = \$3.6 \text{ million per year}$
- Reporting to government $2 \text{ hours} \times \$50 \times 2 \text{ (times a year)} \times 2,000 = \$400,000 \text{ per year.}$
- Recalibrating machinery to maintain emissions performance: $3 \text{ hours} \times \$100 \times 2 \times 2,000 = \$1.2 \text{ million per year}$
- Total Recurring Costs: \$ 5.2 million per year (in first year's currency)
- One off costs (say machines to be employed in the beginning of the period under consideration): \$ 1 million (say)

Example: Regulating Pollution (calculating costs)

- We assume that recurring costs will continue to be \$ 5.2 million in the first period's currency
- However, \$ 5.2 million in the next period is worth less than \$ 5.2 million today (you would prefer the latter to the former; if you put the latter into a bank or an investment it will give much more than 5.2 million in the next period). Discounting is required
- Therefore (TC : Total present discounted value of costs; r: time discount factor ; δ : uncertainty discount factor)

$$TC = 1 + 5.2 \sum_{i=1}^{10} \left[\frac{1}{\{(1+r)(1+\delta)\}} \right]^{i-1}$$

Calculating Present Value

PERIOD NO.	Cost expressed in dollars(first period equivalent)	Cost expressed in present value (first period dollar equivalent) (r=0.1; no uncertainty)	Cost expressed in present value (first period dollar equivalent); (r=0.15; no uncertainty)
1	5.20	5.20	5.20
2	5.20	4.73	4.52
3	5.20	4.30	3.93
4	5.20	3.91	3.42
5	5.20	3.55	2.97
6	5.20	3.23	2.59
7	5.20	2.94	2.25
8	5.20	2.67	1.95
9	5.20	2.43	1.70
10	5.20	2.21	1.48
One off costs (1.)	1.00	1.00	1.00
Total		36.15	31.01

Problems with Estimating Benefits

- While identification of benefits is easy estimating them monetarily is difficult
 - For example, valuing a human life is difficult
 - Estimating the price effects of enhanced competition is tough
- Options
 - Get each identified benefit estimated in monetary terms by an expert panel and do full scale BCA
 - Identify a vector of benefits (number of lives saved, pollution controlled) to first get an idea about whether regulation is worth it
 - When more than one regulatory candidate can give you almost the same vector of benefits try and pick the most cost efficient candidate
 - However, if the benefit vectors are different then one can convert the benefit vectors into values of an index and compare these values(multi-criteria analysis); and the corresponding costs
 - In certain cases we might not even compare regulatory candidates but select one if it yields a good enough vector of benefits and corresponding index value, given the cost (break even analysis)

The Competition Checklist

- Every regulatory candidate can be considered only if its use does not impede competition significantly. The check is done in 2 stages:
 - 3 questions are asked to detect any sort of anti-competitive effect
 - Does it limit the number or range of suppliers?
 - Does it limit the ability of suppliers to compete?
 - Does it the incentive of suppliers to compete? (disclosure, reduced profit margins etc)
- If the answer to all these questions is 'no' then the candidate is cleared for full scale BCA or partial BCA
- Otherwise a competition specialist has to be called in to compare the regulatory net benefits to the adverse impacts on competition

Telecom Sector Case Studies

Reconnecting the Consumer: Australia (2010)

- The Telecommunications Act, 1997 set up a co-regulatory regime involving Australian Communications and Media Authority (ACMA) and industry
 - This involved setting up of codes of conduct for industry and the intervention of ACMA whenever these proved inadequate
- The Reconnecting the Consumer (RTC) Inquiry was necessitated by growth in consumer complaints to the Telecommunications Industry Ombudsman
 - Subjects: Contracts, billings and payments, customer service, complaint handling and management practices

Reconnecting the Consumer: Australia (2010)

- Recommendations
 - Clearer pricing information in advertisements: easier to compare plans
 - Clearer detailing of plans: services provided, bill calculation
 - Need for suppliers to put out information about quality of customer care and speed of resolution of complaints
 - Alleviation of Bill Shock
 - Complaints handling process should meet a benchmark standard.
- Options Evaluated: (i) Status quo of Consumer Protection Code (Benefits equal to 0 and costs equal to over a billion dollars per annum) ; (ii) replace it with a revision in 2012 incorporating above recommendations with scope for further revision if required (one time costs of \$54.02 m and recurring costs of \$101.869 m)
- Given above information, it was anticipated that a significant proportion of costs under status quo would be eliminated. Hence (ii) was chosen.

Telecommunications Development Levy (TDL) Extension

(i) Proposal for a levy on certain telecom suppliers to contribute to the cost of infrastructure development

(ii) Considerations for fixing size of levy: social and rural exclusion; boosting economic growth; right level of industry investment in telecom, infrastructure and services; factors such as population density, terrain, distance from existing connection points and existing infrastructure

(iii) The TDL had been used to fund the Rural Broadband Initiative (RBI). In the period from 2010-11 to 2016-17, RBI received \$48 m of external government funding and \$252 m of levy funding

(iv) Options: (a) Status quo already embedded in legislation: reduction from 2016-17 onwards from 50 m to 10 m annually; (b) Go from 50 m to 30 m in 2016-17 (additional 60 m in 3 years) (c) Amend the levy by delaying the reduced payment to 2018-19 (addl. 120m); and (d) Addl. 180 m

(v) Option (c) was adopted to facilitate rural welfare plus economic growth (education, health, connection to govt. and energy services; social inclusion; direct economic benefits: ability to run a business, flexible hours, online sales; benefits from precision mapping of soil conditions)

Market Management for Providing Spectrum Services (08/02/13)

- Broad objective of study: Increase flexibility of regulatory framework through new legislative provisions and strengthening of existing ones with following benefits.
 - Great degree of efficiency in market for spectrum facilities
 - Technological innovation and growth through better flows of information
- Immediate policy objectives: (i) release spectrum to those that value it the most; (ii) prevent spectrum hoarding; (iii) incentivize secondary market trading and (iv) meet demand arising from technological change

Market Management for Providing Spectrum Services (08/02/13)

- Option (i): NPV=0 (Status Quo)
- Option (ii): Use Ofcom's statutory duties to facilitate Dynamic Spectrum Access Database Licensing: allocate gaps in frequency bands reserved for TV broadcasting (via a database) for rural broadband, hot spot coverage, in-house broadband etc.
- Option (ii) is preferred to (i): Costs= £ 0.93 m (ii) Benefits: Consumer Surplus (£5723.62m)+Profits (286.18m) + Efficient Spectrum allocation (231.88 m); NPV=£ 6241m (conditional on the development of technologies) `

Facilitating Cross Border Selling in the EU

Bottlenecks

- Problems in parcel delivery
- Differences in VAT and consumer laws

List of Options Considered (3 out of 5 provided)

- Greater transparency
- Ban on blocking access to websites and automatic rerouting unless active consent is given
- Focussing on identifying cases in which geo discrimination is not justified
 - » Tangible goods where consumers arrange for transport
 - » Consumption of services at the point of delivery
 - » Electronically delivered services

Preferred option: 3

Facilitating Cross Border Selling in the EU

Benefits of preferred option

- Increase in cross border transactions causing a significant increase in total volume of transactions
- Price decrease: -0.5% offline and 0.6% online
- 0.8% increase in CS for the entire EU

Costs

- Compliance Costs
 - Identifying the VAT rate in the customer's country in the case of digital sales
 - Others

Net Benefits are large and positive

Cross Border Portability of Online Services in EU

- Problem
 - Difficult to access online content during cross border travel
 - This problem assumes greater magnitude with increase in online material and more extensive and intensive use of the internet
- EC action is needed to provide harmonised conditions for cross border portability
- Policy Options
 - Guidance: owners of content can grant rights for cross border portability (1)
 - Facilitating Legislation (2)
 - Ensuring Legislation (3: Preferred Option)
- Guidance is preferred by producers because of associated non-intrusiveness and legislative intervention is preferred by consumers as it guarantees greater variety of consumption

Cross Border Portability of Online Services in EU

- Benefits from Preferred Option
 - $\frac{\text{Portable Users}}{\text{Total Users}}$ to increase from 5.7% to 14% in 2015-20, adding 72 million users 3636 in Europe
- Costs
 - Reconfiguration of the user authentication system from the geo blocking approach to the access approach
 - Indirect costs involved in authentication and verification
- Net benefits of preferred option are significant and positive

Regulation of VoIP services: Access to Emergency Services (Ofcom 2008)

- Policy objective: Ensure high level of access to 999 call service
- Options: (i) Do not require VoIP services to allow 999 calls/ status quo; (ii) require VoIP services to allow users to make calls to traditional phones or make and receive calls from traditional phones, to allow users to call 999. Option (ii) was preferred.
- Key benefits of option (ii): eliminating critical delays resulting from confusion about 999 access, potentially saving lives. Range between £ 24-34 million in NPV.
- Key costs of option (ii): industry costs of approx. £ 10 million in NPV over 5 years i.e. £ 4.11 in NPV over 5 years per household = approx. £ 0.91 per household per year on annuity basis.

Data Collection Strategies for RIA

Data Collection Strategies for RIA

- Objective:
 - Get high quality and relevant data
 - This objective becomes more important when you expect both the costs and the benefits of the regulation to be large i.e. inaccurate data can lead to incorrect and very costly decisions

Data Collection Strategies for RIA

- A well designed survey of affected groups is very important
 - One should make sure that the sample of people/agents from affected groups is representative
 - The sample should be large enough to be representative but not larger (cost is a consideration)
 - It should also include groups in roughly the same proportion as in the population
 - Questions should be realistic and easy to answer
 - For example: “What impact will a certain specified increase in quality standard have on price?” Difficult to answer
 - “Will you be in a position to supply when a certain increase in quality standard is imposed?” Much easier to answer
 - Respondent bias should be controlled: Questions asking for “Yes”/”No” answers are better than those asking for “how much” since the latter allow for strategic answers

Data Collection Strategies for RIA

- Complex compliance cost issues or benefit issues might require 'face to face interviews'
- Recent surveys on relevant information must be hunted up as this might help economize on survey length as well as costs
- Use tried and tested companies for assistance in conducting RIA: Business Test Panel in Denmark
 - Before selecting a company a full background check should be done
 - A check should also be done regarding potential conflict of interest
 - It is important to still have people in the organisation who understand RIA well so that any advice given by a private company can be evaluated before it is used

Data Collection Strategies for RIA

- Review of experience in other similar countries
- Use relevant information with various government departments and statistical offices
 - For constructing a representative sample
 - For generating estimates of costs and benefits
- A review of relevant market surveys and academic literature for data and methodology is important
- Data on premiums charged by insurance companies can help estimate benefits (prevented harms) of regulation

Data Collection Strategies for RIA

- Consultations can be useful though they may yield a biased sample with more representation by powerful well informed lobbies
 - The consultation should be publicised so that the group turning up for or responding to the consultation is representative of the affected populations of agents
- Different consultation tools
 - Notice and comment (with or without discussion paper)
 - Circulation for comment (among a group of important stakeholders)
 - Public hearings (with the advantage of discussion and the disadvantage of 'possible commotion')
- Extensive written material (long and short documents) should be circulated about the proposed regulations to facilitate comprehension
- Data should be collected on the (a) the likelihood of voluntary compliance ; (b) the likelihood of enforcing compliance for agents who do not comply voluntarily and the costs of such enforcement; and (c) the costs and possibility of non-compliance deterring prosecution

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Methodologies http://www.finance.gov.au/finframework/docs/Intro_to_CB_analysis.pdf

Examples of RIA and instructions for multi-criteria analysis

Victorian Government (Australia). Copies of all RIA published since 2004. Go to www.vcec.vic.gov.au, open the Regulation Reform page, click on “Regulatory Impact Statements”.

Thank you
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