

**THE WELLBEING OF FUTURE GENERATIONS:
NEW PERSPECTIVES ON ECONOMIC GROWTH**
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Introduction

*“Human progress is neither automatic nor inevitable.
We are faced now with the fact that tomorrow is today.
We are confronted with the fierce urgency of now.
In this unfolding conundrum of life and history
there is such a thing as being too late
We may cry out desperately for time to pause in her passage,
but time is deaf to every plea and rushes on.
Over the bleached bones and jumbled residues
if numerous civilizations are written the pathetic words: Too late.”*

Martin Luther King¹

Today, developed countries are severely constrained by data such as an aging population and low birth rate, which is recorded in many European Union countries. This kind of data affects not only population growth but also the levels of public spending in each state. This is an extremely urgent problem. Already in 2004 the European Commission Green Paper "A new solidarity between the generations of demographic change" had expressed serious concerns about the future of young people: an aging population on the one hand and the level of public spending on the other, in fact, make unsustainable trends in public finances.

Among the countries most at risk are those that are impacted to a greater liabilities arising from unfunded government pension programs: more than 200% of GDP in France and Italy, and more than 150% of GDP in Germany. In view of this development, it is clear that depending on the level of public spending future scenario could be more or less optimistic for new generations.

Objective of the paper is to show how the idea of generational equity needs to be placed at the base of both the legal reforms in order to focus the needs of new generations, and that fiscal policy to maintain the same capital stock and the same opportunities for present and future generations. In particular, the work omits to deepen the intra-generational equity or equity within the same generation, but deals mainly with the appearance of fairness between generations and therefore

¹ M.L. King Jr., 1967

different generations (e.g. young and old) and between present and future generations.

The work is divided into two parts. The first two chapters are basically conceptual: from the oil shock of the '70s, through the idea and the model of sustainable development is treated the theoretical part that led to the discovery of the finiteness of resources and creation of theories relating to intergenerational equity. In the first part, in fact, there are listed the research experience of the prevailing economic history of the twentieth century and the main method of analysis of equity between generations, from the definition of welfare as a right for the present and future generations, to the definition of intergenerational public goods whose current availability, cannot compromising that of future generations.

The last three chapters address primarily the issue of remedial actions and policies to be implemented to ensure fairness between generations. In particular, the second part focuses on different positions of Pigou and Coase, and in this direction, pointed out that the public must prevail over private interest, will be proposed three possible alternatives or strategies that are not prevalent, but competitors in the same way, to achieve the same result. The first is a possible legal and constitutional reform to guarantee solidarity between generations and the right future for future generations. The second is to achieve the Millennium Development Goals as instruments of supranational policy aimed at creating a better future for present and future generations. Finally, there is an experimental proposal: the spread of the instrument of generational accounts as best practice internationally well-established and the idea, still experimental, to implement generational balance even in public.

I. The concept of sustainability: from the finiteness of resources to the generational equity

The discovery of the finiteness of natural resources from the first oil shock between 1974 and 1975, announced to the world that natural resources are not infinite, but finite and that the stocks of renewable resources, of which oil was a part, is in fact a theoretical illusion distant from reality: what is now freely available might not be enough for everyone tomorrow. Some years later the definition of sustainable development in 1987 officially open the debate on equity not only between present generations related to the need to remedy the impoverishment of much of the world's population, but also between present generations and future ones, by the will to act to ensure the same level of quality of life between present generations and future generations.

This model comes directly as a result of ideological changes of time, and what had been discussed by the Club of Rome in 1972, albeit with some further step.

Although at the time of redaction by the Club of Rome, in 1972, of the book “The Limits of growth” - through which the leading researchers of the Massachusetts Institute of Technology (MIT) questioned the unlimited development and continued growth² - it was possible to distinguish clearly two needs: from a first point of view the needs of the developed Countries of the North that declared the emergency of the climate change and the environmental problems, ad from a second point of view the needs from the Southern Countries that highlights the attention on justice and equity. After it, the aim of the Brundtland Commission in 1987 trying to respond to both needs, defining sustainable development as development that *"meets the needs of the present without compromising the ability of future generations to meet their own needs"*³.

While in previous years, therefore, the development was based on three assumptions - that economic development would grow endlessly unfolding on global spaces, which would have improved the lives of men, and, finally, that would last forever - with the definition of sustainable development such statements lose value, in favor of the idea of development, failing to ensure no equity in the distribution of resources, is now trying to repair treating the welfare of present and future generations, and placing the objective of encouraging a commitment by the governments of the world and promote cooperative relations between peoples in the light of justice between generations⁴.

2 cfr. D.L. Meadow, 1972

3 cfr. G.H. Brundtland, 1988

4 “In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change are all in

The commitment to greater justice between generations and to create a sustainable economic model, not born with the Brundtland Commission, but as we said before, with the perception of the finiteness of resources and the need for a change of course, centered on the goal of sustainability.

So while in 1985 Robert Repetto proposed to encourage the creation of an economic system able to protect the livelihoods of future generations⁵, Robert Solow argued the importance of justice between generations and sustainability as a moral obligation for the next generations⁶. The R. Solow's position on the sustainability is very clear: in an article on it he argued the need to consider not only the principle of intergenerational equity, but also the principle of efficiency under which the current generation are likely to be indebted to the younger generation, as well as the availability of this or that particular resource, production capacity needed to maintain a certain standard of living⁷

A few years later, again in an article written on the occasion of the fortieth anniversary of "Resources for the Future" R. Solow argued the importance of preserving natural resources for future generations to ensure that the use of resources and remedy the economic policies suggested at that time brought an unmoderated use of environmental resources, economic and social, by virtue of the idea of non-finiteness of resources and the conviction that the market economic process of production and consumption should eat unlimited⁸.

A similar position is opposed to the evidence of the finiteness of resources, and the functioning of economic, social and environmental dynamic. In particular, for example with similar theories in favor of environmental and equity between generations, it's possible to evidence how today economic system is and principles of biological system are strongly contradictory. The contradiction between these systems, as is explained by the theory of the decline stems largely from two principles that underlie economic order: the theory of production and the centrality of technological progress.

Consider the classical production function:

$$Q = A f(K, L, R)$$

harmony and enhance both current and future potential to meet human needs and aspirations." [G.H. Brundtland, 1988: Chapter 2]

5 "At the core of the idea of sustainability, then, is the concept that current decisions should not damage the prospects for maintaining or improving living standards in the future...This implies that our economic systems should be managed so that we live off the dividend of our resources, maintaining and improving the asset base so that the generations that follow will be able to live equally well or better. This principle also has much in common with the ideal concept of income that accountants seek to determine: the greatest amount that can be consumed in the current period without reducing prospects for consumption in the future." [Repetto R. 1985*]

6 Solow, R. M. 1986

7 "The basic question is: how much of the world's – or a country's – endowment of nonrenewable resources is it fair for the current generation to use up, and how much should be left for generation to come who have no active voice in contemporary decisions?" Solow, R. M. (1986), pp. 141-149.

8 Solow, R. M. 1992

According to that, the production Q grows in function of the growth of labor L , of capital stock K , of t primary resource R and of technological progress A .

In this sense we have a situation where it's always possible to increase the amount of product, even when R decreases the amount of resources used: it's sufficient to increase the capital stock, according to the principle that both the stock of natural resources that capital stock are fully replaceable.

In fact, according to the first principle of thermodynamics, the amount of material that enters the production process coincides exactly with the differences that are at the end of that process, so an increasing amount of products is always an increasing amount of materials first used, and, consequently, a greater impact on the ecosystem. Applying, then, the principle of thermodynamics, it is clear that continuing the path of continuous economic growth, by virtue of the finiteness of resources, it becomes difficult to ensure future generations can have the same stock of resources both natural capital and then give them the same standard of life of present generations.

From these considerations, many economists and scholars had thought of ecosystem paths of technological progress can identify new methods of production of eco-efficient and lightweight. In fact, it was found that technological progress stimulates the creation of new needs, thanks to marketing and advertising campaigns more exciting and attractive and therefore little impact, use and / or reducing the stock of production.

It is therefore necessary to identify sustainable economic policies that can ensure equitable distribution of capital stock (natural, human, financial, instrumental, and social) and do not pose the new generations in a position to inherit "*less physical and natural capital and thus allow us to achieve--though not out of its choice--a higher standard of living at its expense.*"⁹

II. Well being and Intergenerational Public Good

The principle of preserving the productive capacity of future generations must be attached to the principle of ensuring both the same level of social welfare (well-being), and the same right to create social welfare. The concept of wellness related equity between generations and intertemporal allocation of resources, there have been throughout the twentieth century different positions and different measurement models. For the purposes contained in this work it is mainly considered the positions of F. Ramsey and Hartwick.

In the definition of well being given by Frank Ramsey, for example, the concept of social welfare is closely tied to the concept of utility as a result of consumption. This concept, very utilitarian, expected social welfare is maximized when there is 'the maximum amount of utility', due to consumption of all generations¹⁰. Thus, the consumption level C of each generation, incorporates in itself the aggregate welfare of the given generation.

We define $U(Ct)$ the welfare of generation t with upward of function U , and with growing intensity decreasing.

The wellbeing function in t become:

$$V_t = \sum_t^{\infty} U(C_t)$$

In $t \geq 0$

To identify how to maximize V_t F. Ramsey believes that the next generation is always able to find the optimal flow of consumption, "*creating a $C1$ consume, invest in a manner appropriate, and would increase the amount of capital to the optimized second generation*"¹¹. In the same way that a generation has inherited from previous generations of a given stock of capital, including resources and knowledge, this would normally be transmitted to succeeding generations the optimal capital stock, useful to give them the same level of welfare.

But what is most challenged in this theory is the difficult to realize the sum of utilities: Ramsey, in fact, does not foresee the possibility of resorting to discount utilities of future generations, making the convergent sum of utilities. Not only that, the discount of utility has been severely criticized by Ramsey and described as "ethically indefensible"¹² for the fact that future generations less weight than present.

On the question of whether to apply discount rates to utilities, P. Dasgupta and Heal in 1979 establish a formal economic model in which the function V_t apply a factor G , which makes the

10 Ramsey, Frank P. 1928.

11 Cfr Dasgupta P. 2004

12 Ramsey 1928, p.261

function more sensitive to the distribution and equality¹³:

$$V_t = \sum_t^{\infty} G U(C_t)$$

in $t \geq 0$

Ramsey theory, again, is opposed in some respects that of Koopmans, who considers the consumption of no more sequences derived from the sum of utilities, such as Ramsey, but a conceptual starting point. According to this theory, which poses an ethical basis to the laws of flows that the discount rate should be positive, social welfare would be the numerical representation of a system of consumption streams:

$$V_t = \sum_t^{\infty} \beta^{\tau-1} U(C_t)$$

Per $t \geq 0$

Where $\beta = 1/(1-\delta)$ and $\delta > 0$

According to this equation, then U is the current well-being, $\beta (\tau-1)$ is the discount factor and δ the discount rate or "pure time preference"¹⁴.

R. Solow¹⁵ and other economists, under the rules of distributive justice incurred by John Rawls¹⁶, have shown that, to ensure some equity between generations, the per capita consumption should be constant over time. In his theory R. Solow raised as a welfare criterion the consumption standard gained by the low rich generation during the time. Starting then from such an egalitarian way of reference, no society would be justified in asking for any sacrifice, however small, to a generation in order to provide an advantage, however great, in any generation. In other words: the welfare of future generations could not compensate for the sacrifice of these¹⁷.

However, this theory has two important limitations. The first refers to the pre-condition of having a capital stock high enough to ensure a degree of prosperity, without which it would not forever maintain a low level of consumption. The second limit is related to the population rate: if population has a steady rate and the technological progress the model is limited and defined by the same economist "stupidly conservative", because it is too much conservative to be real, because of

13 Dasgupta, P. Heal G.M. 1979.

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15 cfr. Solow R.M. (Symposium 1974)

16 cfr. Rawls J (1971)

17 Cfr. Solow R.M. 1986

the standardization of the consumption rate and the impossibility to increase it¹⁸.

Another model is the one based on the "Hartwick rule", whereby the value of a single unit of not extracted natural resource should increase in each moment as well as the rate of the current marginal product of the reproducible capital; the consequent competitive rents will be able perpetually to maintain a constant level of consumption¹⁹. This rule, widely used in environmental economics, is considered very important because it indicates how much of exhaustible resources can be "saved" (set aside) and invested in reproducible capital so that his pension will last, maintain the level of addiction and prevent the decline of non-renewable resources.

According to R. Solow Hartwick's rule can be regarded as one of the rules better and more effective to give the idea of the proper management of stocks of capital for future generations, and also to provide the right line ethics policies for the new generations²⁰.

In this sense, therefore, becomes useful to identify sustainable policies that have as their aim the preservation of public property and the just distribution of public goods between generations. In this regard, it should give a clear definition of what is or is not an intergenerational public good.

A public good is defined intergenerational if costs or benefits related to it affect the present and future generations²¹. This is the (positive) case of scientific research carried out in a particular period and whose benefits will be available for present and future generations A negative example of this case could be the pollution damage or the social conflict that generates war: the consequences of these events should be distributed unevenly between the generations.

In its analysis on public intergenerational goods T. Sandler argues that, both Both at the scientific then at the institutional level, the attentions of the policy makers are focused only to the transnational disparity of the public goods sharing, while the problem about the distribution of the global public intergenerational good is not considered also if it is more urgent. Examples are some plans for growth for the developing countries which provide a substantial use of biodiversity in the name of greater economic growth but without any consideration of the unequal availability of resources related to this process²².

A good, to be called public, must have two specific characteristics. The first is that the benefits of delivery of goods are common in the community; the second refers to the universality of benefits

18 Cfr. Solow 1974

19 Hartwick, J. M. (1977

20 "The image that come to mind is Ulysses lashing himself to the mast because he knows he will be tempted by the Sirens. From that point of view, Hartwick's rule is a better-than-average rule of thumb" [Solow, 1986]

21 "An intergenerational pure public good (bad) provides benefits (costs) that are nonrival and nonexcludable within and among generations" .T. Sandler 1999.

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both in terms of countries and groups of people, in terms of generations²³.

In turn, public goods are distinguished:

- Pure public goods: whose benefits are not competitive (nonrivalrous) and are not exclusionary (nonexcludable), such as traffic signs, whose value is the same for all those who benefit.
- Impure public goods, or goods that are not purely public nor purely private, which are divided into:
 - or goods whose consumption is not competitive but excluding (club goods);
 - Or goods whose consumption is not foreclosure but is competitive (e.g. Biodiversity).

To understand more precisely what meets the definition of intergenerational public goods and what type ranks, consider the taxonomy of goods made by T. Sandler, see Table 1.

23 I. Kaul, I. Grunberg, M.A., 1999.

TAB 1: Taxonomy of public goods based on good's characteristic²⁴					
		Pure Public	Impure Public	Club	Joint Products
Intragenerational	Regional	- Forest fire suppression Groundwater pollution cleanup - Animal disease control - flood control	- waterways - Rivers - Highways - Local parks	- Common market - Crisis management forces - Electric grid Information networks	- Peacekeeping - Military forces - Medical aid - Technical assistance
	Global	- Ocean pollution cleanup - Weather forecasts - Monitoring stations - World Court	- Electromagnetic spectrum allocation - Satellite transmissions - Postal Service - Disease control	- Canals - Air corridors - Internet - Shipping lanes	- Foreign aid - Disaster relief - Drug interdiction
Intergenerational	Regional	- Wetland preservation - Lake cleansing - Toxic waste cleanup - Lead emissions reduction	- Acid rain reduction - Fisheries protection - Hunting grounds protection - VOC emissions reduction	- National parks - Irrigation systems - Lakes - Cities	- Peacekeeping - Flood control - North Atlantic Treaty - Organization - Cultural norms
	Global	- Ozone shield protection - Global warming prevention - Disease eradication - Knowledge creation	- Overuse of antibiotics - Ocean fisheries - Antarctica protection - Revolution making	- Transnational parks - Geostationary orbits preservation - Polar orbits - Barrier reefs	- Tropical forest - Space colonies - United Nations - Poverty Alleviation

²⁴ Cfr, T. Sander, pag 24-25

According to this division to each public good there is a different relationship with the generations and the responsibilities of national and / or supranational level. So while a legislative policy aimed at reducing toxic waste is one of the pure intergenerational regional public goods, interventions aimed at limiting global warming or the ozone hole are defined intergenerational pure global public goods. Similarly, the consequences of a disproportionate use of natural resources such as waterways can be detrimental to the welfare of present and future, for it comes within the column of impure public goods within generations.

From the taxonomic table, T. Sandler proposes 4 "Awareness rule" that define the level of marginal benefit to each generation to consume public goods generation.

The model is based on the existence of two regions $r = 1, 2$ and $j = 1, 2, 3$ for three generations. All the people living in the region belong to the r th and j th generation is defined as Ω_{jr} . The goods produced are of two types: the public good q produced in period 1 just for the two periods, while the private good y is produced and consumed in whole at any time. Unlike the public good, private good has the effect of intergenerational inequality.

To reach the intergenerational Pareto optimum must, as said, to maximize the utility of all individuals with all generations and all regions²⁵.

The utility of the people is:

$$U^{ijr} = U^{ijr}(Y^{ijr}, q) \quad \text{Where } i \text{ is part of } \Omega_{jr}$$

According to what we've said before, the production of y is totally consumed, so:

$$Y_f = \sum_{r=1}^2 \sum_{i \in \Omega_{jr}} y^{ijr}$$

Because of this, the first Rule of Awareness Sandler maintains that the marginal rate of substitution (MRS) of an intergenerational public good on a private good equals the marginal rate of utility of two goods and indicates the marginal benefit that an individual derives from intergenerational public good:

$$AR1. \sum_{r=1}^2 \sum_{f=1}^3 \sum_{i \in \Omega_{jr}} MRS_{qy}^{ijr} = MRT_{qy}$$

The marginal rate of transformation (MRT) indicates the marginal cost of the two goods.

25 "To attain intergenerational Pareto efficiency, the provider of the intergenerational public good must account for the marginal benefits that the long-lived public good confers on people in the current and future generations in both regions "Cfr. Sandler, pag 28

There are also three other rules based on different planning options, social or institutional: while the second has simply interregional perspective, the third is focused on equity between generations and fourth ignores both perspectives.

Particular attention is paid to the fourth rule shows that policy makers consider neither the effects nor the inter-generational. It is the closest to reality and provides the lowest performance level intergenerational, so only the current generation derives benefits from planning policy.

$$AR4. \sum_{i \in \Omega_{f,r}} MRS_{q_y}^{if,r} = MRT_{q_y}^f \quad r = 1, 2$$

The situation would change if we consider other types of goods. For example, in the case of joint ("joint product") the externalities are really important. Considering the case of fossil fuels, if the current generations benefit from the heat produced by their combustion, greenhouse gases (negative externalities) do harm to the life of present and future generations. In general, the costs of negative externalities are loaded on the shoulders of future generations or however they vary the availability of resources.

Similarly the management of "club goods" means the imbalances between the generations at the expense of future generations: often short-sighted management of an asset can lead to a deterioration of the same and non-availability for future generations.

It's important to give an idea of better management of intergenerational public goods. Who is responsible for planning activities for a just allocation of resources between generations?

III. Market failures or public failures? Who has to manage the intergenerational coordination?

To understand who's the responsible about the regulation and the allocation of resources between generations, in this paper we contrast the positions of those who described the inequality between generations as a market failure and who, by contrast, affirms that it is a public failure. The thesis of this paper is that only the public level should guarantee the same rights to all the generations, by introducing some rule in the law. To show this thesis will be opposed the position of Coase (pro market failure) and that of Pigou (pro public failure) about the problem of the management of the environmental risk between generations.

One of the most important economist theorists pro market failure is Joaquim von Amsberg²⁶. In 1995 he published an experimental model of environmental risk management between generations. If we have an insurance market with asymmetric information speculative, the present generation does not know what will be the health of the world that future generations will have. So he assumed that shares responsibility and conservation of resources are a kind of insurance that the current generations decide to activate to preserve the benefit of future generations, even at the cost of supporting a reduction in consumption.

The idea of Von Amsberg is that market failures related to equity between the generations are completely independent from any type of externalities. Even if the two generations were to establish trade relations between them, they could never achieve the balance of costs between the generations. At the heart of market failures between the generations, then, there is the consumption of public goods in general²⁷.

Clearly, in this sense, in the case of market failures related to intergenerational goods, the Coase theorem is not applicable. In fact, Coase argued that optimal allocation of resources can be restored by assigning property rights and implementing free market, if this generational equity position loses value and effect as when you should perform the contract does not yet exist individuals to be polluted or receive a benefit. Therefore, negotiation is impossible.

Consider the entire flow of benefits and costs of a period t :

$B(E)_t$

$C(E)_t$

26 (Von Amsberg, J. 1995)

27 "Any belief that posterity right in current resource systems, directly implies market failure" Wright V., 2006

To add and compare this flow of values, you must update and express them in present value terms. This requires the identification of a discount rate r . Therefore you will find that the calculation of net intertemporal welfare which allows a proper allocation of resources will be²⁸.

$$SB_0 = \sum_{t=0}^{\infty} \frac{B(E)_t}{(1+r)^t} - \sum_{t=0}^{\infty} \frac{C(E)_t}{(1+r)^t}$$

The mathematical evidence of this type of position is given by a set of equations that from the cost-benefit analysis model shows the mechanism of the intertemporal allocation of exhaustible natural resources. This type of choice provides a tradeoff between present and future exploitation, which derives from the limited stock available. It is therefore necessary to identify a constraint that prevents the situation where the decision on the exploitation rate in the current period can be taken to independent decision on future use. Since the natural resources are considered limited, a flow of extraction not sustainable in the present reduces the stock available and therefore the flow of extraction possible for future generations.

Is it possible to coordinate the two generations?

We define Q_t the stock of exhaustible resource, $B(Q)_t$ the net profit earned by each generation of resources exploitation and $B(Q)_{t+1}$ the option value, or the willingness to pay to retain the use of resource for the future. As we said before, in the absence of external coordination (as a law or an agreement), each generation will be increased to consume the maximum of available resources Q^* so that $B(Q^*)_t = 0$.

By this, future generations will support an opportunity cost $B(Q^*)_{t+1}$ as the result of their inability to exploit the same stock of resources of the previous generation:

$$\frac{B(Q^*)_{t+1}}{(1+r)}$$

In the case of optimization of resource Q_t between the two generations the intertemporal optimally will be:

$$MAX_{Q_1} \left[\frac{B(Q_T - Q_1)}{1+r} \right]$$

Because of it, we have to consider the optimal use of the resource at the rate Q_1 of the extraction by the first generation so that the extraction rate Q_2 of the second generation will be

$$Q_2 = Q_t - Q_1:$$

$$Bm(Q_1) = \frac{Bm(Q_2)}{1+r}$$

In this way the exploitation of one additional unit of resource in the first generation will be minor than the discounted benefit in the second generation which has to be renounced. The finding that the present generation can extract more than what is allowed to extract the next generation, means that the efficient intertemporal allocation is given more to future generations that, in the sense that an egalitarian allocation between periods implies a lower net benefit of this and not assume a greater net benefit of future generation²⁹.

This shows that it is not possible a market in which all future generations express their preferences. The optimal allocation cannot be guaranteed by spontaneous transactions as required by the Coase Theorem. Thus, the present generation will tend to impose a too high r .

Conversely, economic policies have the task of enabling the optimal transaction between generations through its r then, and to prepare the policy for the generational coordination.

It is therefore obvious that the resolution of generational equity cannot be left to market mechanisms, nor can you think that we can reach an agreement between the parties. In this regard, there are two most common theoretical positions that is a subsidiary of the other:

“There is wide agreement that the State should protect the interests of the future in some degree against the effects of our irrational discounting and of our preference for ourselves over our descendants. The whole movement for 'conservation' in the United States is based on this conviction. It is the clear duty of Government, which is the trustee for unborn generations as well as for its present citizens, to watch over, and, if need be, by legislative enactment, to defend, the exhaustible natural resources of the country from rash and reckless spoliation”

[A.C. Pigou, 1932³⁰]

“The future is not adequately represented in the market--at least not the distant future--and there is no reason that ordinary market behaviour will take care of whatever obligation we have to the future”

[A. Sen e S. Anand, 1996³¹].

29 Cfr. Musu I, 2003

30 Pigou, 1932

31 A. Sen, S. Anand, 1996

From the quote above it is clear that investments concerning the management of intergenerational public goods can only be entrusted to the state and then to public mechanisms of regulation of intergenerational exchanges. About it many lawyers and, in particular, lots of constitutional experts have argued the need for appropriate legislative action.

To be effective and efficient, the actions of the legislature on intergenerational equity, in order to avoid not more market failures but government failures, require the presence of legislators called “rational and benevolent”, where the adjective “rational” means “a legislator who has the aim to maximize social utility” and the adjective “benevolent” indicates the attitude to consider “the pursuit of neutrality with regard to this benefit for the future”³².

According to this model, the legislature makes a choice that can be to grant or not an x benefit to society. This benefit has a probability of 100% of its absolute value to be achieved if pursued to the present generations. Its probability is therefore equal to $p'(x) = x$

If we consider, however, the realization of benefits in future time then we will see that this will gradually lower with increasing time spent by the choice from the actual benefit. In this case the probability is:

$$p''(x) < x \qquad p''(x) < p'(x)$$

If we make a cost-benefit analysis, and then given the cost (negative utility) resulting from the choice, you will find that if the damage to public wellbeing is realized in the present, the absolute value of this damage will be total $p'(y) = y$. If we consider the probability that the damage occurs in the future you will see that these are decreasing with the passage of time:

$$p''(y) < y \qquad p''(y) < p'(y)$$

If the legislature's objective is the pursuit of social welfare maximization and minimization of negative utility the situation will be:

$$p'(x) > p''(x) > p''(y) > p(y)'$$

And so, the actual benefit will be preferred to the potential benefit that will be preferred to the potential and the actual damage. In this case, as for the previous case of market intervention, the externalities presence, either negative or positive, can create public failure.

At the same way, for instance, if we are in front of a not benevolent legislator and in presence of negative externalities, it is possible to choose policies of “rent seeking” with the aim to increase the public consensus of the legislator. In case like that the legislator can accept– or can promote – by the current generations some distorting behavior of free riding on the utilization of intergenerational goods: Most benefits would be internalized by generations, while the cost would be in total charge of future generations.

On the position of Pigou, a legislator may intervene in an authoritarian manner, taxing externalities to correct inefficient allocation mechanisms. For this to happen, it is necessary that the legislature is fully informed of the damage in order to assess the extent of negative externalities to be internalized through taxes called, in fact, Pigovian.

It is clear that the position of Coase, which reference is made earlier about the failures of the market, comes just as opposed to Pigou's theory: if Pigou externalities are caused by a lack of efficient regulation, according to Coase the ultimate reason the existence of externalities lies in market failure.

According to the position shown in this work, it's important to intervene in creating legal rules structured to minimize the loss resulting from non-cooperation, minimize the costs resulting from the failure of the constitutional arrangements and ensure a fair allocation of resources.

In particular, a good opportunity may arise from the vision of constitutionalists who would make the constitutional right is called a “protected sphere of rights” to meet the needs of inter and intra generational equity by providing solutions like pigouvian, internalization of costs. In this sense, the Constitution would become a true standard inter and intra generational³³.

33 “In it live analytic rules, immediately precepts, and procedural rules that ensure the permanence time of the constitutional text, by lowering transaction costs needed to reach the choices « collective or political »” M. Abrescia, pag 9

IV. Global cooperation for the solidarity of generations: the Millennium Development Goals

In view of the development of future generations, by global institutions there has been more progress on the recognition of the importance of equity between generations, at least in theory, thanks to a prudent and ambitious supranational policy. In this group of policy actions there are the eight Millennium Development Goals (MDGs) signed during the meeting “the Millennium Summit” held in New York from 6 to 8 September 2000 by 191 Member States of the United Nations in order to close the gap in terms of development between North and South³⁴.

The decision to ask and targets has meant a great responsibility of UN member states and national levels involved in the action. In effect, to speak in favor of the Millennium Development Goals every Nation has undertaken to increase, as regards the appearance of the developing countries, the official development assistance (ODA) - up to reach 0.7% on level of gross domestic product (GDP) for ODA, and, as regards action against their territories, to enable more and better basic social services. But the idea to create some Goals in favor of the poorest and weakest people of the world has not regarded only the economic aspects. Indeed in the commitments of developed countries signatories there was also the mission to promote debt cancellation and the adoption of rules of international fair trade, based on principles of justice, so that the Doha Round to the pledges of development for the benefit of poor countries .

The MDGs - see table. 2 - Provide a range of interventions that will affect not only the present generations but also and especially to future generations. The actions to combat child mortality (MDG 4) and lack of education (MDG 2) as those shares in favor of gender equality (MDG 3) will be major beneficiaries as children and then future generations. Similarly, the action on environmental protection (MDG 7) forms the basis for the definition of planet that humanity wants to leave for our children tomorrow. In this context, in fact, we have the protection of intergenerational public goods which are referred to in the preceding pages.

In particular, measures to combat climate change must be, for the next year, a crucial point of all countries committed to preserving our planet and to ensure the same availability of environmental resources for present and future generations. In particular, measures to combat climate change must be for the next year a crucial point of all countries committed to preserving our planet and to ensure the same availability of environmental resources for present and future generations.

34 United Nations Millennium Declaration, 2000

TAB. 2: Millennium Development Goal : targets	
MDGs	TARGETS
1. Eradicate extreme poverty and hunger	1.A) Reduce by half the proportion of people living on less than a dollar a day 1.B) Achieve full and productive employment and decent work for all, including women and young people 1.C) Reduce by half the proportion of people who suffer from hunger
2. Achieve universal primary education	2.A) Ensure that all boys and girls complete a full course of primary schooling
3. Promote gender equality and empower women	3.A) Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015
4. Reduce child mortality	4.A) Reduce by two thirds the mortality rate among children under five
5. Improve maternal health	5.A) Reduce by three quarters the maternal mortality ratio 5.B) Achieve, by 2015, universal access to reproductive health
6. Combat HIV/AIDS, malaria and other diseases	6.A) Halt and begin to reverse the spread of HIV/AIDS 6.B) Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it 6.C) Halt and begin to reverse the incidence of malaria and other major diseases
7. Ensure environmental sustainability	7.A) Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources 7.B) Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss 7.C) Reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation 7.D) Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020
8. A global partnership for development	8.A) Develop further an open, rule-based, predictable, non-discriminatory trading and financial system Includes a commitment to good governance, development and poverty reduction; both nationally and internationally 8.B) Address the special needs of the least developed countries Includes tariff and quota free access for the least developed countries' exports; enhanced programs of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction 8.C) Address the special needs of landlocked developing countries and small island developing States through the Program of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly 8.D) Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term. 8.E) In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries 8.F) In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

In one of the most recent reports on the human development with the emblematic title "Fighting climate change: Human Solidarity in a Divided World"³⁵, UNDP identifies in the climate change a major area of intergenerational solidarity because the depletion of natural resources and the abuse of biodiversity that are taking place for nearly two centuries could seriously put in danger the quality of life of future generations, restricting their opportunities and human progress. Pointing to the future in fact, the problems will be more burdensome to eliminate related to situations of extreme poverty, but it will not only food poverty. The goals to reach cover the right to health, sound nutrition, education and equal opportunities for all inhabitants of the planet. A possible failure of this action can be translated for the poorest part of world citizenship - about 40%, 2.8 billion people - and their children as a future of very limited opportunities³⁶. In this sense, the MDG7, the Millennium Development Goal that have to ensure environmental sustainability, is very important for the equity between generations because it is the goal deputed to grant the same availability of natural and physical capital for the present and the future generations.

TAB 3: Financial Needs for future challenges³⁷

<i>Objective</i>	Financial Need	Annual outlay for global cooperation
Climate Change Mitigation	Adoption of a sustainable energy system, with support for the poorest countries	1% of GDP (reach countries) 0,5% of GDP (developing countries)
Adaptation to Climate Change	Aid to support the adaptation of the poorest countries	0,2% of GDP (reach countries)
Conservation of biodiversity	Financing of Protected Areas	0,1% of GDP (reach countries)
Combating desertification	Financial assistance to projects of water management in arid countries with low income	0,1% of GDP (reach countries)
Stabilization of global population	Aid for universal access to family planning tools	0,1% of GDP (reach countries)
Science for sustainable development	Public funding of research and development of new technologies for sustainable development	0,2% of GDP (reach countries)
MSGs	Assistance to help poor countries to escape the poverty trap	0,7% of GDP (reach countries)
Total	Total expenditure for global sustainable development	2,4% of GDP (reach countries)

Someone might think that the achievement of the Millennium Development Goals, as well as other environmental or policy choices for poverty reduction undertaken, providing the availability

35 HDR 2007/2008

36 Ivi

37 J. D. Sachs, 2010: pag. 338

of important amounts of money. But this is not true. In his latest book, Jeffrey D. Sachs tried to make a rough estimate of funding requirements for achieving the MDGs and also make interventions on behalf inter and intra generational equity, as the stabilization of the global population or the conservation of biodiversity, as shown in Table 3³⁸.

From this estimate it is possible to show how it could be sufficient a participation of 2-3% of annual GDP of developed countries (identified as donors) to try to solve a lot of problem. It seems a ridiculously low price considering the income level of developed countries, and especially considering the effect of these policies in terms of well being of future generations.

38 J. D. Sachs, 2010

V. Possible national policies: what tools?

The need to identify the standards for natural, social and fiscal, economic equilibrium, has led to the spread of real instruments of generational accounting in order to investigate aspects of equity between generations.

Among the tools identified, generational accounts have distinguished themselves as innovative and useful tool for measuring the imbalance between generations, the assessment of debt sustainability and the analysis of how fiscal policies affect the present and future generations. The generational accounts, in fact, measure the amount of tax that an agent representative of a given generation will pay during his maturity, given the current tax policy³⁹. The calculation of generational accounts is a complex calculation that takes into account simultaneously three aspects and their interactions: i) the demographic structure and evolution, ii) the complex rules governing the income and expenditure of public funds, iii) the level and long-term sustainability of public debt outstanding⁴⁰.

In this sense, the appeal to “right future of new generations” launched by lawyers and constitutionalists necessarily becomes a key step that may influence the choices of the legislature applying generational accounting tools for the evaluation of tax policies. On this course develops the idea of generational mainstreaming for public institutions.

The testing of generational mainstreaming has in this moment a single case, that of the Calabria Region, which has provided in the Regional Law 15/2008. Testing the idea that mutual gender budgeting and aims to create an ad hoc budget to replace the need for equal opportunities between genders, that of equality between generations.

The idea to undertake this experimentation was born in the particular scenario of Calabria which shows serious problems for the younger generation. From a purely demographic point of view, in fact, Calabria is now facing some problems such as aging population, youth mobility continues to the north, the unemployment rate, now likely to adversely affect the prospects of future generations⁴¹.

This kind of problems shows that the weight of earlier generations is overwhelming compared to

39 Cfr. Belloni M., Bianchi C. e Vagliasindi P.A., 1999

40 Cfr, Sartor N.

41 During the period 1992 - 2008 the aging process that affected the Calabrian population was more evident of the rest of the South, due to a sharp decrease in the number of young people under 15 years of substantial stability of age between 15 and 64 years, and in particular a marked increase in the elderly (over 65 years of age). Thus, the decrease in the proportion of young people and the increase in the elderly has led to an increase in the retirement in Calabria from 67.1 in 1991 to 126.0 in 2008, surpassing by more than 10 points the average level of south (115,8) Cfr, SVIMEZ 2009

the younger generation. If, on the one hand, migration are increased and other hand has increased life expectancy, it becomes necessary to enable economic policy measures which are concerned to respond to young people to not make them go away, to give assistance tools for older age groups and conciliation lifetimes and working time that prevent the escape of women from the labor market⁴².

Hence the idea to experiment with innovative tools for measuring equity between generations and evaluating actions implemented to protect the rights of younger generations and future generations: the generational mainstreaming.

The method used is twofold: first, the generational accounts, the same as running for state budgets, will allow the legislature to identify the fiscal imbalance between the generations present and future generations, on the other side there will be a similar matrix created ad hoc on the model of gender budgeting which will display the action taken will be enjoyed by present and future generations or to be incurred from a tax viewpoint, the two generations.

As for gender budgeting, the attempt by the legislature that decides to apply the generational balance is to identify the demand for services that may be disposal for present and future generations, the level of services offered and how it affects bid for future generations, for example if they are provided for future planning targeted interventions (see Figure 1).

The analysis of the disputed used to understand the demographics and needs of different cohorts of generations under investigation macro select them (the person and family area, area economic development, governance and staff area).

TAB 7: Matrix of Generational Mainstreaming

COHORTS	Direct Grants		Indirect Grants		Human capital and environmental investments	Tot Expenditure
	Services	Structures	Services	Funding		
K (≤ 15)						
j (16 – 25)						
a (26 – 40)						
m (41 – 55)						
o (56 – 70)						
v (≥ 71)						

The analysis of offering services of direct grants and services focused on enhancing human capital is used initially as a method of reclassification of the regional budget and report, as a tool to influence the next budget and therefore policy choices. To identify the level of equity and generational accounts will use the appropriate indicators to report spending on programming and planning, for analysis of the context and application services for the analysis of services for analysis

42 Cfr. Esping – Andersen G., 2010

budget. The figure of those indicators, produced at the end of each phase, summarizes the results of the various phases of analysis and directed towards the final result you will get.

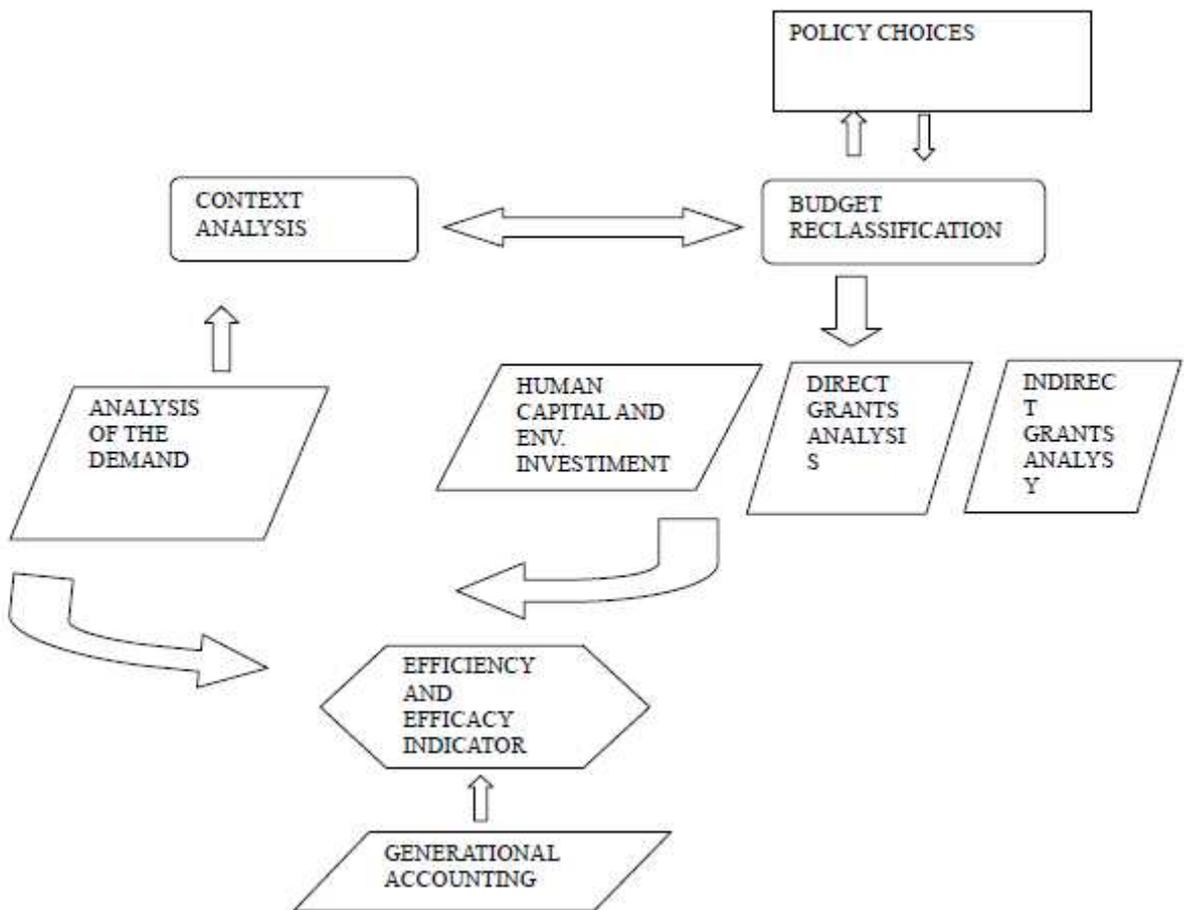
In this sense, the measurement of sustainability between generations requires the use of different types of data depending on the terms "transfer institutions" or "direct transfers to beneficiaries."

For example, if you want to analyze the spending pattern for the young generations, or to cohort generation between 0 and 15 than for older age cohorts (71 and over) will be the indicator of efficiency generation (GE) for year t is:

$$GE_{k,y} = \sum_T \frac{S_K / P_K}{S_Y / P_Y}$$

As long as the ratio is below 1, the choice of fiscal policy may not be efficient since the expenditure per capita generation with less life expectancy is higher than that allocated to cohorts whose life expectancy is higher, so under budget policy choices may vary.

FIG 1



For example, if indirect disbursements aimed at establishing welfare facilities for the elderly or the support of voluntary associations specializing in the care of the elderly exceeds the needs of users in the territory, we could divert some funds for the establishment of nurseries or schools. Similarly, evaluation of interventions to increase spending on human capital and, especially, interventions aimed at environmental protection are useful to identify the level of sensitivity of policy makers towards sustainable policies and for maintaining the rights of generations present and future.

The method is very similar to the mathematical model proposed by Bonin in the preceding pages, but in this case you can quickly correct policies without taking into account generational balance under budget, the calculations made in response to budget sheet. In particular, the instrument acquires greater significance in the case of former Objective 1 regions, now that may Convergence objective, the removal tool, identify more efficient policies to achieve the objectives of the Lisbon strategy and then work for a quality development that takes account of social inclusion, environmental protection and equity between the present and future generations.

Conclusion

Each choice of public policy, both national and supranational, has consequences not only on the present generation, with increases or reductions in disparities between populations, but also future generations, affecting their growth prospects and quality of their lives. This is what was argued in this paper aims to disseminate, modestly, the importance of creating policies to promote equity between generations.

The protection of public goods intergenerational ambitious supranational policy, generational accounting and budgetary actions are necessary to facilitate a targeted use of public spending anti-cyclical in nature and does not harm the natural balance, social and economic medium term. Larger spaces for income support operations of the weakest can only stem from structural reforms of the welfare system, designed to rebalance spending by adult generations to younger bands. A truly inclusive system of welfare for the younger generation, which also looks at demographic future prospects may not be financed with a certain extension of the debt that would reflect necessarily on the same future generations, nor by economic and productive systems that do not involve any Given the distribution of natural resources, but by deep and courageous reforms based on a careful assessment of generational accounting, as, for example, the pension system. Only in this way can we say we have worked to give our children our own opportunities.

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