A HYBRID MODEL PROPOSAL BASED ON SCM AND RCM ADMINISTRATIVE BURDEN MODELS (A.B.Ms)

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Abstract

The existent administrative burden models' (ABM's) perform certain weaknesses mainly on: a) Regulatory cost measurement expansion, b) Integration & standardization of data and sampling measurement methods, c) Integration & Standardization of time and resources d) Evaluation of the weaknesses of Public Administration and e) lack of standardized international comparison benchmark. Based on these main deficiencies the address of certain amendments that will meet contemporary challenges such as: i) the standardization of data collection methodology, ii) a more solid substantive cost measurement methodology, iii) an extended AB measurement capabilities module and finally iv) the feature of international comparison, is a significant amelioration.

Keywords: Administrative burden, Administrative Burden Model (A.B.M.), administrative costs, substantive costs, international comparison, Standard Cost Model (S.C.M.), Regulatory Cost Measurement Model (R.C.M.).

JEL classification: G38, K20, L51

1. Introduction

A comparative analysis among the main A.B.M's designates that certain amendments or incorporations on ABM's could be further expand their scope and their capabilities, mainly referring to the: a) adoption of an appropriate statistical method for typical business unit's determination, leading both to an unbiased, objective and impartial typical business selection and administrative costs determination for the total survey population via extrapolation process, b) the standardization of the methodological approach for the questionnaire response collection, in line with best practices or/and methodologies that have been developed internationally. Primarily this could be achieved at the preparatory stage (setting phase) of questionnaires, enhancing the information provided by the qualitative variables, c) the expansion of compliance cost measurement capabilities (e.g. substantive compliance cost of business units measurement, opportunity cost measurement and transaction cost measurement between business units and public sector) and d) the adoption of an AB international comparison numéraire, through the implementation of nominal or real exchange rate (PPP or MEP) measurement techniques, facilitating also the benchmarking of administrative burdens worldwide [OECD (2011); World Bank (2010); Weigel (2009); Frank A.G. den Butter, Marc de Graaf & André Nijsen, (2009); Regulatory Reform Group, (2008)].

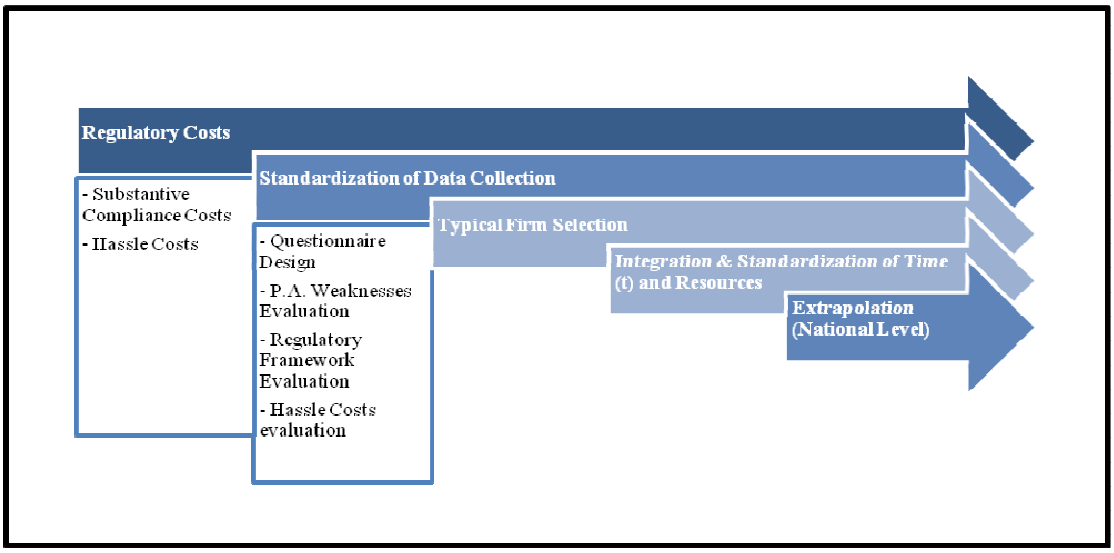
Furthermore, the comparison among the existent ABM's presents many deficiencies, especially in the fields of: a) Data collection methodology, b) risk assessment methodology for the recognition of the administrative sectors with significant A.B, (c) weakness evaluation of Public Administration and finally d) Regulatory Framework Efficiency Evaluation [INTOSAI, (2013)].

2. A new Hybrid A.B.M. Proposal

The proposed hybrid ABM is being based on the existent ABM's structure (mainly on the international SCM and RCM) with the introduction of certain amendments. As, the structure

of the proposed amendments associated with the structure and the workflow implementation steps of SCM, therefore we are quoting only the corresponding steps at SCM structure, where model calibration is being adopted *(Graph 1)*.

Graph 1: Hybrid A.B.M's main futures



2.1.1. Determination of Regulatory Cost types and Source based classification - (S.C.M. - Phase 1 - Step 1)

The S.C.M. step 1 is being modified in order the regulatory costs to be splited out into three (3) different module categories, allowing measurement of different types of administrative and regulatory costs. Hence, the measurement model composed of three (3) different modules. The first (1st) module includes the administrative costs as a combination of the corresponding costs of the S.C.M. and R.C.M. models. The second (2nd) module includes all cost drivers associated with the substantive compliance costs that a typical firm confronts, based mainly on RCM identified compliance cost factors. Finally, the third (3rd) module corresponds to the necessity for hassle cost measurement or assessment, according to World Bank survey experience and methodology [World Bank, (2010)].

Administrative Costs
Composes of three (3) different types of administrative cost subcategories: **i) Information obligations (IO) Costs:** Include the costs for all the necessary administrative activities in order a typical firm to comply with the disclosure requirements of the regulatory framework. **ii) Data Withhold Obligations (DWO) Costs:** Include withhold or availability data costs, in order obligations to be submitted whenever it's asked for (IT or file record keeping policy) and in compliance with the disclosure requirements of the regulatory framework. **iii) Educational & Training Obligations (ETO) Costs:** it includes the costs related with the necessary training or/and education for the adaptation of personnel professional skills with the requirements of the regulatory framework (In accordance with R.C.M provisions).

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Substantive Compliance Costs
Composes of **four (4)** different substantive cost subcategories: **i) Financial Costs:** Costs associated with requirement to carry out certain amount of capital resources to the State, due to the regulatory framework provisions (e.g. taxes on earnings, SSF contributions, license fees, fines e.t.c). **ii) Personnel Costs:** Costs related to HR management, exclusively related to the compliance with the regulatory framework. These costs inter-related with staff training, cooperation strengthening, supervision issues, etc.

iii) Material Costs: Includes all material expenses exclusively related to the compliance with the regulatory framework, including the cost of materials procurement, services from third parties, infrastructure financing and depreciation, etc.

iv) Opportunity Costs: Includes foregone yield, due to the utilization of capital resources for the compliance with the regulatory framework.

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Hassle Costs

That composes of **three (3)** different hassle cost subcategories:

i) Loss of Time - Opportunity Cost: Associated with the loss of productive time by the administration or/ant the personnel in order to comply with the obligations imposed by the regulatory framework.

ii) Non-formal compliance Costs: Includes any potential payouts for the verification of informative or substantial compliance of a business unit with the regulatory framework that although they don't indicated as prerequisites, they have been adopted by the typical firm as factor successful or accelerated completion of the adaptation process.

iii) Corruption Costs: Includes any potential payouts to public or private sector representatives for a false or fraudulent verification of informative or substantial compliance of a typical firm.

2.1.2. Standardization of Data Collection (S.C.M. - Phase 2 - Step 7)

The questionnaire design at the S.C.M. Step 7 during the preparation of interview drivers, takes into account the following procedures.

a) Questionnaire Design & Evaluation

The design of the questionnaire is being based on the principles of DELPHI survey type, since: i) those involved in the survey of regulatory framework processes, don't have a thorough knowledge of the internal entities environment and processes and ii) due to informational asymmetry there may be collective benefits based on subjective judgment. For these reasons questionnaire design takes into account the following principles:

- A constant feedback policy that allows the repetition of those questions which the research team deems as influential or requires a more clear response.
- Use of descriptive statistics on the 1st round of sample responses in order to assess any outliers, assessing also responses of a quantitative nature.
- For those answers where deviation exceeds an (x%) percent of the standard deviation (s) (decided by the survey team depending on the attributes characteristics, socioeconomic factors e.t.c) and in accordance with the confidence interval, a 2nd round responses is being conducted on those questions that divergence appears.
- Repetition of questions, aiming to the limitation of stochastic factors that can stir up standard deviation's increase.

b) Public Administration Weaknesses Evaluation

Focusing on public administration's weakness, mainly on the efficacy and efficiency of administrative strategic vision and operations, it is a prerequisite to detect inner public administration weaknesses that could provoke or cumber AB phenomenon (a corresponding process addressed also by B.H.T. Model).

The simplification, redesign and/or elimination of administrative procedures should take into account the existence of all the necessary safeguards on administrative procedures, while essential information for administrative weaknesses associated with AB, contributes substantially both to regulatory distortions withdrawal and finally to the introduction of administrative reforms.

Thus, questionnaire evaluation is crucial in order queries and replies to be addressed appropriately. Therefore during questionnaire design phase, survey team structures the queries in that manner that the acquisition of information on the efficiency and quality of public

administration within the public entity under survey to be assisted. This information answers at least to the following issues:

- Identification and evaluation of internal controls within the public entities, associated with the assurance of proper operation of administrative processes under survey (e.g. assurances that deviations from regulatory framework don't exist), which is also interrelated with the performance of public administration and the reduction of AB. These issues refer to the following sub-categories: (i) authorization and approval procedures, (ii) allocation of tasks and roles, (iii) access control, (iv) verification.
- The identification and assessment of risks associated with: a) the effectiveness and quality of public governance within the entity under survey, and b) the performance of the administrative operation of the entity. These risks must be divided into two (2) sub-categories: i) endogenous risk (inherent risk) or the risks associated with the environment and the functioning of the entity and ii) risk of internal controls (internal control risks) or the risks associated with the existence of an effective internal control environment (INTOSAI, 2013).

b) Regulatory Framework Efficiency Evaluation

The collection of qualitative data related to the effectiveness of regulatory framework, is quite significant for the reduction of AB. By either using "five-point scale Likert" or "Scale of one to ten" method, questionnaire design should take into consideration the following subjects:

- Evaluation of the regulatory framework quality.
- Assessment of the positive or negative impact of the regulatory framework and the regulatory burden on business operation.
- Assessment of the positive or negative impact of the regulatory framework on the competitive structure and operation of market.

All this queries should be accompanied by proposals for the improvement and amendment of the regulatory framework.

d) Hassle Costs Evaluation

da) Tax Cost

Retrieving information and qualitative data in correlation with tax compliance, questionnaire design takes into account the principles and structure of World Bank's Enterprise Surveys. In particular, the research team structures a cluster of sub-questions referring tax compliance and quantification, with which significant information on the structure and function of the regulatory environment are collected. The content of the sub questions answers mainly on the following issues:

- The assessment of regulatory framework's effectiveness in relation to the necessary time of management and staff involvement on tax compliance issues (time tax).
- The assessment of annoyance degree for certain tax attributes.
- The assessment of the annoyance degree from the current tax administration governance level and quality.
- A diagnosis of tax framework key features, in line with the methodology sets out in the Paying Taxes of Doing Business (WB). These features are related to: a) tax burden - tax rate issues, b) tax compliance time and c) the payment process.

db) Corruption Cost

A separate set of qualitative and quantitative questions is being adopted, related with the detection of corruption attitudes during compliance process. On that sub-step, the survey team proceeds to the identification of possible regulatory failures or internal control inefficiencies associated with the appearance of corruption that contributes to unfavorable business environment, as well as to entry market barriers, followed with increased production costs and high risks associated with "doing business" intention.

For the design of the questionnaire are taken into account the principles, the structure and the variables used by World Bank (2013) BEEPS methodology, while the structure of the

questions are based on the model of Enterprise Surveys Indicator Descriptions. The structure of the questionnaire answers mainly on the following issues:

- The identification of the administrative processes where evidences for corruption phenomenon or corruptions shadows exist.
- The identification of management activity type where corruption evidences exist (tax, licensing, etc.).
- The estimation of average number of meetings required in each step with the respective tax - administrative officers.
- The existence of internal control at the respective tax transaction procedures.
- The assessment of the influence degree of subjective judgment and action of tax administration during transactions.
- In case of corruption incidents disclosure, the estimation of financial returns value (in average).
- The qualitative and quantitative analysis of the responses.

dc) Opportunity Cost due to Time Loss

The opportunity cost due to time loss results from the calculation of the time loss by management and employees, due to liabilities related to the compliance with the regulatory framework, in combination with an implicit interest rate, associated with the potential employment performance loss in productive activity of the business unit.

The indicative terms of time loss obligations consist of the following obligations:

- **Information Compliance Obligations**: Include time spending by the management or employees for the preparation, correction and communication of the necessary information, the duration of the meetings with the competent authorities, internal conferences etc.
- **Substantial Compliance Obligations**: The time spent by the management for tax compliance, consultation with financial stockholders in order to finance investment projects in compliance with the regulatory change, the planning of training programs due to legal framework changes etc.

While opportunity cost is being calculated according to the same methodology that has been adopted by the respective stages of the SCM or RCM, implicit interest rate is being calculated by the survey team on the basis of: a) the interbank interest rate in € (EURIBOR) for business deposits, or b) the ratios of net operating profit of the typical firm.

The process for opportunity cost calculation includes the following steps: a) Determination of total time loss (T_{tw}), b) Definition of costs associated with time loss, c) Determination of implicit rate of interest (i_i) and d) multiplication of the implicit interest rate (i_i) on time loss (T_{tw}) and labor and management cost (PC).

$$OC_{tw} = (T_{tw} \times PC \times)(1 + i_i) \quad (1)$$

Where

$OC_{tw} = Adjusted\ Opportunity\ Cost\ due\ to\ time\ loss,$

T_{tw}= *Time loss (workdays)*

$i_i = implicit\ rate\ of\ interest\ on\ deferred\ payement,$ *(weighted average cost of capital, WACC)*

$PC = Labor\ \&\ staff\ management\ cost$

2.1.3. Typical Firm selection - (S.C.M. - Phase 2 - Step 10)

A major challenge refers to the sample representativeness during the application of A.B.M.s, an increased estimation's accuracy could be fostered through the adoption of a

stratified random sampling process[1] for the homogenization of the population and according to the population's characteristic in interest.

Therefore, the phase 2 - step 10 of the International SCM is being amended through the adoption of the following sub-steps.

1. Data collection on specific population characteristics from official sources, associated with the regulatory burden under survey (e.g. financial performances & outcome, size type, geospatial type e.t.c.).
2. Definition of specific stratification scales for the population, according to the characteristic under survey. Specifically, the population is divided into non-overlapping groups/layers according to the characteristic under survey. During stratification process, the researchers calculate the weight of each group in the total population ($W_i = {}^{N_i}/_{N}$) $W_i = {}^{N_i}/_{N}$[2]. For the determination of the number of *m* layers to be selected, significant differences among the true mean in stratum *i* (μ_i) in accordance with minimized true variance (σ_i^2) should be also taken into account.
3. The size of the required total sample (*n*) is determined by the degree of confidence with which the estimation $\bar{X}_n = \sum_{i=1}^{m} W_i \bar{X}_i$ $\bar{X}_n$ ($\bar{X}_n = \sum_{i=1}^{m} W_i \bar{X}_i$)of the true mean μ is not far than a given value $e = \bar{X}_{st} - \mu$ e ($e = \bar{X}_{st} - \mu$)of sampling error, that is, the problem may be stated as "what should be the size (*n*) of the stratified random sample so as the following confidence level be true?" (statistical function 2):

$$P(|\bar{X}_n - \mu| \leq e) = 1 - a \tag{2}$$

The determination of the sample size (*n*) ensures a given value V for the variance of the sampled mean ($V(\bar{X}_n) = V$). Thus, the statistical function for the calculation of the sample size (*n*) is given by the following relation (statistical function 3):

$$\mathrm{n} = \frac{n_0}{1 + [\sum_{i=1}^{k}(N_i/N)\sigma_i^2]/(\mathrm{NV})}$$

where

$$n_0 = \frac{1}{\mathrm{V}} \sum_{i=1}^{k} \frac{(N_i/N)^2 \sigma_i^2}{W_i} \tag{3}$$

Where:
n= the size of the stratified random sample, $n=n_1+n_2+\ldots+n_m$
N_i*=units of group or stratum i, i=1,2,…,m,*
N=total population, $N=N_1+N_2+\ldots+N_m$.

4. Survey team verifies the representativeness of characteristic(s) under survey in different stratification layers, calculating also the representative rate of the characteristic(s) in the total sample.

5. In each group/layer via a random sampling method or random numbers generation method we take a random sample. For this sample, an estimator of the mean and the

[1] *The stratification compared with simple random sampling, has less dispersion for the estimator of the population mean (a mean estimator with significantly smaller variance than the random sampling).*

[2] *Where Ni=units of group or stratum i, i=1,2,…,m, N=total population, N=N1+N2+…,Nm.*

variance of the characteristic (q) on survey are being calculated (statistical functions 4 and 5):

$$\bar{X}_n = \frac{1}{n}\sum_{i=1}^{k} n_i \bar{X}_{n_i} \quad (4)$$

$$\sigma_{\bar{X}}^2 = V(\bar{X}_n) = \sum_{i=1}^{k}\left(\frac{N_i}{N}\right)^2 \frac{\sigma_i^2}{n_i}\left(1-\frac{n_i}{N_i}\right) \quad (5)$$

6. The researchers verify whether the mean and the variance of the characteristic(s) of the sample are within the confidence interval (hypothesis statistical testing through one-sample test). In those cases where there is a discrepancy, the researcher proceeds to a resampling[3]. For the determination of the confidence interval it's used a normal distribution function with known mean and variance wherein.

   For a typical normal distribution we define [z(a/2), z (1-a /2)], in which z belongs to a given probability (1-a).
7. Where, according to survey team's estimations, risk factors exist that may limit business unit response, an indicative percentage increase of the sample [indicatively + 20% or + 30%] could be set via the sampling process of sub-step 5, addressing effectively situations of non-response to the questionnaire interviews.
8. Interviews conducted in the whole sample of business units selected on the sub-step 5.

2.1.4. Integration & Standardization of time and resources (S.C.M. - Phase 2 - Step 12)

The need for standardization of the "compliance time" on each sub-categories of costs, could be achieved through the use of descriptive statistical measures (mean and standard deviation), which are obtained for each different stratified sample. Statistical outliers business units may be excluded from the sample, in cases where the necessary for compliance time compliance exceeds a certain percentage (x%) from the standard deviation of the sample's layer (σ).

For the identification of statistical outliers in a normal or stratified distribution commonly used the methodological criteria of: i) Chauvenet's criterion, ii) Grubbs' test for outliers, iii) Dixon's Q test or iv) Peirce's criterion.

Survey group may for practical reasons also easily use the method of interquartile range (interquartile range method), where Q_1 and Q_2 are the lower and upper quartiles respectively, and k a variable where k≥0, then the outliers are those observations that are outside the range (statistical function 6):

$$[Q_1 - k(Q_3 - Q_1), \quad Q_3 + k(Q_3 - Q_1)] \quad (6)$$

2.1.5. Export valid data at the national level (S.C.M. - Phase 3 – Step 13)

For the process of extrapolation to the population of a regulatory cost under survey, the S.C.M. step 13 is being amended as follows:

a) After total cost calculation according to the stratification of the sample scales (Phase 2 - Step 10) and the integration & standardization of time and resources occurred (Step 2 - Step 12), follows the calculation of the total regulatory cost to the population of the layer ($LTRC_i = \sum_i RC_i$ ($LTRC_i = \Sigma_i RC_i$, RC = regulatory cost) based on the usual statistical properties (statistical functions 7 and 8):

[3] *We accept that the population follows the normal distribution or that any deviation is marginal and do not affect the estimator.*

$$\overline{TRC_i} = \frac{1}{n}\sum_{i=1}^{k} n_i \overline{TRC_i} \quad (7)$$

$$LTRC_i = \overline{TRC_i} \times n_i \quad (8)$$

b) For the estimation of the average total regulatory cost of the entire population and its consequent variance, the survey team use also the above a weighted average statistical function of the $LTRC_i$ with their weights $W_i = {}^{N_i}/_{N}$ (statistical function 9):

$$PTRC_i = \sum_{i=1}^{n} (w_i \times LTRC_i) + \cdots + (w_n \times LTRC_n) \quad (9)$$

Where:
n= the size of the stratified random sample, $n=n_1+n_2+\ldots+n_m$
$PTRC_i$ = Population Total Regulatory Cost
w_i = The weight of each group in the total population

2.1.6. Adjustments for International Comparison (S.C.M. - Phase 2 - Step 15)

For the adaptation of the administrative and substantive compliance cost in terms of international comparison, the survey team implements the method of purchasing power parity (PPP) with the adaptations and modifications adopted by the OECD and Eurostat at the S.C.M. Step 15. Specifically, the procedures followed include:

- **Step 1:** Linking of the calculated different types of administrative and compliance costs with EUROSTAT collective services categorization (COFOG 98).
- **Step 2:** Linking of the calculated at Step 1 administrative and compliance costs with the public services types of actual cost for which the estimated purchasing power parity (PPP) exists at the lowest level of expenditure aggregation (Basic Heading).
- **Step 3**: PPP values on public services types and for each different type of administrative and compliance costs, provided by OECD – Eurostat data in accordance with EKS PPP methodology, where an indirect PPP between two (2) countries is obtained by calculating it indirectly through the PPP acquired from Step 2. The calculation formula for EKS is as follows (statistical function 10):

$$PPP_i = EKS_{\frac{A}{B}} = \left\{ F^2_{\frac{A}{B}} \times cF_{\frac{A}{B}} \right\}^{\frac{1}{3}} \quad (10)$$

Where:
EKS = the geometric mean of the Purchasing Power Parity (PPP) and all indirect PPP between a pair of countries (A and B).
$F_{A/B}$ = *The formula for calculating Fisher's PPP, which is the geometric mean of the Laspeyres type PPP and Paasche type of PPP.*
PPP_i = *PPP for category (i) costs*

If there are no details then for the calculation it is used the aggregate value of PPP for the respective categories BH Code 14.01.14.1 / or 14.01.15.1, with corresponding weights according to the classification of individual compliance costs.

- **Step 4:** Calculation of administrative and substantive compliance cost in terms of PPP, through the following equation (statistical function 10):

$$TC_{PPP} = \sum_{i=1}^{n} (C_1 \times PPP_1) + \cdots + (C_n \times PPP_n) \quad (11)$$

Where:

TC_{PPP} = total compliance costs under PPP conditions
C_n = compliance costs for category (n) costs,
PPP_n= PPP for category (n) costs

3. Discussion and Conclusion

With the proposed amendments into SCM and RCM structure, the new hybrid ABM, corresponds effectively into certain challenges, referring mainly to: a) a better regulatory cost segregation and typical firm selection procedure, b) a new substantive and hassle cost module development, c) the integration and standardization of time and resources, d) public administration weaknesses and regulatory framework efficiency evaluation, e) amendments to the extrapolation process to the population, f) adjustments on PPP methodology base for international comparison capability.

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