

**STRUCTURAL CHANGE AND ADAPTIVE POLICY
TARGETING: A STRATEGIC AND EVOLUTIONARY
APPROACH**

Morris Teubal

**Emeritus, The Hebrew University of
Jerusalem**

mismorris76@gmail.com

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ACRONYMS

SIP-Strategic Innovation Policy

S/E-Systems-Evolutionary

HLO-Higher Level Organization/System, *a Meso- Level entity e.g a sector, industry, cluster, innovation or entrepreneurial system*

SC-Structural Change. a new HLO; SC*-extended view of SC

STE-Science, Technology, Higher Education

GF-Government Failure; S/F-Success/Failure

MF/SF-Market Failure / System Failure

-2

Body of Knowledge-BoK; GC-Global Company

**Type 2 'Policy Targeting'-Policy Targeting of a Type 2,
new HLO/meso-level entity**

RDM-Robust Decision Making

E-Entrepreneurial Effectuation

C-Entrepreneurial Causation

SIP (E)-SIP Effectuation ;SIP ©-SIP Causation

-→-leads to

-3

IRC-Increasing returns to scale

DIRC-Dynamic IRC

VC-Venture Capital; SU-Start Up or SU company;

EHTC-Entrepreneurial High Tech Cluster

**VC/EHTC-early phase VC market/industry and the
EHTC into which it is embedded**

MOF-Ministry of Finance/Treasury

A:BACKGROUND-1

A(1) Why SIP and Policy Targeting?-1

The dynamic global environment forces countries to increasingly rely on Structural Change (SC)-based Economic Growth,

that is

growth based on new sectors, industries, clusters or systems i.e. new (Schumpeterian) meso-level, entities or new HLOs (Higher Level Organizations)

A2/A(1)-2

Whole sectors have disappeared e.g. in the UK in the last couple of decades, maybe in Israel today; and could continue to be wiped out

Productivity advances, upgrading, adding services and design and other improvements of existing sectors might or might not fill the gap in terms of output, employment and living standards

A3/A(1)-3

→ ***Strong Likelihood that, continuously and faster than previously, new sectors, clusters or industries (new HLOs-the substance of SC) must emerge for growth to be sustained in the future [for an extension of the notion of SC see below]***

→ ***This may justify Policy Targeting of such entities***

Policy Targeting was not generally accepted in conventional economics at least up to the 1990s. Such a view seem to be changing

A: BACKGROUND-4

(A2) MF/SF could block 'Endogenous' SC* & an Example

Frequently SF and/or MF may block the autonomous or endogenous emergence of a 'socially desirable' SC-related priorities e.g. a new meso-level HLO entities

→Policy (including Policy Targeting) is justified

***non policy induced materialization of a meso-level, new HLO priority**

A5/(A2)-2 (Example: Israel's VC/EHTC Priority)

In Israel, such failures stood in the way of an endogenous emergence of a socially desirable VC/EHTC during 1993-2000(approx.). Policies were implemented during the pre-emergence (1985-92) phase or before, and during emergence of such a meso level, new HLO entity.

Some (New) Policies during Pre-emergence

- strong support both of STE & business innovation [e.g. new Magnet & Incubators program; promoting TTOs at Universities]
- Integrated or 'holistic' support of immigrant absorption (of highly qualified immigrants from the former Soviet Union) + other policies

A6/(A2)-3 (Israel's VC/EHTC Priority)

Emergence Phase (1993—2000 approx.)

- Policy Targeted domestic, early phase VCs [Yozma Program]
- indirectly triggered & sustained a cumulative process of emergence of an Entrepreneurial High Tech Cluster (EHTC) *which included a domestic, early phase VC industry & market i.e a VC/EHTC*

A7/A(2)-4

SU numbers increased from 300 in 1992 to about 2500 towards 2000; high tech exports tripled; more than 100 IPOs in NASDAQ, etc

At almost zero cost to the Treasury the outcome was a high impact on growth

Enhanced incomes from High tech, from sales of products/technology, M&A and capital markets despite relatively weak impacts on employment; and backward and forward linkages flowing from High Tech

A8/A(2)-5

From

Horizontal Support of Business Innovation [1970s

and part of 1980s]

To

Targeted Support of a VC/EHTC [during late pre-

emergence i.e.late 1980s-early 1990s]

A: BACKGROUND-9

A(3) Reflections on the Israeli Example-1

A word of caution

- *While the country & policy makers did the 'right things' (in part due to the entrepreneurial approach and even foresight of those in charge of policies) we were lucky.*
- *The timing was just right e.g. several 'exogenous' and 'endogenous' events favored the success of Yozma during the 1990s e.g. technological revolution/ Internet & liberalization in communications/; immigration from the former Soviet Union; strong returns to the global VC industry, Israel's international reputation due to the Oslo Peace process, etc*

A10/A(3)-2

****Nobody can assure a future as 'favorable' as the past. Therefore, Policy (& Policy Targeting) success in the past is no guarantee of success in the future.***

Conditions (external and internal) have changed and will continue to change, sometimes drastically, possibly, including in some cases, unfavorably

****Countries and their political systems and policy mechanisms-not only Israel- may have difficulty in adapting to or implementing such changes***

A11/A(3)-3

A key issue is policy and its objectives

Given the dynamics of the global environment and the deep uncertainty facing any country the objectives of policy are frequently very uncertain and constantly changing

This is the reason for having explicit and (if needed) changing, “upstream” priorities

A12/A(3)-4

Therefore, a key issue nowadays for SC-based economic growth and Policy Targeting is 'Strategic' i.e.

flexibly setting and if necessary re-setting of national strategic priorities and linking them with policy objectives and policies on the ground [Sect. C]

A: Background-13

A(4) Endogenous SC or Full Fledged Policy Targeting?-1

SC may occur in response to general/horizontal (non-selective) policies, old or new [e.g. with liberalization of DFI, trade and foreign exchange and or horizontal/neutral subsidies to business innovation] or without additional policies at all.

In these cases I will be stating that SC is 'endogenous'.

A14/A(4)-2

At the other extreme we have Full fledged Policy Targeting of a new HLO, which results from a number of strongly selective SC-promoting measures such as

- Heavy selected subsidization/tax benefits over a non trivial period of time [e.g. prior to and during at least *early* emergence of the new entity]
- Selected liberalization of trade or DFI or selected tariffs/quotas
- sector specific regulatory and/or institutional changes, etc

Note: *the notion of 'endogenous' SC/emergence of a new HLO should seemingly include cases where the incentives given were horizontal/neutral*

A15/A(4)-3

Israel's policy targeting of an ICT-cluster during the 1990s was a combination of relatively minor 'catalytic' incentives to a VC industry and favorable exogenous events

It was an 'intermediate case' i.e. while emergence of its *VC/EHTC* was not endogenous, it was not an example of a full fledged Policy Targeting process.

A:BACKGROUND-16

A(5) Priority-related Government Failures

Countries experienced frequent Government Failures (GFs) resulting from failed policies which directly or indirectly are related to absence of or 'imperfect' Priority Setting and Priority Articulation into policies related to SC.

Grosso Modo they resulted from a generalized absence of a Strategic Innovation Policy (SIP) System adapted to Type 2 [radical/deep uncertainty], new HLO priorities.

A17/A(5)-2

Type 2 uncertainty means radical uncertainty about what future events could significantly affect a particular priority (unexpected events Taleb 2009) and/or their timing or about the probability of occurrence of known events.

Note

By and large, existing policy systems are better adapted to Type 1 Priorities i.e. priorities involving moderate uncertainty or ‘calculable risk’ than to Type 2 Priorities

A18/A(5)-3

GF(1): Implicit or Very General Priority or Absence of (timely) priorities in emerging areas of Importance

e.g. Israel (Biotech, support of Mid/Low Tech in Business Sector); US (maybe in Advanced Manufacturing)

GF(2): Imperfect setting of complex Priorities

Imperfect priority-setting mechanisms when priorities are complex e.g when underlying technologies change rapidly [*many areas including some priorities in the area of education in some countries*]

A19/A(5)-4

Even more so in those priority areas belonging to 'Strong Ministries' e.g. **Defense (possibly the US and Israel).**

Imperfect priority setting/re-setting may be the outcome of many factors e.g. bureaucratic biases, 'politics', pressure groups, organized labor, etc.; and most importantly, absence of effective institutional separation between priority setting from policy making

A20/A(5)-5

GF(3): Narrow and non-updated Knowledge base underlying Priority setting → Biased Policies

e.g. non systemic/non-evolutionary /absence of of long term perspective concering VC/SU related priorities and their articulation into policies on the ground (several countries of Europe, including Finland up to and including the 1990s, Australia and a number of semi-industrialized countries)

A21/A(5)-6

GF (4): Faulty *de facto* priority articulation in terms of policies

‘Politics’ & strong Ministries or the ‘Political Cycle’ (rather than ‘Dynamic Alternative Cost’) could determine what policies are cut [and priorities ignored] in response to ‘unexpected’ needs (‘budget cuts’ or ‘political’ needs)

Priorities/policies suffering most could include even those having explicit medium and long term components & impacts. An example are cuts in STE support

A22/A(5)-7

GF(5): Ignoring meso-macro links leading to Priority re-setting requirements

Example

Natural resources boom countries like Australia, Canada, Chile with concomitant currency appreciation might, without adequate priority re-setting in terms of manufacturing, unwillingly promote both unemployment and lopsided, non-inclusive and non-sustainable growth

Possibly the manufacturing priorities if they existed at all probably lacked short, medium and long term components; and were not re-set in response to the changed external context

B. OBJECTIVES-1

1) Propose a Strategic Innovation Policy (SIP) framework based on System/ Evolutionary (S/E) principles

If not specified otherwise, “strategy” [whether ‘National’ of ‘Government’] means ‘a coherent set of priorities’.

The set of National Strategic Priorities should also be coherent with *Country Vision* (or set of Overarching National Goals) in areas such as Sustainable/ Inclusive Growth, Health, Education, Defense, Environment, Foreign Relations..

B-2

Government Strategy (SIP or non-SIP) does not stand alone i.e. it must be derived from a National Strategy. It involves that subset of national priorities whose endogenous materialization is blocked by a MF and/or a SF

Strategic Innovation Policy (SIP) would be part of a Government's Strategy.

B-3

2) Set the foundations for applying the SIP framework to a single module of SC-based Economic Growth namely Policy Targeting of a new meso HLO priority, including one confronting ‘deep’ uncertainty [accompanying paper, in process]

B-4

The focus of the overall effort (where this presentation and accompanying paper are initial outputs) is an analysis of *phased* evolutionary processes leading to Policy Targeting and subsequent emergence of such an entity. This would constitute an instance or module of SC-based economic growth

Key issues to be considered will include priority setting, priority-policy coordination; non-linearities in the SIP process, co-evolutionary processes and meso-macro links.

B-5

3) Exemplify through a Priority-based re-interpretation of the evolutionary process leading to the emergence in Israel during 1993-7/8 of a high impact, ICT oriented, entrepreneurial cluster (the VC/EHTC of 1993-2000 aprox.)

(See accompanying paper, in process)

B-6

4) Analyze “Adaptive Policy Making/ Behaviour” and exemplify through reference to the previous Israeli *example* [while also interpreting the ‘causes’ of successful Policy Targeting]

Note

Adequate Adaptive behavior is crucial under Type 2 uncertainty. This means policy making should also develop the relevant capabilities for *continued adaptation to new threats and opportunities*, even in an unpredictable environment

B-7

5) Summary and Final Remarks

A Think Piece or an Action Items Agenda?

Are we confronted with Paradigmatic Changes in Meso-level, new HLO entities and in the way such strategy should be undertaken?

And more generally, are we confronted with Paradigmatic Changes in the way strategy and policy should be implemented?

B-8: Possible Role of a Think Piece

The paper as an attempt at creating a framework for asking questions concerning changes or directions of change or reform in actual policy systems/processes which take into account issues such as

- 1. Type 2 (or Radical) Uncertainty (or ‘wild’ randomness),**
- 2. The importance of generating ‘upstream’ strategic priorities both in the sense of Body of Knowledge (BoK) and in the sense of ‘policy objectives’**
- 3. the explicit need of ‘relating’ or thinking about the future,**
- 4. the need to consider SC-related priorities and Policy Targeting**

B-9

5. to consider both ‘local coordination problems’ e.g (concerning ‘particular’ priorities) and ‘global coordination’ e.g. through MOF/Treasury, which includes the *‘prioritization of priority articulation into policies’*
6. To explicitly consider meso/SC-macro links with short, medium and long term components
7. Eventually propose a new approach [i.e. strategic and systems/evolutionary] to linking inclusive economic growth with sustainable growth

C: Essentials of SIP

C(1)Priorities: Concept and Role

For our purposes, a “priority” is an evolving ‘Body of Knowledge’ (BoK) in the relevant priority area which could also include numerical & graphical information (in some cases a clear, delineated boundary; in others not)

This definition highlights the distinction between a priority and a priority area [as-very imprecisely-between a book and a book’s title]

C2/C(1)-2

Only those priorities whose materialization is blocked by MF and/or SF should be articulated into policies [all SIP priorities belong to this group]

Priorities and Priority setting lie mostly ‘upstream’ in the SIP process, while Policies lie ‘downstream’

Through time a priority may be deleted from a country’s priority set, or be morphed into another priority

C3/C(1)-3

Priorities related to but not identical to Policy Objectives

- priorities not involving MF/SF will not be considered by policy at all
- priorities are less specified than ‘downstream’ policies
- while priorities are essentially ‘knowledge-intensive’ (a BoK), policies may be significantly influenced by ‘politics’ of the relevant Ministries/Departments

C4/C(1)-4

-priority articulation into policies may be hampered by unexpected constraints

This may be due to budgetary constraints or enhanced importance of another priority/priority area. De-facto this would lead to a change in policy objectives

-certain priorities have not yet been articulated into policies

Since priorities lie ‘upstream’ in the SIP process and policies ‘downstream’, the policy objectives of certain ‘relevant’ priority areas [those involving MF and/or SF] are likely not to have been formulated

C: Essentials of SIP-5

C(2): Priority Characteristics-1

Priorities should be Explicit → *dedicated priority setting mechanisms*

Dynamics of Priority Setting

- **Priority Setting:** *definition & specification e.g. General Priority- → Specific priority*
- **Priority Re-setting** *e.g. updating in response to new knowledge or changed circumstances*
- **Priority Transformation** *e.g. morphing into another priority, branching out*
- **Priority Deletion**
- **Identification of new priorities & new priority areas**

Priorities might have to be identified/defined independently of policy makers (in most cases) → *priority-policy coordination issue*

C6/ C(2)-2

Example: Changing Priorities Leading to Israel's VC/EHTC

*I focus on a Summary Statement of a priority rather than on the priority itself. Thus the **general priority summary statement** prior to and during early pre-emergence in Israel (In between 1969 & end approx 1990) was*

'promoting innovation and an increasing numbers of innovative companies'.

*It evolved into a **more focused**, meso rather than micro-level, summary statement of a VC/EHTC **priority option** during the late pre-emergence phase (early 1990s)*

'creating an ICT-oriented entrepreneurial system/cluster including large numbers of SUs, a domestic early stage VC industry and market, and other agents; and 'flexibly' focused on software, communications and medical instruments'*

**The basic three-phase evolutionary example of emergence of Israel's VC/EHTC can be found in Avnimelech and Teubal 2004,6,8a,8b,8c. An addition which introduces changing priorities can be found in Teubal 2013, 2014.*

C7/ C(2)-3

Nowadays, Priority Setting is a Knowledge intensive process.

An interconnected and dynamic global environment implies that a knowledge intensive systems/evolutionary (S/E) approach should be adopted for priority setting, priority updating and priority transformation.

Similarly for identifying inter-priority and inter-temporal links

Priorities have Short, Medium and Long term Components

Articulating such priorities into policies (and frequently, adequately setting priorities) are key challenges for many Democracies! Tendency to suppress medium/long term priorities or priority components in favor of the short term

C8/ C(2)-5

Priorities could be more or less general (and alternatively, less or more focused)

Frequently a focused/well defined priority also includes the means for attaining the embedded social objective e.g. technologies, equipment, skills, organization

Ideally **a National Strategy (SIP and beyond)** **should comprise a coherent set of priorities**

Should fill all relevant priority areas. The set should also be coherent with the underlying Vision

D2/D(1) Priority Types 1 & 2 -1

Type 1

‘Moderate’ uncertainty [“risk”] concerning the knowledge underlying such a priority and its access (and/or the production of such knowledge)

*Also, the Knowledge is to a large extent **structured & explicit knowledge**, obtained from search, research and discovery; through a strong component of **expert advise***

D3/D(1)-2

Type 2 Priorities

****Radical Uncertainty + likelihood of Unexpected Events+ possibility of chaotic dynamics.***

***BoK**

Over and above some structured and explicit components Type 2 meso-level new HLO priorities involve

- *a non trivial component of **tacit knowledge** [also informed guesses?*
- ***non-structured knowledge from stakeholders, users and experts***
- *information and knowledge resulting from **key agents' doing on the ground** [see below SIP Effectuation and mutual policy-priority links]*

Type 1 and Type 2 priorities are 'ideal' types, the extremes of a continuum. Most priorities are a mix of the two types. More than in the past, the mix would nowadays tend to favor Type 2 priorities

D4/D(1)-3

Why Type 1/Type 2 distinction?

The Type 1/Type 2 distinction is fundamental, and for three reasons:

- 1) There are key differences in Priority setting, SIP processes and Policy Targeting of Type 1 and Type 2 priorities (see Box below on Non-Linearities)***
- 2) Globalization and radical uncertainty /wild randomness (Taleb 2009) is increasingly transforming priorities into Type 2 priorities (or the set of priorities into a mix with an increasing 'share' of Type 2 priorities)***

D5

D(2)Mechanisms for Setting Priorities-1

Type 1 Priorities

A Top-down, supra-ministerial, knowledge intensive/ oriented council (the SIP Council , see Teubal and Zlotnick 2011) lying at the highest level of the state/ Government.

Key role played by ‘experts’.

It would orchestrate outsourcing of priority setting and ‘sanction’ outcomes; and participate downstream in policy process up to a point when Ministries (or those in charge of policies) would take over.

D6/D(2)-2

Type 2 Priorities (largely decentralized, bottom up mechanisms)

- ***Multi-Stakeholder Deliberation*** (Swanson and Bhadwal 2009)
- ***SIP Effectuation*** (Teubal 2012, an extension of Entrepreneurial Effectuation see Sarasvathy 2001):
implementing ‘experimental policies’ → further priority definition & specification → implementation of ‘regular’ policies. This is done by *Activating key agents whose ‘doing’ on the ground* [in the context of SIP (E), see D4 below) *will reveal/identify key structural features of the new HLO*;
- ***System & Other Learning by Priority setters and Policy Makers***; and
- ***Expert advice***

D7/D(3)Coordination (Types)-1

Priority – Policy Coordination [the focus here*]

Inter-ministerial Coordination [for generic, multi-ministerial priorities]

*I assume that *priority targeting* involves only priority-policy coordination

D8/D(3) -2 (Modes)

Non-Linear Mode of Coordination (Type 2 priorities)

Since 'initially' priorities are 'very general', 'experimental' policies [rather than 'regular' policies] -*through the activation of key agents*- will be needed to contribute to induce reasonable priority definition and specification.

Such a SIP process stretch will be termed SIP(E) (E stands for Effectuation, see E below)

D9/ D(3)-3

Priority setters and policy makers must be mutually coordinated in this case[non-linear coordination]

This may be difficult since autonomous coordination is prone to 'disputes' and 'politics that may make it relatively difficult to achieve for Type 2 Priorities

There are two parts to the problem

D10/ D(3)-4

i) Whether 'priority setting' can be knowledge-based with a minimum of 'politics' & 'bona-fide disputes' interference from downstream policy makers [this will not happen with Type 1 priorities]

ii) Can priority- policy coordination be assured

D11/ D(3)-5

Even when priority setting is purely knowledge based without 'disputes', there still will be the problem of downstream policies which reflect politics rather than knowledge

Thus, for Type 2 priorities, explicit Governance-Based Coordination may be required

D12/ D(4)-Examples of ‘Policy Targeting’

	Type “1” Priority	Type “2” Priority
STRONG (new HLO)	<p><u>Traditional Infant Industry Promotion</u></p> <ul style="list-style-type: none"> -Civilian aircraft (Brazil) -Salmon industry (Chile) - Semiconductor & Electronics Industries (Taiwan) 	<p><u>ICT-oriented entrepreneurial systems</u></p> <ul style="list-style-type: none"> -Israel 1969-→1997/8) <p><u>Biotech Clusters</u></p> <ul style="list-style-type: none"> -Singapore <p><u>Alternative Energy Sectors</u></p> <ul style="list-style-type: none"> -Wind-power industry (Germany) <p><u>Advanced Manufacturing + Gas/Oil Fracking?</u></p> <ul style="list-style-type: none"> - US <p><u>“New” Infant Industries</u></p> <ul style="list-style-type: none"> -Telecom Equipment (China)?
WEAK (upgrading of existing HLO)	<p><u>Traditional Cluster Upgrading</u></p> <p>Many countries</p>	<p><i>Presumably a thinly populated set</i></p>

E11/E(5) Comparing Effectuation, Learning and Coordination in the evolutionary processes underlying Type 1 and Type 2 Policy Targeting

Type 1

Linear SIP process
SIP © throughout
Learning by Doing

Ex-post Pr-Pol coordination
Low Probability Disputes
*Potential for “Knowledge
-Push*

Type 2

Non-Linear SIP process
SIP (E) necessary, SIP© possible
*System + ‘Other’ Learning**

Ex-ante/Mutual Pr-Policy coord
High Probability Disputes
Need Strong Governance

***to configure what has to be targeted & the ecosystem where it should operate**

F: Policy Adaptation

F(1). Background-1

Nelson and Winter 1982 and others pointed out that in the 'real world' there is no 'optimum' which policy makers could aim at; and that "satisfying" is a key behavioral principle of both private agents and Governments

Metcalfe 1994 and elsewhere indicated that with Radical Uncertainty, policy makers are or should be adaptive rather than 'optimizers', and there is no assurance that policies may be effective

F2/F(1)-2

Ormerod 2006 pointed out the pervasiveness of policy failure in complex, multi-agent systems, resultant, among other things, from the uncertainty of agent reaction and interaction resulting from policy

Swanson and Dhawal 2009 have pointed out the need to adapt policies to a 'set of futures' rather than to a single "future"

This paper builds upon these contributions to analyze a SIP and S/E perspective to Adaptive Policy Targeting of a new HLO under conditions of radical uncertainty.

F: Policy Adaptation and Conclusions-3

F(2) The “What” of Policy Adaptation-1

‘Adaptations’ could start being relevant early during ‘pre-emergence’ when either domestic developments or exogenous events and/or processes create new potential opportunities for SC-based growth

Initially such *early opportunities* may be quite general in two senses: a) they will not include a fully specified meso-level, new HLO entity for possible Policy Targeting; and b) may be relevant for a class of such entities

Through time, they could become better defined and specified.

F3/F(2)-2

As mentioned, in the Israeli case, adaptation first led to priority transformation or *branching out* from a *Horizontal micro-level priority* [with a strong focus on MF blocking business R&D]

‘Promotion of Business Innovation and Innovative Firms’

to a Targeted Meso-level, new HLO priority

‘Promotion of an SU-intensive, ICT-oriented entrepreneurial cluster’ [& eventually– to Israel’s VC/EHTC]

F4/ F(2)-3

The latter meso-level priority was a response to exogenous & domestic events that took place during late pre-emergence [late 1980s, early 1990s] , e.g. a few high quality SUs with IPOs in NASDAQ during the early 1990s, the new technological opportunities opened up by the Communications and eventually Internet Revolutions; the highly skilled immigration from the former Soviet Union, etc.

As a consequence, such a priority became increasingly defined and specified →VC/EHTC which was eventually targeted by ‘Yozma’

F5/ F(2)-4 Comments to “What”

****Given the dynamic environment there is continued need for adapting policies priorities***

****Moreover, Type 2 priorities should be flexible, i.e. aim at a set of alternative targets***

F6/ F(2)-5 (Comments to “What”)

The new meso-level entity configuration aimed by policy should reflect reasonably desirable & plausible futures rather than a ‘single’ future (Swanson and Bhadwal 2009).

*The set of futures may change in light of changing circumstances-modifying/deleting/transforming existing priorities and/or adding/deleting new priority areas- **both domestic and foreign, exogenous and endogenous, present and future.***

It should also allow for some guesses (intuition?)

F7/ F(2)-6 Continued Adaptability of Type 2 Priorities/policies

***Continued ‘adaptability’ of Type 2 priorities [Radical
Uncertainty] may be difficult, due to***

- ***‘politics’***

For example, while priority setters might learn from well designed “experimental policies” [SIP (E)] such policies may be unduly influenced by ‘politics’; and/or

- **“disputes” (Nelson 2001, 2005).**

F8/ F(2)-7 Political Leadership

We conclude that there are potentially inherent difficulties in achieving effective policy adaptation of Type 2, new HLO priorities.

A favorable circumstance would be the presence of “Political Leadership acting during a ‘Window of Opportunity’ ” [Israel’s case during the late 1980s and during the 1990s, when, among other favorable factors, a social and political consensus was achieved concerning the need to ‘absorb’ large numbers of highly skilled immigrants from the former Soviet Union.]

F9 /F(3) The “How” of Policy Adaptation

(1) Adequate Policy Adaptation [and in fact Policy Targeting in general] requires Budgets for policy implementation

This will depend on Macro variables (growth, budget and debt considerations) and on other variables

The Macro environment in turn may depend on past successes with SC-based economic growth and Policy/priority adaptation → success may breed success [*through mutual meso-macro links taking place through time*]

F10 /F(3)-2

(2) Updating the relevant Knowledge Base and/or Adoption of New Approaches to policy making and allocation of resources broadly conceived (especially during periods of radical change in the relevant systems)

e.g. incorporating Evolutionary (e.g. to allow for ‘Contagion’ and dynamic global links) and Strategic/SIP approaches to the policy process (e.g. to effectively consider ‘Emerging Technologies’ and to be able to consider and visualize Short, Medium and Long term implications of priorities/policies)

Requires close links between *priority setting mechanisms, MOF/Treasury and Individual Ministries/Department*

F11 /F(3)-3 “How”

(2) New Mechanisms for Priority setting

e.g. mixing multi-stakeholder deliberation with expert analysis and deliberate search for objectives/solutions through networking and new mechanisms such as social media and crowd sourcing

(3) assuring a measure of independence of priority setting/re-setting from policy making

(4) Improving Priority- Policy Coordination particularly in the presence of non-linearities

e.g. leveraging the Knowledge-Push Effect derived from effective priority setting/re-setting; and implementing effective governance systems

F12 / F(3)-4 “How”

-Recognize new methodological approaches & ex-post evaluations

Evidence based policy is much less relevant than what was thought in the past because of radical uncertainty and the need to related to and think about the future [rather than simply extrapolate from the past]

-Building dynamic sequences of evolutionary processes involving priorities, policies, policy outcomes, other endogenous events/processes and exogenous events.

F13 /F(4) Avoid Lock In/Path Dependence

(6) Conclusion

While the above Paradigmatic changes may be difficult to implement due to policy/policy process 'lock-in' (an extension of B. Arthur 1994 concept), continuation of 'more of the same' policies and methodologies risks becoming increasingly irrelevant.

G: Policy Adaptation in Israel's VC/EHTC

Political consensus led to a minimization of the role of politicians in defining priorities/policy objectives [their role was circumscribed to defining and politically accepting 'immigrant adsorption' as an 'Overarching National Goal', part of the country's Vision] and of 'disputes' around priorities, policies and their coordination on the ground

The national consensus around the effort at immigrant adsorption facilitated financing of the Policy Targeting program ("Yozma") & of complementary programs all of which also contributed to immigrant absorption [Technological Incubators Program and the Magnet Program which promoted University-Industry high tech consortia undertaking generic R&D]

G-2 (No coordination Problem)

Coordination was also assured by the fact that the key agent who identified and defined the new meso-level priority [Chief Scientist who was in charge of traditional Innovation Policy-Horizontal Grants to Company R&D- at the time] was subsequently appointed to be in charge of articulating such a priority in terms of Policy Targeting Design and Implementation[→Yozma Program,93-97/8]

H: Policy S/F, Adaptation and Luck

Adaptive Policies do not mean successful Policy Outcomes

First, for Type 2 priorities, ***‘apparent failures’ are consistent with adaptive behavior*** when e.g. they result from ‘unexpected events’, e.g.

- ***truncation of the evolutionary path, either during or prior to emergence;***
- ***abandoning altogether a particular priority area;***
- ***substituting the existing new-HLO priority for another one***

H-2

More generally speaking, with Type 2 priorities we might have

***Adaptive but Failed Policy outcomes (due to 'Bad Luck'),or**

***Somewhat non Adaptive Policies and Successful Policy outcomes (due to 'Good Luck')**

H-3

The Israeli case exemplifies

Successful (S) Policy Targeting with ***High Policy Adaptability*** and ***Good Luck***

It is a very special case, a point in the space defined by Policy Success/Failure, High/Low Policy Adaptation and Good/Bad Luck

Other case studies including Failures should also be considered [part of an Appreciative Theory approach as applied to *Adaptive Policy Targeting*]

H-4

Part of the good luck directly favored high adaptability in the sense of enabling a lower effort to adapt (e.g the cost of the Targeted Program— Yozma--- and complementary programs; and their effectiveness) [example of good luck making for ‘easier’ policy adaptability in the sense of exploiting new opportunities

Another part related to external events affecting other priorities events whose exploitation required a greater effort e.g. immigrant absorption [an example of adaptation for enhanced outcomes involving greater effort]

H-6: Adaptation as ‘Exploiting a Window of Opportunity’

The Window of Opportunity was the large numbers of highly qualified scientists, engineers, medical doctors and technicians from the former USSR who immigrated to Israel during the late 1980s and 1990s

They not only stimulated innovation and high tech. Their impact-facilitated by absorption policies- must have contributed indirectly to transform a prior micro level innovation/high tech national priority into a meso-level ICT-oriented high tech cluster priority (VC/EHTC).

This was successfully Policy Targeted during 1993-7/8

SUMMARY AND CONCLUSIONS

(I) Background and Motivation-1

The dynamic global environment forces countries to increasingly rely on Structural Change (SC)-based Economic Growth e.g new sectors, industries, clusters, innovation systems [new meso HLO entities]

While SC may occur ‘endogenously’ i.e. without add’l selective policies, frequently MF/SF may block such changes → Policy Targeting may be necessary

A successful example is Israel’s Policy Targeting of a high impact VC/EHTC during 1993-2000, with the Yozma program having overcome the relevant MF (or MF and SF) associated with creation of a domestic early phase VC industry/market.

(I) Background and Motivation-2

Many countries failed up to and including the 1990s in their policy targeting efforts to promote entrepreneurial systems and VC. Overall this resulted from a short term perspective (Lerner 2009) and for other reasons (Avnimelech et al 2010; Rosiello et al 2012)

Moreover, despite the success of Policy Targeting in some Catching Up countries, there are numerous instances of Strategy/Priority-related Government Failure

These are some of the reasons why this presentation proposes a SIP perspective to Policy Targeting and SC

(II) The SIP approach-1

The SIP approach proposed here emphasizes strategic, system & evolutionary dimensions

- A priority is an evolving Body of Knowledge (BoK) having short, medium and long term; and quantitative and qualitative components*
- Priority setting [definition and specification] also involves linking with other priorities*
- Priorities evolve through time, they are set and possibly re-set and transformed*
- there are dynamic meso [from Policy Targeting and SC]-macro links

(II)-2

- *‘National Strategy’ is understood as a set of explicit, knowledge based and updated national priorities*
- *The priority set should be coherent within itself and with country Vision [a set of overarching national goals such as Sustainable Growth, Inclusiveness & employment, Health, Education, Defense, etc]*
- *‘Government Strategy’ is a subset of National Strategy*

The paper focuses on two types of meso-level HLO entities and correspondingly two types Policy Targeting-Type 1(moderate uncertainty or risk) and Type 1(radical uncertainty and unexpected events)-an on their differences.

(III) Reinterpreting Israel's Experience-1

Success was the outcome of an evolutionary process starting in 1969 and involving a pre-emergence phase (1985-92) and an emergence phase (1993-2000 approx, see Avnimelech/Teubal several papers)

That process involved 'positive variables' e.g. numbers of innovative companies, and 'normative' ones e.g. priorities/policies.

Also external events, many of them very favorable e.g.

- **liberalization and technological change in communications;**
- **the globalization of NASDAQ;**
- **the high returns to the global VC industry;**
- **Israel's enhanced reputation after the Oslo agreements; and**
- **the massive immigration from the former USSR**

(III)-2

*Priorities & policy objectives were initially quite general and micro-level
[‘support of business innovation/ innovative companies’].*

*Gradually they evolved into being more focused and higher level meso
priorities, eventually becoming during the early 1990s
[‘emergence of a VC/EHTC’].*

*These changes reflect a successful adaptation to new opportunities, strong
priority-policy coordination and relatively few ‘disputes’ or interference
of ‘politics’*

*[a reflection of national consensus concerning the absorption of
immigrants]*

(IV) Why a “Think Piece” rather than an “Action Items’ Agenda” for a particular country?-1

There are a number of reasons:

- 1) The theme is a quite general strategic and systems/evolutionary approach to policy rather than-as in my past research- solving a very specific issue for a very specific context
- 2) It makes sense if it is true as I believe, that, in the last 20 years and especially since the Global Financial Crisis, we are experiencing paradigmatic changes in the global environment which should be reflected in policy and in policy institutions
- 3) If this is so then there cannot a relevant pure action items agenda without reference to the broad outline of what could become part of the new paradigm
- 4) The SIP framework *raises issues about the mutual links between a knowledge based priority setting framework, policy implementation Ministries/Agencies, and Ministries of Finance/Treasury; and about the links between ‘thinking’ and ‘doing’ in the policy area*

Current long term proposals by Israel’ s MOF might go in this direction

(IV)-2

(5) There are at least four aspects to consider

- 'dynamic' meso [SC-based growth]-macro links

e.g. successful SC (like in Israel's during the 1990s) through macro impacts may set the base for further SC-based growth in the future e.g. both through further STE investments and by supporting, training and empowering 'middle' and 'disadvantaged' populations [both contributing to satisfy future SC-related pre-emergence and emergence conditions]

-how to prioritize the pattern of articulation of priorities into policies → towards a Dynamic Alternative Cost/Benefit

Would need a more macro-coordination effort e.g. by MOF (provided they incorporated the new paradigm including explicit priority setting with short, medium and long term components)

D-3

- Adapting Robust Decision Making (RDM) techniques to identify plausible and 'desirable' future economy/society trajectories under conditions of 'deep' uncertainty [special attention on how to incorporate qualitative priority elements and inter-temporal and inter-priority links]
- Set up a 'priorities' group for brainstorming and learning