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Strategy, Institutions and Sustainable Country Adaptation

OR

“Effective Country Adaptation (CA) to Threats/Challenges and Opportunities: A National and Government Strategy (N&GS), Institutional and Strategic Innovation Policy(SIP) Perspective”

Morris Teubal¹

Acronyms and Key Words

CA-Sustainable Country Adaptation or simply ‘Country Adaptation; ONG-Overarching National Goal; N&GS-The set of formulated National Strategic Priorities (NS) and the subset of Government Strategic Priorities(GS); “K”- Knowledge; “I”-Implementation; N&GS-“K” – The Knowledge embodied in N&GS; N&GS-“I”- the subset of N&GS implemented on the ground (endogenously or through policy); GS-Government Strategic Priorities i.e. the subset of N&GS whose implementation on the ground depends on Policy i.e. is blocked by Market Failure (MF) and/or System Failure (SF); NGOs-Non Governmental Organizations; SF-System Failure; VoD-Valley of Death; SIP-Strategic Innovation Policy [SIP I-directed to ‘market forces’; SIP II-directed to ‘empowerment’ of individuals and civil society; SIP III-directed to the Restructuring and/or Re-invention of Government (Structure and/or Operations) and/or the State; NSC-National Strategic Council; MOF- Ministry of Finance (Budget Bureau); CB-Central Bank; AI-Artificial Intelligence; BS-Business Sector; SMEs-Small and Medium Sized Enterprises; NIS-National Innovation System

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THREATS/CHALLENGES/OPPORTUNITIES: A N&GS AND SIP PERSPECTIVE**

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EXTENDED ABSTRACT

Background

New threats & shocks (and Opportunities) in their Global and Domestic Environment increasingly pose significant Challenges for countries to adapt to. Examples are Disruptive Technologies (Christiansen 2002) such as Artificial Intelligence, Deep Learning, Robotics and 3D Printing with negative implications concerning continued Unemployment, Income Inequality (Picketty 2014, 2015), Inclusiveness & Social Resilience and even Personal Security; Climate Change; wars + new lethal weapons +Data Security/Cyber vulnerability; new health threats/challenges, "System Failures" derived from enhanced complexity of economic, social, political and legal systems and associated difficulties (both in ascertaining and applying adequate regulatory systems); weak & ineffective government systems due to 'short termism' and 'politics' or weak capabilities and/or out-of-date policy perspectives or misplaced 'objectives', etc.

The above Threats plus the enhanced importance of Radical/Type 2 Uncertainty (Taleb 2007) pose new strategic challenges which countries (and Governments) find difficult to adapt to i.e. the outcome being "weak CA".

Country Adaptation (CA) and the CA System

Effective Country Adaptation to such (and other) Threats/Challenges/Opportunities is key for the steady well-being of its inhabitants. It involves much more than reasonable performance today in areas such as GDP/growth, Inflation, Debt Reduction and Productivity; and is likely to be a much more complex affair than one that focuses on Macro-Economic policies while ignoring the 'strategic' dimension of CA.

Such an approach underestimates the criticality of an evolving set of specific/structural investments and associated institutional changes and policies required to deter future reductions in GDB and citizen welfare [for an extreme example of avoiding such inter-temporal System Failures, see Finland's policies with respect to nuclear waste, The Economist, April 2017. Thus over and beyond Macro-Economic objectives [see Part II. Section 10] a Country Adaptation approach should consider Overarching National Goals (ONGs) and associated *Priorities/Priority areas* such as (or related to) 'Employment' & 'Inclusiveness and Social Resilience'; 'A Flexible/non-fragmented Government/Political System' who supports 'Liberal Values'

& ‘Justice for all Citizens’; ‘Attempting to reduce Global Warming’; ‘Minimizing the impact of Floods & Draughts’ and ‘Avoiding & Confronting Famine’; ‘Avoiding/Dealing with International Conflicts’; ‘Data/Cyber Security’; ‘Confronting New/Existing Health Hazards’, ‘Updated Education and Training’; etc (some these are not be easily measurable).

Throughout, I attempt to link CA with ‘Global Adaptation’. I argue here that effective “Country Adaptation” to Threats/Challenges/Opportunities should involve or should consider the following-

- Country Vision and a related set of frequently inter-linked Overarching National Goals (ONGs, which might change when a specific country is confronted with new Threats/Challenges/Opportunities (the outcome of broader Global Changes e.g. Globalization, Climate Change & Technological Change);
- Each ONG should be linked ‘downstream’ to one or more knowledge-intensive & policy relevant Strategic Priorities belonging to an evolving set of N&GS;
- A Strategic Priority [whether ‘National’ or ‘Government’, and in contrast to a simplistic and not fully developed ‘Nominal’ Priority] is a Body of Knowledge involving Background, Narrative & Past Events, Forecasts & Future Scenarios; Links with other Strategic Priorities; the Implementation Profile (including key issues and decision points), and the associated Recommendations and ‘General Policy Objectives’ ; and

for each Government Priority

- ‘Downstream’ Policy Design and Implementation on the Ground by policy makers-- which should be consistent with priority-setters’ Implementation Profile and General Policy Objectives (a fact requiring not only close priority-policy coordination but institutional change & coordination among key institutions/organizations—see Part II, Section 11).

Throughout a distinction should be made between i) N&GS-“K” (the ‘Knowledge Component’ of a N&GS resulting from ‘upstream’ priority formulation or priority setting in what could be termed the country’s ‘Strategy and Policy’ System, and ii) N&GS-“I” (its priority ‘Implementation Component’ “downstream” in terms of policies-including Strategic Innovation Policy(SIP)-on the ground’).

Dynamic Sequence 1: Creation of a Simplified CA System^{2 3}

***Threats/Challenges/Opportunities*→ *Identifying and formulating a relevant set of ONGs*→**

→*Autonomous Formulation of a N&GS-“K” by priority setters* →

***General Policy Objectives (for each Government Strategic Priority)*--→ --→**

-→*Priority-Policy Coordination + mutual feedback (Pri. Setters and Pol. Makers)* →

-→*for each GS-Specific Policy Design & Implementation on the Ground*→

→*Country Adaptation*

The above sequence describes-in a very simplified way- **'creation'** of a CA System in response to a particular set of new Threats/Challenges/Opportunities. A related sequence would describe the **Strategic Re-orientation** which follows important *new* Threats/Challenges/Opportunities (actual or expected/forecasted), the outcome being a **'modified'** CA system. It is likely that both (but especially the former) require at least a measure of 'Re-invention of Government'.

Close interaction and coordination between (autonomous) priority setters (e.g. the NRC & its 'working groups in each priority area) and policy makers (MOF, CB and individual Ministries/Secretariats) on the other; as well as good inter-Ministerial coordination –are necessary conditions for effective CA. This follows from their impact on 'downstream' implementation of the N&GS and for their crucial role in any subsequent 'Strategic Re-Orientation'.

While a 'Flexible Political System' could help it should be complemented by another ONG entitled "A Strategic and Entrepreneurial Government (and/or State)" ⁴. This follows from the possibility that implementing such re-orientation 'on the ground' might require an important set of new and

² What follows is a simplification. In Part II (Sections 10 & 11) I introduce a National Strategic Council (NSC) whose *first* task is to orchestrate creation and continued updating of a N&GS. By explicitly dealing with N&GS(or 'Strategy')<—>Macroeconomic coordination through 'institutional' interaction and links with the Ministry of Finance/Budget Bureau (MOF) and the Central Bank (CB) it will play a key role in CA. **It also ignores the possible links with SIP as well as interactions with the political process (which also appear in the text).**

³ Also, for expositional reasons the Dynamic Sequence that follows ignores feedback effects and other non-linear phenomena such as the impact of 'exogenous' events like a new & significantly different set of Threats/Opportunities (some of these will appear in the full paper). It also ignores the possible links with SIP as well as interactions with the political process (which also appear in the text).

⁴ Such an ONG is related to (but not identical) with the *Entrepreneurial State* of the literature (Mazzucato 2012, Bonvillian several articles). I also contend that frequently SIP II could play important role in the above processes e.g. by reducing the risks of **CA-unfriendly** 'political developments' resulting from the economic and social consequence of sharp changes in the set of Threats/Challenges facing the country e.g. immigration, a sharp deterioration of the terms of trade leading to unemployment, etc.

coordinated priorities and policies including new patterns of 'policy inter-connectedness'. Note that even creation of a NSC and 'formulation' of a N&GS *together with the institutional underpinnings assuring 'Autonomy' and 'Authority'* would-in all likelihood- require Government to re-invent itself (similarly with significant 'Strategic Re-Orientations' situations triggered by important changes in the set of Threats/Opportunities).

Priority-Related System Failures (SFs)

From the perspective of this paper, Venezuela and Argentina are examples of significant CA-related System Failures due to absence of (or imperfections in) their evolutionary path during the last decade or two. Their dynamic weaknesses (when compared with Dynamic Sequence 1 above or Dynamic Sequence 2 below⁵) seem to have resulted both from 'failed policies' resulting both from a very limited view of the requirements for effective Country Adaptation to new Threats/Challenges/Opportunities and from weaknesses in their social, economic, and political systems.⁶ Other countries including some in Europe might have experienced CA-related System Failures. A System Failure in Israel relates to its political un-willingness to significantly improve and extend Education and Training (especially to and for the poor who represent a high proportion of overall population by OECD standards). Another is its failed response to new opportunities for achieving peace (see among others Y. Dror's seminal articles in Israel's 'prime' newspaper, 'Haaretz'). This paper will focus on-and provide around twenty examples of- 'priority-related' ['Strategic'] System Failures spanning a number of countries and areas.

Note that this paper's view of System Failures leading to 'failed policies' derives from policy systems which—due to 'politics', non-awareness of the changing policy making requirements, 'corruption' or 'bureaucracy & rigidities' in the Government/Political Systems' (and/or in their institutional underpinnings)—are not 'strategic' or strategic enough. An example could be formulating a '*static*' rather than a '*continually changing*' set of i) National and ii) Government strategic priorities. Moreover, they might be ignoring (i) Inter-Priority links ('upstream in the country's 'Strategy and Policy System') and ii) 'policy' inter-connectedness patterns and links ('downstream' in such a 'Strategy and Policy System').

We also argue that frequently '*Strategy and Policy System*' failures are the outcome of an inappropriate and/or outdated institutional setting. This in turn could be the outcome of Innovation Policy's 'failure to adapt' by making it more *strategic*. By way of example, SIP III's aim could include its contribution to the *changing institutional underpinnings of the emerging 'Strategy and Policy System'* e.g. by defending "an Autonomous NSC and its Authority to defend,

⁵ At least in relation to the general conceptual framework (rather than the 'specifics') of such Sequences

⁶ Other countries or 'countries in the making' which seem to be in or close to a *Valley of Death* (which-due to Path Dependence, may be very difficult to overcome), will be mentioned in the main text of the paper (such a Valley of Death may be the outcome of continued non CA behavior).

interact and coordinate with other organizations 'downstream' [and 'middle-stream'] in such a system.

Policy Inter-connectedness and its contribution to Country Adaptation

Searching for and implementing effective policy inter-connectedness patterns may be critical nowadays e.g. as part of the response to the growing Unemployment resulting (or which may in the future result from) AI, outsourcing, and other factors such as changes in the competitive advantages of key industries or sectors. Over and beyond traditional policies such as wage flexibility and lowering the cost of employing and firing workers [and some Vocational Training, which not always is sufficiently updated], a 'policy inter-connectedness' view will also consider other policies which overall enhance 'Inclusiveness and Social Resilience' including through positive impacts on Employment. Thus side by side with policies which directly focus on creating new jobs, other indirect impacts may result from continuously updated 'Vocational Training Policies', 'Industrial & Innovation Policies' directed to upgrade existing (or create new) sectors/industries; enlightened 'support of SMEs and entrepreneurship'; 'Pre-school learning and improved Educational methods' (including personalized learning and adaptation to different ethnicities), etc. And last but not least, 'Empowerment of the less fortunate members of society', including the poor and immigrants (SIP II). Needless to say their success might contribute to creating the political conditions for the continuation of CA policies in the future.

A key issue is the political feasibility, willingness and capacity of Governments to undertake the CA policies mentioned above (as well as others that have not been mentioned) such as policies associated with 'Health', 'Housing', 'Personal Security,'etc.

SIP II deals with 'innovative' & integrated provision of Government Services (preferably without intermediaries) in numerous areas such as Health, Education, Subsidies/Loans & Advice, etc. Such services would be specifically directed to a variety of different socio/economic/ethnic groups including Immigrants (where their easy access could-in certain circumstances-make such services more effective from an immigrant absorption point of view). Their CA role may also be indirect since--by dealing with Unemployment and thereby contribution to avoiding the 'Political Fragmentation' that may follow new shocks/threats it might set the base both for continued Strategic Re-Orientation and for the steady implementation of CA friendly policies.

More on Strategic Innovation Policy (SIP)⁷

⁷ I focus on SIP II and SIP III only, since these seemed to have been least 'recognized' by what could be termed 'Traditional Innovation Policy'.

Over and beyond Traditional Innovation Policy which focuses on supporting 'technological innovation' undertaken largely by and for market forces in the presence of Market Failure⁸, Strategic Innovation Policy also supports 'social/services' innovations by and/or for other agents (including individuals & civil society organizations such as NGOs) directed to empower the less fortunate members of society(SIP II) as well as Strategy & Policy/services innovations – including organizational and institutional innovations--by and/or for public sector agents or organizations including the Government itself (SIP III).

A small sample of Types of innovation and Areas supported by SIP II and SIP III follows:

- (i) 'Creating the Institutional and organizational underpinnings for an autonomous, knowledge-intensive process of setting National and Government Priorities by newly formed entities without (or with minor) 'political interference (including likely "Strategic Re-Orientations" dictated by new Threats/Challenges/Opportunities)'(Type);
- (ii) Innovation support directed to facility the process of priority setting as well as identification of patterns of inter-priority links (Area);
- (iii) Innovations in Management, Organization and Institutional set-ups both off/for firms & market forces & for Government entities such as Secretariats/Ministries/ Policy Agencies (Area);
- (iv) Enhanced access, enrichment and overall coordination of Government services tailored & directed to individuals & socio-economic/ethnic groups as well as to civil society organizations(Area)
- (v) Promoting Visualization, 'Qualitative' Pattern identification, Super-forecasting (see Tetlock and Gardner 2015) and Scenario Building & analysis of alternative futures (Type);
- (vi) Techniques and procedures for 'robust' policymaking under conditions of strong and even Radical/Type 2 uncertainty, see Lempert 2013 (Type) (Area) ; etc
- (vii) Innovations supporting Focused Search, Identification,, Classification and Updating of inter-priority links and policy inter-connectedness patterns (Area); etc.

Most if not all the 'Social/Services' innovation types are either non-physical or the non-physical part is key. They include e.g. information, various types of "routines" (see Nelson and Winter 1982), and Algorithms & Software among others. These and other innovative 'technologies/techniques' underlying SIP and SIP Types could (or

⁸ While Market Failure was typically associated with business R&D there were other technology-related functionalities associated with MF such as *engineering, design and startup of new process equipment*

might increasingly) rely on Artificial Intelligence(AI), Deep Learning, Big Data, Neural Networks and Augmented Reality.

Note that a very important user of SIP would be the Government who would be 'providing (through SIP II) & 'receiving' (through SIP III) innovative services' in the context of Re-inventing itself with the aim of enhancing its role in continued CA (SIP III).

Dynamic sequence 2 which follows complements Dynamic Sequence I by focusing on the possible roles of SIP II and SIP III on effective CA⁹.

Dynamic Sequence 2: Impacts of SIP II and SIP III on CA/Strategic Re-Orientation¹⁰

New Threats/Challenges-→SIP II→"Improved CA-friendly Political Conditions"

→ SIP III *: *Institutional & Organizational Changes* →SIP III a→

→N & GS-"K" (*'Strategic Re-orientation -knowledge component*) →

-→SIP III **: *Institutional & Organizational Changes*-→ SIP III b

→ *Inter-connected 'Downstream' Policies (& associated organizational and institutional changes)*

→ *Continued CA*

Simbols

SIP III *- Innovative Support of Institutional and other Pre-Conditions [*'autonomy' in setting most stragic priorities without political interference*)for a continuously updated N&GS;

SIP III a- Innovative Support of 'Knowledge Creation' in upstream Strategy formulation;

SIP III **- Innovative Support of changes in the institutional, organizational & behavioral underpinnings of the policy formulation and implementation process;

SIP III b- Innovative support of Policy Implementation on the ground

Final Remarks Part I

The paper deals with a relatively extensive analysis of what a National and Government Strategy is all about. Over and beyond the Dynamic Sequences of Part II of this monograph (some of them *in process*) future work will focus on creating a small number of 'stylized' Dynamic Sequences -each one adapted to a particular country type. It will also summarize and justify the 'qualitative orientation' of the methodology utilized, particularly for situations where the global system is undergoing a process of 'Paradigmatic Change'. I will also speculate how, in these troubled times, the paper's framework of

⁹ As with Dynamic Sequence 1, it ignores the key roles played by the NSC, MOF and CB in promoting continued CA. See also Part II of this monograph

¹⁰ Future work will enrich the type and impacts associated with Dynamic Sequences 1 and 2 by considering feedbacks, exogenous changes and calendar time.

analysis might be useful to individual countries searching for new approaches to strategy & policy making. Some implications for Global Adaptation will also be pointed out.

Section 1: New Threats/Challenges and Opportunities Confronting Countries¹¹

New Threats & Shocks (and Opportunities) in their Global and Domestic Environment increasingly pose significant Challenges for countries to adapt to. Examples are

***Disruptive Technologies (Christiansen) such as *Artificial Intelligence, Robotics, Deep Learning, Augmented Reality and 3D Printing* with negative implications concerning continued Unemployment, Income Inequality (Picketty 2014, 2015), Inclusiveness & Social Resilience and even Personal Security;**

***Climate Change leading to *Higher Temperature, Large Scale Fires, Draught, Floods, Rising Sea Levels, Famines* etc which are bound to continue;**

***Wars + New Lethal Weapons +Data Security & Cyber Warfare Issues e.g. ‘The Power of One’ by Thomas Friedman (New York Times) and numerous publications concerning country and Government Cyber vulnerability in a wide variety of areas;**

***New (actual/expected) Health Threats/Challenges such as *Food/Water Contamination, Drug-resistant Bacteria/Viruses* (The Economist May??, 2016) as well as hazards associated with the production, transportation, storage and use of certain chemicals;**

***Immigration**

*****“System (& Government) Failures” due to failure of Governments to design/implement the increasingly sophisticated policy making mechanisms required to effectively confront the above mentioned accelerated appearance of new Threats/Challenges confronting countries. The challenge is even greater once it is recognized that country (and global) economic, social, political & legal systems are becoming increasingly ‘complex’.**

The above failures in policy making could lead to inadequate and ‘politically (rather than ‘knowledge’) motivated regulatory systems such as those concerning the Financial Sector of certain Advanced and Middle Income Economies during the first decade of this century.

¹¹ Throughout, the term ‘Threats’ and ‘System Failures’ refer or relate to individual countries and to their process of ‘Adaptation’

Given the above background, this paper argues that, increasingly, effective policy making of countries should be characterized by three interrelated characteristics. ***First***, it should truly involve a ***Strategic Approach*** to National & Government Priorities and to Government policies i.e. a knowledge intensive approach where the continuously updated process of 'priority-setting' directed to define the objectives of 'downstream policy making' is "sufficiently autonomous of the political system". ***Second***, while aiming at the inter-temporal welfare of a country's inhabitants, it recognizes the importance of an explicit ***Country Adaption (CA) function, approach and system*** which, while also involving Macroeconomic Priorities/Policies, would also ***crucially depend*** on "structural investments" in key strategic priority areas associated with the above mentioned Threats/Challenges/Opportunities. EFFECTIVELY MERGE WHAT FOLLOWS IN RED WITH THE ONGOING TEXT Effective Country Adaptation to such (and other) changes is key for the ***steady well-being*** of its inhabitants. It involves much more than reasonable performance today in areas such as GDP/growth, Inflation, Debt Reduction and Productivity; and is likely to be a much more complex affair than an effort which strongly focuses on Macro-Economic policies which underestimates the criticality of an evolving set of specific/structural investments and associated policies required to confront the above Threats and Challenges and/or to deter future reductions in GDB and citizen welfare [for an extreme example of avoiding such inter-temporal System Failures, see Finland's policies with respect to nuclear waste, The Economist, April 2017]. ***Third***, the tasks of the above "Strategic Approach" should also include (i) new capability development e.g. concerning country Vision and Overarching National Goals (ONGs) underpinning the CA function; for priority setting (and to some extent, policy making); and (ii) concerning the institutional setting underpinnings both for the above as well as for effective/knowledge based/ policy making on the ground.

System Failures (SFs) result from ***weak and ineffective*** Governments or Government/Political Systems which- in addition to weak capabilities and/or out-of-date policy perspectives or misplaced 'objectives'- focus on 'short termism' and 'politics' [i.e. give and take in the political market] if not on outright 'corruption'.

To summarize it could be stated that the above Threats pose **new strategic challenges which countries (and Governments) find difficult to adapt to i.e. the outcome being "weak CA"**. To this must be added-as an outcome of the enhanced complexity and possibly that of other factors such as those mentioned above- the enhanced importance of Radical/Type 2 Uncertainty (Taleb 200?) affecting both the global and domestic environment of countries.

Section 2:Country Adaptation (CA) and the CA System

Effective Country Adaptation to such (and other) changes is key for the **steady well-being** of its inhabitants. It involves much more than reasonable

performance today in areas such as GDP/growth, Inflation, Debt Reduction and Productivity; and is likely to be a much more complex affair than an effort which overwhelmingly focuses on Macro-Economic policies.

A purely Macro approach to intertemporal welfare of a country's population significantly underestimates the criticality of an evolving set of specific/structural investments and associated policies required to confront the above Threats and Challenges. It also tends to underestimate the required underpinnings both in terms of knowledge/capabilities and in terms of the institutional, organizational and 'political' conditions for their effective articulating and 'downstream' implementation on the ground.

An alternative Country Adaptation approach to the inter-temporal welfare of a country's population (which also includes a Macroeconomic component) should-methodologically speaking- consider both monetary and non-monetary impacts in at least three levels of analysis i.e. macro, meso and micro. This would mean visualizing qualitatively and estimating quantitatively [as far as this is possible] the 'Social Benefits & (Alternative) Costs' not only of GDP, Inflation, Debt and Employment [which in principle are measurable] but also considers other Overarching National Goals (ONGs) such as 'Inclusiveness and Social Resilience', 'Reduced Health Hazards', 'Updated Education and Training', etc some of which might not be easily measurable¹².

Thus, when considering protecting the Eastern Seaboard of the US from floods (which could be a Strategic Priority for that country resulting from the rising sea level Threat)-a Country Adaptation perspective should consider both macro or macro-meso level variables such as expected reduction of 'damage' and 'loss of life' and even 'employment effects' (direct and indirect), etc as well as meso-micro spillover effects in the short-medium and long term resulting e.g. from enhanced industrial activity and the deployment of new technologies and associated 'learning' and even 'innovation' impacts which might contribute to related infrastructural work in other coastal areas.¹³

If the above makes sense, a key theoretical issue for Economists and Social Scientists is to better understand the nature and composition of effective Adaptation, both of Countries (the focus of this paper) and of the Global System. While much remains to be done and still is 'in process' and is quite challenging, I do refer in the paper to a CA function and a CA system; how they

¹² From a Country Adaptation Perspective, Social Benefits and Social Costs depend on Overarching National Goals (ONGs) affecting Country Adaptation (CA) see below. They could be Monetary and/or non-Monetary; and the conversion of the latter (including important 'qualitative' ONGs) would not always be possible let alone easy. This of course raises questions concerning '*measuring Country Adaptation*'; and, when this is not possible, how to compare **two alternative** profiles of CA.

¹³ **I hereby anticipate a key aspect of the approach of this paper, namely, that CA is closely related to a National and Government Strategy (N&GS), i.e. set of continually updated, and inter-linked, National and Government strategic priorities.**

relate to each other and, for NGOs related to ‘Global Issues’ such as Climate Change, War, Immigration, etc-- their links with ‘Global Adaptation’. While the Economists’ Social Welfare Function (Arrow 19XX) was useful in the past, especially in ‘normal times’, it-like the predominant role of Macro Economic indicators such as GDP/growth & Inflation as a measure & main determinant of inter-temporal, collective welfare-would seem to be less relevant nowadays (as it most probably was in the past during extreme periods of Crisis when countries face multiple Threats such as those associated with War)¹⁴.

I argue here that effective “Country Adaptation” to Threats/Challenges/Opportunities should involve or should consider the following-

- Country Vision and a related set of “inter-linked” Overarching National Goals (ONGs, such as “Inclusiveness...” and/or “An Innovative Society” and/or “A strategic and entrepreneurial State”);
- The definition and characterization of each ONG includes links/relationships (including mutual ones) with other ONGs;
- Moreover, each ONG could be linked ‘downstream’ to one or more Strategic Priority;
- Each Strategic Priority e.g. “Developing *New Industry “X”*” may be related to other Strategic Priorities such as “Updated, high level Vocational Training’ and to priorities in the ‘Education’, ‘Innovation’ and even ‘Immigration’ areas;
- Strategic Priorities should-by definition- be continuously updated. The set of such priorities for a particular country constitutes the set of National Strategic Priorities; while the sub-set of the latter involving either Market Failure and/or (priority-related) System Failure constitutes the set of Strategic Government Priorities)¹⁵;
- Strategic Priorities should be knowledge-intensive & policy relevant. Related to this, a distinction should be made between the ‘Knowledge Component’ of a N&GS (which relates to ‘priority formulation’) and its ‘Implementation Component’(which relates to ‘priority implementation in terms of policies on the ground’)¹⁶;

¹⁴ The violent Threats/Challenges (and Opportunities) facing countries nowadays, due both to the aftermath of the Global Financial crisis of 2008 and to other Globalization/Wars/Climate Change/destruction of the environment facing them, **would seem to justify such an assertion**. Still, much remains to be done to better understand the nature and the institutional framework supporting effective CA e.g. the link between CA and what could be termed ‘Global Adaptation’; the link between country Vision and its set of ONGs (both its ‘objective’ and ‘subjective’ components), etc.

¹⁵ Government Priorities are National Priorities whose implementation on the ground is blocked by Market Failure or System Failure (for the latter see Teubal 2016a). Also, for many if not most priority areas, it would be impossible to effectively formulate a Government Priority without having previously formulated the ‘corresponding’ National Priority (one key reason is that in many if not most areas, before knowing what is a National Priority one cannot state whether it is also-or is not- a Government Priority). The expression **N&GS** indicates a country’s set of **National Strategic Priorities** and its set of **Government Strategic Priorities**

¹⁶ This distinction seems to parallel that mentioned by A. Sen in relation to the notion of Justice (A. Sen 20??, pp.). **In my opinion and based on A. Sen’s insights, a key CA- friendly ONG should be “An Inclusive & Non-**

- **A Strategic Priority [whether ‘National’ or ‘Government’ and in contrast to a ‘Nominal’ Priority¹⁷] is a Body of Knowledge involving Background, Narrative/Narratives and future Forecasts/Scenarios; Links with Other Priorities; and—certainly for ‘complex priorities’—Recommendations concerning *choices between alternative priority specifications and between alternative implementation profiles*;**
- **Moreover, each ‘complex’ “Government” Strategic Priority should end with a ‘General Policy Objectives’ section which is strongly linked to the above “Choices”; and**
- **‘Downstream’ Policy Design and Implementation on the Ground by policy makers which should be consistent with priority-setters’ General Policy Objectives section (a fact requiring close priority-policy coordination)¹⁸.**

Following a Country Adaptation perspective means that, while Governments could influence policy making on the ground (both as regards feasibility and details of policy design and implementation), they should abide by the ‘General Policy Objectives’ set by the autonomous & ‘knowledge-oriented’ priority setters/formulators who lie ‘upstream’ in the “Strategy and Policy System” of the country. Moreover, while Governments should largely avoid being directly involved in formulating National Strategic Priorities, there are some priorities e.g. maybe related to Defense where they might or should be so involved i.e. have a role even in setting General Policy objectives. However and in response e.g. to the ‘politics of the Defense Budget’ and the potential role of ‘Path Dependence’ in this regard- even in such areas independent and autonomous priority setting should play an important if not crucial role.

Box 1:A Simplified View of the Country Adaptation(CA) System

***Threats/Challenges/Opportunities-→ ‘Explicit Vision’ + Identifying and formulating
ONGs→ Identifying the relevant CA function-→***

Discriminatory Justice System which also supports ‘liberal values’ “. It would also be interesting to check how such an ONG could be linked to Sen’s view of individuals having many identities (and not only an ethnic & religious one).

¹⁷ In contrast to a ‘Strategic Priority’, a Nominal Priority has little beyond the Priority Name in terms of ‘specification’ and ‘process of implementation’, let alone of a ‘learned’ choice among alternative profiles of such specification/implementation (see Teubal 2017a, in process).

¹⁸ This does not mean that the Government will not have a say nor **that it might not have an influence on** policy making on the ground. **Situations where in-house Government knowledge and decision making might be crucial especially during violent Crisis and new Threats/Challenges accompanied by drastic reductions in the Budget, concerns ‘strategizing the downstream implementation of (Government) Priorities’.** This inevitably would lead to a ‘strategic notion’ of what is Alternative Cost from the National/Government perspective. While analyzing this goes beyond the limits of the present version of the paper, it is clear that success in defining and applying such CA-friendly Alternative Cost principles will very much depend on strong/virtuous interaction between ‘autonomous’ priority setters, policy makers and key officials of the country’s Budget Bureau (moreover, such principles will very much depend on the evolving patterns of *inter-priority links and policy connectivity*).

→Autonomous Formulation of a N&GS by “Priority Setters” →

General Policy Objectives (by “Priority-Setters”-for each **Government Strategic Priority**) --→

-→Priority-Policy Coordination + mutual feedback →

-→(“Policy Makers”: **Specific Policy Design & (Priority) Implementation on the Ground**→

→Country Adaptation ¹⁹

AVOID EXCESSIVE REPETITION IN THE NEXT TWO PARAGRAPHS

Vision & identification of ONGs; and even more so, the formulation of Strategic Priorities should, to a large extent, be an autonomous knowledge intensive process [mechanisms should be created to ‘protect’ them from overzealous Heads of State and Politicians], largely independent of the political process and –despite feedback and interaction with ‘downstream’ policy makers-even of Government itself. Such independence is not a one-shot affair, it would also have to exist whenever an updating or re-formulation of some “key” Strategic Priorities is required i.e. when confronted by new Threats/Challenges such that a ‘Strategic re-orientation’ would be necessary)²⁰. Note that ‘downstream’ policy making on the ground should be coordinated with “upstream” priority setters at least in the sense that specific policy design and implementation on the ground should be based on (and be consistent with) the above-mentioned General Policy objective.

Alternatively it could be stated that a well-functioning CA system (or ‘Strategy and Policy System’ backbone of such a system) requires not only coordination but close/virtuous interaction between the ‘upstream’ knowledge component of the N&GS (and associated ‘priority setters’) and its ‘downstream’

¹⁹ In a future draft I will comment on the nature of Vision and on its links with ONGs. The Box is supposed to give the reader a ‘sense’ of the changes or **transformations occurring during the process of Country Adaptation to a given set of Threats, Challenges and Opportunities. It involves** variables, phases and key relationships of the ‘Strategy and Policy System’ of **the Country concerned. Since it is a simplified &** purely ‘descriptive’ **representation it is far from being a** satisfactory representation of the Dynamics of CA, neither during the process of ‘creation’ **of the above system or during its ‘updating’(see below ‘strategic re-orientation’ in response to changed Threats/Challenges/Opportunities). Key simplifications are:** (i) a unidirectional/linear process with beginning and end; (ii) almost no feedback effects such as *Learning* or the endogenous generation of new Threats/Opportunities e.g. a **domestic** Financial Sector whose evolution leads to potential System Failures **associated with ‘Too Big to Fail’ situations or a dynamic SU-oriented high tech sector which generates new opportunities for SC/growth ;** and (iii) absence of unpredictable **or exogenous** events that **could accelerate or** truncate the process, etc.

²⁰ The role of Strategic Innovation Policy (SIP) in the above ‘strategic re-orientation’) will be considered below in Section 9

implementation component (and associated policy makers)²¹. Together with close inter-Ministerial coordination they could be key for a successful process of Strategic Re-orientation which follows important New Threats (actual or expected/forecasted); and-as mentioned- in regard to Strategic Innovation Policy (SIP).

Section 3: Examples of ONGs (and ONG links)

For many Advanced and Middle Income Countries the relevant ONGs should include the following (a non-exhaustive list with some items particularly relevant for certain LDCs):

Macroeconomic variables e.g. GDP growth, Inflation, Aggregate Productivity, Employment, Reasonable Debt levels, Pensions, etc;

Structural Change & Steady Growth²²

Employment Creation;

Avoiding Hunger and Dealing with Famine

Distribution of Income

Inclusiveness and Social Resilience;

An Innovative & Entrepreneurial Economy/Society

A Strategic, Innovative & Entrepreneurial Government;

Primary and Secondary Education (adapted to different socio-economic, ethnic and Immigration groups)

Higher Education

Liberal Arts

Science and Scientific Research

²¹ The distinction between the “Knowledge Component” and the “Implementation Component” of a N&GS is crucial for understanding **both** what a country’s strategy is and **for appreciating ‘the value’ of Knowledge even if the particular strategic priority has not yet been implemented** on the ground. While two countries might look identical in the latter sense there still may be substantial differences **between them** in the extent by which Country Adaptation *knowledge* has been accumulated (and therefore in their capacity to adapt to Threats/Challenges). In that situation, **the country which also has formulated the knowledge component of other priorities not yet implemented on the ground (but which might respond to likely future Threats) will stand relatively higher in the CA scale (or have greater CA capabilities) compared to the country that has no additional CA-knowledge over and beyond that which is implemented on the ground. In my opinion it might be wrong to state that in such a situation both countries have ‘identical strategies’** (It might be wrong but it would seem that this would be an important view in the Business Strategy Literature). **Alternatively one could state that, while in terms of ‘strategies implemented on the ground’ both countries in the example above are similar, in terms of CA ‘capabilities’ they differ considerably.**

²² Important since research and experience tell us that relying too much on a small number of sectors or product areas is highly risky

Innovation and Technological Development;**Immigration and Immigration Absorption (adapted to different socio-economic and ethnic groups)****Pre-School Learning (idem)****Updated Vocational Education and Training (idem);****Updated and Inclusive Health****A flexible, innovative and continuously adapted Health System;****Defense and Personal Security****Data/Cyber Security;*****A 'flexible', CA-friendly Political System which minimizes 'Politics', Corruption and 'Populism'*****A 'flexible', CA-friendly Political System which supports the Re-invention of Government (to confront violent changes in Threats/Challenges while maintaining the substance of the Democratic Process)*****Maintaining Liberal Values*****A non-discriminatory Legal System Assuring Equality & Justice for All*****Strengthening Wide and Knowledgeable Participation in the Political Process;*****Regional Issues;*****Quality of Life and Support of the Environment (reduced pollution including evening 'light' pollution, waste and congestion; support of Green Areas and access to Nature; and Environmentally-friendly and adequately 'spaced' construction, housing, transportation and communication systems; etc)'*****Global Commitments/Contributing to "Global Adaptation" (adapting to Climate Change, Protection of Flora & Fauna; Peace, Justice and Reconciliation; and Immigration/Immigration Absorption among others);*****International Relations' Issues; etc.**

Before proceeding to consider a second component of a country's CA system [namely, the set of continuously updated National and Government Strategic Priorities (N&GS)] I will give a very simple example of how some of the above ONGs are or could be linked to the political underpinnings of a CA-friendly process of *Strategic Re-Orientation* in response to the appearance of new Threats/Challenges.

Section 4: The 'political' underpinnings of effective Strategic Re-orientation/CA

I assume that the country faces new & violent Threats/Challenges which-if not dealt with swiftly and effectively-could lead, in the first instance, to expanded poverty and to an enlarged segment of 'losers'. The resulting 'political fragmentation' could in turn lead to a loss of flexibility in the political system which directly affects the country's capacity to adapt. In an extreme case, it might lead to a Valley of Death affecting the population at large. At this stage it would not be clear if and when the country could shift back to 'normalcy'.

Strategic Innovation Policy (to be dealt with extensively in Section 9 below), particularly SIP II-whose objective is to 'empower' the lower and weaker segments of the population by facilitating, enhancing and integrating the services provided to them by the Government in areas such as Pre-School Learning, Education, Training, Health and Housing- could play an important role in diminishing the above mentioned process of Political Fragmentation (thereby diminishing or eliminating the negative impact of the new Threats/Challenges on the required Strategic Re-orientation, thereby facilitating CA).

Similarly with the other area of SIP which strongly differentiates it from 'traditional' innovation policy, namely SIP III. SIP III is directed to (i) implement 'strategic'/priority-based policy making' by Government (i.e. policy making based on the extensive knowledge generated by an 'autonomous' process of setting National & Government strategic priorities) and to (ii) identify and characterize the required changes in the institutional, organizational and managerial changes that would make that possible.

To exemplify, I present a two 'Dynamic Sequences' associated with a successful strategic re-orientation (and CA): first, a Reduced Form (Box 2a), and then, an Extensive Form (Box 2b) which also focuses on the role of Strategic Innovation Policy (SIP).

Box 2A: The New Threats/Challenges-CA link: Reduced Form

New Threats/Challenges -> Assuring a Flexible Political System

-> Strategic Re-orientation-> Country Adaptation (CA)

Box 2B: The New Threats/Challenges-CA link: Extensive Form with a SIP focus

New Threats/Challenges -> Reinforced SIP II->

-> Strengthening of/Assuring Flexibility of the Political System->SIP III-->

-->Re-invention of Government (of Government System)->

-> Effective Strategic Re-orientation-> Likelihood of Effective Country Adaptation (CA)

To summarize, the CA-friendly ‘strategic re-orientation’ process mentioned above was facilitated both by a pre-extant *Flexible Political System* and by a set of policies, particularly *Strategic Innovation Policy (SIP)*. Thus through its impact on ‘Employment’, ‘Inclusiveness and Social Resilience’ and other CA-friendly ONGs, SIP II would soften or ameliorate the direct impact which the new Threats/Challenges had on the Social Structure. This in turn would weaken the process of Political Fragmentation which might have occurred otherwise, thereby freeing the Government to deal head-on with the Crisis²³.

Avoiding political fragmentation is necessary but not sufficient for the Government to be able to visualize and implement the ‘*strategic re-orientation*’ required for effective CA. It also requires a successful *Re-invention of Government* with respect both to the institutional and organizational framework within which it operates and as regards its management routines and capabilities and approach to policy making on the ground.

By activating a slew of new technologies in the AI, robotics, Big Data, Reality Augmentation, etc areas SIP III could play an important role in both respects (see below section 9). Thus *Re-invention of the Government System* should include

- (i) creating a ‘space’ for the autonomous determination of National & Government Strategic Priorities (see next section) or in case such a space exists-adapting it to the new N&GS requirements associated with the new set of Threats/Challenges;
- (ii) assuring various forms of coordination between ‘priority setters’ and ‘policy makers’ as well as between the various Ministries/Policy Agencies/Departments involved in policy making; and
- (iii) high- level coordination between the N&GS on the one hand and the Executive and Legislative branches of Government, including the Ministry of Finance/Treasury. ²⁴

²³ The last statement suggests that the required characteristics of Government should go beyond being Flexible (second line of the Dynamic Sequence). Rather it should be a combination of ‘Capacity to make CA-relevant decisions’ and ‘Flexibility’ (second line of the Dynamic Sequence)

²⁴ Requirement i) is availability of an autonomous and independent ‘space’ for formulating/setting/changing National (and Government) Priorities independently of Government and of the Political Process (see Teubal 2016a,b; Teubal 2017a). While such independence is importance for assuring the predominance of knowledge creation in priority formulation/setting (independently from ‘politics’ and even ‘corruption’) it does not preclude interaction with policy makers ‘downstream’ in the Country’s Strategy and Policy System” (as well as a measure of coordination and feedback with Government with respect to a subset of relevant Government Priorities). Requirement ii) and possible iii) is extensively discussed below in the context of Strategic Innovation Policy (SIP) which might have to play a key role in the above process of strategic-re-orientation.

Needless to say the capabilities, effort, imagination and 'luck' required for effective strategic re-orientation/CA in response to new Threats/Challenges is such that it need not happen i.e. obstacles may appear at various phases of the process. We should not be surprised that frequently only *New Political Leadership* could lead the above process²⁵.

A final point is that from a dynamic perspective the above Flexibility & re-invention of the Political System (and even Government) to enhance its capacity to act-may depend on the social structure as well as on other variables associated with e.g. (enlightened) Educational policies. A complementary policy which may be key for the future might be "Pre-school Education [see *The Economist* 2016] directed e.g. to create first class citizens that could be active and effective in the democratic process. Needless to say, such 'strength' in the social system may be important and even be 'key' when it comes to implement a significant re-orientation of a country's N&GS in response to expected or changes in the global environment.

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Section 5: The Basics of National (and Government) Strategy

Strategic Priorities derive from ONGs which in turn depend on the collection of Threats/Challenges and Opportunities confronting the country. In this section I considerably expand the analysis of such priorities.

Priorities versus 'politics'

The basic function of an explicit Government Strategy (i.e. a set of Government priorities **to be implemented through policies on the ground**) is to *generate knowledge for effective policy making* while providing a counterweight) to the **felt (increase in the) role of 'politics' in policy making**. **These might be particularly so in complex democracies where the 'democratic process' has become significantly more complex than in the past.**

Government Priorities are a subset of National Priorities

Government Priorities are a subset of National Priorities where Market Failure and/or System Failure block their 'endogenous' implementation on the ground by non-Government agents

²⁵ Frequently and as part of its activity, such a leadership could transform the pre-extant Government into a *Strategic, Innovative and Entrepreneurial Government* (Bonvillain, various papers; Mazzucatto 2012). Another point is that violent new Threats/Challenges (like during War) may **induce the appearance both of new political leadership and of a coalition government with favorable CA implications.**

(market forces, civil society, citizens). Both depend on perceived domestic and global conditions. ²⁶

Strategic Priorities as Bodies of Knowledge (BoK)

Strategic Priorities are *Bodies of Knowledge (BoK)* relevant to a particular *priority area*. They are flexible and continuously adapted **and updated** to changing circumstances. Typically **each priority includes** a number of **knowledge-based Sections** followed by a **Summary & Recommendations**. Moreover each *Government Priority* will also include '**General Policy Objectives**'.

Sections

- *Introduction/Background* [why this priority?];
- **The 'Narrative' or Alternative Narratives** i.e. the content of the priority and its links with **Threats/Challenges and Opportunities**. Its structure might involve a description and analysis of a number of interacting processes **involving aspects of the Economy, Society, Political System/Government, Environment** as well as **International Links** and **implications for other priorities**];
- *Forecasts and Future Scenarios* including links with the above Narratives;
- *Inter-Priority Links*;
- *Choice of Narrative & Forecasts/Future Scenarios*
- **Key Issues regarding Priority Implementation on the Ground** such as **key strategic issues** and-given existing knowledge and forecasts- the '**desired implementation profile**' including its potential benefits and '**costs**', its dynamics-- including both the order of key decisions, the role of inter-priority links and policy making underpinnings, the nature of coordination and mutual feedback with policy-makers, possible System Failures (see e.g. Section 6 below) and other obstacles during the process, and expected outcomes in the short/medium/long term;

AND

Summary & Recommendations; + (for *Government Priorities* only) **General Policy Objectives**.

In a well- coordinated 'Strategy and Policy System' **the General Policy Objectives of a Government Priority 'upstream'** would constitute the basis for **Specific Policy Design and Implementation 'downstream'** by Government Agencies/Ministries/**Departments**.

Inter-priority Links and the meaning of 'Strategic'

²⁶ For the notion of **System Failure** [SF] see Nelson () and Metcalfe () and Teubal 2016 among others, while for **Government Failure** see e.g. Stiglitz 1988, pp. XX. In Section 6 I focus, **from a CA perspective**, on a less analyzed type of SF namely '(strategic) priority-related SF' (see Section 7 below).

A priority's BoK must have **both** short, medium and long term components **as well as** links with other ('related') priorities. **If it considers only the short term and if it largely ignores inter-priority links it should not be considered 'Strategic'**²⁷. **Since a short term approach to policy seems to be widespread; and** since this implies ignoring significant inter-priority links **-many so-called Government priorities should not be considered 'strategic'**²⁸.

An Example

Consider a country confronted with *New Disruptive Technologies* which generate new Threats/Challenges and Opportunities which it must confront for **CA-** reasons. **The country's adaptive** response could be visualized as taking place at *three* different levels of increasing 'specificity'-

- **CA-level 1 changes, or "CA at the ONG level"** which directly affects CA and provides *the New Country Adaptation profile (or CA profile)*;
- **CA-level 2 changes, or "CA through Strategic Re-orientation"** -upstream in the 'Strategy and Policy System', involving re-prioritizing the set of strategic priorities (including additions and/or deletions to the original priority set); and
- **CA-level 3 changes, or "CA at the Policy Implementation level"**- downstream in the 'Strategy and Policy System' of the country', leading to a new set of policies 'on the ground'.

I explain. The new set of Threats/Challenges/Opportunities will change both the *impact* of and the *functional relationship* between CA and the various ONGs. These are the **CA-level 1 changes or CA at the ONG level**. Thus side by side with the immediate positive CA impacts offered by the new disruptive technologies through ONGs like 'Technology Absorption' and 'Structural Change/Growth' there will be **negative impacts affecting other important ONGs such as 'Employment' and 'Inclusiveness and Social Resilience'**. **To these 'direct' impacts we must add changes in the functional form linking CA at the first level with ONGs, including the possibility of adding or deleting particular ONGs (for simplicity we will term such impacts 'indirect')**²⁹.

The above Level 1 changes set the base for **"CA-Level 2 changes" or "CA through Strategic Re-orientation"** with strong implications for **"CA-level 3 changes" or "CA at the Policy Implementation level"**. Thus, the required **Strategic Re-orientation** might have to provide a framework not only for traditional 'wage and employment' policies including reducing the cost of employing and firing workers, but to a new group of Strategic (plus changes in existing) priorities associated with strategic priorities such as *Innovation, Structural Change(new or improved*

²⁷ **This is so since** it would not contribute to our notion of 'inter-temporal' Country Adaptation (CA)

²⁸ **This links with the distinction between a 'Nominal' priority and a 'Strategic' priority**

²⁹ **An extreme case of CA at the First ONG level would be when the country in question faces an unexpected War with a strong neighbor, one which could be tough and of long duration. In these circumstances, the relative importance of ONGs like 'Defense' will increase relative to others like 'Education' and 'Health'. It is also conceivable that a completely new ONG which was not thought of before would now become an important variable in the such CA function.**

industries, sectors or clusters), Education & Vocational Training, Support of Entrepreneurship and SMEs, and even (consider and experiment with) *Minimum Income policies* and *Macro-economic priorities* such as Productivity and Pensions.

A summary in terms of linked Dynamic Sequences follows.

New Threats/Challenges/Opportunities-→

New (& changed weight in CA of existing) N& GS→

New CA function→

-→**Strategic Re-orientation (New Key Strategic Priorities + New set of inter-priority links)→**

-→**Modified Policy Portfolio (New Policies/Deletion of some 'old' policies; New pattern of Policy interconnectedness³⁰)**

Alternative Narratives & Future Scenarios³¹

Whenever the process of (Government) priority formulation leads to a multiplicity of Narratives and/or Future Scenarios, its 'completion' may be delayed and even frozen due to the impossibility of reaching consensus prior to the setting of *its General Policy Objectives*. **If efforts at achieving consensus fail (see Chapter 3 of Teubal 2015a) there is risk of de-linking the above strategic priority area from 'downstream' policies on the ground. The outcome might then be a special form or 'a priority-related system failure' with 'negative' consequences for policy making (due to a reduced knowledge base and the presumed & enhanced role of 'politics' in decision making).**

The multiplicity of 'Narratives' and Future Scenarios may be frequent in 'Complex Priorities'. In which case the priority setting process might stall (with implications for downstream Policies). Given the potential SF (and associated weakening of CA) a key issue for such priorities is when and how to re-start the priority setting process in search for consensus (see Innes and Hoover 2012)³².

³⁰ See below Sections 8 and 9

³¹ Since **most if not all the** priorities mentioned in this paper will be 'strategic' I will **frequently** be using the term 'priority' without preceding it by the word 'strategic'

³² **This raises the issue of mechanisms for achieving priority narrative consensus, as well as consensus concerning both 'Recommendations' and (for Government priorities) General Policy Objectives.** Frequently 'upstream' priority consensus is achievable by further considering inter-priority links (see Innes and Hoover 2012 pp. and their concept of XXXX). Moreover, Tversky has proposed mechanisms to reduce 'biases' in the voting process within the priority formulating committee concerning which Narrative (and possibly General Policy Recommendations) to be chosen

"Collective' setting of Priorities

This paper is the *anti-thesis of top-down priority setting* in favor of more decentralized and **autonomous** approaches involving both experts and other members of society e.g. 'stakeholders' or other agents having the relevant knowledge (or the capacity to generate or access such knowledge), etc³³. There are many examples where consensus was eventually arrived at despite sharp differences in opinion between different groups. For example, in the context of regional priorities and as regards the regulation of water supply/use in California, there were strong differences *between agriculturalists and consumers of water* (see Innis and Boover 2012) which were eventually overcome. In this example the authors **introduce the concept** of 'Collaborative Rationality', *a non-linear interactive process* which contributed to achieve consensus **in that (and in other) particular priority (ies)**. In other cases, lack of consensus might lead to (a hopefully temporary) suspension in the priority setting process³⁴

Assuring a 'Broad National & Government Strategy'

For CA-reasons, countries should aim at a broad **set of Strategic Priorities i.e. one covering all or most of the key ONGs of the country concerned** including those emphasized by the new set of Threats and Challenges **they face**. **Alternatively it could be stated** that such a set should deal with the main issues and strategic challenges of the day as well as those that might appear in the future. **As part of the above such a set should map** key inter-priority links required for effective policy making. These facts **and the time required for execution** should be taken into account by those promoting creation of a CA perspective based on a broad and continuously adapted **set of N&GS**.

Links between Priority Setters and Policy Makers

While ideally we emphasize the importance of Independent Priority Setters to assure that priorities and their articulation into policies reflect the best possible knowledge at the time, there are situations when cooperation **with policy makers** is important. Thus priority setters might benefit from the advice of experienced policy makers concerning which **among alternative**

(see Economist 2015). Such mechanisms include assuring equal access to and time to read and evaluate all proposals as well as equal time for hearing and discussing **every important point of dispute (also the order of presentation of the various options should be considered)**.

³³ For an excellent analysis of the importance of 'scientific/statistical methods' in forecasting **of future circumstances and of policy impacts** (also compared to the effectiveness of 'experts') see Tedlock and Gardner 2014 and Kahnemann 2011. A **paradigmatic** area of application of such methods is **Weather Fore-casting where the required multiplicity of actual forecasting attempts could be made rather easily and frequently**. It still remains to be seen the extent by which such Super-Forecasting methods are applicable to Scenario Building as regards 'complex' priorities with a strong **and distinct** qualitative component within a CA context **particularly during periods of paradigmatic change** (my hunch is that **while a lot might be applicable, there are possible situations where additional insights obtained by other methods might be required**).

³⁴ Also and **as mentioned above, if not overcome it might** imply a weakening of the role that 'knowledge' [or knowledge push] could play in 'downstream' policy making, thereby enhancing the possible role of 'politics' **and associated weakening of CA**

narratives and associated Recommendations/General Policy Objectives is worth considering, especially when policy makers are objective actors and when 'politics' plays **only** a minor role.

Moreover, in situations of national emergency requiring new complex priorities and rapid implementation in terms of policies on the ground, close cooperation may be important both to save time and to speedily identify *a 'virtuous (Political) compromise'* that may assure **both a rapid political sanctioning both of a relevant Strategic Re-Orientation as well of a knowledge/priority based and coherent 'policy' implementation on the ground.**

Nominal & Strategic Priorities

A **Nominal Priority** is the Name of the priority (or the priority area) or alternatively **a priority whose formulation/specification does not go beyond stating a General (Government) Objective** i.e. it ignores the various sections mentioned above which comprise the BoK of such a strategic priority. This includes **Narratives and Choice of Narrative and/or Forecasts/Future Scenarios and/or Recommendations and/or General Policy Objectives.**

Alternatively it could be stated that a Nominal Priority lacks a sufficiently broad and well defined set of knowledge based Specific Objectives underpinning downstream policy making on the ground. A recently publicized example of what seemed to be a Nominal Priority in India is 'Demonetization' ["A Cashless India", see **The Economist**, January 7, 2017, pp 53-54] whose **General Objective** was to '*eliminate black money and corruption as well as reducing the flow of funds directed to finance terrorism*'. The mechanism used was to '*reduce the bulk of a country's currency overnight*' by "*scrapping two bank notes which made up 86% of all rupees in circulation*". The above article also states "*Predictably the Economy appears indeed to have been hobbled by the sudden "demonetization" and "Evidence of the measure's costs is mounting, while the benefits look ever more uncertain"*³⁵.

The shift from a De-monetization priority which is 'Nominal' to being "Strategic" implies acting far beyond the obvious need to create **and improve** arrangements for exchanging 'old' currency for 'new' currency as well as tightening control of banks and the flow of cash. It should also consider **inter-priority** impacts and associated policy responses **in the short/medium/long term.** Thus, from a Country Adaptation perspective the shift to a cashless economy **might** require the 'empowerment' of groups like poor peasants, the unemployed and other under-privileged members of society, by creating capabilities to operate within the new cashless 'system'³⁶. Moreover, **due to the impact on consumer spending (at least in the short run),** the transition to

³⁵ Both **The Economist** and **The New York Times** suggested that-as a result- of the above measures, the growth rate of India seems to have fallen by almost one percentage point (although recent growth information seems to contradict this assessment) thereby losing its rank as the fastest growing economy for 2015. It should be noted however that whether or not Demonetization has negatively affected India's Adaptation/adaptability, full analysis of the CA impacts of De-monetization should be considered i.e. assessing other impacts resulting from inter-priority linkages (and even new ONG links) and associated policy-interconnectedness.

³⁶ **Some of such impacts require links with Strategic Innovation Policy (Teubal 2016), particularly SIP II which is directed to empowering the less fortunate members of society (it may also have deep implications in the way, as mentioned above, the Government operates, some of which requiring institutional/organizational innovations i.e. SIP III).**

such a monetary system may deeply affect important industries or sectors such as Tourism, Agriculture & related Services and Government Services (e.g. Education and Health); and even changes in the operation of other product and labor markets in some less developed rural and urban areas. Note that such 'structural' implications are consistent with the Macro-Economic view of Economists concerning the negative impact of a lower stock of 'money' on aggregate output [an important issue in traditional/neoclassical Economics see e.g. Friedman and Schwartz work on the causes of the 1929-late 1930s "Great Depression" in the US]³⁷.

I conclude that from the Country Adaptation (CA) perspective of this paper a key issue in avoiding the above-mentioned priority-related System Failure is transforming a Nominal Priority setup (which policy makers & politicians generally understand since it implies that 'they know' what specific policy objectives are) into a Strategic Priority set up the understanding of which is frequently weak in Populist and even in many 'liberal' Democracies. In this context, the shift to a 'strategic' perspective of Government Policy requires awareness of the need to engineer adequate responses both to the enhanced number/violence/complexity of the Threats & Challenges facing countries as well as to the enhanced 'complexity-determined' role of 'Politics' in policy-making³⁸.

Summary on Identifying and Determining Strategic Priorities

At the level of an individual priority, the above transformation is the outcome of a very special learning and knowledge creation process leading to a 'Body of Knowledge' (BoK) which includes 'up to date' and even 'cutting edge' knowledge of the area covered by the new priority in question (including 'General Policy Objectives' (which policy makers would take as a basis for their more detailed Policy Design and Implementation on the ground, see Teubal 2016 Section II). In that context country adaptation to emerging Threats, Challenges and Opportunities involves explaining/justifying as well as specifying Priority Objectives and visualizing and specifying the Priority Implementation Process in the short-medium and long term³⁹.

To summarize, a Strategic Priority is a Body of Knowledge (BoK) which could consist of 300, 3000 or any other number of pages describing and analyzing the above mentioned 'double' specification process. It may require visualizing the future or set of possible futures and possible CA implications for the country in question.

³⁷ Other important impacts from the effects of De-monetization such as those also resulting from weakening of other key ONG's like 'Poverty Reduction' and 'Inclusiveness and Social Resilience' should also be taken into account.

³⁸ The apparent predominance of Nominal Priorities and what seems to be the paucity of Strategic Priorities would seem to imply the widespread existence of 'strategic-priority-related' System Failures in Advanced and Middle Income Economies. This might imply not only that CA failures exist but that they could persist in the future.

³⁹ The term 'Strategic' here refers to a 'holistic' & intertemporal 'Country Adaptation' orientation or perspective.

The shift to such a *bona fide* N&GS involves a number of important themes such as:

**identification of actual and possible future Threats/Challenges and Opportunities emerging from the global and domestic environments;*

**Forecasting [see Tetlock and Gardner 2015] and Scenario building;*

**Identifying and characterizing possible links and connections (some of them two-way) between the new strategic priority (or priorities) to be specified and those of other “key” strategic priorities (& underlying ONGs) being affected by it;*

**Assessing key policy implications of the newly specified strategic priorities and of its links with other key priorities;*

**Assessing the capability and willingness of ‘downstream’ policy makers to implement strategic, priority- friendly (or CA-friendly) policies on the ground i.e. to consider the relevant ‘upstream’ Strategic Priority including its General Policy Objective as the basis for their more detailed policy design and implementation on the ground. Related to this is policy-makers awareness both of the importance of adopting CA- friendly policies as well as a broader knowledge base requirement compared to what was routine in past (in pre N& GS days).*

**identifying key required changes in the structures and operation of Government e.g. those associated with coordination and with priority-related knowledge creation free from ‘politics’.*

When the new Threats, etc are both significant and frequent the above shift to ‘strategic’ policy making *could require a significant change in existing policy making routines* (including in the routines for changing routines), *and even in the organizational profile and institutional underpinnings of policy making*. The required strong coordination and mutual interaction and cooperation between upstream priority setters and downstream policy makers/ policy making institutions such as ‘Ministries’ and ‘Policy Agencies’ (and with the Government and Legislature) might require significant changes in the way existing Governments organize themselves and operate.

CONSIDER RE-WRITING Needless to say a key requirement for the above concerns the creation of ‘a space’ for the autonomous determination of strategic priorities, that is, far from (while still interacting with) ‘downstream’ policy making on the ground. Moreover, once such a space is made available, it is more than clear that the processes of specification and continuously updating a new Strategic Priority should consider both alternative futures and inter-priority links in the short-medium and long term (and similarly with respect to the visualization and specification of its ‘implementation’ process on the ground). Some of these will involve two-way links between the priority in question and other priorities⁴⁰ **START APRIL 23 HERE**

⁴⁰CHECK FOLLOWING FOOTNOTE TO AVOID REPETITION WITH TEXT ABOVE This requires ‘political will’ to create such a space by allowing creation of an autonomous High Level Country Adaptation (CA) Committee which might set objectives, outsource, oversee and implement the following: assessment of existing/new Threats, Challenges and

Section 6: System Failures (SFs)

This section briefly summarizes the conceptual background for the subsequent section's tables with examples of '*Priority-Related*' *System Failures (SFs)* affecting policy making on the ground (more precisely, specific policy design & implementation). More specifically, there are two reasons why policy making on the ground might not reflect a well) characterized strategic priority in the relevant area. Either such 'upstream' priority formulation does not exist (e.g. what exists might be a *nominal* rather than a *strategic* priority) or it exists but is ignored by 'downstream' policy makers.

Ignoring or failing to formulate new strategic priorities during periods of violent changes in the nature and violence of the Threats/Challenges (and Opportunities) facing the country will result in absence of the *Strategic Re-Orientation* which countries should undergo for effective CA purposes⁴¹. The two possibilities reflect the two aspects of a country's Strategic Re-Orientation: *the 'upstream' (new) knowledge formulation function* (embodied in the new or improved priorities and in the deletion of pre-existing ones) and the '*downstream*' *knowledge implementation function* (activated by policies which reflect the knowledge embodied in such new priority set and more specifically, their Recommendations/General Policy objectives).

For an example of failure in the US to adequately prioritize an *Affordable Housing for the Poor* priority during the 1980s see Stiglitz 1989; and concerning failure to formulate an *Avoiding the Spread of Poverty* priority in that country, see The Economist 2015. More generally speaking it seems that frequently Governments have believed in a truncated notion of Priority Formulation i.e. one that focuses on Nominal Priorities rather than on Strategic Priorities (for an example from India, see above Section ??).

Up to now I have made no distinction between Government Failure (GF) and System Failure (SF). For the purpose of this project I assume that the set of Government Failures is larger than that of SFs; and more specifically while all SFs are GFs there are also other Government Failures

Opportunities; the associated, relevant set of NGOs (including links among them) and related Strategic Priority Areas (and inter-Area links) which comprise the Country Adaptation Function and System; the set of National and Government Strategic Priorities; assuring the 'downstream' policy implementation on the ground of the subset of Government Strategic Priorities; and relationships and interactions with downstream policy-makers on the ground. Needless to say that once such a Committee has been established and set the basis for its ongoing work, it would be in charge of identifying situations requiring a 'discrete/significant Strategic Re-Orientation of the country concerned.

⁴¹ I am ignoring here the impact of completely unexpected events which always may appear and, when they do, they might neutralize what could have been the positive impact of almost any bona fide process of country strategic re-oriented

which are not SFs (the implicit assumption being that 'bad policy decisions' might have been made even in the absence of a SF)^{42 43} [MERGE THE TWO FOOTNOTES].

Towards a Classification of System Failures

I start with an apparently common SF namely failed Government responses to the appearance of new disruptive technologies (a very concrete situation now-a-days) such as failure to stimulate upgrading of the knowledge base underpinning policy (which ideally is embodied in the relevant National & Government strategic priorities). Thus, a country's labor force requires significantly enhanced training both to become more flexible and adaptable to the new technologies and to the fleeting job opportunities made available, and to contribute (together with other educational efforts directed to the population at large) to the pool of entrepreneurs and innovative SMEs which could harness such technologies for job-creating SC-based economic growth.

Note that the above failures result (or increasingly will be the result of) a failed re-orientation of the "Strategy & Policy System" to adapt both to Risk and to Type 2 uncertainty (enhanced by the above disruptive technologies) and/or to the new Policy Targeting and associated Employment possibilities (e.g. new or improved productive sectors) resulting from such technologies.

I start with three categories of relatively simple SFs (SF1, SF2 and SF3) which are consistent with most of the existing evolutionary economics literature (Nelson ?? , Metcalfe ?? , Hodgson ?? among others), followed by a 'common sense' digression of the extent by which they could involve 'failures' which are priority-related/strategic. Since under current circumstances, a reasonably well developed National Strategy & Policy System is an important part of a country's National System of Innovation, I subsequently present two additional SF categories (SF4 and SF5) originating in gross imperfections as regards the Government and State's strategic orientation, capabilities and 'on the ground' implementation procedures and routines.⁴⁴

Simple Categories of SFs

***(SF1): Failures of Omission** in dealing with Market Failure (MF) e.g. Housing Policies which not only did not eliminate existing MFs but also created new MFs/SFs (*a la Stiglitz* , see Stiglitz 1988). That is, over and beyond the GF focused by Stiglitz in his 1988 book which results from providing affordable housing (say, by imposing lower rentals) while ignoring the impact on the supply of 'housing', there might be an

⁴² Since there are several unsolved issues resulting from the above statement I suggest the reader consider it as a simplification device rather than a logically proven statement. By and large the reader could also consider GF and SF as being interchangeable. In future work I will delve in these issues while also focusing on the location of such failures e.g. the policy system, the Executive, The Legislative, etc.

⁴³ GFs are linked to but not identical to System Failures (SFs). There are two possibilities: i) GF co-exists with an adequate [organizational/institutional, etc] or SF-free CA system and is the outcome of 'bad luck' or 'temporary weakness' in policy making; and ii) GF is the outcome of a SF i.e. an inadequate CA or 'Strategy & Policy' System e.g. when-despite violent changes in the global/domestic environment, no strategic re-orientation was undertaken 'upstream' i.e. at the priority formulation level (or alternatively when the priorities underlying failed policies were Nominal rather than Strategic).

⁴⁴ System Successes which are the counterparts of SF4 and SF(5) [see below] include DARPA's Public Entrepreneurship efforts during the post Sputnik period (see Bonvillian 2013, 2014). See also Mazzucato's analysis of the (US) Entrepreneurial State (Mazzucato 2013).

additional, 'strategic', SF in affordable housing policy. This would be the outcome of ignoring the links with other social needs of the population involved such as 'employment', 'transportation', 'personal security', 'education' which policy makers should have considered as part of an 'integrated policy package' ("failures of omission").

*(SF2): **Failures of Commissing** -Inefficient State operation in areas/projects where the State should not operate (e.g owning and managing standard hotels which compete with similar privately owned ones) or in 'public goods' areas/projects involving 'negative social profitability'.

Examples are inadequate and excessive Infrastructure in many countries like bridges in Japan (some executed) or Chile (planned but eventually not executed). They may be compounded by privatizing for the sake of privatizing, whatever the cost; outsourcing as much as you can for the sake of outsourcing; or bending to pressure of interest groups rather than following 'social needs' (e.g. possibly the Government of Israel's policy approach to exploitation of natural gas, see *The Marker* several issues starting July & August 2015); or outright corruption.

*(SF3): Bureaucratic, unimaginative, 'ideological' and even corrupt project implementation by the Government/State in standard Public Good areas with clear social needs, knowledge about existing technologies and a rather pre-determined road-map.

* **Complex SF I- Dominance of 'Politics' over 'Knowledge-based' Decision**

This SF involves non- provision of 'attainable' public goods representing or generating new 'superior' opportunities for advancing one or more of the country's Overarching National Goals (ONGs) such as Economic Growth, Employment, **Inclusiveness and Social Resilience**, Inclusiveness, Defense and Personal Security, etc. While such public goods could have been identified and defined--through the formulation of new priorities (including the interactions accompanying such a process), through **imagination** and/or 'entrepreneurial-type' vision, trial & error and investment— they were not. Moreover, even **in some cases where they were, the provision of such goods did not take place.**

* **Complex SF II-Getting out of a Valley of Death (VoD)**

Sometimes **an unattended Complex SF I** associated with what should have been regarded as an imperfectly formulated **and/or implemented** 'complex priority' **could lead** to a 'Valley of Death' i.e. **a new emerging and largely Domestic Threat/Challenge** which the Economy/Society may find difficult to overcome (**Complex SF II**), since it might have to involve **an even sharper** 'Strategic Re-orientation **compared to that which** existed initially. One reason could be the difficulty in undertaking the required radical re-invention of Government (and even the State) i.e. failure to create an adequate institutional and governance system **to push forward** a significant national/government strategic re-orientation.

We can summarize SF5 by the following 'dynamic sequence'

Dynamic Sequence XX

New Threats/Challenges → **-Absence of Strategic Re-orientation (K& I)→**

→Complex SF I → Valley of Death-(VoD)→

Complex SF II-→ Continuation of VoD

Even more than with *Complex SF I*, a key constraint in overcoming *Complex SF II* could be 'politics' i.e. the 'give and take in the political market'⁴⁵. 'Politics' might block generation of the required 'strategic re-orientation' knowledge [i.e. a new set of National and Government strategic priorities] or, given such knowledge, its effective implementation on the ground. There are many types of 'negative' impacts resulting from 'politics' e.g. *Complex SF I* might be rampant and 'coordination' difficult. Thus 'politics' may lead to ineffective political coordination and, indirectly, ineffective priority-policy coordination; inter-ministerial/inter-Agency coordination; and Macro-Strategic coordination **among many others**. This means that, absent a strong, new political leadership with a new Vision, the likelihood of creating a dynamic out of the VoD could be quite low, at least in the short and medium term⁴⁶.

System Successes (SS)

In contrast to SF4/SF5, an example of System Success (SS) was the *Public Entrepreneurship* exhibited by DARPA in the development of new generic technologies (Internet and other ICT areas) **as well as its involvement in a public-private/military-civilian, production and technology transfer network** in the post-Sputnik era (see Bonvillian 2013 and Mazzucatto 2012). **We will see that the justifiable** behavior of such an agency contrasts with the traditional focus of policy making i.e. in satisfying 'existing well formulated needs' through 'ready-made solutions', standard means and bureaucratic procedures⁴⁷.

Because of the availability of new, creative options for **bona fide** public investment, *ceteris paribus*, **Complex SF II** could involve costs of failure of an order of magnitude higher than those belonging to **Complex SF I**. Thus **Complex SF II** could involve a 'double failure': not only a failure of omission i.e. not identifying nor implementing novel **priorities or priority** options of potentially high **social** returns e.g. new technological infrastructures setting the base for a new set of industries, sectors, etc; but also failure of commission by focusing (**maybe due to 'interests' or political pressure**) on 'more of the same' actions rather than on novel **policy making involving** public-private interfaces.

In order to better appreciate the complexity of SF4 (and even of SF5) **the reader might benefit from a simplified analysis of DARPA's SS in Appendix ??**. It is based first on Bonvillian's analysis of the role of the US State or Government as a *Public Entrepreneur* (Bonvillian 2013, 2014) and **to some extent** on Mazzucatto's work on the *Entrepreneurial State* (Mazzucatto 2013).

Section 7. Examples of Priority-Related System Failures⁴⁸

⁴⁵ **My assumption is that in the presence of a declining economy and, even, a 'withering' society, the battle for ownership of the remains might be particularly fierce to the point that 'regular' constraints and procedures of a working democracy would probably not survive.**

⁴⁶ **Needless to say there must be various configurations of Complex SF II and of the strategies to achieve the required political coordination i.e. to overcome the existing political fragmentation thereby creating the basis for a reasonable 'strategic re-orientation'. (compare e.g. the case of Greece with that of Venezuela)**

⁴⁷ This contrast bears a similitude to the Nominal versus Strategic Priority distinction made above,

⁴⁸ **For simplicity I will temporarily refer to such SFs as GFs. Needless to say, a full characterization of some of the information recorded below for each GF might require deeper understanding of the processes involved as well as additional data/information and a sharper overall assessment of CA impact.**

Box 1 below considers six types of Government Failure (GF 1,,,,,,GF 6) **each one involving non-existing or biased strategic** ‘priorities and/**or biased priority** articulation into policies **on the ground**. They result from **(i)** excessive political influence **in priority setting by** ‘strong Ministries/**Departments**’ e.g. Ministry of Defense **in relation to Defense or Security related priorities**; **(ii)** to 'priority complexity' **(iii)** to weak supra-ministerial mechanisms **not only of priority setting and distribution across Ministries but also of the associated ‘policy responsibility/authority’ allocation across Ministries/Departments** (important for those priorities which are *generic* or multi-ministerial); **and to other factors**.

The GF set of the Box relate to a variety of priority and policy *areas* such as **Biotech; Defense; Natural Resources e.g. Gas, Soybean, iron ore; Venture Capital and High Tech Clusters; Innovation in mid-low tech firms; etc**⁴⁹. Thus GF 1 is due to ‘incomplete’ or ‘nominal’ (rather than ‘strategic’ priorities) while GF 2 is the outcome of (i) ‘imperfect’ priority-setting mechanisms as applied to ‘complex’ priority areas e.g. to confront ‘political interference’ and pressures from ‘interest groups’; or (ii) imperfect ‘downstream’ implementation on the ground of such priorities (including imperfect inter-Ministerial coordination). On the other hand, GF 4a & 4b involves priority mis-specification due to absence of priority *re-setting* **in the context of a required (*but absent*) ‘Strategic Re-Orientation’** itself a response to a changed environment. While GF(4a) refers to Manufacturing-related priorities in resource rich countries like Australia, Canada and Chile enjoying an export boom, GF(4b) refers to what seems to be a generalized absence of Strategic re-orientation at the country level in response to the ‘emergence’ of a set of new, disruptive, technologies e.g. Artificial Intelligence, 3D Printing, Robotics, Advanced Computing, etc. Finally, GF(5) is an extreme case of *misspecification* due to insufficient *updated, knowledge intensiveness* in the priority setting process, the outcome of a traditional, non-systemic and non-evolutionary perspective of the relevant policy area e.g. VC and entrepreneurial system’s policy in Europe, at least (with some exceptions) during the 1990s and even somewhat beyond.

BOX 1: PROFILES OF PRIORITY RELATED GOVERNMENT /SYSTEM FAILURES (SF4 & SF5)

GF(1)Implicit/Nominal/Very General Priority and/or Ignoring Emerging Opportunities and New Desirable Priority Areas

Israel: Early Biotechnology Committees of the 1980s and 1990s;

Israel, strong delay in priority setting and policy promoting of innovative mid/low tech firms (Teubal 1999, Trajtenberg 2005, Teubal and Kuznetsov 2012);

(Possibly):delays in promoting Advanced Manufacturing in the US (Bonvillian 2012).

⁴⁹ Sufficient material has been assembled to duplicate the set of GFs analyzed in a forthcoming subsequent draft of this paper

GF(2) Inadequate mechanisms for setting **and/or** articulating large, complex **Strategic** Priorities-Role of **Politics**

Imperfect priority-setting mechanisms when priorities are complex **and involving *bona fide differences in opinion*** as well as *biased arguments* in favor of this or that alternative priority configuration. **An additional inadequacy--** due to **absence of independent priority setting mechanisms *and/or*** fragmentation of the Government Agencies involved *and/or* absence of bona fide priority-policy coordination—**is caused by ‘politics’**.

Moreover, **Politics’ could also** prevail over the ‘knowledge’ embedded in the relevant priority or priorities **when it comes to define policies on the ground** (see **Priorities & Policies related to exploitation of Natural Gas in Israel during 2014/15**, The Marker-numerous issues July-August 2015; Haaretz August 14, 2015).

Other complexity-related difficulties in priority setting & implementation concern the Defense area. They might relate e.g. to Size of overall Budget and/or to an imperfect and possibly non-objective analysis of links between Size and Threats facing the country. These may be exploited politically by *strong Ministries* (like the Defense Ministry in many countries) leading to biased outcomes reflected both in priority definition and in inter- and intra-ministerial allocation of public resources (for the case of Israel see a number of issues of The Economist during August 2015).

GF(3) Faulty Governance & ‘Politics’: Biases in Formulating Generic, Multi-ministerial Priorities and/or in Inter-ministerial Budget allocation

Biases due to the dominant role of ‘strong’ Ministries/Departments in "allocating" the funding of generic priorities across the relevant ministries (priority-policy coordination failure); and to the relative weakness and biases in coordination when identifying inter-priority linkages and associated ‘downstream’ policy inter-connectedness⁵⁰ [‘generic’ ICT and Biotech areas].

For both reasons there is a strong case i) for strong institutional separation *between* priority setting ‘upstream’ in the “Strategy and Policy System” *and* ii) for setting the knowledge and institutional underpinnings for ‘distributed’/ ‘downstream’ **policy implementation on the ground (i.e. by several individual Ministries/Departments in charge of implementation).**

Important in specific ICT and Biotech areas, several countries.

GF 4: Absence of A Strategic Re-Orientation in response to actual, likely or forecasted new Threats/Challenges (such as weakening of Terms of Trade, Appearance of Disruptive Technologies or both).

GF(4a) Ignoring key meso-macro links and associated Priority Re-setting to avoid 'negative' SC

Absence of Strategic Re-orientation in favour of innovation-based manufacturing (including new manufacturing sectors) in response to currency appreciation **resulting from expanding mining**

⁵⁰ For policy interconnectedness see Section 9 below

exports during the raw materials boom which continued during the first decade of this century e.g. Australia, Canada and Chile⁵¹; Idem to be able to confront a **potential deterioration of the Terms of Trade of countries like Argentina & Brazil (soybean); Venezuela (Oil), etc.**

Such failures clash with **the CA-friendly Overarching National Goal of sustainable and inclusive growth with diversification** (Teubal and Zlotnick 2011) **or with the ‘sustainable growth’ and ‘Inclusiveness and Social Resilience’ of this paper.** For the importance of diversification in economies like Chile, see Hausman and Klinger 2007 and Rodrik 2004.

GF(4b) Unmet Priority Re-specification & Policy implementation needs in response to global appearance of disruptive technologies (e.g. Artificial Intelligence, Robotics, Advanced Computing, 3-D Printing,,,,,,,) with short term (and possibly long term) negative impacts on ‘Employment’, ‘SC-based growth’, ‘Inclusiveness and Social Resilience’ and CA more generally speaking[this seems to be due to a short term perspective].

GF(5)Non-updated/Narrow Knowledge base [partly a result of Non-Strategic & Non Evolutionary approaches] underlying Priority setting →Inadequate and/or Biased Policies

VC and entrepreneurial systems’ policies of a number of European countries up to and including the 1990s were largely static, non evolutionary and non systemic (Avnimelech et al 2010, Rosiello et al 2011). Similarly, VC policies in Finland and other countries during 1990s and early 2000s were too short term (see Lerner 2009, Chs 6,7; Teubal and Kuznetsov 2011). **Even if** explicit priorities existed they abstained from considering i) systematic pre-emergence conditions for the emergence of a VC market; ii) the possibility that emergence of a VC market be the key driver leading to emergence of a broader entrepreneurial cluster; and iii) possible VC-Start Up co-evolutionary processes.

Similarly, VC-related policies in middle income economies oriented to mid-tech entrepreneurship in Argentina, Chile and Thailand, seldom seemed to have been oriented to the possible future emergence of an Entrepreneurial Cluster or System. Either the relevant priority was not sufficiently specified [e.g. weak specification of key pre-emergence conditions for such a system] or it did not evolve to consider such a possibility. Exceptions include Taiwan during the 1980s and beyond(see Breznitz 2007 ch. 2); and Israel during the 1990s(Avnimelech and Teubal 2006, Teubal 2013, 2014)

⁵¹ Interactive meetings with policy makers of the Department of Innovation, Industry, Science and Research of Australia (June 2011); with Dr. Howard Alper, chairman of the Science, Technology and Innovation Council (STIC) and with MP Garneau, Liberal Party House Leader, in Canada in the context of the 2012 Bromley Lecture (Ottawa, Canada); and with the former head of Chile’s Innovation Council (CNIC), Prof. Eduardo Bitran and **the former** Head of the Board, Prof. Jose Miguel Benavente, May 2012.

GF(6) Biased Budget Cuts induced by the Global Crisis in the context of Weakly Specified (i)Priorities, (ii) Inter-priority Links; and (iii)excessive emphasis on Macro-Economic Overarching National Goals (ONGs)/Priorities[some of the latter coming from Global Institutions and Supra-national entities].

Rather than knowledge-based & CA-friendly 'Dynamic Alternative Cost' perspective (based on a reformulated and upgraded set Strategic Priorities and associated policies in the context of the country's Strategic Re-orientation), what determines the distribution of National Budget cuts (frequently focusing on 'Social Expenditure' e.g. in Education and Health, Vocational Training, Pre-School Learning and other priorities related to the "Inclusiveness and Social Resilience") is a mixture of strong Ministries, 'political' reasons and impositions from abroad including from the 'rules of the game' of supranational entities. A common phenomenon in many countries in Europe and elsewhere, such a limited view of what Country Adaptation is about could trigger a significant weakening of effective CA with long term consequences, including for Global Adaptation.

Comments: The Importance of Institutional Innovation

Venezuela and Argentina are examples of significant CA-related System Failures due to absence of the above social and political conditions. One outcome was absence of a Structural Change/Growth strategy (which is a key component of CA) let alone a full-fledged 'strategic re-orientation' to be implemented once global prices of key commodities (oil, soya) would start to decline). Other countries including some in Europe might also have experience CA-relates System Failures. A System Failure in Israel relates to its political un-willingness to significantly improve and extend Education and Training (especially to and for the poor who represent a high proportion of overall population by OECD standards, see OECD reports and analysis from Israel's prime Business Paper, The Marker). Another System Failure of that country concerns its failed response to new opportunities for achieving peace [see academic work and articles by a highly respectable political scientist at the Hebrew University, Professor Y. Dror, including in the Haaretz newspaper during 2014 and 2015].

A final point is that the Global and Domestic Changes mentioned above plus other aspects of the Globalization process (in the sense both of increasingly free movement of goods, people, capital and knowledge/technology and of acceleration of Technical Change) are likely to create strong links(at a point in time or inter-temporally) among subsets of ONGs(which are the entities which directly affect CA). Examples are the links between 'Immigration Absorption' and other ONGs such as 'Education & Training', 'An Innovative Society and Economy', 'Structural Change/Growth'; and 'Inclusiveness and Social Resilience'; and between all of these and Employment and other Macro Economic ONGs such as 'Growth' and 'Capacity to pay Pensions and Debt'. Note that some of these might also be linked to 'A Flexible Political System' and even 'Maintaining Liberal Values'.

BETTER LINK THE FOLLOWING PARAGRAPHS TO THE PREVIOUS ONES

A key issue when analyzing 'strategic' priority-related system failures concerns *the institutional underpinnings* for setting an effective National and Government *Strategic Priority* (both the "K" and the "I") system and for assuring its continued updating in response to new Threats/Challenges/Opportunities, both domestic and foreign i.e. a flexible process of Strategic Re-Orientation.

Specific issues in this regard include⁵²-

*The importance of creating a 'space' for the autonomous formulation and updating of National and Government Strategic Priorities (GF 4)

* Mechanisms to improve the allocation of funds for Generic Technology Development and Applications across the various Ministries and Policy Agencies involved in such technologies (suggested by GF 3);

* Mechanisms for identifying patterns of policy-interconnectedness and for inter-Ministerial coordination in this regard (suggested by GF 3);

*how to reign- in and control the Defense Budget, including overlapping of expenditure between the Army, Air Force and Navy (suggested by GF 2);

* New 'routines' concerning export of military equipment including sophisticated defense systems which take into account 'unwanted spillovers of knowledge' (GF 4b) and 'other' 'negative' (or 'positive') spillovers pertaining to ONGs and strategic priorities related to 'international relations', promotion of 'global issues' such as 'peace' & 'protection of the environment' and even 'reduction in the flow of immigrants to Advanced and Middle Income countries';

*Creating a 'complex' and adaptive system including mechanisms for the continued updating of Cyber Security-related strategic priorities and associated policies on the ground (for an illuminating summary of the issues see The Economist, April 8, 2017 p. 9)

* As part of efforts supporting an Entrepreneurial State (see Mazzucato 2012, Bonvillian 2011) or a CA-supportive Strategic and Entrepreneurial Government/Government System (Teubal 2014)-create a mechanism for the continued updating and re-structuring of strategic priorities associated with innovation, start- ups, innovative SMEs and entrepreneurial clusters, one which-due to Paradigmatic changes- may facilitate significant changes in the way policy making in some countries is undertaken nowadays.

Needless to say, a lot of innovation (including innovation in Government and for Government) will be required. This leads to the role of 'Strategic Innovation Policy' (see Section 9).

⁵² The term 'mechanism' to be used in what follows is intended to cover both institutional & organizational innovations (including new routines e.g. concerning exports of military equipment and the increasingly important new routines for changing routines)

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Section 8: The Changed ‘Strategy and Policy System’ and its CA impact: Inter-Priority Links and Policy Inter-connectedness

The violent new Threats/Challenges mentioned above (Section) and, more generally speaking, the expansion of the Globalization process involving enhanced freedom of movement of goods, knowledge, technologies and people explains the ‘emerging’ importance of i) Inter-Priority links (‘upstream’ in the country’s ‘Strategy and Policy System’) and ii) ‘policy’ inter-connectedness patterns and links (‘downstream’ in such a System).⁵³

An example of policy inter-connectedness and links ‘downstream’ in the above System is the link (or potential link) between policies affecting “Education and Vocational Training” and policies associated with ‘Employment’, ‘Health’, “Housing’, ‘Personal Security’ etc. This means that what we do (or not ‘do’) in the Education area could have an impact (or could very much depend) on how we deliver Health and Housing (and even Transportation and Personal Security) services, and vice-versa.

There are several reasons why policy interconnectedness could contribute to Country Adaptation. First, the integrated provision of Government Services in above priority areas could contribute to key CA-friendly ONGs such as ‘Inclusiveness and Social Resilience’ and ‘Poverty Reduction’. This because easy access to such services e.g. through advanced smartphone and digital technologies might involve much less effort and time and be much more effective and adapted to the needs of different socio/economic/ethnic groups. Moreover, such services could be better integrated among themselves and be accessed without intermediaries.⁵⁴

The CA impacts could go far beyond their contribution to the above ONGs, since by stimulating ‘better informed and educated citizens’ leading to enhanced and more focused participation in the democratic process, the above policy mechanisms (particularly the ‘integrated services’ supported by SIP II) would contribute to avoid political fragmentation, loss of liberal values and even ‘populist’ Governments with non-CA friendly policies(see above Section 4).

A Second reason why policy interconnectedness could contribute to CA concerns Immigration Absorption where the advantages of effective and well developed policy interconnectedness might-ceteris paribus- be even greater relative to what they are for other groups of the population. This is a relevant point given the fact that Globalization and Wars are increasing the waves of Immigrants reaching not only the countries of Europe but other countries as well. Whether a particular country wants or doesn’t want

⁵³ In parallel to (and as part of) such changes new and stronger links appear among the key ONGs affecting Country Adaptation under such circumstances

⁵⁴ see SIP II in the next Section which is directed to enhance key ONGs such as ‘employment’ and ‘inclusiveness and social resilience’.

immigrants is one thing; but for those agreeing to receive and absorb immigrants [even when this is part of a Global Commitment rather than being a key ONG of the country in question], a key issue is how policy interconnectedness could contribute to their effective Absorption. A related issue is how Immigrant Absorption Policy relates to SIP [see next section] and how it contributes to CA⁵⁵.

Section 9: Strategic Innovation Policy (SIP) and Country Adaptation (CA)

Background to SIP and Key Areas and Types

Building on the previous section I contend that confronting the dynamism of the Global (and Domestic) environment requires a shift in focus from *Traditional Innovation Policy* (& 'technological innovation') to *Strategic Innovation Policy (SIP)*. This also involves a shift to a broader view of Innovation to include e.g. institutional, organizational, managerial aspects as well as 'services/software (or software-hardware) innovations.

While *Traditional Innovation Policy* which focuses on supporting 'technological innovation' undertaken by and for market forces in the presence of Market Failure⁵⁶, *Strategic Innovation Policy* also supports 'social/services' innovations by and/or for other agents (including individuals & civil society organizations such as NGOs) directed to empower the less fortunate members of society(SIP II). In addition, SIP also supports as well as Strategy & Policy/services

⁵⁵ If it is agreed that 'Integrated' & interconnected policies covering the areas mentioned above [and even within a particular area of Government services such as Health-see SIP II below] are desirable for the local poor, disadvantaged and disabled populations, they would also be so for immigrants. More than with existing populations who speak the local language and who are better connected, successful 'immigration absorption' may critically depend on the above mentioned pattern of integrated solutions. Thus the structure and pace of "Immigrant Absorption" in terms of the new language skills being acquired could then be a key factor determining the evolution of the procedures and routines to be applied in each one of the other areas mentioned above (Education, Health, Transportation, Housing, etc).

⁵⁶ While Market Failure was typically associated with business R&D where it was supposed to create 'underinvestment' which Traditional Innovation Policy was supposed to overcome, there are other MF-related functionalities such as *engineering, design and startup of new process equipment* which should be dealt with as well. While SIP I must also include such components it goes beyond this by focusing on 'packages' which, in addition to innovation support today could also provide additional support, including 'targeted support, of innovation systems or other meso-level entities tomorrow. This goes beyond Traditional Innovation Policy. For an example see Teubal 2016a, Appendix III

innovations –including organizational, managerial and institutional innovations--by and/or for public sector agents or organizations including the Government itself (SIP III) .

Support of ‘Services’ innovations (whether ‘social’ or related to ‘strategy & policy’) are **or constitute** a central *innovation type* of Strategic Innovation Policy, one which played a relatively minor role in Traditional Innovation Policy. It reflects the enhanced importance of ‘services’ in advanced economies including in their Governments, particularly but not only those related to ICT.

Examples of *Types* of innovation and *Areas* supported by SIP include-

- (viii) **Innovations** in Management & Organization *both* of/for firms & market forces *and* of individuals & civil society organizations & Government (*Area*);
- (ix) **Enhanced** access & **enriching** of Government services (e.g. medical services) to individuals & civil society organizations(*Area*) e.g. facilitating access to services and interaction with the relevant provider, particularly by the less fortunate groups of society;
- (x) **Promoting** Visualization, ‘Qualitative’ Pattern identification, **Super-forecasting** (see Tetlock and Gardner 2015) and Scenario Building & analysis of alternative futures (*Type*);
- (xi) **Techniques and procedures** for ‘robust’ policymaking under conditions of strong and even Radical/Type 2 uncertainty, see Lempert 20?? (*Type*) e.g. including **attempts to link the qualitative and quantitative dimensions of policy making and its impact** (*Area*)
- (xii) Identification and formulation of key National and Government strategic priorities (*Type*)
- (xiii) Support of the process of *identifying* ‘robust’ strategic re-orientation profiles in response to actual or expected Shocks, Threats and Opportunities (*Area*);
- (xiv) Focused Search, classification and updating of inter-priority links and policy inter-connectedness (*Area*)
- (xv) **Innovations facilitating** ‘implementation’ on the ground of a N/GS or of the above ‘strategic re-orientation’. **This could include** mechanisms to assure effective priority-policy coordination ‘downstream’ which also allow for ‘upstream’ or ‘two way’ feedback from both experimental and ‘regular’ policy making (*Area & Type*)

Most if not all the ‘Social/Services’ innovation *types are* either non-physical or the non-physical part is key. They include e.g. information, various types of “routines” (see Nelson and Winter

1982), and Algorithms & Software among others.⁵⁷ ⁵⁸These and other innovative ‘technologies/techniques’ underlying SIP and SIP Types could (or might increasingly) rely on Artificial Intelligence(AI), Deep Learning, Neural Networks and Augmented Reality.⁵⁹

Users of the Social &/or Services component of SIP could include the population at large including a wide variety of individuals first and foremost (but not only) the less fortunate groups in society as well as user groups like Non-Governmental Organizations and other ‘civil’ society groups (*SIP II*). Finally, a no less important user of SIP would be the Government itself who would be ‘providing (or outsourcing) & receiving innovative services’ in the context of Re-inventing itself with the aim of enhancing its role in continued CA (*SIP III*).

SIP II and Country Adaptation

SIP II’s key function is to provide complex, interrelated and continuously improved ‘services’ of various kinds to the country’s inhabitants (with both ‘customization’ and ‘holistic’ components). Its services /services’ innovations comprise *functional aspects* [e.g. do Educational services also include the very important ‘pre-school’ component?]; *improving service access* e.g. through smartphones and without intermediaries; and *service integration* e.g. *within* the category of Health Services or *by linking* e.g. affordable Housing with adequate Transportation and access to Education and Personal Security services. The outcome of *SIP II*

⁵⁷ Their usefulness is both quantitative and ‘qualitative’. Examples of the latter concern the nature and specifics of e.g. new Health threats and new Security threats as well as disruptive technologies which substitute an existing industry for another which is radically different. Like with good theory which sets the key variables and relationships to be measured statistically or through econometric work- in the violent environment which countries face nowadays (with constantly new and even unexpected phenomena of key importance making their appearance) identifying the ‘qualitative’ dimension of the new Threats (or Opportunities) may be of critical importance (and even might have to be prioritized when assessing their quantitative dimension). A recent article in the Economist (see above) implicitly or indirectly suggests that the AI/neural networks capacity for ‘pattern recognition’ might be useful for solving some of the knowledge creation and decision-making issues confronting country adaptation nowadays such as identifying the ‘qualitative’ aspect of the new threats or opportunities as well as the quantitative implications. Both might in principle be the outcome of case study work supported by (or interacting with) Theory. See Nelson & Winter 1982 and other comments on Appreciative theory by R. Nelson.

⁵⁸An example of a ‘qualitative statement’ embodying a completely new Threat of key importance for CA nowadays is the ‘*the power of one*’ mentioned by Thomas Friedman of the New York Times in an interview in Bloomberg. It was his view that so much power in the hands of a single individual together with other factors could imply a complete change in the security challenges facing countries nowadays. When applied to the country adaptation conceptual framework of this paper it could mean a complete change in the ‘adaptation function’ and on the structure of (and links between) the various ONGs affecting it. The above statement exemplifies the potential power of ‘qualitative change’ which should become part and parcel of those thinking about how nations could survive and prosper nowadays.

⁵⁹ Their relevance (and link to Big Data) is likely to increase in the future. When faced with radical changes in the global or domestic environment as well as Radical (Type 2) Uncertainty concerning both the ‘exogenous future’ and the implications of alternative policy actions today, policy makers might have to act as ‘players’ of chess and possibly even more so, of “Go” (for the latter see Economist ADD 2016 and the article entitled ‘The Brain-Boosting Power of Video Games’ in Scientific American, June 2016). By the same token, Artificial Intelligence (AI) would seem to imply that such technologies might also play significant roles in *SIP II* and *SIP III* (see “March of the Machines” and “The Return of the Machinery Question” in The Economist, June 25, 2016).

could be singular improvements in important CA-relevant ONGs such as “Public Confidence in Government”; “Inclusiveness and Social Resilience” and “An Innovative Economy and Society”. By contributing necessary political pre-conditions for Governments to adopt a N&GS and/or the required ‘strategic re-orientation’ dictated by new Threats and Challenges, SIP II might indirectly also contribute to continued CA (see ‘Dynamic Sequence’ below).

Such services and service-innovations, which would be extended to the Unemployed/Less fortunate Members of Society and to Immigrants could complement other important services (and service-innovations) such as i)cutting edge & updated Vocational Training and ii) support of Self-Employment, SMEs and Entrepreneurship/SUs.

SIP II service innovations could be targeted to the needs of particular individuals or families depending on ethnicity, level of education, etc. Together with traditional Wage and Employment policies (mentioned above) and creation of new (or improvement of existing) industries and/or sectors and/or clusters, such policies could help individuals (including helping them help themselves) by empowering them to be more productive through a set of evolving and interrelated policies which not only directly help Employment but also (through enhanced CA) indirectly.

Note that the knowledge underlining the required and even continued changes in the structure of policy-interconnectedness characterizing SIP I and SIP II (and possibly SIP III as well) might be difficult to acquire without changes in the structure and operations of Government (and example could be creation of semi-independent Policy Agencies which, with greater degree of freedom when compared with Ministries/Secretaries, could better interact both among themselves and with upstream priority setters). The potential importance of this fact becomes clearer once we recognize that the frequent and even violent changes in the threats and challenges confronting the country are likely to produce important and even radical changes in policy inter-connectedness patterns.

I summarize the discussion up to now with the Dynamic Sequence of Box 3

BOX 3: SIP II and Country Adaptation

SIP II → Enhanced “*Inclusiveness & Social Resilience*” →
 → Improved participation in the Democratic Process →
 → Enhanced Likelihood of a CA-friendly Government⁶⁰

SHOULD COMPARE WITH BOX 2B

DECIDE WHETHER TO REFER TO BOX 2B AND DELETE BOX 3 OR TO GIVE JUSTIFICATION FOR LEAVING BOX 3

⁶⁰ This sequence is incomplete since it ignores the important role that SIP III could play –see below.

IDEM WITH BOX 4 IN NEXT PAGE

Links with SIP III, 'Strategic Re-Orientation' and Country Adaptation

The impact of SIP II's empowerment of the most vulnerable segments of the population on 'Inclusiveness and Social Resilience' could weaken the 'political fragmentation' and associated rise of 'populism' in the Political process which could accompany a high and sustained jump in Unemployment^{61 62}. If this is the case SIP II's empowerment should seriously be considered by countries with a significant and sustained growth in *unemployment*.

The CA-impact of such an empowerment derives from the impact of such an empowerment on Government's 'flexibility' and 'willingness' to undertake the required 'strategic re-orientation' dictated by global and domestic changes even if most of the results would or are expected to appear in the medium and long term. This could involve a significant process of Re-invention or restructuring of Government⁶³ which is a key aspect of SIP III.

SIP III which promotes innovations in the structure and operations of Government (both the 'upstream' knowledge component of the country's *Strategy and Policy System* and the 'downstream' policy articulation on the ground component) plays three important *roles* in the 'strategic re-orientation' process favoring effective country adaptation to the above-mentioned violent changes in Global & Domestic environments facing the country. First, by contributing to 'design' & 'implement' a relatively free from 'politics National and Government Strategic Priorities' space, it would facilitate the required Strategic Priority updating process (the 'upstream' *Knowledge Creation function*). Second, innovative support of design and implementation of policies on the ground in the various 'policy areas' associated with the required Strategic Re-Orientation, account taken of 'downstream' inter-priority links in the short-medium and long term (*Knowledge Articulation function*); and iii) contribution to visualize and implement the required Changes in the institutional and organizational/managerial/regulatory set up for the above—including priority- policy and inter-policy coordination.

⁶¹ This is a key issue that increasingly will confront countries if for no other reason than the gradual *diffusion* of Artificial Intelligence (AI) though the use of neural networks (see above footnotes and). A recent program by the TV channel Bloomberg has emphasized this point ('most jobs including e.g. journalism and important management jobs are bound to be substituted by machines') as well as the implication that countries should start to 'massively' train workers for the new era (which they are not doing).

⁶² The implied assumption is that there might be *strong complementarity* between social/software policies directed to 'empowerment' of less privileged members of society (e.g. improving their education and health) on the one hand *and* other employment-enhancing policies of Governments such as *Flexibility in Employment, Vocational Training, Macro-economic policies and support of SME/'Entrepreneurship'*

⁶³ See above Section's 4 and 5. Alternatively, it could be stated that the impact of SIP II on 'Inclusiveness and Social Resilience' might stimulate the Government to become 'more strategic & more entrepreneurial'. This in turn might increase the country's 'adaptability'

BOX II: Impacts of SIP II and SIP III on CA⁶⁴

New Threats/Challenges-→SIP II-→"Favorable Political Conditions"

-→SIP IIIa →'Upstream' Strategic Re-orientation-→SIP IIIb--→

→ Inter-connected 'Downstream' Policies & associated organizational and institutional changes

-→ Continued CA

A tentative conclusion is that a policy *exclusively* oriented to *directly* create Employment might not be enough from a medium and long term CA perspective, since disruptions from other factors such as Wars, novel Health Threats, Natural Disasters & Climate Change, etc might sharpen the Weakened "Inclusiveness and Social Resilience" generated by and associated with the initial drop in Employment ⁶⁵(with implications concerning whether a 'populist' future Government which, as a result, might be elected would be sufficiently interested in proceeding to act in favor of effective country adaptation")⁶⁶.

In such a context, *inter-connected policy making* might require both a measure of 'traditional' Wage and Employment Policies (more wage flexibility, reduced cost of employing and firing workers, and 'some'-not necessarily updated-vocational training) as well as a whole range of SIP II "social &/or services' innovation support as well as a set of SIP III policies directed to the restructuring of Government and its operations (including policy-making).

CHECK IF SHOULD DELETE NEXT TWO PARAGRAPHS

I conclude that a key practical and analytical point is that the impact on CA of e.g. a sharp/unexpected drop in Employment, could very much depend on those organizational & managerial changes in Government that are required to adequately consider both inter-priority links and associated inter-policy connectedness. This also leads us to the importance of SIP III (directed to facilitate a restructuring of Government as well as the facilitating the upgrading of policies on the ground). By way of example, assume that the country in question traditionally favors 'immigration' (or has global obligations to do so). In these circumstances, policy makers should increasingly be aware that policies favoring immigration today might have to be inter-connected with

- *Immigration Absorption* in the short, medium and long term (e.g. family & individual support in functional areas such as learning the local language & other Pre-School

⁶⁴ In what follows SIP III's first role is represented by SIP IIIa and its second role by SIP IIIb

⁶⁵ Or might cancel any short term improvement that "direct" Employment policies might have achieved

⁶⁶ For an example of 'populist' reaction to Unemployment in Midwest US see article entitled 'Rusty Roof' in The Economist, 2 July 2015 and others which attempt to interpret the results of the recent election in the US [See Economist]. Similarly, see other articles on the causes and implications of Brexit in the UK as well as the above mentioned article in pp. 19-24 in the same issue entitled 'Anarchy in the UK'.

Learning, Primary and Secondary Education, Health, Higher Education, Culture, Employment & Vocational training, Personal Security, etc); and to

- *Structural Change and Growth of new meso-level entities (as well as improvements in existing entities);*
- *Innovation and Absorption of New Technologies; and*
- *Macro-economic issues like short term Deficit and long term pension sustainability etc.*

The fact that such linkages and the need to assure continuation of *'Inclusiveness and Social Resilience'* for existing populations (including Harmony between them and Immigrants) are important for country adaptation- further enhances the complexity of the overall Strategy/Priorities and Policy system and the importance of the social &/ services component of SIP. It also contributes to explain why the continued evolution of SIP and the continued updating of National/Government Strategy are or should be connected.

More on SIP III

The three roles of SIP III mentioned above involve *direct and indirect support of innovation oriented to "Government Re-inventing Itself" as part of a CA process of 'strategic re-orientation (itself a response to important changes in the set of Threats and Opportunities facing the country)*. The outcome would be a significant *knowledge push effect* on 'downstream' policy making [which first and foremost affect the Objectives of policy] on the ground, one which will require not only *new management routines* but also *changes in the structure and organization of policy making*. As mentioned such a re-invention process requires both *ascertaining the required changes* in Vision/set of ONGs/ set of National & Government Strategic Priorities resulting from the new Threats/Opportunities *and visualizing their implications in terms of institutional, organizational and managerial changes in the structure/operation of Government*. While this role of SIP III differs significantly from the 'standard' innovation support paradigm, it fits very well with SIP's (and more specifically, SIP III's) indirect role in supporting a country's National Innovation System (NIS).⁶⁷

Within such a perspective *SIP III comprises two types of actions, direct and indirect*. Over and beyond the 'knowledge' push effect from *direct innovation support of policy making in all policy areas (including support of new methods for inter-Ministerial coordination and for assuring inter-policy connectedness)*- SIP contributes to the National Innovation System (NIS). Such an *Indirect [or NIS-directed]* support should *take place through promoting and updating the institutional and organizational set up underpinning both a continuously updated National*

⁶⁷The above could be considered as *an extension of the notion of NIS in Advanced and Middle Income Economies* [see Nelson ed. 1993; Edquist ed. 1996; and Edquist's paper at the ICC] *to include the CA-system itself*. Thus NIS should include-- not only the institutions and organizations associated directly and indirectly with innovation e.g. Technological Centers, Incubators, Universities, Innovation support Agencies, Intellectual Property Rights, Patents, etc --**but also** a country's **N&GS**, the institutional set up making **upstream** knowledge creation and 'downstream' knowledge implementation in terms of policies possible, and even the 'stock' of knowledge emerging from such a sub-system

and Government Strategy (including ‘strategic re-orientation’) and its ‘downstream’ implementation on the ground⁶⁸. Types of Indirect support of policy making include reinforcing inter-Ministerial coordination or changing the rules of the game linking Regions to the Federal Government by allowing the formulation of (some) regional priorities by the regions themselves; or increasing the number of relatively autonomous “policy” Agencies in those areas where a lot of ‘strategic & Policy’ knowledge had been accumulated in the past, prior to the efforts at creating a N/GS⁶⁹.

Summary of Phases in SIP III and an Example

In what follows I present a simple three step and-for simplicity- linear view of the dynamics of SIP III I and its contribution to CA.

Step a (“Institutional and Other Pre-conditions”) is SIP III’s contributing to create a workable institutional and organizational framework for the creation of an independent and significantly autonomous N/GS (including continued ‘strategic re-orientation’ efforts dictated by changing domestic and foreign conditions). As with all or most of SIP III, the stimulus for engaging in the above is not the outcome of the standard ‘incentives to innovation’ of Traditional Innovation Policy. Rather, action leading to such pre-conditions for a *continually adapted* N/GS could be spearheaded by *enlightened government officials* (maybe with the required ‘political’ links) who -- given ‘the prevailing new model of reality’ characterized by the continued and frequently violent and unpredictable changes in the global and domestic conditions facing countries⁷⁰ -- understand the inevitability nowadays of enhanced complexity both in setting policy objectives and in implementing them on the ground.

Step b (“Knowledge Creation”) is the actual formulation or setting of a National and Government Strategy. Since this should be distinguished from the actual implementation through policies on the ground of (the subset of) Government Priorities, this step involves only the Knowledge [or Knowledge Creation] Dimension of N/GS. I argue that a continually updating dimension may require significant ‘innovation’ and significant ‘incentive to introduce innovation’ in actual priority setting e.g. for identifying patterns of inter-priority links and how these change through time [see below].

Step c (“Policy Level”) This includes (i) techniques for characterizing that the last Section of any and every Government Priority’s BoK (Recommendations/General Policy Objectives) be the

⁶⁸ REWRITE, SHORTEN AND SIMPLIFY THE FOLLOWING Note that there are ‘other’ Government actions [we could call them ‘political’ or ‘exogenous’ in the sense that they are not a result of new, endogenously-created knowledge] to restructure and to increase the efficiency of Government in its policy making/implementation role which are not part of SIP III although they may still contribute to enrich a country’s NIS. In some cases knowledge about what Government re-structuring is required for effective policy making already exists, but these are not implemented due to ‘political reasons’ or outright corruption.

⁶⁹ SHOULD MENTION-MAYBE IN TEXT- ARTICLE BY ECONOMIST ON FLEXIBILITY OF EU; THE THREE TIER MODEL BEING CONSIDERED; THE ROLE OF LEADING COUNTRIES, ETC.

⁷⁰ The motivation might be professional, ‘political’, ideological or a combination of these

basis for ‘downstream’ policy design and implementation on the ground; and (ii) innovations in policy making contributing to identify and implement policy.⁷¹

An Example

A partial example of steps a)-c) **concerns** the ‘strategic re-orientation’ of Israel during the second half of the 1980s and during the 1990s a process propelled by ‘System Learning’ by key agents in Government at the time **both** in response both to immigration from the former Soviet Union and to new threats as well as new opportunities facing innovative companies. It was a simpler case **compared** to that confronting countries nowadays. At the time there was consensus across the political spectrum that **focusing simultaneously on innovation and innovative companies (‘High Tech’) on the one hand and on immigration from the former Soviet Union (‘Immigration’) on the other** was (in our terminology) CA-friendly. These **ONGs where complementary and they** led to a new strategic priority (early stage Venture Capital) **supported by the well- known Yozma Program**. It also led to other interlinked policies such **as the Incubators Program (which supported SUs as well as technically proficient immigrants) and the Magnet Program (which supported high tech, pre-competitive consortia comprising both SUs and established companies)**. The outcome of the interrelationship between the three key policy programs was **emergence of a new ICT oriented Entrepreneurial Cluster during 1993-2000 –a highly favorable CA outcome.**⁷²

Summary, Conclusions and Implications (Part I)

Part I proposes that Governments of Advanced and Middle Income Economies seriously focus on the increasingly important and complex ‘Strategic Knowledge & Strategic Knowledge Creation’ requirements of policy making nowadays. This view flows from what looks like a Paradigmatic Change in the

⁷¹ **The above** division of labor between ‘independent setting of strategic priorities’ [call it “Thinking”] and ‘Government policy **which** implements them on the ground’ [call it “Doing”] is key **when confronted by a combination of deep economic crisis and disruptive technologies**. This **because such ‘exogenous’ changes might require, from a CA perspective, a significantly different ‘knowledge base or knowledge underpinning’** than what was common in the past. In such a context knowledge formulation may require a strong intellectual & creative input, even more so once we recognize the potential importance of a new set of inter-priority (and even inter-ONG) links

⁷² **The importance of promoting immigration absorption together with high tech development, while exciting in itself, is only one more example of the enhanced importance in the post 2008 world of priority interconnectedness and policy interconnectedness. We may also find such linkages in policies directed to” affordable housing’ [as part of articulation of the key ONG frequently mentioned above, namely “Inclusiveness and Social Resilience’] which to be successful, might have to be linked to timely and geographically adequate policies on education, health, transportation and personal security for the less advantaged, to say the least. The System Failure in housing policy making which results from not considering the other ‘related’ markets- differs from the Government Failure in Housing Policies for the poor in the US during the 1980s analyzed by Stiglitz [such Government Failure were due to inadequate consideration of how the ‘rental market’ works with no mention of the other conditions for such policy to be effective).**

global and domestic context under which countries operate, itself the outcome of globalization, climate change and technological change.

Give Knowledge Push a Chance!

This monograph suggests that the implied *new 'Strategy and Policy System'* requires both a new institutional setup (e.g. the 'authority' & 'autonomy' of the new priority setting organization) & innovation policy support (e.g. Strategic Innovation Policy, particularly SIP III). Neither of these are 'static', one-shot decisions. Rather, they are dynamic processes with feedback effects. Under such conditions aiming at Sustainable Country Adaptation (CA) makes sense.

Such a component would be generated rather autonomously and independently of the 'political system', thereby potentially countervailing the possible presence there of 'short termism', 'politics' and even corruption. The knowledge component would be embodied in each Strategic Priority comprising a country's National (and Government) Strategy, with each such priority being a Body of Knowledge whose last section (for Government *Strategic* Priorities, GS) would include formulation of General Policy Objectives. Priority-Policy mechanisms of coordination would assure that 'Downstream' policy makers at the Ministerial level would consider such Objectives as a basis for Specific Policy Design and Implementation on the ground⁷³.

Strategic Innovation Policy (SIP) would be an important component of Policy. It would also play important roles in the process of Strategic Re-Orientation in response to new Threats and Challenges; and might also play a role in inducing the required structure, institutions and operational routines of the country in question.

Note that success in the process and outcome might have to involve a diminished role of 'politics' and 'corruption' in Government policy. Moreover, in some cases, the requirement could be so stringent that only new political leadership accompanied by the re-organization of the Government System or of some of its key institutions or routines could make a difference.

Depending on case, the alternative to the above process might be continued country non-adaptation and risk of falling into a path-dependent, self-sustaining Valley of Death (probably reinforced by political changes promising but failing to deliver improvements in citizens' welfare).

⁷³ Part II will enrich the analysis of *priority-policy coordination* by introducing a meso-level [i.e. between 'upstream' strategy/strategic priority setting and 'downstream' policy making] involving an explicit and largely institutional coordination process (both in the sense of creating new agents/organizations and in the sense of new 'Rules of the Game')

An additional point is to note that different countries may need different profiles both of creation of the above system as well as of strategic re-orientation e.g. involving different sets of strategic priorities and interconnected policies. While macro-economic issues might be central in many countries, by and large they should be part of a broader package involving other, no less important, strategic priority areas through specific/structural change-oriented investments directed both to neutralize new actual and expected Threats as well as exploiting new Opportunities.

Throughout and in contrast to previous views concerning the effectiveness of economic and political systems (and their implicit CA properties)— a key objective of any CA-friendly ‘strategic re-orientation’ in response to violent changes in the global and domestic environments should--no less than exploiting new Opportunities-- be directed to compensate, relocate and upgrade the capabilities of ‘losers’.

Implementing a Strategic Perspective to Country Adaptation i.e. an effective ‘Strategy and Policy System’ would require developing and introducing innovations both in policy making as well as in the structure and organization of Government. A key underpinning is creation of a ‘space’ for a ‘politics’-free, autonomous and independent formulation and continued updating of a set of National and Government Strategic Priorities i.e. the ‘knowledge component’ of a National & Government Strategy(N&GS) which we describe as lying ‘upstream’ in the country’s ‘Strategy and Policy System’ (see Section 11 in Part II of this monograph). Moreover, innovations directed ‘downstream’ in such a system (& for the subset of *Government* Strategic Priorities only) it might have to include institutional, organizational and ‘governance’-related changes as well as new capabilities and ‘routines’ (both to underpin actual ‘policy making’ on the ground as well as to assure that it faithfully reflects the relevant priorities ‘upstream’).

Strategic Innovation Policy (SIP) will play key roles in the above process starting with a significant reinforcement of Traditional Innovation Policy directed to support innovation, innovative firms and innovative clusters (SIP I). A key non-traditional role would be *promoting innovations facilitating* a) the identification and updating of inter-priority links thereby contributing to the process of formulating N&GS; b) idem of policy inter-connectedness; and c) of policy sequencing. An example of the latter ‘policy making innovations’ could be e.g. linking *outcomes* of general/‘horizontal’ innovation support with both i) creation of new policy targeting “options” (e.g. new industries or new cluster configurations) and ii) “selection” of one or a small number for implementation on the ground

All three contributions to policy capabilities and policy making {i.e. a). b) and c)} would also be relevant for SIP II e.g. new routines and smart-phone based procedures and links (including ‘personalized’ ones) linking diverse

medical areas or directed to favor and empower the poor and most fragile segments of the population by linking employment opportunities with types of *vocational training, affordable housing, personal security, education and health.*

Another contribution of SIP (particularly SIP III) would consist of organizational and technical innovations which generate new tools for identifying & characterizing new routines for effective NSA ↔ MOF & CB interaction and coordination (see below Section 10); for *priority-policy coordination & interaction*; and for *inter-ministerial coordination & cooperation*. Finally, SIP III might be involved in supporting innovations identifying the benefits and costs of particular profiles of Government restructuring e.g. the importance of substituting some Ministries by semi-independent Policy Agencies.

Further research is required to identify the key roles that SIP III (and SIP more generally speaking) could play. There is no doubt, however, that the frequency and violence of the Threats/Challenges and Opportunities facing nations pose new policy & institutional challenges which new configurations of SIP may help to solve

A key conclusion of this paper is that countries should, simultaneously and continuously, generate adaptive responses to both Economic Crises and to new Threats/Challenges and Opportunities with 'strategic' implications. Another conclusion is that this requires a diversified, multi-dimensional and dynamic response-both strategic and macroeconomic. This monograph's message is that creating and continuously updating an integrated "Strategy and Policy System" (including its changing institutional underpinnings) might be a useful policy focus for a large sub-group of Advanced and Middle Income countries.

PART II: INSTITUTIONS, A NATIONAL RESEARCH COUNCIL (NRC) AND SUSTAINABLE COUNTRY ADAPTATION (CA)

SECTION 10: A NATIONAL RESEARCH COUNCIL (NRC) FOR SUSTAINABLE COUNTRY ADAPTATION (CA): THE ROLE OF INSTITUTIONS⁷⁴

⁷⁴ Throughout I will be assuming a 3-power Democratic System of Government.

10.1 ‘Autonomy’ in Complex Knowledge Production & Utilization; and in Complex, Knowledge-based Decision Making

In most Democracies there are organizational entities and functional areas which- due to complex processes of knowledge creation and/or of knowledge-based decision making- *are* or *should be* independent (or *significantly* independent) of i) the Government/Executive and of ii) a voting process (by the Legislative or directly by citizens).

The term ‘**Autonomy**’ is used here to describe the institutional framework (‘Rules of the Game’) supporting such a process. Its potential relevance covers areas & associated organizations where complexity in knowledge creation or knowledge utilization is present in a significant way. A key example of ‘Autonomy’ from this paper’s perspective is a **National Strategic Council (NSC)** in charge of (i) ‘orchestrating’ i.e. organizing, overseeing and coordinating the formulation (& continuous updating) of a National and Government Strategy (N&GS-“K”) **and** (ii)- by playing a key ‘knowledge-input’ & coordination role-contributing to their ‘downstream’ implementation (N&GS-“I” or GS) ^{75 76 77}

Table 10.1 describes the set of knowledge creation and/or associated decision-making organizations/ institutions where Autonomous (or semi-autonomous?) decision making would seem to prevail-in one configuration or another- in Advanced & Middle Income countries.

TABLE 10.1: INSTITUTIONS/ORGANIZATIONS WITH ‘AUTONOMOUS’ DECISION MAKING

1. The High Court of Justice;
2. Attorney General, State Prosecutor & Comptroller General

⁷⁵ NSC’s ‘Autonomy’ would also apply to its role in influencing ‘downstream’ implementation in terms of ‘policies’ on the ground of GS (which is the subset of N&GS whose implementation on the ground is not ‘endogenous’ i.e. is not blocked by MFs and/or SFs-see Section 5 and 10.4). This will involve coordination and interaction both with the Central Bank and the Ministry of Finance, Budget Bureau (MOF); as well as with individual Ministries in charge of policy making in specific areas. It should be noted that the NSC –which was not discussed in Section 5- would also be active *both* in the interface between formulation and updating of a N&GS (what has been termed there N&GS-“K”) **and** in its ‘final’ implementation on the ground [N&GS-“I”]. See 10.3 below (also for the link between GS and the closely related N&GS-“I”).

⁷⁶ Note that Implicit in the above statements is the view that a key Overarching National Goal (ONG) underlying effective Country Adaptation **nowadays** is to formulate, update and implement a set of National and Government Strategic Priorities (see Sections 1-5).

⁷⁷ Note also that a NSC as defined above seems to exist only in a few countries. It should not be confused with the Science and/or Technology and/or Innovation Councils (and/or Chief Scientists) operating in Advanced and Middle Income Economies. This because their area and structure of activity are likely to be too narrow compared to what is required from the NSC(see below).

3. **A National Strategic Council (NSC)**
4. **The Central Bank (CB**, which formulates Macro-Economic Policy and aspects of Financial Regulation);
5. **Ministry of Finance, Budget Bureau (MOF)**
6. **Autonomous Policy Agencies**
7. **The National Archives**
8. **Central Bureau of Statistics**, etc.

The **MOF** is a highly specialized & professional department of the Ministry of Finance who, together with the NSC and through its interaction with the Central Bank and the various Ministries/Secretariats, participates in the process which leads to the 'downstream' implementation of the country's **N&GS (i.e. of its GS)**, including 'prioritization' of such a process.⁷⁸

Autonomous Policy Agencies are Policy organizations or secretariats headed by professionals where policy-making is supposed to be isolated from political pressures **ADD REFERENCE**. They might be particularly useful for coping with the '*policy interconnectedness*' characterizing current policy-making e.g. exploiting the links between *Innovation Policies* and *Immigration Absorption Policies*, or between *Employment Policies* and policies leading to the 'empowerment of vulnerable/disadvantaged sections of society' (see Section 8). An example of "strong" Autonomy of such an institution was Israel's Office of the Chief Scientist (OCS) which successfully implemented the Government's Strategy towards 'commercially-oriented' Innovation (at least) during the 1969s-2000 period (see Appendix 1 and Teubal & Avnimelech 2004 & Avnimelech & Teubal 2006). The *indirect impact* of such an institution and of its role (together with other Agencies and Ministries) in Immigrant Absorption was to trigger the eventual emergence of an *Entrepreneurial High Tech Cluster* and related domestic *early stage* Venture Capital industry during the 1990s (see Appendix A)⁷⁹.

The above list shows that while the *Government/Executive and/or Parliament/Assembly/Senate and/or country citizens* (through a Referendum or General Election) make or contribute to make selected complex knowledge-based decisions -- they do not do so in all areas. **In other words**, there are **urgent** 'policy-related areas'

⁷⁸ Since the NSC is a significant if not the key player (see 10.3 & 10.4 below), such an interaction is or could be the basis for 'A knowledge-push' & limited 'politics' profile of downstream implementation i.e. of N&GS-"I"/GS

⁷⁹ In contrast to such a success and due to political interference (The Marker, several issues during the 2014-17 period), Israel's Gas-related Policy Agency did not play any significant role in formulating Government Policy concerning exploitation and utilization of the significant Gas reserves found in the Eastern Mediterranean. The possible presence of a significant *System Failure* in this area strongly suggests the need for *strengthening the institutional framework supporting (largely) 'Autonomous' 'Policy Agencies'*.

which are so fundamental and so knowledge based that they might, to some extent, have to be isolated from 'politics' and the 'political system'⁸⁰.

Concerning the NSC and the need for a N&GS, I conclude with a double message- **First** the urgent need for a 'Strategy and Policy System' involving an 'upstream', NSC-orchestrated **formulation** of a N&GS component and a 'downstream' **GS implementation** component; and **Second-** an adequate "institutional & organizational setup" for such a knowledge-intensive & 'politics-free' process to be possible.

The key message of this monograph is that the above system and process might make a singular contribution to **Sustainable Country Adaptation (CA)**.

Such underpinning parallels similar institutional set-ups which exist in **other areas e.g.** the **High Court of Justice, The Central Bank, and The Central Bureau of Statistics**^{81 82}.

10.2 Direct and Indirect 'Autonomy'

Frequently the '**Direct' Autonomy** of the 'organizations/**institutions**' of the list in Box 10.1 is expressed in **the laws/decrees that created them and/or in their Charter**. From a CA perspective, this is not enough since there need not be any assurance that the Head/Manager of such institution/organization would act 'independently' and '**strategically**' in situations when this is required, especially if the criteria for **action or policy** selection is overwhelmingly 'political' rather than 'functional' & based on capabilities. Moreover the political process might succeed in changing the charter of the relevant institution with the result that even a bona fide selection of **its** Head might not assure the 'professional/unbiased attention to the complex 'knowledge-creation' or 'complex knowledge- based decision making process which the organization/institution was originally supposed to undertake.

Moreover, **Direct Autonomy** of organizations involved in knowledge-creation and/or complex/knowledge based decisions is not enough. This because even then, the

⁸⁰ This fact may also have implications concerning the interactions between the Legislature and the NRC (see below)

⁸¹ Argentina's Central Bureau of Statistics has, as of late, recovered its traditional independence from the Executive, see The Economist **June ???** 2017

⁸² The concepts N&GS, N&GS-"K" and N&GS-"I" were formulated under the assumption (like in this draft) that there are no 'strategic' priorities formulated at the 'regular' Government level of most countries, despite the fact that Government agencies might provide 'inputs' to the strategic policy making activity of the NSC. In this case, the concept of GS broadly coincides with that of N&GS-"I". This might be a simplification e.g. in some cases, and assuming absence of a strong 'politics' and/or 'corruption' environment, the relevant Ministry/Secretariat such as the Ministry of Defense in some countries, might play a pivotal role in setting *bona fide* & *CA-friendly* Defense-related priorities e.g. Communications/ Communications industry regulation by the Ministry of Communications. In other cases Government institutions like the CB or MOF might have accumulated experience relevant to the formulation of regulation- intensive priorities (→Bank Regulation by the CB). In these and in other similar situations, the relevant GS might exceed N&GS-"I". Future work- which will also have to differentiate between 'strategic' and 'nominal' priorities-will attempt to deal with some of these issues.

Government or the Legislative may determine the *process of selection* of key individuals who will be heading such organizations and who will be making such decisions. In such cases, (full) Autonomy **i.e. non/minimal interference** may require both *Direct & Indirect Autonomy*.⁸³

We conclude that while real 'Autonomy' (i.e 'direct' and 'indirect') matters it may be difficult to enforce. Different countries may have different institutional set ups underpinning (or directed to generate) 'autonomy' of the organizations listed above (in Figure 10.1). They will not always succeed. Moreover, as part of an extended political game some Governments might attempt **to reduce effective i.e. direct & indirect** "Autonomy" of some key institutions/organizations.

I summarize **with a list of** some of the issues concerning 'Autonomy' from a Country Adaptation perspective with a focus on the activity of the NSC and its 'downstream' influence in promoting CA-friendly policy making (at the Ministerial/Secretarial level)

- (i) There seems to be a strong case for the *autonomous* generation of *complex strategic knowledge* (embodied in a continuously updated and CA-relevant N&GS) by (**or orchestrated by**) an *autonomous NSC*;
- (ii) **Lack of Autonomy** could **lead to** strong interference of 'politics' and even 'corruption' in critical decisions concerning the narrative and priority-implementation profile of key strategic priorities, **with negative implications** for 'downstream' policy- making and for the effective operation and adaptation of the country concerned;
- (iii) **A related or, part of the problem is the significant complexity of identifying & articulating on the ground the strong links- in the short/medium and long term- among strategic priorities which are 'complex'. I will show this with an example.** Over and beyond a measure of 'neoclassical remedies' to Unemployment (**such as greater wage flexibility**), **implementation on the ground of a complex priority such as assuring High Levels of Employment** may require simultaneous and coordinated actions in other priority areas such as *Entrepreneurship & SMEs, Updated Vocational Training, AI Research, Restructuring of*

⁸³ Note that the 'rules' of nomination of judges (including judges of the High Court) seem not always to be fully specified, or even if they were & depending on case, Governments and key politicians or the Legislature in several countries have wielded undue influence in key nominations. An example of undue influence of the political process (and of 'politics') is the recent decision by Poland's Legislature to enable the Government to select (or to determine the process of selection) of judges for the High Court (NYT XX July 2017). Moreover there are cases where the Executive has ignored or significantly modified existing regulations. It follows that there are numerous pathways through which the *indirect influence* of Governments and/or key politicians could operate. Recent events strongly suggest that this might be the situation in some countries of Eastern Europe (The Economist...**XXX**.....) and in Venezuela to mention a few. My presumption is that in such cases the 'indirect' impact of Government could be quite substantial.

Existing Industries and/or Targeting New Industries, Empowerment of the Poor & most Vulnerable segments of the Population and even with priorities in the Education [including e.g. Pre-School Learning] Health and Immigrant Absorption areas (see Section XX above)⁸⁴.

- (iv) **Similarly**, effective ‘Autonomy’ might also give the NSC a strong knowledge creation **and knowledge access** advantage over downstream policy makers (at the Ministerial/ Secretarial level) in less understood but-nonetheless-**important CA-friendly ONGs and** priority areas such as **(or associated with) Equity and Justice for All, Dealing with Climate Change, Promoting Livable Cities, Personal Security and even Cyber-Security⁸⁵.**
- (v) **An important** reason for **NRC ‘Autonomy’** is the enhanced complexity originating in 1) the requirement of continually updating National and Government Priorities in response to new Threats/Challenges and Opportunities with strong implications concerning **reformulation of** ‘downstream’ policy objectives; and 2) **the associated requirement of beefing up and/or restructuring** the relevant capabilities and even institutional setting under which **such ‘dynamic’** knowledge creation process is taking place⁸⁶.
- (vi) **It is my opinion** that a *strong institutional underpinning assuring effective ‘Autonomy’ of the NSC* (i.e. one which minimizes the direct and indirect interference by the Government) **and a clear functional role in ‘downstream’ policy-making** would be desirable. This does not mean, **however**, that-- in response to the chaotic dynamics, radical uncertainty and enhanced systemic complexity characterizing countries and their links with the global environment— **a structure of such rules (i.e. particular institutional framework) assuring satisfactory CA outcomes**

⁸⁴ The absence of **political constraints together with** the ‘knowledge’ generated (and capabilities accumulated) **by a truly Autonomous institution/organization like the NRC** might very well enable it to successfully orchestrate the identification & characterization of such inter-priority links (which are basic for ‘downstream’ policy inter-connectedness, see Section XX) relatively better than downstream Ministries/Secretariats.

⁸⁵ Similarly, in areas where awareness of the need to formulate strategic priorities is less understood e.g. concerning BREXIT in the UK, priorities being a pre-condition for a Referendum on this issue, see **Conclusions below**.

⁸⁶ **Having said that it is important to mention that with respect to very sensitive and/or complex** priority areas such as Defense, most countries have created specialized agencies designed to set strategic priorities. **In such cases, the newly created NSC would have to coordinate with them in a number of activities e.g. in building patterns of inter-priority links which extend far beyond those links made explicit by the specialized agency.**

in response to all possible Threats/Challenges & Opportunities exists.^{87 88}

- (vii) From a CA perspective, attempts at dealing with such unpredictability (**especially in periods of violent changes**) while also **supporting a fully autonomous NSC** will, in all probability, require the re-invention of Government (and even the State) to make it more **Flexible, Strategic and Entrepreneurial**.⁸⁹

The above remarks lead to the notion of *Prioritizing (implementation of) Government Strategic Priorities* or *Prioritizing GS on the ground* (see 10.3 & 10.4 below).

10.3 Towards Effective 'Policy' Implementation of N&GS: NSC interactions with the CB and MOF(Preliminary)

While an institutional framework allowing 'downstream' *specific policy design and implementation on the ground* which reflects 'upstream' knowledge creation (i.e. a continually updated N&GS, orchestrated by the NSC) is highly desirable since it would be 'free from 'politics'- *there are other 'downstream' considerations which should be considered as well* (even in an 'ideal' world). An important one concerns *interactions* between the NSC and the Central Bank (CB) (the CB is a key agent in Macro-Economic Policy as well as in setting Macro-Economic objectives/ priorities). **Another** involves NSC's **interactions with** the Ministry of Finance, particularly the highly professional Budget Bureau (MOF), assumed here to be in charge of the country's Budget. The size of the Budget, actual and expected surpluses or deficits, the allowed relative level of accumulated Debt and the allowed Deficit would be key for determining the resources available for policy making i.e. for 'downstream' implementation of the subset of GS, particularly the *short term* component.

In what follows I will focus on the *nature of the interactions* between the three institutions/organizations: NSC, CB (Central Bank) and MOF with a focus on the links/interactions between the NSC on the one hand and (individually) the CB and MOF on the other. The NSC is a key *non-conventional* institution/organization focusing on **orchestrating** 'upstream *strategic* priority setting and updating' i.e. a relatively *new-knowledge creation function* which –by effectively linking and interacting with the existing institutions (CB and MOF) could play a key role in 'effective' downstream policy making

⁸⁷ Under other reasons we have the 'reality' *unpredictability* of Chaos Theory as applied to modern economic-social-political systems (Ormerod , among others). Needless to say this basic feature contrasts with the explicit or implicit view prevailing in 'standard' Economics (at least till the 1990s or until the crisis of 2008), **both concerning its perception of reality and its way of thinking e.g about the link between the past and the future.**

⁸⁸ The above situation enhances the potential importance of 'Guardians of the Gate' which are individuals whose public standing and reputation might influence the views of their fellow citizens (**including key politicians and high level Government officials**) thereby indirectly influencing the political process.

⁸⁹ See Bonvillain 20XX; Mazzucatto 2012; and Teubal 2016). A related CA condition given the dynamics of change and its inherent unpredictability is the enhanced importance of the human factor e.g. new political leadership may be *sine que non* during periods of deep crisis. **ADD SOMETHING ABOUT THE NEED FOR A SYSTEMS VIEW OF THE AUTONOMY AND AUTHORITY OF THE NSC**

(and through this **have an impact** on overall Country Adaptation). **Related to this is the fact that such interactions will also contribute to *Prioritizing (Implementation of) Government Strategic Priorities***

The key interactions to be considered are-

- i) ***Interaction A***: concerns the NSC and each individual *strategic priority team* (in charge of formulating individual strategic priorities or in charge of a ***priority area*** involving more than one strategic priority);
- ii) ***Interaction B***: involves the NSC and the Central Bank (CB);
- iii) ***Interaction C***: involves the NSC and the Ministry of Finance/Budget Bureau (MOF); and
- iv) ***Interaction D***: involves the NSC and individual Ministries/Secretariats in charge of policy making on the ground in **particular areas**.

Over and beyond *coordination issues* e.g. concerning the definition and delimitation of priorities- ***Interaction A*** could contribute to the *qualitative characterization of individual strategic priorities* such as *Background & Narrative*, identifying and characterizing *Inter-Priority links* in the short/medium and long term; visualizing [and possibly choosing] among *alternative priority implementation profiles*; and (for GS **only**) formulating *General Policy Objectives*.

Interaction B involves the NSC and the Central Bank (who would be in charge of- or the leading agent in- *setting Macro-Economic objectives/priorities*) with ***broad implications*** concerning the extent and time profiles by which 'Government Priorities' (**GS**) could be implemented).

Interaction C involves the NSC and MOF **leading to aggregate** information concerning available budgets/financial availability for GS support and to ***individual priority-implementation information*** concerning monetary costs, 'alternative costs' and (orders of magnitude of) 'quantifiable' benefits (see also 10.4 below).

When extended to the whole set of GS, the above interaction would help clarify, transmit and even improve **both** the shared understanding about *the nature, extent and distribution of inter-priority links* resulting from implementation of GS **and implications for the budgeting of individual Ministries/Secretariats/Policy Agencies**. A key benefit of this is enhanced understanding of *the pattern of policy inter-connectedness* resulting *both* from the pattern of inter-priority links and from the specifics of the financial constraint/surplus confronting the country⁹⁰.

⁹⁰ **CHECK CONSISTENCY AND WHETHER THIS IS ALREADY MENTIONED IN THE TEXT** While 'upstream' priority-'Downstream' policy coordination could, in principle, lead to an 'ideal pattern' of policy inter-connectedness, other factors should such as the National Budget financial constraint derived from the MOF of MOF & CA would also have to be considered. Moreover, **the extent by which the resulting pattern of resource allocation contributed to CA would also depend on the CB and MOF agreeing on the prioritization of GS(across priorities and through time) put forward by the NSC.**

Needless to say the above process and-more precisely- the information/knowledge generated by it could enable the MOF to play a key role in inducing the **required inter-Ministerial policy coordination which is an important institutional underpinning for a CA-friendly pattern of implementation of strategic priorities** (individually and collectively across the set of GS).

In some countries & circumstances such a knowledge-based process could contribute to dampening what would seem at times to be **a ‘politics’-oriented [“give and take”]pattern of inter-Ministerial policy coordination.**

Finally, concerning ***Interaction D***, I assume the existence of **active** collaboration and exchange between *highly professional Policy Agencies* at the Ministerial level (one at a time) and the NSC. A key topic might be confronting the ‘upstream’ *General Policy Objectives* of each strategic priority (known by the NSC) with the *Specific Policy Design (& Implementation profile)* put through by the Policy Agencies **in charge of Implementation on the ground. When proceeding in this way across the set of GS it would be possible to ascertain** “the extent by which the emerging policy inter-connectedness patterns **reflect (and are consistent with) the inter-priority links identified and specified ‘upstream’ in the country’s “Strategy and Policy System”** (for more on such links see Section 5)⁹¹.

Further Reflections and Summary

Effective implementation of GS **requires a meeting of minds** between highly professional upstream priority setters (and the NSC) and the professional elite of the Ministry of Finance **and its Budget Bureau** (MOF). Their interaction and mutual learning process-while focusing on resource availability—should **also** lead to the joint appreciation of the quantitative (and even the ‘qualitative’) CA-relevance of at least a subset of **key strategic priorities (including** their interrelationships in the short/medium/long term). The fact that a budget constraint might always exist (especially **in response to new significant Threats** which the NSC has formulated **in terms of new** priorities across a **broad** spectrum of **key** Priority Areas), only enhances the difficulty in making the ‘right’ funding and support decisions.

We cannot overemphasize **the fact** that the above is a complex affair since priorities are mutually linked (directly and indirectly) and comprise short, medium and long term components. **Moreover, the country's Budget may represent an additional constraint.** Alternatively it could be stated that the complexity of the new, post 2008 reality is such that it is only natural to realize that the resulting policy process would also

⁹¹ This could be of great importance since, frequently, policy making ignores important aspects of policy-interconnectedness e.g it might favor a 'politics-oriented' profile of connectedness rather than a *bona fide* strategy-oriented profile. **Moreover, such an analysis might also contribute to check whether or not** individual Ministries/Secretariats/Policy Agencies attempt to minimize 'strategic' policy inter-connectedness in order to internally appropriate a higher share of **the relevant MOF funding** (rather than sharing it with other Ministries)

be complex and possibly lie beyond both the prevailing political setup and the capabilities at hand.

System Failures in the above mutual process involving the NSC and the CA & MOF may be the outcome either of *political unwillingness to interact* and be influenced by the *knowledge-oriented NSC* or of a *bureaucratic approach [rather than 'an entrepreneurial and strategic approach] to policy making, which—unfortunately-- seems to prevail among some Advanced and Middle Income economies*⁹²

Note that-in periods of unexpected crisis and shortage of tax receipts⁹³ **the mechanism or process linking 'upstream' 'knowledge' and 'downstream' *policy making (account taken of resource constraints) may require an explicit process of Prioritization of Government Strategic Priorities (GS), that is, *which priorities should be implemented first and which, later on; and to what extent and when.* This is the theme of the rest of the subsection.***

10.2 'Prioritizing Implementation of GS: Preliminary Thoughts or "*Towards and Integrated 'Strategy & Policy System/ Process*"

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The starting point is my presumption that even in well-organized and de-politicized situations -and more so during periods of significant Strategic Re-orientation- **linking upstream 'strategy' with downstream policy would not be a linear process.** Rather it should involve a preliminary action directed to *Prioritizing (Strategic) Priority Implementation* through an intense interactive process involving the NSC and both the CB and MOF⁹⁵.

Prioritizing (Strategic) Priority Implementation involves two sorts of knowledge and two basic qualitative-quantitative estimates:

- A) Substantive knowledge: for. each individual 'strategic' priority. This includes both 'qualitative' knowledge about (background and narratives, objectives, inter-priority links, future scenarios, alternative- and selected- implementation profiles, recommendations & general policy objectives) provided by the NSC; **and** quantitative knowledge on **policy implementation costs**, provided by the MOF;

AND

⁹² See Summary and Conclusions of this monograph

⁹³ Either currently and/or expected in the short/medium term (including situations involving significant 'politics' or 'politics and corruption' leading to significant 'waste' of Government Resources.

⁹⁴ Recall that GS is a subset of N&GS, namely, those **strategic priorities** whose implementation on the ground is not 'endogenous' i.e. is constrained by either Market Failure (MF) and/or System Failure (SF, see Section 5 above). **Note that the concept of N&GS-"I" refers both to "endogenous" and to "policy-induced" implementation of strategic priorities.**

⁹⁵ For simplicity I will be focusing below on interaction between the NSC and the MOF (who will also be considering macro-economic variables, **particularly the Budget constraints**. Future work will **attempt to** include the CB explicitly into the interaction and coordination processes (between the NSC and MOF) focused here.

- B)** Qualitative-quantitative estimates for each strategic priority including (i) **MOF's** alternative cost estimate in terms of **the cancellation or delay in implementation of other priorities in the short, medium and long term**; and (ii) **NSC's** estimate of the contribution of each strategic priority to Overarching National Goals & CA.

A) provides the 'basic **knowledge and information** for the estimations done in **B)**; and both set the basis for **C)**, which focuses on linking or confronting the 'strategic' **ONGs/CA** perspective at the 'upstream' priority level with the strongly 'macro-economic' (and weakly 'strategic' & 'nominal' priority approach) accompanying **MOF** decisions⁹⁶ in Advanced and Middle Income Economies

Before proceeding it is important to mention that **C)** is complex with no clear methodology appearing in the literature on how to 'bridge' between the strategic & largely qualitative approach of A on the one hand and the macroeconomic and largely quantitative approach of B. Such complexity may be even greater if we assume that a 'political compromise' must underlie any **agreement** especially **once** we recognize the fact that many Governments have a strong propensity **and bias** to focus '**excessively**' on the short run.

Whether because of 'politics' **and/or** 'corruption' the short term **bias of many** (including non-Populist Governments) may be devastating from a CA- perspective. It could lead to minimalist investments (and associated institutional reform) directed to counter/confront new **future** Threats/Challenges such as *Protection of Key Chemical Installations; Floods, **Urban and Forest Fires**; Draughts & Hunger; Contamination of Water Supplies; Air and Soil Contamination; New Personal Security Threats, Cyber Threats as well as* effectively dealing with **Unemployment** including future unemployment resulting from applying AI and other technologies to production processes [see above & Section XX)].

Sustainable Country Adaptation requires not only creating & updating a N&GS which-through specific investments and institutional changes- targets the above Threats and Challenges. Over and beyond Macroeconomic constraints, it also requires a CA approach to visualize how to Prioritize the GS component of N&GS e.g. concerning additional knowledge (& inter-priority link) requirements; possible impacts of new Threats/Challenges/Opportunities that may arise; and political compromises.

The above leads me to distinguish between two sub-phases in the process of Prioritizing the implementation of GS, namely **B1 and B2**. **Their importance will be particularly strong during periods of rapid change involving new**

⁹⁶ see Section 5 for the distinction between 'nominal' priority (which is not much more than the 'priority name') and a 'strategic priority' (see above and Section 5).

"Threats/Challenges/Opportunities" configurations (with strong CA implications). Both involve a Learning Process (one by the NSC and the other by the MOF)⁹⁷.

B1 The NSC Identifies the 'strategic' and CA implications of the above new set of Threats/Challenges/Opportunities. The first step is to generate a small group of key **strategic** priorities to confront/exploit the above Threats/Challenges/Opportunities. A second step requires defining a CA function in terms of a subset of ONGs (some may already exist, others must be added or deleted) which reflect such priorities. Finally, an estimate should be done of the CA implications of the new set of strategic priorities resulting from such changed perception of Threats/Challenges and Opportunities. The calculation will have to assign different weights to different ONGs and through them, to different strategic priorities.

B2 The MOF determines the Macro-Economic Implications of the same new set of Threats/Challenges/Opportunities. Compared to NSC's role in B1, MOF's role in the formulation of a new set of Macro-Economic Objectives/priorities (such as GDP, Growth, Employment, Inflation, Deficit and Debt/GDP ratio) would involve a stronger quantitative and a weaker qualitative emphasis. It would also tend to give a relatively stronger focus to the short run implications. The outcome would be a new set of Macro-economic objectives/priorities.

C. The MOF together with the NRC will 'evaluate' the 'Social Desirability' of alternative combinations or 'packages' of a) 'N&GS' and associated Country Adaptation outcomes; AND b) Macro-economic objectives resulting from B1 and B2.

This would be followed by a mutual/consensual choice by both institutions of one or a small number of 'good' combinations packages ('good' from both a Strategy/CA and a Macroeconomic/MOF perspective).

The above would set the basis for a joint MOF/NSC proposal to the Government, who will have to make a 'strategy-macroeconomic' choice.

Moreover, as part of the 'implementation on the ground' of the above Government choice (and as a result of the mutual learning process of both institutions) two additional steps will be undertaken. First, a 'full-fledged' process of Prioritizing Implementation of Government Strategic Priorities (GS)^{98 99}. Second, creating the

⁹⁷ Rather than prioritizing *a given* GS, a new global and domestic context calls for prioritizing the new GS (say GS*) that is that emerging from the new N&GS (say N&GS*)

⁹⁸ Future work will attempt to explicitly incorporate Macroeconomic objectives/priorities directly into the CA function.

⁹⁹ Such a leaning and prioritization process would contribute to subsequent NSC-MOF coordination (or 'Strategy' & macro-economic coordination) 'downstream' in the country's 'Strategy and Policy System' [see 10.4 below]. It should be noted that, while existing policies of Advanced and Middle Income Economies already consider 'strategic' elements, they do so insufficiently and possibly in a minimalist, 'nominal (rather than 'strategic') priorities' sense (see below 10..

institutional underpinnings for effective Policy-Interconnectedness e.g. assuring effective inter-ministerial coordination in policy design and implementation on the ground¹⁰⁰.

To summarize:

The key challenge for the subsequent interaction between NSC's *qualitative-strategic* estimates and evaluations on the one hand; and the MOFs *quantitative-operational-macroeconomic* assessments on the other comprises two key phases [A) & B)] and a third mutual learning process by the NRC and the MOF [phase C)].

The outcome would be a small set of pairs involving 'Strategic' Country Adaptation Scenarios AND related Macro-Economic Data & Information based on a common set of e predictions about major future Threats & Challenges). .These will subsequently be presented to the Government for approval and subsequent implementation on the ground.

Needless to say a true meeting of minds among the two approaches is a necessary condition for the above 'strategic' & 'macro-economic' outcome to be possible. **Yet this is only a necessary condition for an integrated and effective Strategy & Policy process/system.Governments as a whole must also be actively involved.**

I will mention two key roles or functions-of Governments.

First, acceptance of a (or a small set of) CA friendly strategy –macroeconomic objectives combination (and implicitly, a particular 'profile of strategizing implementation of GS), and

Second, assuring (through new 'rules of the game') the inter-ministerial coordination required for effective policy inter-connectedness.

Both would lead to an Integrated "Strategy and Policy Process/System".

Since this requires a *Flexible, Strategic and Entrepreneurial Government* such an outcome might only become possible through significant reform in most countries.

From the perspective of this monograph the key component of Country Adaptation-friendly Government Reform is acceptance and active promotion of an 'independent' NSC and the institutional setup to assure its *autonomy* in operations and impact (including its interaction with other key players such as the MOF, the CB and individual Ministries/Secretariats). The details of such a framework will depend on country specific factors such as (i) whether or not *The High Court* and other key organizations are sufficiently autonomous (both '*directly*' and '*indirectly*')

¹⁰⁰ This means that, for 'strategic reasons' Governments should impose the required Ministerial discipline in the short, medium and long term.

viz a viz Government and Politicians; and (ii) whether individual Ministries/Secretariats have the *professional capacity, will & authority* to operate 'strategically'. Last but not least are the country's political culture; the capacity and 'behavior' of its Head of State (e.g. *populist* or *strategic & entrepreneurial*); and whether or not well established behavioral and organizational routines underpin and support wide scale 'politics' and/or 'outright corruption'.

10.5 A 'Basic' Dynamic Sequence: Creation and Operation of a NSC leading to a N&GS¹⁰¹

Globalization, Climate Change, and Political & Technological Change →

- *Violent & Frequent New Threats/Challenges/Opportunities facing countries*-> awareness that- a new, knowledge-intensive strategic approach to policy making **is required** ->
- *Creation of the Institutional Underpinnings for a National Strategic Council (NSC)*->
- *Creation of a NSC in charge of formulating a N&GS directed to 'sustainable Country Adaptation' (CA) with additional authority to coordinate 'downstream' implementation on the ground of the resultant strategic priorities* →
- Initial Operations of a 'Strategy and Policy System involve identifying Key Strategic Priority Areas & associated key strategic priorities including inter-priority links;
- Identifying the subset of key Government Priorities (GS) i.e. those whose implementation on the ground requires explicit policies →
- Institutional set up for 'downstream' Strategy-Macro Economic interactions and decisions
- *Strategy -- Macro-Economic interactions leading to effective coordination between all the organizations involved (NSC, CA, MOF-1)*

¹⁰¹ What follows is a descriptive (rather than an analytical) sequence whose sole purpose is to present the reader a semblance of the string of events leading to a fully functioning NSC. I am ignoring for the time being feedback effects, path dependence and exogenous changes which, in a fully dynamic model, would characterize the actual process followed in a particular country (including its success or its failure to adapt).

→ **'Downstream Implementation' & Learning** (key strategic priorities)

->Adjustments in the set of GS (to reflect Macro-Economic Constraints) and in Macro-Economic Policies to effectively reflect key Strategic Priorities →

-> alignment of 'Strategy' & Macro-Economic Policy

->'Downstream' implementation on the ground of the above-mentioned

→ **Re-invention of Government and Government System** to enhance efficiency and operationalize & extend to all priorities

→ **Full Operation of the new 'Strategy and Policy System/Process**

->Extension of 'Downstream Implementation' to all strategic priorities (including-see below-- new ones & updating of existing ones)

→ **Changes in Globalization, Climate Change & Political and Technological Change-→**

- new Threats/Challenges/Opportunities facing the country
- new/modified strategic priorities {N&GS, including the set of 'complex' strategic priorities) and a new set of Government Priorities (GS); as well as to new Macro-Economic constraints

→ At some point in time, a **Renewed New Strategy & Policy System** may be required; and if significant, the above steps/phases-including those involving 'institutional changes- would have to be re-taken and re-designed again.

SECTION 11: THE DYNAMICS OF COMPLEX STRATEGIC PRIORITIES

11.1 Complex Strategic Priorities¹⁰²

As a starting point I would like to emphasize the key difference between a *Strategic Priority* and a *Nominal Priority*. A *Nominal Priority* is not much more than its 'Name' e.g. 'Reduce Poverty' or BREXIT with a minimum of detail if at all. These same 'priority names' would represent 'strategic priorities' if they are accompanied by a *Body of Knowledge (BoK) with Sections* addressing Background, Narrative, Inter-priority links, Alternative Future Scenarios, Profile/Profiles of Implementation, and Recommendations & General Policy Objectives (see Section 5). Note that a common usage of the word 'Priority' relates to 'General Objective or Objectives' without much of an explanation i.e. a *Nominal Priority*. It seems to be widely used not only by citizens but also by politicians and even Heads of State.

'Complex Priorities' are a special kind of 'strategic priorities' (from here the term used occasionally of 'complex, strategic priorities'). Over and beyond the complexity of all or most of the Sections comprising their BoK, *complex strategic priorities* usually *involve alternative formulations of at least some of them*. By way of example only, the *Narratives* leading to the 'strategic' priority '*Reducing (or Reducing the rate of increase of) Global Warming*' could be a) Global warming is due to man-made activities; or b) man-made activities are only a minor cause of global warming. **Each one of them will have distinct *Implementation Profiles* and distinct *Policy Recommendations*.** Similarly with BREXIT there are *alternative configurations to aim at* during UK-EU negotiations concerning (past) *Narratives* and *Objectives*; Possible future Scenarios Profiles of Implementation & Recommendations/General Policy Objectives [Martin Wolfe 2017 (quoted in *Haaretz*, June ?? 2017 and *The Economist* July 2017).

What follows are examples of complex or potentially complex 'strategic' priorities, in some cases with two or more '*alternative formulations*' (where one of them may have to be *selected* e.g. by Elections or a Referendum¹⁰³).

¹⁰² Complex Priorities are likely to be associated with alternative formulations in terms of *Narratives*; *Implementation Profiles*; *Inter-priority Links* and *Recommendations/General Policy Objectives*

¹⁰³ Choices among alternative *Profiles of Implementation* and/or *General Policy Recommendations* may also have to be made in the context of 'regular' strategic priorities. However, in contrast to 'complex' strategic priorities, some of such choices could be made in the context of the activity of the NSC (and the relevant priority formulation group or groups) **in coordination with the CB and the MOF.**

- “National Reconciliation (with FARC ¹⁰⁴) and Reduction of Coca Production” in Colombia [*The Economist*, several issues during 1015-17];

- “Avoiding (& Effectively Dealing with the consequences of) Flooding” in Bangladesh, Holland and the US's Eastern Seaboard;

"Staying or Choice among Alternative BREXIT profiles' [*M. Wolfe, Financial Times*, ;"The Six Flavours of Brexit" *The Economist*, July 17, 2017; New York Times, several issues 2017]

“Poverty Reduction + Updated Vocational Training” [*The Marker & Haaretz*, several issues]; and “Continued Occupation or Two State Solution” [idem} in Israel¹⁰⁵;

“Eliminating Corruption in Government” (Mexico, Brazil, etc);

“Confronting the Threat of Draughts/Fires and/or dealing with them and their Consequences” in Ethiopia, Canada, the UK, Australia, etc [many sources e.g The Economist, several issues.¹⁰⁶

A key aspect of complex priority formulation would seem to be the necessity of making choices among alternative configurations of the "same" complex strategic priority (or complex strategic priority area). This in turn has important implications concerning formulation and/or implementation on the ground of such priorities. As it turns out, it might be very difficult and even impossible to 'satisfactorily formulate' complex strategic priorities and even to make *ex-ante choices* of key Sections independently of the 'implementation process'. Moreover, without serious prior work by the relevant 'priority-formulation team' to identify, structure and formulate alternative options for the relevant priority section or sections (or,

¹⁰⁴ "*Frente Armado Revolucionario de Colombia*" (FARC) was an ideologically motivated guerilla group which challenged the Government and State till recently when *Implementation* of a Government-led proposal of peace and reconciliation was **accepted**. A key source of income for FARC was growing coca leaves and transforming them into cocaine[CHECK EXACTLY]. As with other *complex strategic* priorities **the substance of its text explicitly** links different 'simple' or 'regular' priorities.

¹⁰⁵ **As with the "options for BREXIT" indicated above, Israel's two options "Continued Occupation" or "Two State Solutions" do not directly relate to the relevant BoK. Rather they are a key 'selection' requirement emerging from the process of formulating such a BoK**

¹⁰⁶ The reader should recall [Sections 1 and 5] that nowadays sustainable country adaptation (CA) requires a set of **strategic** priorities involving specific/structural investments and/or institutional changes and/or policies directed to avoid (or minimize consequences resulting from) possible future Threats and/or minimize future destruction & loss of life or GDP. These would include e.g. Isolating radiation from Nuclear Power plants (or from used fuel of such plants), Avoiding or rapidly dealing with Leakages/Destruction of certain Chemical Installations; Strengthening long standing Power Dams; drastic reduction in (or in contamination of) water supplies, Containing new Cyber Threats, Dealing with new Personal Security threats, etc. My presumption is that prioritization of most of these involve not only strategic priorities but also strategic priorities which are complex.

alternatively for the priority as a whole), the result of a Referendum will have little substantive significance¹⁰⁷.

Alternatively it could be stated that, while a *linear process* of priority *formulation followed by implementation* might, *grosso modo*, could characterize 'simple' strategic priorities, it *should not characterize* 'complex' ones. A key reason for this is the *cognitive* impossibility of 'selecting/choosing' a strategic priority variant prior to implementation on the ground¹⁰⁸. This *choice/selection problem* seems to contrast with choice among *relatively well defined* set of options in the literature (Kahneman 2011, and Tversky's suggestions concerning 'choice procedures' as summarized e.g. in *The Economist*,,,,,,,,,). I conclude that in some very relevant cases of priorities involving 'choice', knowledge & experience from 'downstream' implementation on the ground might be *crucial to 'finalize' the formulation* of complex strategic priorities^{109 110}

Over and beyond the complexity and uncertainty associated with the need to formulate alternative options when setting complex strategic priorities-is the need to choose/select among such options. Simple & well understood choice decisions based on a 'nominal' view of the relevant priority would, *prima facie*, not be possible. An important example is 'Staying' in the EU or BREXIT [or one among alternative BREXIT configurations]. Whenever highly complex & 'multi-optional' strategic priorities have political consequences affecting large populations, Elections or Referendum based on a nominal view of such priorities (i.e without awareness of the 'strategic' dimension and the associated need for 'full priority formulation') might "fail" to be reasonably implemented.

Such procedural mechanisms for selection among alternative options of 'complex priorities' might have little value from a 'sustainable country adaptation' (CA) point of view (even if Governments, due to lack of awareness or 'politics', think otherwise). In some constellation of circumstances, they might even trigger a downward spiral (see Dynamic Sequence in 11.2 below, *in process*).

¹⁰⁷ Ignoring this key point is consistent with a 'nominal' rather than a 'strategic' view of the relevant priority. In fact, its unfavorable consequences for priority implementation (and Country Adaptation) could be immensely stronger the greater the extent by which the priority concerned is 'complex'.

¹⁰⁸ It might be stated that in contrast to 'choice' problems in other areas 'clinical testing' type procedures would not be possible nor useful as mechanism for intra-priority selection of complex strategic priorities of the type we are considering

¹⁰⁹ Such a functional or ex-ante *non-linearity* in the strategic priority formulation & implementation process *would add to other sources of ex-post non-linearity* generated by the political process and even by radical uncertainty. Even more so, the formulation as well as implementation of certain complex priorities like 'Reducing Unemployment & Promoting Employment' may require analyzing the complex dynamics of economic, social and political systems (and their interactions) In this connection it would be interesting to compare the thoughts presented here with the *Super Forecasting* process proposed by Gardiner & Tedlock's book (see Gardiner & Tedlock 2015)

¹¹⁰ A related issue concerns the notion of 'complexity' as applied to strategic priorities: does it refer, as suggested in the text, only to the Priority Implementation processes on the ground—what I have called N&GS-"I" -or does it also refer to the 'writing down' or formulation of the priority itself (N&GS-"K")?

In such situations, what Governments could do *to promote a stronger mandate while also fortifying the Democratic Process* – is to formulate and effectively diffuse a relevant BoK for each one of such options. Needless to say this could be extremely difficult, especially in countries with large and diverse populations and even more so, when a functioning NSA has not yet made its appearance (also the stage is open for populist Governments to act by distorting the very nature of the process as well as its overall national strategy and CA perspective).

Following M. Wolfe's suggestion in the Financial Times concerning BREXIT and the argument spelled out in three articles on the topic appearing in *The Economist* (*The Economist*, July 25, 2017)- an explicit effort at priority formulation and specification (more detailed and effectively summarized) would have helped **making 'knowledgeable' choices** among alternative BREXIT options. Needless to say and as emphasized above this might *require significant priority formulation and diffusion/implementation actions* involving not only the NSC (who certainly would have had to play an important role) but also the Government as a whole.¹¹¹

I conclude that **the contribution of 'strategic priorities' to effective & sustainable Country Adaptation (CA) depends first on the extent, quality and specificity of the knowledge created during the priority formulation process;** and second on the quality of the 'implementation-related' knowledge (**including in some cases, knowledge about required 'institutional reform'**) assembled during the early phases of priority implementation. Such **knowledge might enhance both** effective NSC coordination and interaction with both the CB and the MOF; *and* effective knowledge transmission & coordination with policy makers 'downstream' in the 'Priority and Policy System'¹¹².

A key hypothesis requiring further research is that there are multiple reasons explaining why important politicians and even Heads of State do not favor neither the formulation nor the implementation of 'strategic' priorities, even when (or especially when) these are complex. The first one is **'Ignorance'** about the importance and role of 'strategic priorities' in country adaptation [maybe the outcome of an outdated 'world view' or 'model of reality']. Another important reason is **'Political Fragmentation'** i.e. a situation where even a knowledgeable Head of State would fail to get a majority of Ministers or Cabinet Members to support creation of the institutional underpinnings for 'strategic' policy making (e.g. for creation of an 'autonomous' NRC-see the above Dynamic Sequence). The last reason for shying away from 'strategic policy making' is the existence of **'Populist Governments'** who might consider that a shift to a 'strategic knowledge' pattern of policy making might constrain an entrenched form of behavior which yielded

¹¹¹ Needless to say, a key issue in this regard concerns the awareness, capabilities, determination and political strength of the relevant Government. Unsurprisingly, new political leadership may be required.

¹¹² Note that an 'upstream' **'nominal'** (rather than 'strategic') priority perspective could easily fail

short term 'political benefits' without compromising (and even, up to a point, contributing) to their hold on political power.

All three factors seem to be present in different proportions among, at least some, Advanced and Middle Income countries. The consequence of such System Failure (SF) (even when being confronted with violent and frequent Threats/Challenges/Opportunities)—could be igniting a dynamic process of economic and social 'decline'. Once started it would be difficult to predict where such a process could lead to (even to a self-sustaining *Valley of Death* for the country concerned).

Needless to say, confronting the above challenges may not be possible without a new & more favorable institutional framework (see previous section) and, most likely, without new political leadership. It may require the Re-invention of *Government and/or the State*¹¹³.

11.2 Paradigmatic Change, C Priorities and Valley of Death: A Dynamic Sequence *to be added*

SUMMARY, FURTHER NOTES & CONCLUSIONS

Countries face increasing rapid and violent changes in the Threats, Challenges and Opportunities they face in response to the radically changed global (& 'domestic') environment confronting them. The three basic causes are: 1) Globalization; 2) Climate Change; and 3) Technological Change. In light of such a context Advanced and Middle Income Economies should seriously focus on a new & more knowledge intensive model of policy making ("*strategic policy making*") that is policy based on '*strategic knowledge*'. Together with their '*institutional*' *underpinnings* such policy-making model is 'key' for Sustainable Country Adaptation (CA) to such changes.

Strategic Priorities and a National Strategic Council (NSC)

"*Strategic Knowledge*" is **knowledge** embodied in a set of Strategic Priorities comprising the country's National (and Government) Strategy (N&GS, see Teubal 2017, Section 5). **Depending on country its generation and continued updating should take place** independently of the 'political system', through the orchestration and coordinated action of an 'autonomous' National Strategic Council (NSC). **The outcome of such a process might significantly redress or limit** the 'short termism' & 'politics' (and, to some extent, the *corruption*) of (or involved in) **policy making process of some Advanced and Middle Income Countries.**

Each **strategic** priority is a *Body of Knowledge* (BoK) with Sections dealing with 'Background & Narrative' (or alternative Narratives), 'Forecasting & Scenario Building', 'Links with other Priorities', '**Implementation Profile**' (or **alternative Implementation Profiles**) including 'Key Events & Decision Points'; and—for the subset of N&GS which are Government Strategic Priorities(GS)- 'Recommendations and General Policy Objectives'.

Meso-level Coordination and "Coherence"--the role of Institutions

A key condition for the creation of an effective NSA is an institutional framework which not only would be Autonomous (directly and indirectly, see above Section 10) but also have the Authority to interact with and significantly influence the activity of key policy-related institutions like the Central Bank (CB) and the Ministry of Finance, Budget Bureau (MOF). **Such interaction and the subsequent coordination would enable the NSA to achieve overall coherence** between the set of 'Strategic Priorities GS it sponsors and (i) the set of Macro-Economic Objectives/Priorities (where the CB would lead) and (ii) available/predicted public resources for GS in the short/medium/long term (where MOF is key). Barring significant changes in the global and domestic environments & barring significant non-predictable events, a particular trajectory for "**Prioritizing the Implementation of GS**" i.e. **what strategic priorities should be implemented first and which ones later on, would be embedded in the resulting Macro Economic ↔ Government Strategic Priorities(GS) pattern of coordination. Such an outcome would also be consistent with a 'Strategy and Policy System' supporting Sustainable Country Adaptation (CA).**

Policy Level Coordination and Interactions

The meso-level institutional interactions mentioned above also set the base for 'downstream', *policy level interaction and coordination* between the NSC and *individual Ministries* (or in some cases, *groups of*) Ministries) in charge of *Specific Policy Design and/or Implementation on the ground for each GS*. A key issue is the *degree of coherence* between the 'Recommendations and General Policy Objectives' Section of each priority's BoK ('upstream' in the 'Strategy and Policy System') and (for each priority) the Specific Policy Design on the ground ('downstream'). Another important issue requiring additional interaction and coordination is the *coherence* between the 'upstream' *pattern* of inter-priority links and the 'downstream' *pattern* of policy inter-connectedness.

Effective support of the above interaction and coordination requires a slew of institutional 'rules of game'. These rules may have to be adapted to i) new types of priorities (e.g. existing strategic priorities which metamorphose into new 'complex' ones) and to ii) new implementation contexts (e.g. a process leading to enhanced role of 'politics' over strategic knowledge in actual policy-making).

Towards "A Strategy and Policy System"

While macro-economic issues are central in many countries, by and large they should be part of a broader package oriented to 'sustainable country adaptation'(CA). This means the existence of other, no less important, strategic priority areas involving specific/structural change-oriented investments & institutional changes directed both to neutralize new actual and expected Threats/Challenges as well as to exploit new Opportunities.

This is the background to the central point of this monograph which is creation of **"A Strategy and Policy System" leading, through intensive interaction and coordination, to overall coherence between a CA-friendly 'Strategy' and CA-friendly 'Macro-Economic objectives'**. Such an outcome is the result of intensive interaction, mutual learning and coordination *between* two sets of Agents: new Autonomous Agents (the NSA & the various groups operating under its direction) with sufficient *Authority and existing*, professional *Autonomous* or *Semi-Autonomous* institutions (MOF and CB). The former are involved in setting and continuously updating a National & Government Strategy (N&GS); while MOF & CB are involved-while coordinating the Prioritization of GS implementation with the NSA- in assessing alternative profiles of Government Expenditure and Receipts; and in setting inter-temporal macro-economic objectives¹¹⁴.

The above process will lead to what could be termed-- '*strategy-macro-economic*' coherence; and-under 'normal' circumstances- to improved *Sustainable Country Adaptation* (especially when compared to a preponderant Macro-Economic approach which includes some additional 'nominal' priorities i.e. without a clear and continually updated N&GS).

Throughout and in contrast to previous views concerning the effectiveness of economic and political systems (and their implicit CA properties)— *a key objective* of a CA-friendly N&GS in response to violent changes in the global and domestic environments facing countries is compensating, relocate and upgrade the capabilities of 'losers' e.g. the Unemployed, Poor, disabled, etc. Over and beyond 'social justice', such an approach reflects our understanding that effective CA in the post 2008 (or post late 1980s, early 1990s) world requires taking into account the *dynamic* interaction between economic, political *and* social systems¹¹⁵.

¹¹⁴ Note that in addition to the MOF and CB the latter group of agents may have to include individual Ministries/Secretariats, preferably 'independent' Policy Agencies (with whom the NSA will have to interact).

¹¹⁵ **The links are particularly relevant if the country's N&GS includes some important priorities which are 'complex (see next paragraph)**

In other words, countries should simultaneously generate 'adaptive responses' both to *Economic Crises* and to *Other Threats, Challenges and Opportunities* facing the country. Such responses would have to involve both *Macro-Economic Policies* and '*Strategic*' Policies [including the relevant institutional underpinnings]. Macro-economic policies by themselves will not suffice, especially when the missing 'strategic policies' reflect a pre-existing situation involving crises not only in the Economic but also in the Political and Social spheres.

Qualitative Change, Why it is Important

According to Nelson's recent Research Policy article, *Qualitative Change in Economics* is one of three modes of Analysis the other two are *Modelling* and *Statistical Testing*.

My view is that a change in Paradigme creates a social need for a *Qualitative Description & Analysis of The New Reality* which should precede Modelling and Statistical Testing.

Qualitative Analysis plays a key role in visualizing and implementing strategic priorities (including *inter-priority links*) in the context of a National and Government Strategy (N&GS) coordinated by a National Strategic Council. Together with quantitative analysis it could contribute to--

*identify emerging *Links between Economic, Social and Political variables and systems*;

*clarify the possibilities opened up by Super-Forecasting as applied to certain types of future events (see examples in the recent book by Gardner and Tedlock);

* identify how changing patterns of *Globalization, Climate & Technical Change* affect *Threat/Challenges/Opportunities*' profiles facing different types of Nations ;
and,

*in tandem with other techniques, hypothesize what changes in Government Structures and Routines might be required to effectively confront such Threats/Challenges & Opportunities.

It should be noted also that Qualitative Change analysis could also play a role in the intellectual process leading to country recognition of the importance of Sustainable Adaptation as an Over-Arching National Goal.

Strategic Innovation Policy (SIP) and Country Adaptation

Strategic Innovation Policy (SIP) *broadly defined to include 'institutional innovations'* would be an important component of the above 'strategic' approach to Policy (and even more so in the process inducing emergence of the country's 'Strategy and Policy System'). It comprises three basic components: -an extension of traditional innovation policy (SIP I); innovation

policy directed to empower the weaker segments of a country's population e.g. the poor, immigrants, disabled, etc and to enhance the quality and interconnectedness of Government services received(SIP II); *and* innovation policy directed to change the nature & operations of Government (SIP III).

Through *innovation support directed to facilitate identification and updating of links among different strategic priorities* as well as *'patterns of policy interconnectedness'*- SIP III would promote *both Strategic Capabilities* ('upstream' in the Strategy and Policy System) *and Policy Capabilities of Government* ('downstream'). An example is linking policies which are "*directly*" oriented to reduce Unemployment (like enhanced wage flexibility and lower costs of employing and dismissing workers) with other *indirect* policies supporting Employment. The latter would include support of (continuously updated) Vocational Training, Entrepreneurship and SMEs, improvements in existing industries/clusters, targeting of new industries/clusters, empowerment of the poor and disabled (e.g health, pre-school learning & focused education) and immigration absorption.

More generally speaking, through Artificial Intelligence, Big Data, Deep Learning, Augmented Reality etc, SIP could enhance non-conventional policy capabilities. These could include new routines to identify and implement effective policy interconnectedness; new tools enhancing priority-policy coordination & interaction or inter-ministerial coordination and cooperation. It could also contribute to identify the benefits/costs of alternative Government restructuring profiles e.g. the social benefits of creating semi-independent Policy Agencies.

Strategic Re-orientation

SIP could also play important roles in the process of *Strategic Re-Orientation* which follows rapidly changing Threats and Challenges facing = countries (see SIP III in Part I, Section XX). Underlying "Success" in that transition lies improved balance or coherence between 'strategic knowledge and 'political decision making' (thereby contributing to diminished role of 'bureaucracy' and/or of 'politics' in policy making). Having said that it is worth mentioning that the above impacts and their contribution to 'sustainable country adaptation' might depend on country, Government and overall context. Thus in some cases it might very well depend on the timely appearance of new political leadership and/or a new 'strategic' Vision concerning *both* the new global context facing the nation *and* implications concerning re-invention of Government and/or State.

Complex Strategic Priorities

Not only the dynamics of new Threats/Challenges and Opportunities could differ substantially from country to country; also the subset of each country's GS which are 'complex strategic priorities' may differ. This may lead to differential CA dynamics across countries (including differential willingness

and capability to introduce an important & systematic strategic dimension into policy making).¹¹⁶ ¹¹⁷ Examples of complex strategic priorities are Colombia's "National Reconciliation & Reduction/Elimination of Coca Leaves Production/Elaboration/Transport"; the UK's BREXIT configuration to be aimed at in negotiations with the EU [Martin Wolfe's article in the Financial Times June 2017; The Economist July 22, 2017; and The New York Times 2017, pp.]; and Israel's probably key number one complex strategic priority/Overarching National Goal ("Israel/Palestine Reconciliation and Nature of the State") leading to a de-facto choice between two alternative *general* implementation profiles¹¹⁸, namely 'Continuation of Occupation' or 'A Two State Solution'.

One consequence of 'failure' in the process of setting strategic priorities (including complex ones whenever necessary) could be a long period of country non-adaptation and risk of falling into a path-dependent, self-sustaining Valley of Death (probably reinforced by political changes promising but failing to deliver improvements in citizens' welfare).

Notes on Institutions in a Dynamic Setting

When analyzing the role of 'Institutions' in Sustainable Country Adaptation it might be helpful to adopt a '*dynamic*' perspective. Thus the N&GS-led process of 'innovation in policy making' mentioned above and associated institutional framework assuring both 'vertical' ('upstream'-'downstream') & 'horizontal'[across key 'downstream' policy making actors] coherence could characterize Phase 1. Phase 2 might originate both in changes in the Global &/or Domestic Environment and/or in the success achieved in Phase 1. Thus, side by side with CA-friendly impacts, a set of multi-sectorial domestic/global conglomerates must emerge which –through their unduly strong influence on the political system and 'public-opinion'-succeeds in distorting the country's frail 'Strategy and Policy System' to serve their own interests. The resulting System Failure (SF) may or may not persist, depending on many factors. Sometimes a key to a successful Phase 3 would include a coherent set of 'institutional changes'. They might concern the behavior of Banks and other financial institutions particularly viz a viz their links to such conglomerates; limitations on tycoon purchases of Communication/Media companies; new international agreements concerning taxation of multinationals; strict limitations on 'political' contributions by such conglomerates; and beefing up

¹¹⁶ Implementation of complex strategic priorities is likely to involve strong patterns of policy inter-connectedness. These may take a lot of time and may involve complex negotiations. It follows that there might be numerous reasons why successful implementation could fail. In some cases, such a failure may lead to a Valley of Death.

¹¹⁷ A possible dynamic Valley of Death example is Venezuela during the last 5 or more years (see The Economist, July 29 issue entitled "Venezuela in Chaos: What the world should do") Note that not always governments are aware that complex new Threats/Challenges/Opportunities require formulating new 'complex' strategic priorities rather than simple, *nominal*, priorities (A nominal priority is not much more than the 'priority name'; whereas a strategic priority-and even more so, a complex one- is a 'Book of Knowledge',. see Section 5 for the distinction between the two).

¹¹⁸ And more specific profiles of implementation within each general category.

the Legal System of the country. Needless to say, a Dynamic & "General Equilibrium-type" approach would be required to flesh out the institutional implications required for a CA-friendly Phase 3¹¹⁹.

A Remark on Methodology

The underlying sequence of events leading to this paper's structure differs from other possible approaches including those preferred by economists. I explain. Rather than starting with increasingly rapid, changing and violent Threats/Challenges/Opportunities supposedly facing most countries and proceeding to the suggestion that every country should seriously consider adding a strategic component to their policy making structures- the starting point could have been the opposite. Take countries who have been 'failing' and try to identify a set of key factors underlying such failures; and similarly with country successes. Then generate hypothesis and conclude in terms of restructuring of Government and State.

While I am not opposed to such an approach since I think it is methodologically sound (and even better underpinned methodologically speaking compared to the approach followed here), I do think that its full relevance in the present era is highest for future work which focuses on 'strategy' and Country Adaptation (I might attempt to do so myself).

My main motivation for the approach of this paper is the paradigmatic change facing individual countries & the global system possibly since the 1990s (and certainly since 2008). The approach is to suggest a profile of 'events, 'strategy' and adaptive structures which others might take and use following a better known methodology. Such a path might involve 1) suggesting hypotheses for the malaise facing many advanced and middle income countries/economies; 2) clarifying their roots in 'theory' and data; 3) presenting the shortcomings of existing explanations; and then-prior to 'implementation'- 4) Explaining the testing (or any other) methodology used for selecting among the various hypothesis.

APPENDICES

Appendix A: Emergence of Israel's Entrepreneurial High Tech Cluster (EHTC) during the 1990s: An Example of successful Country Adaptation

¹¹⁹ Phase 3 'success' is likely to depend on an 'independent'/autonomous judiciary. For an opposite example of a judiciary under political control see "Dependent judiciary" in The Economist, July 22nd, 2017

A1. Israel: Introduction and Basic Data

Between 1993 and 2000 Israel succeeded in developing a *high impact early stage Venture Capital (VC) industry* together with a *Start Up (SU)-intensive, ICT-oriented high tech entrepreneurial cluster (EHTC)* which fuelled its economic growth during the last years of the decade and even more intensively during the 2004-7 period. With the possible exception of the advanced technology cluster in the Cambridge area which had a relatively higher component of Life Sciences/Medicines and Drugs, Israel's EHTC was one of the most successful examples of a high impact Silicon Valley type cluster (Bresnahan & Gambardella 2004) beyond the US. From 300 SU's approximately in 1993 the number of such organizations rose to around 2500 by the end of the decade. Similarly with VC organizations and total capital under management: from 4 early stage VC Limited Partnerships (LPs) in 1992 to 50 in the year 2000 ; and from relatively small amounts raised and invested in the early 1990s to over 8B\$ under management towards the end of the decade. ([Footnote: See updated data on Israel's High Tech sector in Appendix ??](#)).

BOX 3: ISRAELS ENTREPRENEURIAL HIGH TECH CLUSTER: BASIC DATA BY PHASES

A: Accumulated Figures for a period	1969-1984 Phase I- Background Conditions	1985-1992 Phase II-Pre- Emergence	1993-2000 Phase III- Emergence
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Number of high tech start-up creation (VC-Backed*)	136 (0)	349 (23)	2,436 (855)
Israeli VC Fundraised / VC Invested in Israeli start-ups (M\$)	0 / 0	~85 / ~50	7,480 / ~5,600
Number of IPOs at US (at EU & TASE)	14 (7)	19 (15)	101 (75)
Number of significant Trade Sales (M&As)	0	2	91
Amount Raised-public markets & M&As (B\$)	0.3	0.8	36.7
B: Figure for an actual year	1984	1992	2000
Share of ICT in Manufacturing Exports	14%	28%	53%
ICT Exports M\$ (as % of ICT sales)	~900 (50%)	2,711 (50%)	12,893 (59%)

Software Development Exports M\$ (as % of software sales)	5 (4%)	135 (23%)	2,600 (70%)
ICT professional employees (000)	~42.9	61.7	152.4
Patents Issued in the U.S. (ICT Patents Issued)	193 (44)	355 (89)	969 (417)
R&D as % of GDP (OCS R&D Grants M\$)	2.4% (97)	2.6% (199)	4.5% (440)

Sources: IVC (2008) – row 2-6, CBS (2008) – row 8-11 (estimates from IAEI), USPTO (2008) – row 12, and OCS (2008) row 13. * by investment year. Notice that in table 1A, the second column represents 16 year while columns three and four represent 8 yrs

A2. Phases leading to (and including) Emergence of Israel's VC/EHTC [Footnote: For additional information see Appendix 3]

Box 4: Phases* of Evolution of R&D/Innovation/Innovative companies, Innovation Policy, and VC/VC markets/EHTC: Israel 1969-2000*****

Phase I (1969-84): Background Conditions (Diffusion of R&D & Generation of Innovation Capabilities)

National Concern for the Financing of R&D in firms, (Teubal 1982, 1997; Breznits 2008, ch. 2) which were overwhelmingly SMEs at the time → Horizontal Grants to Business Sector R&D → Growth in R&D performing companies, generation of R&D/Innovation capabilities (enhanced project complexity, marketing, etc); → a significant number of innovative SMEs and some high tech firms; and first appearance of SU companies (early 1980s)

Phase II (1985-1992): Pre-Emergence (Strengthening of Business Sector R&D, of University-Industry Links and SU/VC Experiments)

Strengthening SUs and a significant increase in the supply of potential high tech employees [layouts from the Defence sector and skilled immigrants from the former Soviet Union]. An exogenous Technological Revolution [communications, software, Semiconductors, etc] that assures a continued stream of new business opportunities for SUs;

Main events or activities included:

- Restructuring of Defense industries including Defense R&D to overcome Macroeconomic problems (e.g. very high inflation rates)
- Since the regular OCS Grants to R&D program was felt to be non-effective in relation to SUs (a temporary System Failure since it was soon recognized that promoting SUs should be part of the new priorities/policy objectives that were being identified and defined at the time), efforts to find a solution to that problem helped define the relevant ecosystem required for SU creation, survival and growth → awareness of the central importance of early stage VC [such System Learning was key for the eventual definition of a new, meso-level VC/EHTC priority]
- Policies directed to absorption of highly skilled immigrants from the former Soviet Union

- *Beginning of the Technological Incubator Program and the Magnet program (supporting cooperative University-Industry, generic R&D consortia) during the early 1990s. Sharp Increase in Business Sector R&D grants*
- *A failed finance-directed VC directed program supporting publicly-traded VCs (“Inbal”).*

The combined effect of the above together with tax concessions to skill-intensive companies and expansion of Business Sector R&D support → Increased rate of SU formation [early 1990s].

While no private & professional early stage VC market existed, a variety of SU support mechanisms operated (or were experimented with) including inducements to Angels, OCS subsidies, a few private VCs home grown or from abroad, a special form of VC oriented to finance groups of projects rather than firms, etc. This led to-

- *Further System Learning: Important qualitative aspects of the future entrepreneurial cluster were identified e.g .patterns of specialization (software and communications), and VC and SU organizational forms (Limited Partnerships and Born Global respectively)*
- *Organizational Learning (as part of 'experimental' System Learning triggered by 'on the ground' experience): learning from Inbal's failure about the limitations of public VCs, and learning from Business Experiments [see below] → Selection of Limited Partnership (LP) form of VC Organization*
- *Business Experiments & System Learning (Section 3) & Informal VC activity → New Model of SU ('born global') with links to global product and global capital markets*

Also, and partly as a result, a critical mass of about 300 SUs became available by 1992, some of them of high quality (a few with IPOs in NASDAQ) → increased (& excess) Demand for VC services → Once VC funding was made available [with the onset of Yozma in 1993], it would trigger a market –driven, virtuous VC-SU co-evolutionary process

Background factors: Liberalization of Trade, Capital Markets, Foreign Exchange market, etc. Very favorable exogenous conditions e.g technological change and liberalization of global communications markets; new **and strengthened** possibilities of immigration from the former Soviet Union, beginnings of the Software Industry, etc.

Phase III (1993-2000): Emergence of VC/EHTC (Yozma Program, which Policy Targeted early stage VC and, indirectly, a ICT-oriented, high tech, Entrepreneurial Cluster)

The Grants to company R&D continued and the Technological Incubators and Magnet Programs were reinforced.

Induced by the critical mass of SU, the Yozma Program triggered a cumulative process of emergence of an early stage VC market/industry and a EHTC; continuation of all Innovation Policy programs, (R&D Grants peaked in 2000) → Strong and continued VC-SU co-evolutionary processes leading to a domestic VC industry and market which in turn contributed to scaling up of the system and to its cumulativeness (fed also by collective learning, positive feedbacks, network effects, reputation effects and the establishment of new agents like foreign investment banks and corporate VC investments, strategic investors and other service providers).

A3. Policy Targeting of Israel's VC/EHTC: Learning, Overcoming a Valley of Death and 'Out of the Box' Policies

Both the outlines of the relevant priority (through System Learning) 'upstream' and the Yozma (Policy) Program 'downstream' were conceived/undertaken/implemented by the same individual (the former Chief Scientist of the Ministry of Industry and Trade who subsequently became the head of the Yozma Unit or Directorate of the Ministry, see Teubal 2013 d,e) ¹²⁰. A contributory factor to its success was the simultaneity at the time of two complementary priorities i) promotion of a high tech entrepreneurial cluster; and ii) immigrant absorption (over which-in relation to the flood of immigrants from the former Soviet Union at the time- there was broad political consensus about its importance as well as consensus among bureaucrats and policy makers)¹²¹. The Yozma program **which focused on early stage VC and indirectly on EHTC, in fact also (partially) articulated the relevant 'immigration absorption' strategic priority of the time. It helped that both the priority (VC/EHTC) and the policy ('Yozma') directed to VC/EHTC involved the same individual, namely, the former Chief Scientist of the OCS and Head of the Yozma Program Committee¹²²**. There is no doubt that this unique possibility of automatically overcoming 'political' coordination problems in the context of 'national consensus' and a corresponding diminished role of 'politics' in the policy process at the time was also of great importance for Yozma's success (Teubal 2013d).

Some key insights concerning the VC/EHTC's pre-emergence phase follow:

- the key to *potential* SU survival during pre-emergence **was the** availability of at least a few ***experienced early stage VCs***, that is VCs with a strategy of and capability for identifying and implementing *high opportunity/high return projects* as well as a capacity to 'mentor' SUs in this regard. This reflects the fact that the key success factor confronting 'high quality' SUs at the time (which such VCs would provide) was a combination both of assurance of high potential of a particular *technology-needs* coupling (or invention) together with the market segment to which it would be directed; as well as networks and links overseas which might facilitate its launch in such markets;

¹²⁰ The System Learning generated i) an understanding of the 'problems' encountered by implementing the pre-existing Grants to company R&D program to support high tech SUs (a novel form of innovative SMEs **first appearing in the country in the early 1980s**); ii) conceiving a 'solution to such problems in the form of creating an early stage VC industry and market; and iii) a policy shift from micro-support of individual organizations to support of a new meso-level entity (EHTC) which included such a domestic industry/market (see Sections 1 & 6 **of the monograph**)

¹²¹ Immigrant absorption was an *Overarching National Goal (ONG)* rather than a particular priority (which should be more specific). This means that it translated into a number of strategic priorities the main ones during the 1980s/1990s **focusing on various dimensions of** absorption of immigrants from the former Soviet Union.

¹²² In coordination with the Ministry of Finance, this individual had out-lined the key features of the early stage VC and related entrepreneurial cluster priority during his last term of office as head of the Office of the Chief Scientist, Ministry of Industry and Trade (knowledge which he carried during his subsequent term as Head of the Yozma Committee

- In the absence of a critical mass of high quality SUs such *experienced* organizations (mostly foreign at the time) would not be easily available. The implication would then be, that below such critical mass, existing SUs (even when receiving OCS's support of R&D activities) would very easily fail. In those circumstances, it would be imperative that, through continued experimentation and initiatives, Government Policy find close substitutes ;
- This would require implementing 'Out of the Box' policies (Teubal and Kuznetsov 2012) in the context of a long term policy perspective (Lerner 2009, Avnimelech et al 2010, Rosiello et al 2011, Teubal 2013a) and a relatively clear and consensual set of National Strategic Priorities (Teubal 2012, 2013a). The links between domestic agents and foreign (particular US-based) agents facilitated the original design of the Yozma Program which targeting Israel's domestic early stage VC industry

The above were critical aspects of Israel's successful policy targeting process of an early stage VC industry and indirectly, of a start up intensive entrepreneurial cluster. A broader conclusion was that absence of the above (critical mass, international links, etc) conditions (which prevailed or were created during the late 1980s early 1990s in Israel,) might easily lead to policy targeting failure to induce emergence of what could become a high tech entrepreneurial cluster (Avnimelech and Teubal 2004, 2006, 2009; Rosiello et al 2013, Teubal 2013c), even in contexts where there is a continued and significant entry of new SUs.

Moreover, it should not be surprising that conventional policy support schemes like subsidies, Government owned VCs or even incubators might not-by themselves- be sufficiently effective. A key dimension of the required *out of the box policies* could include *Networking/ Linking* e.g. with Diasporas (Saxenian CHECK REFERENCES 2001, 2002) identifying, engaging and supporting *key agents* (companies or individuals) in the context of experimental policies whose activities may further clarify what is required to sustain worthwhile companies; *Mentoring* by successful nationals living abroad; *Risk-taking by policy makers* e.g. flexible implementation of existing regulations, especially those which are bound to change shortly; and steps taken to *enhance the reputation* of the existing proto-cluster or system and its potential.

Implementing such policies requires a rather *entrepreneurial policy maker* that to some extent is willing to take risks provided that the 'social benefits' are high. Out of the Box policies may be difficult to implement in the normal course of events or in normal times. On the other hand, there may be a *policy window of opportunity* which-in certain circumstances- may facilitate their implementation (see above). My conclusion is that while there are successful cases, the issue of how to generalize about attaining such flexibility and entrepreneurship in policy structures is an open question.¹²³

A3 Actual Relevance of the Israeli Case: Pre-Emergence Conditions Today

While the above thoughts are significant even today when it comes to think about a new high tech entrepreneurial cluster, there are additional considerations that may have to be taken into account. These include i) the world VC industry is more globalized than what it was during the early/mid 1990s i.e. it may be easier now relative to what it was then to open shop beyond the US and Western Europe; ii) there are more 'angels' with experience looking for projects in different parts of the world relative to what they

¹²³ For additional analyses relevant to the above 'Phases' see Sections 6 and 8 in Teubal 2015a, as well as Teubal and Kuznetsov 2012.

were at the time; iii) idem with respect to established companies and business groups looking for projects and SUs to invest **both** within their own countries (like **the** Elron Group in Israel did during the 1970s-1990s & Teva with respect to biomed companies) **and beyond**; iv) there are stronger networks (including Diaspora networks that were also operating then, see Saxenian 2002, 2006) connecting individuals, SUs and other agents in proto-clusters with counterparts, potential partners or sources of advice in major centers of entrepreneurial, high tech activity; v) there are immense opportunities for developing new apps for smart-phone and other devices as well as in design including design of services¹²⁴ ; and vi) there are emerging hubs of activity in major cities over and beyond the centers that operated since or before the 1990s (e.g. **London**, Berlin, Stockholm, New York, etc).

To summarize, it would seem that while 'the deepening of globalization' has been immensely helpful in the development and emergence of Israel's VC/EHTC during the 1990s, it **might** be even more helpful nowadays as regards new attempts to develop such clusters. **Having said this, it is important to mention that the specifics of 'enlisting' the potential advantages of globalization vary from place to place and are most probably different than those confronting Israel during 1985-2000.**¹²⁵

Appendix B: Notes on Policy Targeting of new or improved meso-level entities

B1 Background and the notion of Evolutionary Targeting

This section further analyzes the concept of Evolutionary Policy Targeting and its role in the process of innovation and SC-based economic growth. 'Policy Targeting' refers to *selective policies* directed to trigger and/or sustain emergence of new meso-level entities such as a new sector, industry or cluster (or directed to the restructuring or upgrading of particular existing entities). The set of such emergence-oriented policies range from relatively 'minor' selected/targeted catalytic support with or without complementary institutional changes to full-fledged support involving heavy and continued selective/targeted subsidization and possibly other institutional changes, international agreements, infrastructure provision, etc **which**

¹²⁴ This trend is also increasingly applicable in the context of certain African countries where e.g. substitutes for imperfect (or, due to absence of) banking services for small producers or even households is common, see *The Economist* ??November 2014, pp.

¹²⁵ Future work will include sections devoted to other clusters, of major importance in Europe as well as (1) emergence of new traditional manufacturing clusters supported by new technologies and (2) emergence of complex clusters in rural areas involving agro-food-culture-heritage-environment supported by high tech (see section ?? above and Galli footnote).

accompany such a process. Alternatively, new meso level entity *emergence* could be 'endogenous' in the sense that no new, selective policies were stimulating the process.

In order to acquire a "time" and an "evolutionary phase" dimension the notion of Policy Targeting should go beyond the Strong/Weak distinction used in the past, see e.g. Teubal 2011, Rosiello et al 2013/4. First and foremost, it should include Direct and Indirect Policy Targeting (Teubal 2015a, Section 9) where *grosso modo* Indirect Policy Targeting focuses on creating pre-emergence conditions (e.g. creating an appropriate institutional setting for a particular new cluster, see Teubal and Kuznetsov 2012 and other papers related to Israel's experience) for subsequent Direct Policy Targeting of new meso-level entity priorities. A similar inter-temporal link also holds for Policy Targeting of the National Innovation System (NIS) (i.e. another form of *indirect* Policy Targeting, see Section 9) and, to some extent, Policy Targeting of a country's Physical Infrastructure.¹²⁶

The Evolutionary Targeting approach adopted here (see also Avnimelech and Teubal 2008) involves a number of premises and/or system evolutionary (S/E) conditions and opportunities. These include (i) implementation of government policy at crucial transition points of market-led development processes could have a significant influence on the effectiveness of market forces; (ii) in certain circumstances a major objective of policy should be targeting the emergence of new multi-agent structures (e.g. new meso-level entities); (iii) Targeting is often based on leveraging the success of key market agents in a particular area; (iv) often market led pre-selection and existence of a number of capable market forces should be considered as necessary pre-conditions for successful targeting; (v) in order to trigger a cumulative process of emergence it may be important to assure a critical mass of capable market agents; and (vi) successful targeting should consider supply, demand and institutional background conditions as well as other pre-emergence factors.

A key Policy Targeting distinction concerns whether meso-level entity targeting involves Type 1 or Type 2 uncertainty (Type 1 involves "calculable risk" while Type 2 involve "radical uncertainty or wild randomness", see Taleb 2006 pp). In contrast to Type 1 entity priorities, the evolutionary process/dynamic sequences leading to effective policy targeting of a new Type 2 meso level entity is likely to require *Experimental Policies & Robust Decision Making*, as well as *complex priority formulation, priority-policy coordination* and *inter-priority coordination* (Sections 2.3 and 7 of monograph).

Infant industry targeting [an important subset of policy targeting more generally speaking] is neither automatic nor assured. In its implementation in the real world, there are three major problems: a) identifying the pre-conditions for successful targeting; b) identifying alternative options for targeting and selecting among them; and c), assuring that the targeted policy will be appropriately designed and implemented i.e. in 'normal' times, they would lead to successful emergence of a new infant industry. Israel's VC industry emergence process and the associated Entrepreneurial High Tech Cluster (EHTC) which was created *pari*

¹²⁶126 Alternatively we could state that no less important than targeting new industries today is to create the conditions for future Policy Targeting options. This could take place either by targeting a rather particular set of pre-emergence conditions-indirect Policy Targeting- or by targeting certain 'generic' NIS elements or components today to create favorable conditions for such policy targeting options [see Teubal 2015a, Section 9 in process] of underlying monograph]. Let us recall that whatever the indirect Policy Targeting which takes place, it might be followed either by 'endogenous' (i.e. largely through 'market forces') emergence or by Direct Policy Targeting.

passu with it are good examples of successful 'infant' policy targeting (the associated 'policy' was the Yozma program, see appendix)

B2. Key Issues

There are **several** tendencies associated with Policy Targeting of new meso level entities: first, it is growing; second it is **increasingly being directed to** high technology industries even in **recent Cath Up (CU) countries**; and third, it is **increasingly concerned with developing high tech oriented entrepreneurial clusters (broadly defined)**¹²⁷. I will consider each one separately.

Why is 'Policy Targeting' becoming increasingly fashionable? There are two reasons: the enhanced importance **and recognition of the importance** of undertaking *focused* structural changes in Advanced Countries (e.g. Advanced Manufacturing & Oil/Gas Fracking in the US, solar energy in Germany) due to competitiveness-related, geopolitical or other global issues **and challenges**; and the growing recognition that even 'neutral policies' in the past were *de facto* selective¹²⁸.

Why is Policy Targeting increasingly been directed to high tech **and advanced** industries e.g. **ICT and biomed** such as Singapore's explicit targeting of Biomed/Biotech (Gore and Kauffman 2013; Kauffman and Gore 2013 among others) ? **An important reason is to achieve 'sustainable Catch Up'** (Lee 2013), **through enhanced "innovation –based"(including high tech oriented) SC** both in middle income economies (MIEs) and in advanced countries (ACs).

A final issue is why countries **seem to be interested in developing sophisticated entrepreneurial clusters?** **Complementing what was mentioned above such clusters could stimulate a continued process** of increasingly sophisticated **innovation and SC-based economic growth** e.g. Korea and Singapore in their post catch-up phase. Moreover, for MIE **they could contribute to materialize the required shift from accumulation (or resource)-based SC/growth to innovation-based SC/growth** [OECD 2014 and 9.3 below].

A key issue in Policy Targeting concerns the **opportunities created by the dynamics of inward** foreign direct investment (FDI) in countries like China (see OECD 2014. Such an activity is one out of a broader set creating opportunities for **SC-based growth** e.g. participation in **global supplier networks, imports of capital goods and/or transfer and purchase of technology from advanced countries**. In China, inward FDI may have created the opportunity for creating new *domestically owned* advanced industries e.g. telecom infrastructure and equipment (**Breznitz and Murphee 2012**) and cars (**The Economist, November ???**).

¹²⁷ Concerning this last point: I refer not **only to Silicon Valley type entrepreneurial clusters** which countries like Korea and Taiwan are interested in developing (or in further developing), **but also alternative cluster profiles such as those focused on smart-phone applications located in certain cities** e.g. the emerging New York cluster of innovative startups oriented to innovative services in the area of media, communications and fashion (**The Economist, December 2014**). Such cities differ from the traditional high tech entrepreneurial clusters whose focus was e.g. new chips or new infrastructure components for the Internet. **They also should** be differentiated from diffusion of smart phones with context specific new applications **oriented to existing activities or to satisfy unmet needs in developing countries** e.g. **cattle raising in Latin America or finance and micro-finance in Africa where bank loans (or banks) are absent** (**The Economist December 2014**).

¹²⁸ See Stiglitz and Yinfu Yin (Stiglitz and YifuYin 2013 pp 1-15) for the enhanced importance of 'selective' policies (termed 'industrial policies'). **See also the work on 'biases' in Israel's (formally) 'Neutral' Grants to company R&D program** (Teubal 1999, Trajtenberg 2005 and Teubal & Kuznetsov 2011); **and the work of Cimoli and Stiglitz and Cimoli ADD !!!**.

Moreover, there also could be opportunities for SC (including in 'advanced' areas) from *outward FDI* e.g. the purchase a few years ago of Israel's successful agrochemicals company Macteshim by a Chinese company. In principle such an acquisition could (and this is only a conjecture out of a number of possible trajectories of future events) contribute to the creation of an effective agro-chemicals sector in China¹²⁹.

Concerning the possible contribution role of *inward FDI* to domestic structural change in the Chinese case: while the outsourcing-related investments by foreign based companies of the US and Europe were oriented to 'production' (& increasingly to 'detailed design of products'), domestic 'factors of production' and managers (including maybe 'would-be entrepreneurs') might have increasingly 'learned' not only production engineering but also higher skilled activities like design and even product-oriented R&D; as well as acquiring an increasingly broad and more sophisticated set of managerial skills. Dan Breznits (personal communication) suggests that while FDI was important in the development of new industries in China it did not necessarily operate in the usual way we envisage it. It is true that the core capabilities of both Huawei and ZTE (a few hundred *Chip Designers* for each one) came from what was then known as Shanghai Bell. However, with few exceptions "all designated national champions (by the central government) failed, and it is the un-intended champions (*usually aggressively backed by provincial or central government*) that proved to become the giants .." (see also Breznits and Murphee 2012). Among other things, this example suggests that more for large countries than for others, 'Policy Targeting' could be implemented with varying success both at the Center/Federal Level and at the regional level.

The possible impact of inward FDI on *locally owned* domestic companies may characterize other countries beyond China e.g. Singapore. Through continued learning and technological and managerial upgrading, such companies might become competitive in domestic and foreign markets (Wong 2011). While the outcome might be the successful development of domestic high tech industries it should not necessarily be regarded as the outcome of 'Policy Targeting' as this term has been used up to now in this paper e.g. in connection of Israel's Yozma Program which targeted emergence of that country's VC/EHTC (See section 2). This because, given DFI and other (partly) pre-emergence conditions and policies as well as *exogenous events*, the subsequent emergence of such industries might have been 'endogenous'¹³⁰.

B3. More on Direct and Indirect Policy Targeting, and Examples

The above examples suggest the importance of distinguishing between *Direct* and *Indirect* Policy Targeting, with *inward* DFI potentially contributing to the latter (Indirect Policy Targeting). In contrast to *Direct* Policy Targeting, *Indirect* Policy Targeting could be Strict (or Particular) or Broad. *Strict Indirect* Policy Targeting refers to targeting the pre-emergence conditions of a particular new meso-level entity. On the other hand, *Broad Indirect* Policy Targeting would include two possibilities: *first*, a focus on *promoting the common* components of a set of pre-emergence conditions serving a number of (possibly interrelated) new, meso-level entities (I will be ignoring *this situation* for the time being); *second*, strengthening a

¹²⁹ A related impact on *domestic* SC might occur when outward FDI is directed to set up *R&D Labs* in other countries in order to exploit Science, Technology and Innovation capabilities there. This effect may become increasingly noticeable in the near future.

¹³⁰ A final point concerns innovation-based SC induced by Policy Targeting motivated by non-economic needs e.g. Defense. Thus as mentioned in Section 3 the technology and production systems in Internet and ICT-related areas which were Policy Targeted by DARPA/DOD in the post Sputnik era (see Bonvillian 2013, 2014 and the analysis based on his work in Appendix 1 above) had an enormous impact on US SC and SC-based growth during the 1990s (when productivity in that country started to grow again).

country's NIS with the view of enhancing the potential for continued innovation and SC-based economic growth¹³¹.

BOX B1: DIRECT AND INDIRECT POLICY TARGETING OF SC AND OF THE NIS-OBJECTIVES, AND EXAMPLES^{*132}

<u>TYPE</u>	DIRECT	INDIRECT#
<u>OBJECTIVE</u>		
<u>STRONG</u>		
<u>(i) Oriented to SC#</u>	<p>(ia) Emergence of a new meso-level entity</p> <p>e.g. Israel's Yozma Program targeting VC/EHTC</p> <p>e.g. Singapore's Targeting of biomed</p>	<p>(ib) Pre-Emergence Conditions</p> <p>* <u>for a new meso-level entity</u></p> <p>e.g. create, among other components, a new leather and footwear technology center for a future shoe/footwear industry;</p> <p>* <u>for several meso-level entities</u></p> <p>e.g. support generic ICT training and R&D for upgrading a number of sectors</p> <p style="text-align: center;">OR</p>

¹³¹ Since the notion of NIS is known and accepted, in what follows I will be using the concept of *Policy Targeting (or Targeting) of the NIS to describe this case* (rather than considering it a Broad, Indirect category of Policy Targeting) [Broad, indirect policy targeting will therefore be reserved only for the case of *promoting the common components* of a set of pre-emergence conditions related to a number of **different** new-meso-level entities].

¹³² *Direct* Policy Targeting concept used here is a relatively '*narrow*' definition of Policy Targeting, which contrasts with other 'broader' types of policy targeting which are 'Indirect'. *Broad* Indirect Policy Targeting in this paper also includes selective policies aimed at improving a country's NIS (either strengthening or promoting an Advanced NIS) which in turn could set the base for future innovation-based SC. Note that Indirect Policy Targeting at t-1 may lead to "endogenous" SC at t i.e. without Policy Targeting

<u>(ii) Oriented to NIS</u>		(ii) Creation of a NIS# or targeting support of a new configuration (or critical dimension of an existing NIS) e.g. strategic capacity to set SC-related priorities; and/or new capabilities for Policy Targeting of the above entities
WEAK-	Upgrading## <u>existing meso-level entity/ties</u> e.g Support of ICT training and R&D	<u>Need not exist</u> i.e. when there are no pre-upgrading conditions which justify policy**

Notes #

SC means (a) new meso level entities e.g. a new sector, industry, cluster which are *Horizontal*; or (b) new *Vertical* entities which provide inputs to several horizontal ones e.g. in ICT, design or other services

The term *Indirect* relates to the policy objective when stimulating SC, i.e. focusing on pre-emergence conditions (such as the technological/innovation base and capabilities of a new industry) rather than directly promoting industry emergence. Thus support of NIS could be another form of *Indirect Policy Targeting of SC*

Note that *Indirect Policy Targeting* (including of the NIS) could be important for shifting from accumulation-based SC/growth to innovation-based SC/growth

Notes ##

An intermediate case between promoting *emergence* of new meso level entities and promoting the *upgrading* of existing entities is promoting the *restructuring* of the latter (this possibility is not considered in the table). The concept of *Smart Specialization* is oriented to a fundamental restructuring of an existing industry (see Foray and a summary in 9.?? below) could be classified as *Weak-Direct Policy Targeting*

The above distinction between *direct* and *indirect* policy targeting (and of the latter's *strict* and *broad* versions) is important once we recognize the importance -for innovation and SC-based economic growth- of distinguishing between policies promoting *pre-emergence conditions* of new industries and policies oriented to promote their *emergence*. Not always *Indirect Policy Targeting* will involve *Direct Policy Targeting* i.e. selective support of Emergence of a new meso-level entity (in other words, emergence might be *endogenous*). Thus, inward DFI that contributed to subsequent development of domestic high tech industries is not proof in itself that *Direct* 'Policy Targeting' was part of the process. For *Direct* 'Policy Targeting' as defined in this paper to be linked with inward DFI, the domestic spin off companies (or the areas in which they were involved, or the key drivers of the relevant eco-system) resulting from DFI must have received special, selective support for and during *emergence* (i.e. to trigger and/or sustain such a process). Still, inward DFI through its impact on pre-emergence conditions of a particular meso-level entity (an instance of *indirect* Policy Targeting) could be key for the success of *direct* Policy Targeting.

Box 2 below gives *additional* examples of Strong and Weak Policy Targeting of SC which, rather than distinguishing between *Direct* and *Indirect* targeting, focuses on whether the meso level entity focused *and associated policies involves* Type 1 or Type 2 uncertainty i.e. involving respectively calculable risk and radical uncertainty/'wild' randomness. For precursors to this Box see Teubal 2011 and Rosiello et al 2013.

BOX B2: EXAMPLES OF STRONG AND WEAK "POLICY TARGETING" AIMED AT TYPE 1 AND TYPE 2 MESO-LEVEL ENTITIES*

	Type 1 Priority	Type 2 Priority
Strong (existing entity)	<p><u>'Traditional' Infant Industry</u></p> <p>-Salmon Industry (Chile)</p> <p>-Textile/Garments industries</p> <p><u>Mid-Tech and "Production-Oriented" High Tech</u></p> <p>-Cars(Brazil, Argentina, China, India)</p> <p>-Steel industry (Brazil, Korea)</p> <p>--Civilian Aircraft (Brazil)</p> <p>--Semiconductor & Electronic Industries (Taiwan, 1980s)</p> <p>-Solar Panels (China)</p>	<p><u>entrepreneurial systems or clusters</u></p> <p>ICT-oriented, Israel 1993-7/8**</p> <p>Taiwan 2000s</p> <p>Other e.g. smart-phone apps-oriented in cities, etc, 2000--</p> <p><u>Biotech Clusters</u></p> <p>Singapore, various European Countries</p> <p><u>Energy Sectors</u></p> <p>Wind Power Industry (Germany)</p> <p>Oil/Gas Fracking (US)</p> <p><u>IT & Internet Areas (US)</u></p> <p><u>High Tech</u></p> <p>Telecom Infrastructure and Equipment (China)</p>
Weak (upgrading existing entity)	<p><u>Traditional Cluster Upgrading</u></p> <p>Many countries and types of meso-level entities</p>	<p>Presumably quite widespread in some sectors as part of their continued adaptation, see above and the literature on Smart Specialization e.g. Foray</p> <p><u>Semiconductor and Electronic Industries</u></p> <p>Taiwan</p>

Preliminary: Incomplete information concerning some cases, so further work is needed **ADD KOREAN EXAMPLES FROM KIM BOOK**

*While the examples of the Table relate to Direct and/or Indirect Policy Targeting most of them involve Direct Policy Targeting. Note that our definition of Direct 'Policy Targeting' does not include policies aimed to create favorable pre-emergence conditions for new meso-level entities (such policies constitute Indirect Policy Targeting, see above pp. 12-13.

B4. System-Evolutionary Concerns: Comments on the Inter-American Development Bank's 'Rethinking Productive Development' (see IADB 2015)

The volume is very well written and deals with important issues facing Developing economies. It is an excellent summary of the state of the art with new insights and improvements. It focuses on what they have termed Productive Development Policies (PDPs) which encompass policies oriented to new or improved meso-level entities (or, alternatively policies oriented to SC broadly defined). My comments refers to the relative absence of a Systems-Evolutionary (S/E) approach where for example different types of Productive Development Policies (PDP, as defined by the Inter-American Development Bank, see IADB 2015) could be related through time. A static, non S/E approach could be problematic since promoting a new sector or a radical transformation of an existing sector may in fact reduce employment rather than increase it due to the disappearance of a number of existing, substitute sectors. Therefore a well- functioning economy/society must simultaneously consider such indirect impacts. These will be related to other National Priorities which, somehow, have to be considered, despite the enormous uncertainties surrounding all policies (PDPs including). Needless to say, the effective consideration of such indirect impacts implies that countries gradually should generate a capacity to formulate a National Strategy i.e. a set of National and Government priorities and the institutional framework assuring their implementation in terms of policies on the ground [see Section II(i) above].

A related issue pertains to the justification for Government Intervention including Policy Targeting as defined above. In the above volume IADB volume there is a restricted focus on **Market Failure** (MF) together with an accompanying general statement of supporting 'institutional changes' that would make dealing with market failure through policy a feasible action (or a justification for refraining from such action). My critique is that, increasingly, this need not be enough, since in the real world there are also **System Failures** (SFs) of various kinds [appendix 1 summarizes 5 types of SFs including those directly or indirectly associated with a National and Government Strategy, see also Stiglitz 1989 pp.??) which explain the frequent incapacity of countries to recognize and act in response to sharp changes in the global environment facing them. Moreover, the SF concept is absolutely fundamental since without overcoming key SFs, the capacity of country adaptation to changes in the global and/or domestic environment will be limited. In terms of recent work countries will find it increasingly difficult to become an Entrepreneurial State (Bonvillian, Mazzucatto, etc) or—according to the perspective of this piece- a Strategic and Entrepreneurial State 'capable' in principle to adapt to the wild changes in the global and domestic environment. .

Needless to say, the gradual consideration of these types of dynamic and strategic consideration will increasingly be of importance both for PDPs and for policies in general. Both countries and international institutions should seriously consider creating the required capabilities in these areas. **Some additional Comments follow.**

a) The authors in the IADB book correctly recognize the importance of ‘balanced development’ when they state “...*strong economic development requires a successful balance across all fronts of the policy agenda, not only sound Productive Development Policies*”. This is increasingly important **from the National/Government Strategy perspective of this paper** since the links between **'productive development' of new meso level entities** and other Overarching National Goals (ONGs) such as Poverty Reduction, Employment and Inclusive Economic Growth (**factors which** seem to be ‘increasing’ in relative importance **and which are increasingly being recognized as part of a country's Vision/ONGs and as having potentially very strong links to successful growth**) [**Footnote:** ONGs are part of a country’s Vision i.e. they underlie National Strategic Priorities and Government Priorities]. In this connection it is important that the above-mentioned ‘balance’ should consider both inter-temporal and indirect effects, affecting *both* industries/sectors/clusters and the society at large (since, among other reasons, through the latter the availability of a skilled labor force for the future **manning and development of new meso-level entities** would depend).

Thus certain PDPs leading e.g. to new meso-level entities **and even more so those associated with Disruptive Technologies (C. Christensen; Economist)** might generate unemployment and **even persistent** poverty in rural areas or in cities where displaced workers flow (a possible example is the enormous growth of **Suburban Buenos Aires—its "Conurbano"**-- in response to the soya boom). In others, certain new industries may displace others, with existing market forces not being capable enough to sustain or transform activity without ‘government’ support of ‘upgrading’. I think there is an enormous opportunity for analytically identifying ‘dynamic sequences’ of this kind, with potentially strong implications for the effectiveness of policy, both PDPs and other.

b) *‘PDPs vary widely and they encompass both broad based and selective policies’*. While this is true what is missing here and in the other chapters of the book which I reviewed is the link between Horizontal Policies and Selective Policies (what the authors also call Vertical policies, which in my terminology also includes Policy Targeting of new meso-level entities like a new sector, industry, cluster etc]. In two papers of mine of the 1990s I emphasize the fact that horizontal policies when implemented for the first time reflect ‘ignorance’ of policy makers concerning the location of Market Failures (MFs); and that the learning that ensues, enables not only a better specification of Horizontal policies e.g. concerning the set of functionalities to be supported. Thus while in advanced technology industries the focus could be R&D, in mid and low tech, it –without excluding R&D in some cases- should focus on other functionalities such as Engineering, Design, Training of the Labor force, start up of novel production equipment,

Technology Transfer, etc. Needless to say, a possible outcome of such 'policy learning' could be contributing to identify new options for Policy Targeting/Vertical Policies.

c) A major conclusion is that a sequel to this volume could focus on analyzing PDPs within a Systems-Evolutionary Perspective. An interesting example of such links concerns the 'outsourcing' of manufacturing to China by advanced and also some developing countries (in what follows I will focus on the former since there apparently is more information available). While advanced countries could still retain design capabilities after outsourcing production, this may be limited without retaining elements of a sophisticated manufacturing base. If such a base also disappears a continuation of design capabilities may depend on developing *new* manufacturing capabilities. Related issues are the possibilities of developing 'vertical' design capabilities (which could benefit a number of sectors); and depending on area and sector- the role of 'art studies' in generating basic and advanced design skills.

d) A key additional emphasis to the **Policy Features** presented in pp. 9 & 10 of the IADB book concerns the institutional structure of countries, **and more particularly**, the extent by which 'politics' (in the negative sense i.e. a SF of sorts) would affect **both** National and Government priorities (the latter's "last page" being devoted to 'Recommendations'/ 'General Policy Objectives'] **and** Policy Design and implementation on the ground (and **indirectly, the degree of success in** Country Adaptation to exogenous and endogenous changes (expected and unexpected)

e). A key comment concerns what the authors call 'risky policies'. It would be worthwhile initially in the chapter to state clearly that the global environment is very dynamic and that the issue is not only risky or not risky but what sort of risk we are considering, For simplicity, we should consider two types of uncertainty: Type 1 ('calculable risk') which is the usual concept used in mainstream economics; and Type 2 (Knightian Uncertainty i.e. we don't know all the probabilities of events that may happen or we **don't** know **all the events** that may happen). The latter 'uncertainty' has not been dealt with sufficiently by mainstream Economics, despite its increasing importance world wide.

f)A key issue is how to consider risk/uncertainty in PDPs? First of all it is important to 'look and asses the future', something which seems to escape a lot of the discussion on policy targeting of productive sectors. Activities such as technological forecasting, scenario analysis, etc; and especially Robust Decision Making should seriously be considered when implementing PDPs (at least for some the most important ones, especially in the cutting edge of technology). Robust Decision Making is intended to configure the qualitative and quantitative features of a new sector/industry/cluster to make **it robust to a set of futures**.

g)Also a portfolio analysis of success/failure **in Policy Targeting of meso-level entities** may have to be used when analyzing PDPs

h)A key aspect of such PDPs oriented to new meso-level entities is *visualizaing the 'qualitative' component of the future industry/sector/cluster to be promoted*. This should not be forgotten

since we are living in an extremely dynamic world and even well taken and justified PDPs may fail in this respect. Therefore, when looking into the future rather than the past (IADB 2015, bottom of p. 34 and top of p. 35) it is incorrect to state that the main issue is “avoiding rent seeking and capture”. At least, and even more for PDPs oriented to a new sector/industry/cluster, there should be an awareness of the inherent difficulty in *ascertaining a ‘robust’ and potentially socially beneficial new meso-level entity configuration*. In my opinion dealing with this factor is fundamental, without it policy makers will reduce the chances of creating something which is socially valuable. Alternatively it could be stated, that together with policies to exclude rent seeking, a key aspect of effective ‘policy targeting’ of a new sector/cluster/ industry is identifying a socially desirable qualitative configuration which is also robust to a set of futures.

Appendix C: “Strings” and Dynamic Sequences [in process]

Appendix D: Qualitative Change during periods of Paradigmatic Change [in process]

Appendix E: Links with the Literature e.g. Why Countries Fail? [in process]

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