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Review

Classification of healthcare systems: Can we go further?

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ABSTRACT

This article addresses the issue of the classification of healthcare systems, with the intent to take a step further than the previously analysed models of healthcare organisation.

As concerns the financing of healthcare services, the standard tripartite classification (according to which healthcare systems are divided into three groups: voluntary insurance, social health insurance and universal coverage) is enriched with two additional types: compulsory national health insurance and residual programs.

With respect to the provision of services and the relationship between insurers and providers, it is important to distinguish between vertically integrated and separated systems.

What differentiates this analysis from the majority of previous studies is its underlying logic. Assuming that all systems are hybrid, the article proposes to put aside the classic logic for classifying healthcare systems (according to which individual countries are pigeonholed into different classes depending on the prevailing system) in favour of the identikit logic. The concept of segmentation (of healthcare services or population) proves to be remarkably useful to this purpose.

1. Classifications of healthcare systems: limits

This article deals with a classic topic, already widely explored and debated in the literature: the classification of healthcare systems. The topic is worth revisiting because of its undeniable centrality. Indeed, every scientific community aims at defining firm and widely shared classification criteria, an indispensable condition for the advancement of comparative research. This applies to all subject areas, and the study of healthcare systems is no exception.

Over the years, many proposals have been put forward to classify healthcare systems. Many works propose to classify systems "on base 3" [1–5]. The most widely used classification indeed subdivides healthcare systems into three large models [2]: (1) voluntary insurance; (2) social health insurance (SHI); (3) national health service (NHS). The breakdown of healthcare systems based on these three ideal types can be considered the *standard tripartite classification* [5], which many authors have shared and used in their research [4,6,7].

Other scholars have proposed classifications of healthcare systems "on base 4" [8–11]: each of these proposals, however, uses different classification criteria, and different labels to identify the four types.

Wendt et al. [12] went as far as theorising the existence of 27 different possible healthcare system "combinations". However, 24 of these combinations can be considered hybrid forms, leaving only three pure models (and thus returning, even in this case, to a trichotomous classification). Böhm et al. [13] analysed the 27 combinations mentioned above and pointed out that many of them are "scarcely plausible" from a logical viewpoint, and that, in

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practice, some types are not applicable in the real world: healthcare systems in OECD countries can therefore be grouped under five main models.

Regardless of whether the classification is on base 3, 4 or 5, all the foregoing proposals seem to have – some more, some less – the same limits: (1) they end up including in the same category healthcare systems that differ from one another (some typologies also result in the opposite problem, in that similar systems fall into different categories); (2) for each country, only the *prevailing* model is taken into account, which risks being an oversimplification. Let us discuss a few examples.

Some classifications place the healthcare systems of Australia and Canada in the same category as those of countries like the UK, Italy or New Zealand [3,11,13–15]. But the Canadian and Australian systems are not organised like the British or the Italian NHS [16,17].

In many research works, Switzerland is listed with social health insurance countries like France or Germany [3,13,18,19]. But the Swiss model is substantially different from the classic Bismarckian prototype and adheres to different logics [13,20].

The United States is another example. Labelling the American system as a simple case of "voluntary private insurance" is an obvious over-simplification. The American system is a very complex patchwork [21], where government intervention is anything but minor, as demonstrated by the fact that, in the USA, public health expenditure is around 7.9% of GDP [22]; it is therefore higher than that of "universalist" countries such as the UK, Spain, Italy or Canada. Given its complex architecture, the US system cannot be classified as a mere private insurance system.

These few problematic cases – but there are many others – lead us to consider the classifications of healthcare systems proposed to date in the literature as not fully satisfactory. In this work, we ask ourselves whether we can go further.

We ought to clarify right from the start that the author does not consider the classic tripartite classification and the other types proposed so far wrong, or useless: they are certainly helpful. However, it all depends on the type of analysis that one wants to make. If a certain degree of simplification is acceptable, then the classifications proposed so far, starting from the standard tripartition, are adequate. Conversely, a deeper analysis that places greater emphasis on the differences between systems, and aims at fully understanding the architecture of each healthcare system, requires the adoption of a more sophisticated conceptual scheme.

In the following sections we shall outline 10 models of healthcare organisation: these types in part take up and in part develop the classification proposals already presented in the literature. However, this work is not limited to proposing a new typology, but rather aims to suggest a classification logic that differs from traditional pigeonholing. The classic classification logic starts off by defining some ideal models, and then tries to make the different objects of analysis – in our case, the national healthcare systems – fit into one, and only one, of the identified models, so as to obtain classes as homogeneous as possible [23]. It is, however, generally agreed that national healthcare systems are, in actual fact, hybrid and composite systems that mix and combine elements inspired by different models [1,8,12,13,24,25]. Grouping countries on the sole basis of the prevalent model thus risks producing simplistic descriptions of the national systems that are quite far from the actual state of affairs.

To avoid this limitation, we propose to make a different use of the typology. The ideal types will serve primarily to identify and label the different elements composing each national healthcare system. The typology will therefore be the common analytical framework through which we can put the system's components into focus, understand how each component works and grasp the relationships between the various subsystems. This will make it possible to compose a concise overview, revealing the logic underlying the overall design of each healthcare system. We shall refer to this way of proceeding as the "identikit logic": indeed, it aims at providing more accurate and realistic descriptions of each single national healthcare system, reconstructing the various combinations based on which it was designed.

Some authors [4,26] suggest to consider the healthcare system as a triangle, due to the relationships existing between the three different categories of subjects: users, providers and insurers. When focussing on the relationship between users and insurers, we are talking about the *financing* of the system; financing methods usually also affect the manner in which providers are paid. When considering the relationship between providers and users, we are instead dealing with healthcare service *provision*; service provision methods are in turn affected by the relationship that users and providers have with insurers.

Some healthcare system classifications made in the past almost exclusively consider the financing dimension [1,25,27]. Many authors, however, believe that focussing only on financing is reductive, and that a proper classification should also include the service provision dimension [2,4,12,26,28]. Sure enough, financing mechanisms on the one side and provision methods on the other are considered the two "core dimensions" [13] required to classify healthcare systems [2,11,14,26,29]. Fully agreeing with this approach, in this work we shall take these two dimensions into account, first discussing them separately and then intercrossing them.

In Section 2, we shall start from healthcare service *financing* mechanisms, comparing five different financing systems. In Section 3, we shall discuss the provision of healthcare services and, in particular, the relationship between providers and insurers. We shall therefore make a distinction between integrated and separated systems. By intersecting the financing and service provision dimensions, we obtain 10 different types of healthcare organisation.

As already mentioned, at this point, however, the logic will not be to pigeonhole the various national systems into these 10 types. The operation suggested in this work will rather be to draw up an identikit picture of each single healthcare system. The concepts of "population segmentation" and "healthcare segmentation", as defined in Section 4, will be key to reasoning according to the identikit logic.

Section 5 will attempt to elucidate the usefulness of the framework proposed here, providing some concrete examples of "identikit" pictures. The last section will wrap up the discussion, underscoring the elements of greater originality of this work.

2. Financing models

Multiple criteria can be used to classify the financing mechanisms of healthcare systems.

A first, widely used criterion concerns the *public or private nature* of the insurance scheme [25,30]: insurers may indeed be public, private for-profit or private non-profit entities [6,12,26].

A second criterion refers to the level of *compulsoriness* of the insurance scheme [14,25], hence the *freedom of choice* granted to the insured [31]: there are indeed voluntary insurance programs, compulsory schemes where it is possible to choose the insurer, and systems that leave no choice to the citizen, who is required by law to take out an insurance and is assigned by law to a given insurer.

We can thus make a distinction between *single- or multi-payer* systems [27]. In the case of multi-payer systems, it is important to determine whether the relationship between insurers is competitive or not [25,26].

Many classifications attach great importance to the *contribution method* [4,8,25,30]; the insurance scheme may indeed be financed by taxes, social security contributions proportional to the salary, or insurance premiums; in the latter case, the formula by which premiums are calculated is of relevance [25,26].

Another criterion used to categorise the different health insurance schemes is the *basis for eligibility* [1,24,26]: belonging to a particular insurance scheme may, indeed, depend on being residents in a particular country, having paid regular contributions, belonging to certain "weak" or "privileged" categories [24]. The eligibility criterion usually influences the rate of *insurance coverage* of the population [2,4], and this represents a further classification criterion.

Financing schemes can finally be compared according to the level and modes of *regulation* of financing bodies and the insurance market [25]; public regulation can be more or less stringent [6].

Trying to condense the foregoing criteria, three ideal types of financing systems were developed: (1) voluntary insurance (called both "private health insurance" and "voluntary health insurance"); (2) social health insurance; (3) universal coverage.

The proposal put forward in this article is to keep the three models mentioned above and add two more: the category of "residual" programs, and national health insurance. For the sake of completeness, we should not forgo mentioning that some authors have identified an additional financing model: the Medical Savings Accounts (MSAs) [7,26,27,32]. This latter model is still scarcely widespread. It has been adopted in Singapore and – to a lesser extent – in the United States, South Africa and China. However, the MSA system is not autonomous in any of these countries: it is always combined with some other form of insurance coverage. For this reason, MSAs will not be discussed in this work.

We shall therefore focus on five financing models. Let us consider them individually.

2.1. Voluntary insurance

The voluntary insurance model does not envisage the obligation to obtain insurance coverage against health risks. Tax or cash incentives may be provided to those who opt for insurance [26], whereas penalties may be imposed on those who, despite having the economic means, decide against insurance. In any event, citizens are basically free to choose whether or not to sign up for insurance [25]. Those who cannot or do not want to get insurance coverage will pay for the required healthcare services out-of-pocket.

Conversely, those wishing to take out a health insurance policy can choose from a number of private insurers. The latter are in competition with one another, and can offer policies tailored to individual subscribers. Insurers may be for-profit insurance companies or non-profit institutions and funds [33]. In the former case, the premium will probably be risk rated, i.e., calculated on the basis of the individual risk of each single subscriber [4]. Nothing prevents non-profit insurance entities from calculating premiums based on individual risk, but they often prefer community rated or group rated insurance premiums [26], meaning that they discriminate on the basis of the characteristics of larger groups (all belonging to a given group thus contribute in the same way), rather than of individual subscribers.

2.2. Social health insurance

The basic principle behind the social health insurance (SHI) model is that the state requires certain categories of workers to pay contributions from their salary into a sickness fund. Sickness funds are *quasi-public*, non-profit organisations subject to strict governmental regulation, appointed to collect their subscribers' contributions [18]; in exchange, sickness fund subscribers receive total or partial reimbursement of the medical expenses incurred.

The SHI model therefore divides the population into two groups, who have different levels of freedom. On the one hand, there are those who, as members of certain professions, must pay mandatory contributions. They cannot choose whether or not to sign up for the health insurance scheme as they are forced to do so. On the other hand, there are those who are not subject to any obligations; they may, if they wish, take out a voluntary insurance policy, or bear out-of-pocket spending for their healthcare.

The classic SHI model – for the sake of clarity, the one introduced by the late 19th-century Bismarckian legislation – provides for different sickness funds, not in competition with one another, to be operative within the same country: workers are assigned to a given fund by law, depending on their profession. Only in recent times, some countries have introduced a variant of the original model: the worker is entitled to choose his/her own sickness fund [34]. In these countries, including Germany, it is mandatory to pay contributions, but one can choose which sickness fund to sign up for.

We ought to recall that an essential feature of SHI is that it is a typical occupational system: the obligation to pay health contributions is not prompted by nationality or residency, but rather by one's occupation. We should also point out that the contributions to be paid into a sickness fund – which may be co-paid by employee and employer – are not calculated as a percentage of the overall income, but only of the earned income [26,34].

2.3. Residual programs

In countries where either voluntary or social health insurance prevails, there often are programs that can be defined as "residual". The term "residual" is taken from the literature on the Welfare State [35,36]. The programs that we define as residual for the purposes of this article are those that are financed by general taxation and intended for particular target populations. The beneficiaries of these programs are generally the most vulnerable categories, those that are most exposed to health risks: low-income individuals, the elderly and minors, persons suffering from serious illnesses, prisoners, and refugees. Various countries have residual programs not only for the "weaker groups", but also for certain professional categories considered particularly worthy of protection by the state, such as the military or civil servants.

A key difference between residual programs and other financing models is that in the latter those who pay earn the right to benefit from the program being financed. In the case of residual programs, this is not necessarily true: beneficiaries coincide only in part (or not at all) with those who finance such programs. A healthcare program for the unemployed, for example, is financed by tax payers who do have a job; healthcare for prisoners is paid by those who are not in prison; a program designed for minors is financed by adults who pay taxes, and so on. Residual programs are, in short, programs financed by the community, but only available to particular categories.

2.4. Compulsory national health insurance

The label "national health insurance" has been used in the literature with multiple meanings [11,13,14,24,37]. It is therefore necessary to immediately clear up possible misunderstandings. In this work, national health insurance (NHI) is understood as the principle according to which the state requires all residents to take out a private health insurance policy covering essential healthcare services, using individual resources. There not being one single public scheme into which contributions can be paid, the policy has to be taken out with different, for-profit or non-profit insurers in competition with one another. The NHI is therefore a multi-payer system, in which citizens can choose their insurers.

The state may provide subsidies for low-income citizens (who might otherwise find it difficult to pay the insurance premium regularly), and may impose a regulation, even a very strict one, of the insurance market. The insurance packages usually differ from one another, and may provide coverage additional to the minimum required by law; we must therefore bear in mind that there may be differences between the services provided to individual healthcare users.

2.5. Universalist system

A universalist system is defined as a single-payer insurance scheme (therefore, one for the entire population) covering all residents and financed through taxation. The universalist system, as we shall see later, is not synonymous with the National Health Service.

Compared with other insurance schemes, the universalist system is marked out by the fact that the right to healthcare is not linked with payment of a premium or a contribution, but to residing in a given country. Healthcare is therefore a right of the citizens of that country.

From the point of view of those who have to contribute financially, the universalist system does not grant freedom of choice. Aside from the few countries where some form of opting out is possible, residents cannot choose whether or not to finance the universalist scheme: they are required to pay taxes, and therefore also to finance the program. And, given that (direct) taxes are usually paid more than proportionally with respect to income, the universalist scheme turns out to be a typically *progressive* financing system [26,27].

It is important to underscore that, unlike the SHI model, the universalist system envisages taxation not only on earned income, but on all forms of income. Financing of the universalist scheme therefore has a clear redistributive intent: the richest end up paying, at least in part, the healthcare services provided to the poorer citizens.

3. Healthcare provision: integrated systems vs. separated systems

As mentioned in the foregoing, a proper classification of healthcare systems is widely believed to require the inclusion not only of the financial aspect, but also of the care provision aspect [2,4,26,28]. To bring order among the various healthcare provision systems, various classification criteria have been proposed.

A first criterion distinguishes providers according to their *legal status* [2,4,11,12]. We shall therefore have to distinguish among public, private for-profit and private non-profit providers.

A second criterion focuses on the greater or lesser *freedom of choice* given to patients [7,38]. In some systems, citizens – if covered by some insurance scheme or other – can freely choose among all providers operating in the country. Conversely, there are systems in which the choice of provider is limited to a subset of active providers. Some insurance programs, for instance, allow their subscribers to seek treatment only from those healthcare providers with whom they have entered into a special contract; various programs financed through general taxation limit patients' choice to public providers only.

A third criterion for classifying healthcare provision systems is the presence or absence of a compulsory *gatekeeping* mechanism [4,28,38]. We must then distinguish between systems based on gatekeeping and those permitting "direct access". In countries where gatekeeping is

Table 1
Ten healthcare organisation models.

	Integration/separation of insurers and providers	
	Integrated model (examples)	Separated model (examples)
Financing system		
Voluntary insurance	Staff-model HMOs	Indemnity plans in the US
Social health insurance	IKA in Greece (up to 2011). Some Austrian health insurance funds	Compulsory health insurance funds in France
Residual programs	Veterans Health Administration in the US	Medicaid in the US
National health insurance	Clalit in Israel	Insurance companies in Switzerland
Universalist system	NHS in the UK	Medicare in Canada and Australia

required for access to specialist care (as well as diagnostic tests and certain drugs) a referral by a primary care physician is required (a referral is not required for emergency care). In systems with direct access, the citizen can directly turn to specialist care providers.

3.1. Integrated model and separated model

There is no doubt that the three criteria mentioned above (legal status, patient's freedom of choice and gatekeeping) are three very relevant aspects to classify the different healthcare provision systems, and to understand how they operate in practice. In this work, however, we propose an alternative criterion: the integration of insurers and providers. We shall therefore distinguish between *integrated* and *separated* systems. This distinction has been put forward in various previous works, which refer to *vertical integration* of healthcare systems [14,25,31,37,39–41].

In the *integrated* model, insurers provide most of the care needed by their policy holders directly – through their own facilities and healthcare personnel. In such a model, insurer and provider coincide, constituting a single organisation.

In the *separated* model, insurers and providers are functionally separated. They belong to different, autonomous organisations. Therefore, insurers do not have their own facilities and do not employ their own healthcare personnel; they merely reimburse expenditures incurred for healthcare provided by third parties.

In the foregoing, we mentioned the "healthcare triangle". As the reader might guess, the triangular pattern is not applicable to the integrated model. As insurer and provider are one single entity, the actors on stage are only two; the interaction is therefore dual. Conversely, the separated model keeps the triangular structure, with three distinct actors.

On a conceptual level, the distinction between integrated and separated model does not seem to raise particular issues. In practice, however, it is likely to be excessively trenchant: in the real world there is indeed a variety of contractual arrangements that lie halfway between the two models. It is therefore possible to identify an intermediate category: the "quasi-integrated" systems. By quasi-integration we refer to the organisation structure wherein insurers and providers, albeit being formally separate entities, operate – in functional terms – in a manner similar to that of the integrated systems.

3.2. Financing and provision: 10 models

The conceptual scheme proposed in this work provides for the integration/separation of insurers and providers to intersect the healthcare systems' financing mechanism. Let us therefore return to the five financing models introduced in the previous section.

Each financing system will therefore have two versions: an integrated version and a separated one (the "quasi-integrated" configurations having been left out so as not to overcrowd the chart). This results in a 5×2 chart, corresponding to 10 different models of healthcare organisation. To better define these 10 types, we have included some concrete examples (Table 1).

3.2.1. Voluntary insurance

Let us start from the first financing system, that of private voluntary insurance. An example of *integrated* voluntary insurance is the staff-model HMOs operating in the United States. They are insurance companies that directly provide most healthcare services to their policy holders, through their facilities and personnel (examples of staff-model HMOs are the Harvard Pilgrim Health Plan, or the Group Health Cooperative in Seattle).

The private insurance companies we find in many European countries are instead examples of *separated* voluntary insurance: these companies do not own any healthcare facilities, and merely reimburse expenses for care provided by third parties. Even the traditional *indemnity plans* in the United States are typical cases of separated voluntary insurance.

3.2.2. Social health insurance

Integrated and separated healthcare insurance funds can exist even within social health insurance systems. Let us consider, for example, the main French health insurance funds: CNAMTS, MSA or CANAM. They do not have their own care provision facilities, therefore they embody the *separated* SHI model.

Until the 2011 reform, the IKA in Greece was instead an example of *integrated* social insurance. The IKA (Idrima Kinonikon Asfalisseon, Greek Social Insurance Institute) indeed had its own healthcare personnel, clinics and hospitals, through which it provided most primary, specialist and dental care required by its subscribers. We also find examples of integrated healthcare insurance funds in Austria [42].

3.2.3. Residual programs

As mentioned earlier, "residual" programs are those programs financed by general taxation and intended for specific population targets. An example of an *integrated* residual program in the United States is the *Veterans Health Administration*: it has its own hospitals and outpatient clinics, managed by a salaried staff, that directly provide health care to veterans.

Also in the United States, the Medicaid program is instead a *separated* residual program: there are no hospitals and clinics managed directly by Medicaid; healthcare is provided by third parties and Medicaid merely reimburses the relative costs.

3.2.4. National health insurance

A country that, for some years now, has adopted compulsory national insurance is Switzerland. In this country, there are many private companies (including Helsana, CSS, and Mutuel) that offer a variety of insurance packages. Especially when policy holders opt for a "traditional" package, insurance companies only reimburse expenses incurred for healthcare by external providers. These schemes therefore fit under the *separated* national insurance model.

The Israeli health system is in many respects similar to a compulsory national insurance system, despite not being a perfect example. The main health insurance fund in Israel is Clalit: it has its own, salaried healthcare personnel, and owns and manages its hospitals and outpatient facilities, through which it provides healthcare to its policy holders [43]. Clalit is therefore close to the *integrated* national insurance model.

3.2.5. The universalist system

As mentioned at the beginning of this article, the healthcare systems of Canada and Australia are sometimes listed with those of the United Kingdom, New Zealand, Italy or Spain. These latter countries have established a National Health Service. But Australia and Canada have never adopted this model. The Medicare programs in Canada and Australia are *separated* universalist systems. The British National Health Service is instead an *integrated* universalist system: the entire national territory is covered by a network of healthcare facilities managed directly by the NHS, with its own personnel.

Canada and Australia do have public hospitals, but they are not under the sole ownership of Medicare. In both the Canadian and Australian version, Medicare is therefore only a financing scheme and does not have its own unitary healthcare provision structure. The name "national health service" should therefore be reserved only for integrated universalist systems; programs such as Medicare in Australia and in Canada deserve a separate category, that of "separated universalist systems".

4. The segmentation of healthcare systems

In the previous section, we outlined 10 different models of healthcare organisation. If we were to follow the classic classification logic, we would now try to pigeonhole individual national health systems into one of the 10 models identified: where does Germany fit? Where do we to put the Netherlands? And so on. But does this actually make sense?

Those who study healthcare systems in a comparative perspective know that there are not – or at least there no longer are – any national systems that use only one of the models discussed above. All countries use at least two, if not more. Similarly to the theory formed with respect to the welfare state in general [44–46], in the healthcare sector the principle that applies is that all national systems are hybrid. There is broad consensus on this point among scholars of healthcare systems [1,8,12,13,24,47].

But if we state that all countries have hybrid systems, matching each one with one of the 10 ideal types becomes difficult: if one country matches with more than one model, the classification is not exclusive. Several authors propose to solve the problem considering, for each country, only the *prevailing* model [1,8,12]. But what exactly do we mean by "prevailing"? Let us assume an extreme case where a country applies model A to 25% of the population, model B to 22%, model C to 20%, model D to 18%, model E to 15% E. Which is the prevailing model in this case? Do we place the country under model A, even if it applies only to a quarter of the entire population?

Using the prevailing model as an expedient has an obvious practical value and can be justified in some cases. But referring only to the prevailing scheme seems to be an oversimplification when certain countries with particularly complex healthcare systems are concerned [24].

What we are suggesting here is to use the 10 models in a different way: not the classic classification, but what we might call the *identikit* logic. This is the logic of the software used by law-enforcement agencies to construct – based on descriptions of eyewitnesses – a composite picture of a suspect. These programs allow one to choose from a wide range of face shapes, various hairlines, noses of different shapes and sizes, eye shapes, and so on. The facial composite results from superimposing the facial features, selected from those available in the catalogue, which are closest to those of the face to be reconstructed. A very similar *modus operandi* can also be applied to the study of healthcare systems. Each healthcare system is indeed made up of various components. Reasoning according to the identikit logic means identifying these components, and putting into focus the criteria according to which the system is "segmented".

At this point, it is necessary to introduce into the conceptual scheme the aspect of *segmentation*. This aspect is frequently used in studies on the welfare state, with special reference to the labour market [48,49]. When we adopt it for the healthcare sector, by segmentation we simply mean the presence of dividing lines according to which the overall national system is broken up into subsystems to which different models of healthcare organisation are applied.

There are two basic segmentation principles: (1) segmentation of healthcare services; (2) segmentation of the population.

The *segmentation of healthcare services* involves subdividing the entire range of healthcare services into different "packages". An example of segmentation of healthcare services can lead to distinguish between: (1) "essential"

procedures (i.e., those deemed necessary and thus to be included in the basic insurance package); (2) "supplementary" procedures (those not considered strictly necessary from a medical perspective, such as cosmetic surgery); (3) "exceptional" procedures, related to "catastrophe" risks (for chronic or, in any event, highly disabling conditions, the costs of which would be financially unsustainable for the majority of the population). As we shall see in the following section, the Dutch system is a good example of segmentation of healthcare.

The second type of *segmentation* concerns the *population*. This logic of segmentation involves the subdivision of citizens into distinct groups associated with different insurance schemes. The population can be segmented according to different criteria. The most common are: occupation (for example, a distinction is made between employees and self-employed workers, or between government and private employees); earned income; age (there may be programs reserved only for the young or the elderly). Besides these three, there are other possible criteria to segment the population; there may be programs dedicated exclusively to ethnic minorities, citizens suffering from certain medical conditions, prisoners, pregnant women, and so on. Some examples? In Germany, the population is segmented according to both occupation (employees vs. the self-employed) and earned income (those above a certain income threshold can opt out of the SHI). In the US, the population is segmented according to various criteria, including age: as a matter of fact, there are residual programs for the over-65 (Medicare) and minors (CHIP).

5. Some identikit examples

It is useful to provide some solid examples of how the conceptual framework outlined in the previous sections can be used to put individual national systems into focus. We shall consider – albeit briefly – the United States, Switzerland and the Netherlands. Three cases that, based on the typologies envisaged so far, are problematic and difficult to classify [15,28,47].

5.1. The United States

The United States spend 16.4% of GDP on healthcare (more than any other OECD country), about 52% of which is private spending and 48% is public spending [22]. Most of the public expenditure is used to finance typically *residual* programs. Medicare is a program intended primarily for people over 65 years of age and the disabled; Medicaid supports the poor; the CHIP (Children's Health Insurance Program) is designed for low-income children. Other *residual* programs are for the armed forces, war veterans, federal employees, Native Americans, prisoners, and other "weak" groups. These programs can be *integrated* (as the Veterans Health Administration, already mentioned above) or *separated*. Taken together, residual programs cover about 36% of the US population [50]. The remainder – even after the 2010 Obama reform – fit into in a system of voluntary private insurance. Private insurers the Americans can freely choose from can be *integrated*, *separated* or *quasi-integrated*.

When we say that the United States have a typical voluntary private insurance system, our statement is not incorrect, but rather incomplete. Given the population covered by public programs and private insurance, it would be more correct to say that two-thirds of the American healthcare system is based on voluntary insurance, and one third on residual programs. We should, however, point out that the 36% supported by residual programs is not just any one-third of the American population: it includes categories likely subject to a higher health risk, which are consequently the more expensive healthcare users. Based on this reasoning, if instead of considering the population covered by the different programs, we focus on the relative healthcare expenditure, the proportions change: the American system is 55% voluntary insurance, and the remaining 45% is residual [51].

5.2. Switzerland

Since 1996, Switzerland is either left out of the classifications discussed above [15] or it is labelled as a SHI system [13,18]. According to the definitions given in this article, the Swiss case is rather a good example of *national health insurance*.

All Swiss residents (and not workers alone) are required to take out a basic health insurance policy. Policy holders must do so by their own means, and are free to choose from many insurers in competition with one another. Insurers must comply with very strict state regulations: they cannot make profit on the basic policy, cannot select policy holders (according to the open enrolment principle), and must calculate premiums on the principle of community rating. The poor receive government subsidies to enable them to pay for health insurance.

With respect to the relationship between insurers and providers, the Swiss system tends to be *separated*. Following the US example, however, Switzerland is starting to rely on HMOs. The Swiss HMOs do not own hospitals, but run clinics and employ healthcare personnel. They thus have some features of the *integrated* model and are quite similar to the *quasi-integrated* NHI model.

The foregoing refers to the essential care package, meaning healthcare subject to compulsory insurance. Although the basic package is generous, some procedures are left out, including most dental care. To cover non-essential procedures, the Swiss can take out supplementary insurance. Supplementary policies are handled by a typical *voluntary private insurance* system.

5.3. The Netherlands

The Dutch healthcare system applies segmentation of healthcare services. Healthcare is subdivided into three distinct sectors: (1) "exceptional" medical expenses; (2) the basic package for essential care; (3) "supplementary" procedures.

"Exceptional" expenses (identified by the acronym AWBZ), related in particular to care for the disabled and long-term care, are covered by a single compulsory national scheme, which covers the entire population. As such, the AWBZ scheme is similar to a universal system, albeit

being financed by contributions calculated proportionally to one's salary, and not progressively on the overall income. The AWBZ scheme does not have its own care provision facilities, therefore is a *separated universal* scheme.

The second sector (Zvw), consisting of the basic package for essential care, is entrusted to a NHI system that, however, presents some typical elements of the SHI systems in terms of the insurance premium calculation method. All citizens residing in the Netherlands are required to have an insurance policy covering essential healthcare. There are about 40 (for-profit and non-profit) insurers to choose from, in competition with one another, and public subsidies are granted for both low-income citizens and minors. Most Zvw insurers are independent of healthcare providers (*separated NHI*). Two categories of people are excluded from mandatory insurance (this is an example of population segmentation): (1) the military, as they have a dedicated *residual* scheme; (2) people who refuse insurance for religious reasons or out of principle (they must nevertheless pay a contribution).

There is also a third segment, i.e., that of "supplementary" care (dental care, physiotherapy, alternative medicine, cosmetic procedures, etc.). Supplementary care fits under a typical *voluntary private insurance (separated)* system.

6. Conclusions

In the foregoing sections, we have put forth a new proposal for classifying healthcare systems. In our conclusions, we deem it fit to mark out the elements of originality of this proposal.

6.1. Financing system: two new categories

A first element of novelty pertains to the financing of healthcare services. Most existing classifications essentially subdivide the different financing methods into three models: voluntary insurance, social health insurance and universalist systems financed by general taxation. In doing so, however, it becomes difficult to classify many financing systems. In which category should we place a program financed by the government, but not universal? Should a multi-payer insurance system compulsory for all residents (as in Switzerland) be assimilated with the universalist or the Bismarckian SHI model?

The typology proposed in this article makes an attempt at overcoming these obstacles, adding two further models to the three previously identified: residual programs (that play an important role in many OECD countries, including the United States, France and Germany), and compulsory national health insurance (adopted in countries such as Switzerland, the Netherlands and Israel).

6.2. Vertical integration

With respect to the relationships between insurers and healthcare providers, this work places great attention on vertical integration. This concept is far from being new: the relevance of vertical integration in healthcare has already been stressed in many previous works [25,37,39,41]. The originality here lies in having this dimension intersected the healthcare service financing mechanisms. This has never been done before, at least not in a systematic way. Each financing system indeed envisages two versions, one being integrated and the other separated. We thus obtain a 5×2 scheme.

While each classification proposal involves a trade-off between simplification and accuracy [5,52], the scheme proposed here appears to be a good compromise: it is not too elaborate or complex to keep in mind, but neither overly elementary; if we excessively reduce the number of classes, we run the risk of putting dogs and cats together – as Sartori [23] would say.

6.3. The importance of segmentation

A further element of originality of the conceptual framework proposed in this article is the importance attributed to segmentation criteria. For the sake of honesty, not even the concept of segmentation can be said to be entirely new: it is frequently mentioned in studies on the Welfare State [48,49], even though it has been little used to analyse healthcare systems. And yet, most healthcare systems adopt some sort of "segmentation of procedures" criteria: the entire range of healthcare services is subdivided into different "packages" that can be financed and provided in different ways. Even the "segmentation of the population" finds wide application in the real world: within the same country, there often are groups of people who have different insurance coverage and differentiated access to healthcare services depending on their characteristics, i.e., age, income, profession, pathology, etc.

Since national healthcare systems are mostly hybrid, identifying the lines of segmentation allows us to put into focus the different components of each single national healthcare system.

6.4. The identikit logic

Now we come to the so-called identikit logic. Let us be clear, nothing prevents us from taking the 5×2 typology discussed in this work and using it according to the classic pigeonholing logic, listing the national systems under the different classifications based on the model prevailing in a given country. But a classification based merely on the prevailing model seems slippery in a field, such as healthcare, where hybrid configurations are predominant. We would risk trivialising the single case studies and neglecting numerous salient features.

For this reason, we are suggesting the adoption of a different logic, namely the identikit logic. This logic requires that each healthcare system be first broken down into its different components, following the lines of segmentation. Each component is then decoded in the light of the 5×2 analytic framework. The different parts are then "reassembled" to provide an overall description of the system and its traits.

The comparison of different cases acquires value if it proves capable of properly labelling each object of analysis [5,10,52], identifying its different internal components and putting into focus its respective action logics. This is

the precise aim of the identikit logic: to provide a succinct, but rigorous and structured description of each individual national system, in order to facilitate comparison with the systems adopted in other countries.

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