

MAKSWELL 21st October 2020 at 15.00 CETtime
MAKING Sustainable development
and WELL-being frameworks work for policy analysis **FINAL CONFERENCE**

www.makswell.eu

Using well-being and sustainability indicators for policy

Fabio Bacchini - Istat



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770643

PARTNERS



1. Extending the boundaries of national accounts
2. Policy at work: national and local experiences in Hungary and Italy
3. Data: how many frameworks for policy (an example) ?
4. Conclusion

Related deliverables:

- 4.2 Report on multivariate analysis on MIP and well-being and SDGs indicators
- 5.2 Technical report on a macro evaluation of well-being using a macroeconometric model
- 5.3 Report on results of pilot study and recommendation for stakeholders

WP 4 (N. Tzavidis)

Del. 4.2

Istat: F. Bacchini

University of Siena - Dagum Center ASESDS: Bastianoni, Gianni Betti, Achille Lemmi, Federico M. Pulselli and Laura Neri

WP 5 (M.P. Sorvillo previous T. Rondinella)

Del 5.2

Istat: F. Bacchini, L. Galizzi, R. Iannaccone, C. Jona-Lasinio, R. De Santis, D. Zurlo

Del 5.3

Istat: M.P. Sorvillo, F. Bacchini, B. Baldazzi, M. G. Calza, L. Costanzo, A. Ferruzza, F. Gosetti, G. Tagliacozzo, A. Tinto, P. Ungaro

HCSO: Z. Andrási, Z. Fekete-Fábián, D. Jánosi, N. Kecskés, A. Schwartz

MIPA: F. Massimo Lanzoni, D. Cirillo

Statistical Office of Rome Capital: C. Villani

1. Extending national account boundaries – energy

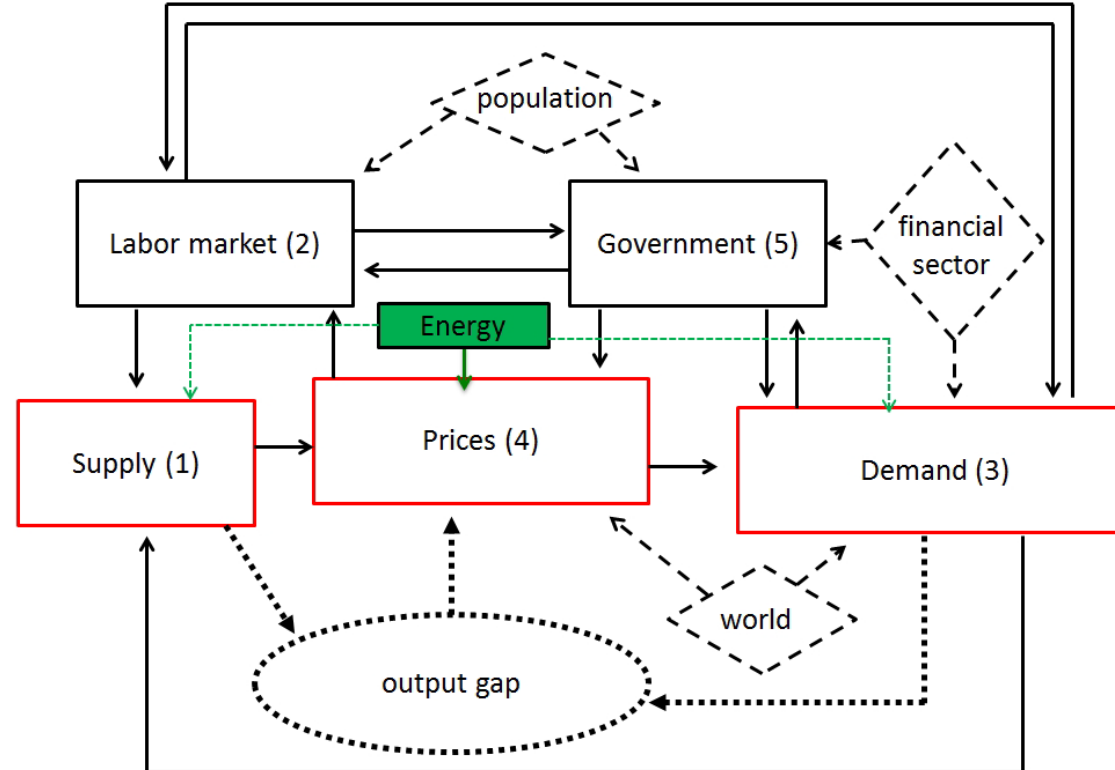
Q: should we reinforce the present framework of National accounts to take into accounts for well-being and SDG?

‘The paper ultimately proposes a broader accounting framework that goes well beyond the traditional macroeconomic framework of national accounts and that tries to establish a link with well-known initiatives to monitor wellbeing at large via for example the OECD Better Life Index’

(Measuring economic well-being and sustainability: a practical agenda for the present and the future (p. Van de Ven, Eureka WP 2019)

- implementing the System of Environmental Economic Accounts (SEEA).
- Inequalities across the households

MeMo-It belongs to a suite of economic forecasting models developed by Istat, where it plays a fundamental role in the modeling framework ensuring the overall consistency in the system. The model is composed by 66 stochastic equations and 91 identities, and represents a New Keynesian economic system including households, firms, public administration, and a foreign sector -> economy-energy-environment model (2E-MeMo-It)



We model the firm's demand of energy inputs, the household's consumption of energy products and their relative price functions through behavioral equations able to explain both short and long run dynamics.

System of Environmental-Economic Accounting (SEEA). In particular, ISTAT elaborates material-flow accounting (MFA) and National Accounts Matrix including Environmental Accounts (NAMEA). To model supply and demand of energy we need data on both quantities and prices.

Concerning the equations: Household's demand of energy products is assumed to be influenced by energy prices, and by disposable income (YD)

Dependent Variable: DLOG(IH_EN)
 Method: Two-Stage Least Squares
 Date: 01/24/14 Time: 03:47
 Sample (adjusted): 1979 2012
 Included observations: 34 after adjustments

$$\text{DLOG(IH_EN)} = C(3) \cdot \text{DLOG(PINT_EN)} + C(4) \cdot \text{DLOG(DDO)} + C(5) \cdot \text{D1986} + C(6) \cdot \text{D2009} + C(7) \cdot \text{D1993}$$

 Instrument specification: DLOG(IH_EN(-1)) DLOG(PINT_EN(-1))
 DLOG(DDO(-1)) D1986 D2009 D1993
 Constant added to instrument list

	Coefficient	Std. Error	t-Statistic	Prob.
→ C(3)	-0.115954	0.045562	-2.544971	0.0165
C(4)	0.961207	0.210270	4.571294	0.0001
C(5)	0.040400	0.020670	1.954478	0.0603
C(6)	-0.046909	0.020102	-2.333570	0.0268
C(7)	0.047560	0.021794	2.182198	0.0373

R-squared	0.682783	Mean dependent var	0.006464
Adjusted R-squared	0.639029	S.D. dependent var	0.031259
S.E. of regression	0.018781	Sum squared resid	0.010229
Durbin-Watson stat	1.841472	J-statistic	1.738308
Instrument rank	7	Prob(J-statistic)	0.419306

Dependent Variable: LOG(FH_EN/POP_T)
 Method: Two-Stage Least Squares
 Date: 01/24/14 Time: 03:47
 Sample (adjusted): 1978 2012
 Included observations: 35 after adjustments

$$\text{LOG(FH_EN/POP_T)} = C(1) + C(2) \cdot \text{LOG(PFIN_EN)} + C(3) \cdot \text{D1991} + C(4) \cdot \text{LOG(YDHN(-1)/POP_T(-1))} + C(5) \cdot \text{D1997}$$

 Instrument specification: C LOG(FH_EN(-1)/POP_T(-1)) LOG(PFIN_EN)
 LOG(YDHN(-2)/POP_T(-2)) D1991 D1997

	Coefficient	Std. Error	t-Statistic	Prob.
→ C(1)	1.039294	0.128515	8.086945	0.0000
C(2)	-0.224111	0.047328	-4.735257	0.0000
C(3)	0.093286	0.029618	3.149634	0.0037
C(4)	0.128183	0.031944	4.012677	0.0004
C(5)	-0.088773	0.029728	-2.986191	0.0056

R-squared	0.625309	Mean dependent var	0.391622
Adjusted R-squared	0.575351	S.D. dependent var	0.044777
S.E. of regression	0.029179	Sum squared resid	0.025542
Durbin-Watson stat	2.072692	J-statistic	0.988668
Instrument rank	6	Prob(J-statistic)	0.320068

1. Extending national account boundaries – inequality

The introduction of income inequality in the aggregate consumption equation may allow to better evaluate the macro-economic consequences of redistributive policies.

$$\begin{aligned} \Delta \log CHO_t = & \alpha_0 + \alpha_1 \Delta \log \frac{YDHN_t}{PCH_t} + \alpha_2 \Delta \log \frac{YDHN_{t-1}}{PCH_{t-1}} \\ & + \alpha_3 \log \frac{CHO_{t-1} * PCH_{t-1}}{YDHN_{t-1}} + \alpha_4 \log \frac{1 + INTR_{t-1}}{100} \\ & + \alpha_5 \log \frac{HWFA_{t-1}}{YDHN_{t-1}} + \alpha_6 \Delta \frac{p90_{t-1}}{p10_{t-1}} + \alpha D2011 \end{aligned}$$

Where CHO is the real private consumption, Y DHN is the disposable income net of interests at current prices, HWFA is the financial wealth at current prices, PCH is the consumption deflator and INTR is the short-term nominal interest rate.

Dependent Variable: DLOG(CHO)

Method: Two-Stage Least Squares

Date: 11/22/19 Time: 12:38

Sample (adjusted): 1997 2017

Included observations: 21 after adjustments

DLOG(CHO) = C(4*10+0) + C(4*10+1)*DLOG(YDHN/PCH) + C(4*10+2)
 *DLOG(YDHN(-1)/PCH(-1)) + C(4*10+3)*LOG(CHO(-1)*PCH(-1)/YDHN(-1))
 + C(4*10+4)*DLOG(1+INTRBTP(-1)/100) + C(4*10+5)
 *DLOG(HWFA(-1)/YDHN(-1)) + C(4*10+6)*D(P90P10_YD(-1)) + C(4*10
 +7)*D2011 + C(4*10+8)*D(BLOOM_IT(-1))

Instrument specification: C DLOG(YDHN/PCH) DLOG(YDHN(-1)/PCH(-1))
 LOG(CHO(-1)*PCH(-1)/YDHN(-1)) DLOG(HWFA(-1)/YDHN(-1))
 DLOG(CHO(-1)) D(P90P10_YD(-1)) D2011 D(BLOOM_IT(-1)) DLOG(1
 +INTRBTP(-1)/100)

	Coefficient	Std. Error	t-Statistic	Prob.
C(40)	-0.003972	0.002016	-1.970442	0.0723
C(41)	0.347615	0.102061	3.405966	0.0052
C(42)	0.396448	0.091946	4.311751	0.0010
C(43)	-0.191367	0.113620	-1.684269	0.1179
C(44)	-0.415687	0.185947	-2.235507	0.0452
C(45)	0.108092	0.023488	4.602051	0.0006
C(46)	-0.050679	0.019620	-2.583093	0.0240
C(47)	0.014563	0.008008	2.424114	0.0321
C(48)	-7.81E-05	5.68E-05	-1.374940	0.1943
R-squared	0.947567	Mean dependent var		0.007078



MAE, MAPE and RMSE calculated with the time series Cross-Validation for both the new and the old consumption function

	old consumption function	new consumption function
MAE	0.0049	0.0039
MAPE	0.2493	0.0459
RMSE	0.0061	0.0052

Policy simulation:

- Scenario 1: Assuming an increase in the households' disposable income of 7.1 billions in 2019 and 8.055 billions in 2020.
- Scenario 2: Assuming the same shock for income as the scenario 1, plus a reduction of the income inequality index p90p10 of 0.21, proportional to the reduction estimated by MEF for p80p20 index.

Effects of the Italian "Reddito di Cittadinanza" on GDP, real private consumption (CHO) and consumption deflator with respect to the base scenario in percentage points (pp)

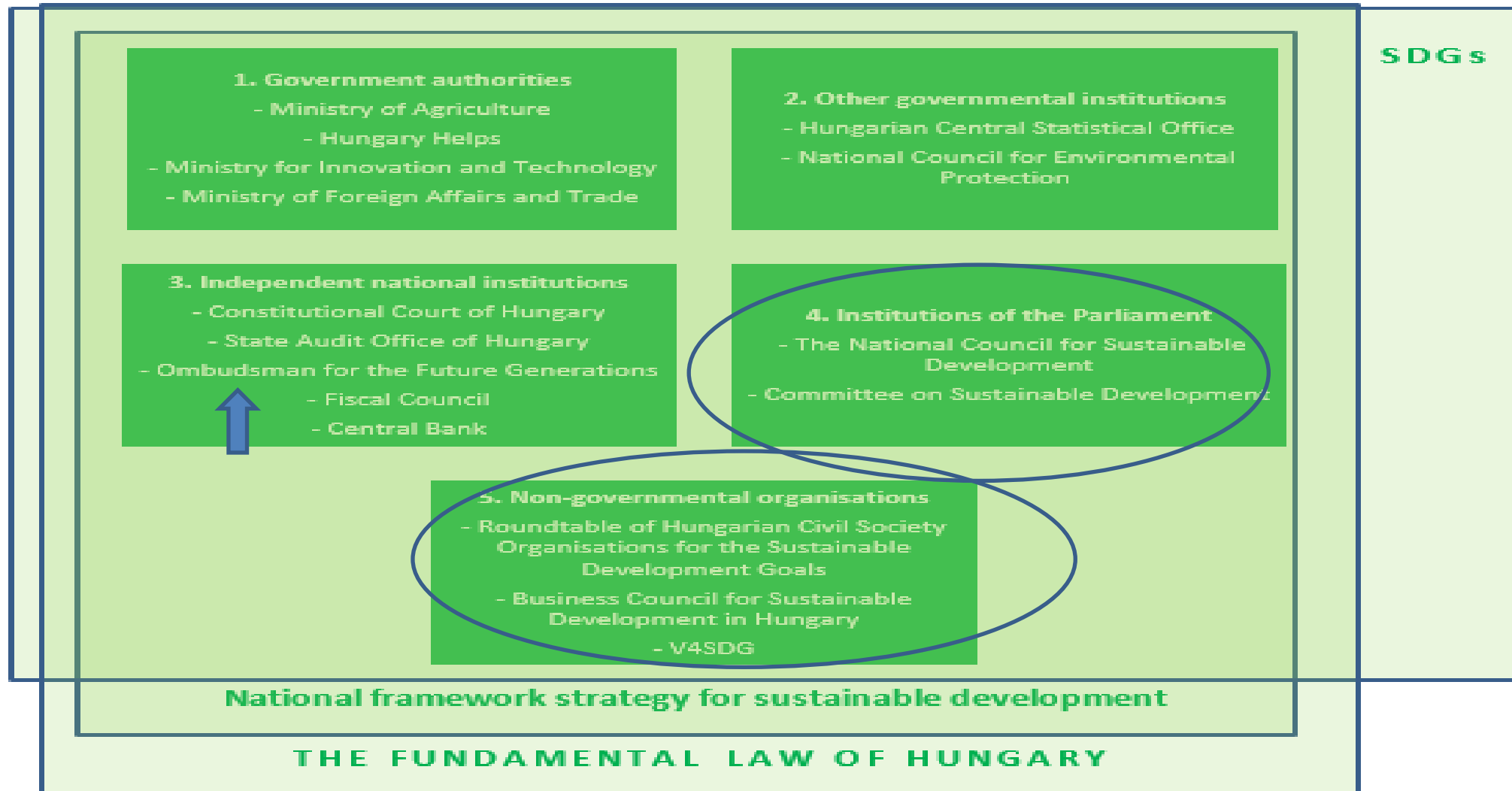
		2019	2020
SCENARIO 1:	GDP	0.2	0.1
	CHO	0.2	0.3
	PCH	0	0.1
SCENARIO 2:	GDP	0.2	0.4
	CHO	0.2	1.1
	PCH	0	0.2

2. Policy at work: national and local experiences in Hungary and Italy

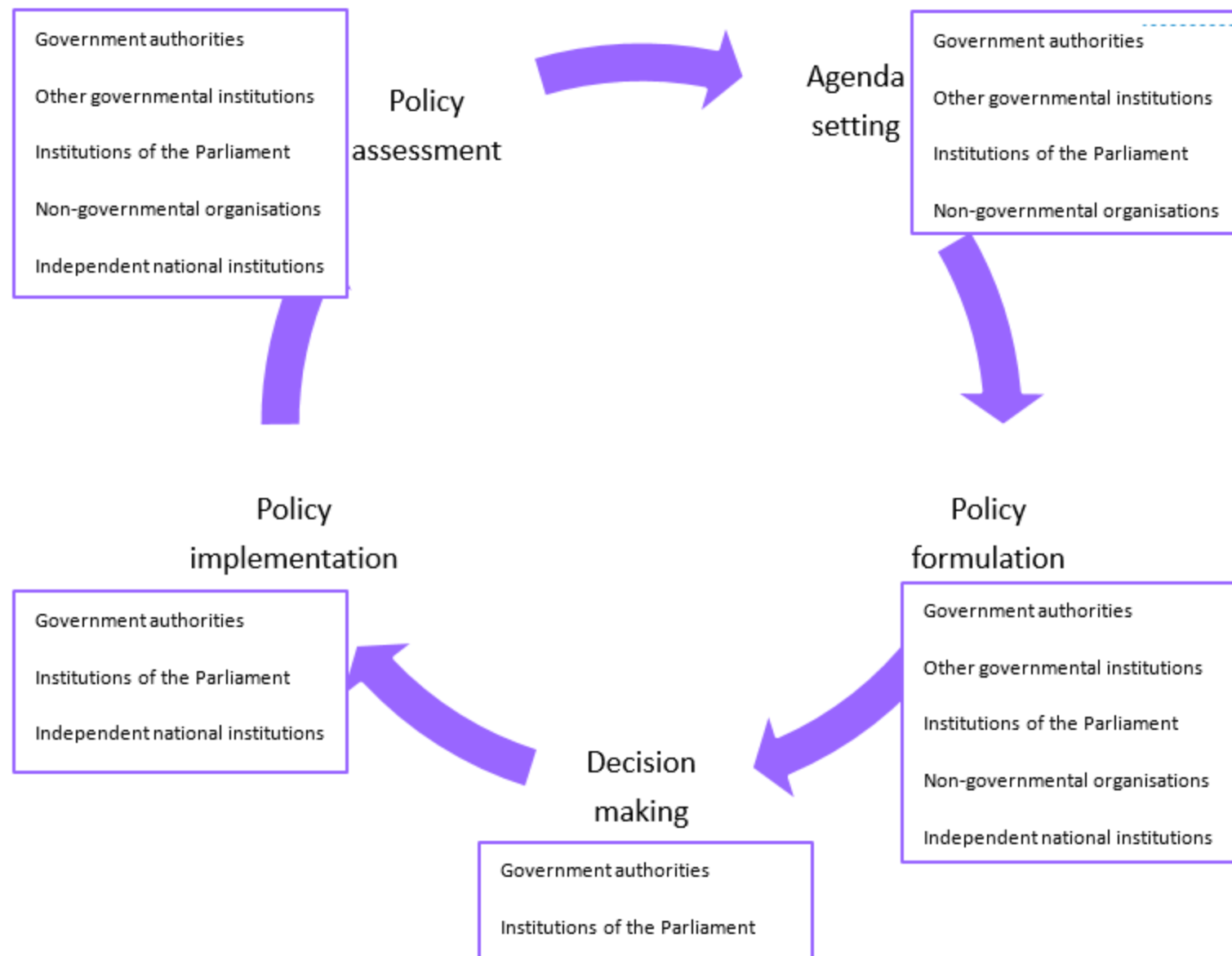
Q. Could the institutional framework important to foster well-being and SDG?

Comparing the use of sustainable development and well-being in Hungary and Italy:

- in Hungary policy formulation takes place mainly on national level, and the regional governance has smaller relevance. Italian Regions (and autonomous Provinces) have a broad spectrum of competencies,
- Hungary policy action is more oriented to sustainable development, while in Italy well-being received a particular attention from politicians.
- Both NSI are full involved in the collection of the data and in the interactions with government and other institutions involved in the process



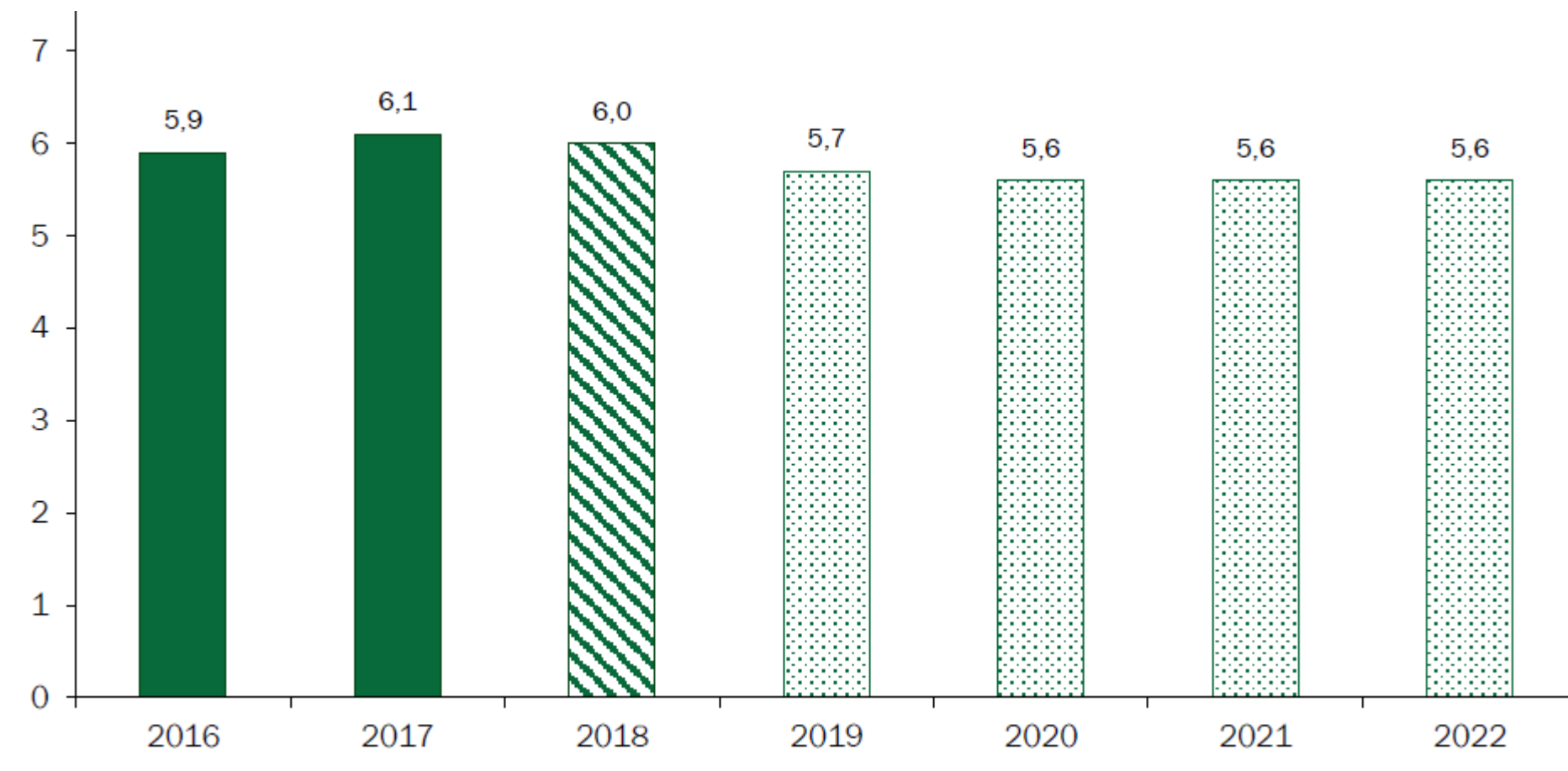
- We bear responsibility for our descendants ...All natural resources, and cultural assets shall form part of the nation's common heritage, and the State and every person shall be obliged to protect, sustain and preserve them for future generations"
- The Ombudsman made recommendation for the identification of focus areas and the definition of governmental action plans regarding the Agenda 2030.
- The National Council for Sustainable Development (NCSD) is the Parliament's independent advisory body focusing on the issues of sustainable development. The NCSD publishes the monitoring report every two years to inform the public and the Parliament on the implementation of the framework strategy including the SDGs.
- The Committee on Sustainable Development is a standing committee of the Parliament, makes proposals, provides feedback, makes decisions in specific matters and is involved in the oversight of government work. It works in close cooperation primarily with the NCSD.



- The Law 163/2016 introduced several innovations in the State budget, among which the inclusion of well-being indicators in the process of definition of public economic policies. In particular, indicators measuring equitable and sustainable well-being are to be considered in drafting the planning documents for economic policy of the Government (DEF- documento di Economia e Finanza).
- The National Sustainable Development Strategy (NSDS) was approved by the Interministerial Committee for Economic Planning on 22 December 2017.
- The Council President's Directive, issued on 16 March 2018, contains guidelines for implementing the NSDS. It assigns to the Presidency of the Council of Ministries the coordination of the actions and policies involving the NSDS as well as the efforts made to produce regular updates to that strategy
- June 2019 'Cabina di regia Benessere Italia' a new institutional body depending from the the primer minister. Main duties: empowering and coordination of national strategies on well-being and sustainability (national strategy for SDG – Ministry of environment)

1. Mean adjusted income (per capita)
2. Income inequality (quintile ratio)
3. Absolute poverty (incidence);
4. Life expectancy in good health at birth (years)
5. Overweight and obesity (rate)
6. Early school leavers (rate)
7. Non-participation in employment (rate)
8. Employment rate of women aged 25-49 with preschool children vs women without children
9. Victims of predatory crime (rate)
10. Mean length of civil justice trials (days)
11. CO₂ and other greenhouse gas emissions (tons x inhab.)
12. Illegal Building (ratio)

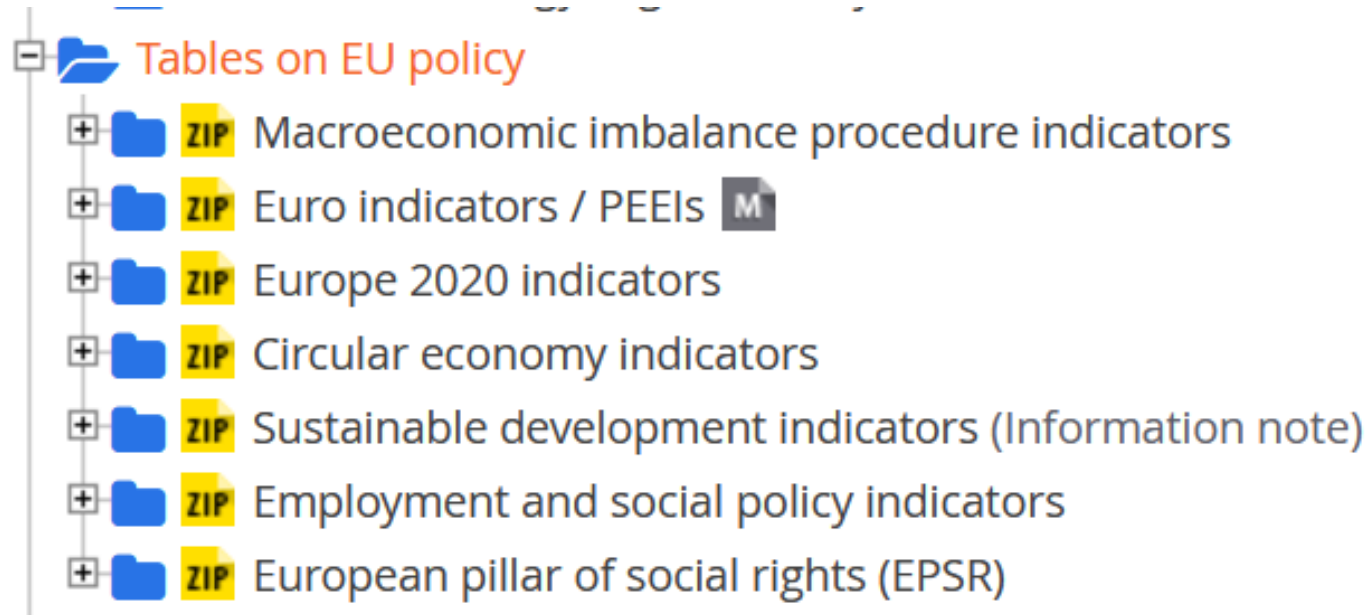
Income inequality (quintile ratio)



- A growing number of Italian Regions is introducing in their programming documents (DEFR - Regional Economic and Financial Document) references to the concepts of well-being and sustainable development, with a different level of detail and often referring to the Bes regional indicators developed by Istat.
- Within that context it is worth mentioning the Regions' Agreements with the Ministry of the Environment for the construction and implementation of the regional Strategies for sustainable development
- Veneto, Puglia and the autonomous Province of Bozen-Bolzan and Metropolitan City of Rome Capital 2016-2020 are presented in details in the del. 5.3
- For example the Veneto Region follows the budget logic, so there is a natural connection with the costs represented in terms of missions and programs that translate the Administration goals.

3. Data: how many frameworks for policy (an example)

Q: could different framework for well-being and SDG providing similar results?

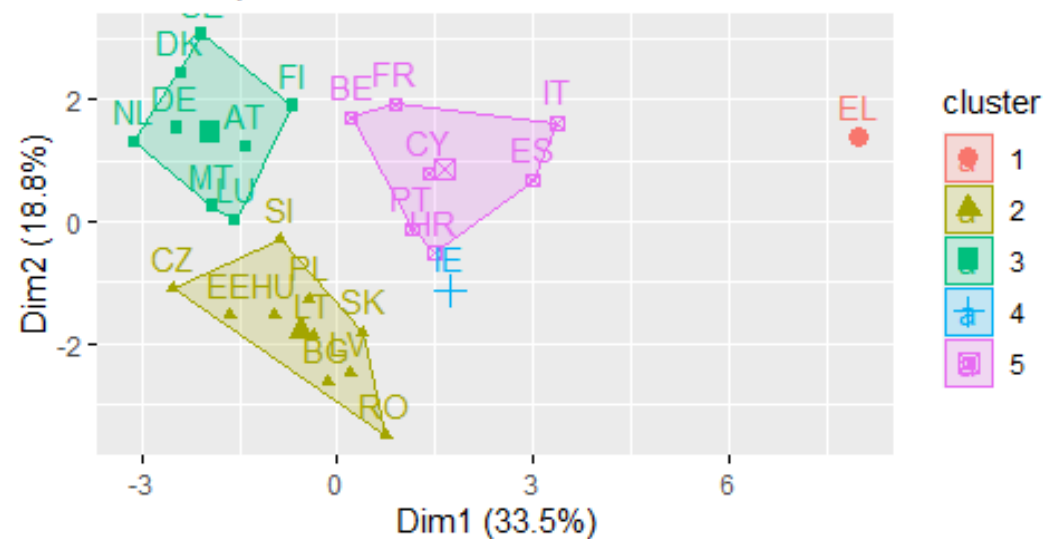


3. Data: how many frameworks for policy (an example)

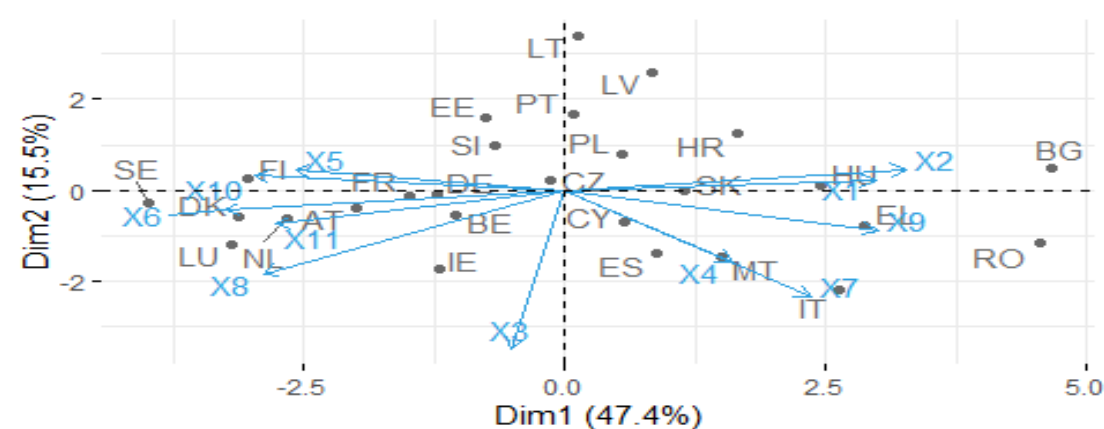
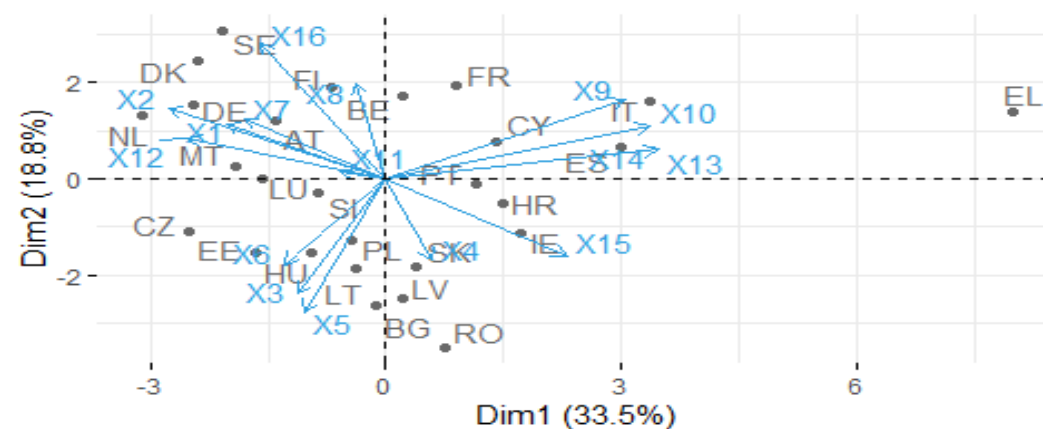
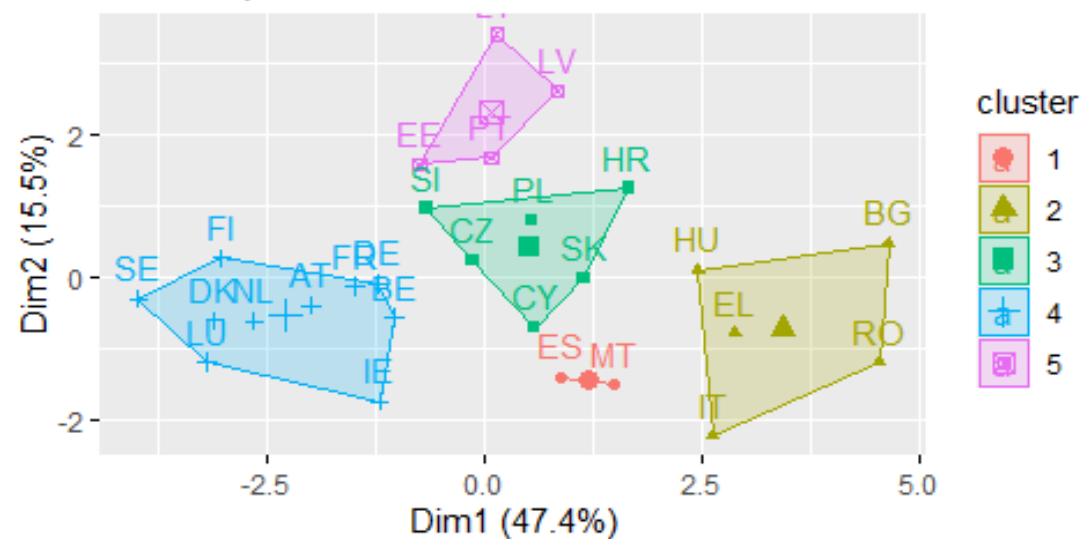
Example comparing analysis based on a selection of the MIP indicators provides and the ones based on the Sustainable Development Goals (SDG):

- 16 MIP indicators and 11 SDG indicators drawn from the social and economic Goals.
- Data: To improve the use of the MIP indicators, the present analysis consider the last data available for the scoreboard comparing them with a subset of indicators drawn from the social and economic dimension of SDG.
- Considering the social and economic dimensions we select:
 - . Social indicators: GOAL 1: poverty risk (X1) and several deprivations (X2), GOAL 3 good health (X3), GOAL 4: early school leaving (X4), tertiary education (X5) and adult participation in learning (X6),
 - . Economic indicators: GOAL 7 employment gap (X7), GOAL8 GDP per capita (X8) and NEET (X9), GOAL 9 public investment (X10) and GOAL 10 income households (X11).
- Methodology: multivariate analysis

Cluster plot



Cluster plot



- According to the MIP indicators, 3 clusters seem well characterized in term of geographical composition: cluster 2 much related to Eastern countries, cluster 3 to the Northern ones and cluster 5 to the Mediterranean. Labour market appears as one of the driver of this composition:
- Results from PCA confirm these evidences adding relevance for Current account balance (X1), Net international investment position (X2) and Private sector credit ow, consolidated (X7) for Northern countries with People at risk of poverty or social exclusion (X16) and Private sector debt, consolidated (X8) more important for Finland and Sweden; Eastern countries are characterized more by Real effective exchange rate (X3), Export market share (X4), Nominal unit labour cost) (X5) and House price index (X6). Finally labour market is mainly driven the position of Italy and Spain.
- Interpretation from the cluster analysis based on SDG indicators return a similar picture adding some details with a slight heterogeneity across Eastern countries, now included in three different clusters. The Northern cluster now includes France and Ireland. PCA helps to characterize these differences. Labour market conditions employment gap (X7) together with early school leaving (X4) are one important driver for the position of Italy and Spain.

4. Conclusion

- As the project MAKSWELL has documented (see Deliverable 1.1 and 1.2) framework on well-being and SDG are commonly used across European Countries. This implies, in turn, that the first stage of the beyond-GDP revolution, the availability of indicators out of the boundaries of GDP, is now completed.
- Some difficulties emerges mainly related to the timeliness of the indicators, a crucial point in the age of COVID-19
- The project has aimed to tackle two other important issues. The first is the introduction of new methodologies and new data that could be useful for augmenting the actual set of indicators improving both timeliness as well territorial disaggregation

- Concerning the policy implementation Stiglitz et al. (2018a) that identifies the different ways of the use of indicators in policy
- To reach these goals, together with new data and new methodologies, three important points emerge from the project:
 - Institutional framework
 - Extending the boundaries of national accounts
 - Explore the interaction amid selection of indicators and their implementation in the policy debate. Integrated set of data more than different frameworks?

Thank you for your attention

MAKSWELL coordination Team
rd-projects@istat.it