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PUBLIC-PRIVATE PARTNERSHIP AND COMPETITION IN HEALTH-CARE AND EDUCATION

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Abstract: *Even if both the health and the educational sector are under the state supervision in basically all countries, there are wide differences in the mix of their public/private provision and financing across them. The debate on the proper mix between private and public involvement has also been re-enlightened by the recent financial crisis which has stressed many countries' public finances. The aim of this paper is twofold. First, it aims at presenting the incentive and competition mechanisms both for the public and the private sector behind different types of mix between private and public involvement according to the industrial organization design of the health and the educational sector. Second, the paper aims at presenting some recent case studies on Public Private Partnerships in both the health and the educational sector in countries such as the UK, the USA, the Netherlands, and Australia.*

1 INTRODUCTION

Given the macroeconomic set-up, in the next years, Italy will have to go on to ensure a fiscal discipline in order to be able to fulfill the

objectives established by the EU (Banca d'Italia, 2013). This implies that also the public sector for health and education will have to be organized by taking into account strong financial constraints. This will call for increasing the level of efficiency in providing health and educational services, but without reducing the attention to equity considerations that are so important in these specific kinds of public intervention. In this respect, Giarda (2011) notes that, in Italy, in the last thirty years, although total public expenditure for Collective goods remained almost the same (40,9% in 1980 and 41,4% in 2009), there has been a switch of public resources from the educational to the health sector: public expenditures for health have increased from 29,7% in 1980 to 33,8% in 2009 while public expenditures for education have reduced from 25,7% in 1980 to 20% in 2009. This of course reflects the demographic changes that we had in the period under consideration, but it can also be linked to the political changes concerning such sectors. The health sector moved from being under the national government supervision to being under the supervision of regional governments while the educational sector is basically still under the central government supervision.

Starting from now and forwards the next years, both the health and the educational sectors will have to face new challenges in order to be able to guarantee the economic sustainability of

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public intervention in both sectors without worsening in terms of equity of access and quality of the services provided to the population. In this respect, it can be helpful to analyze some contributions on the mix between public and private financing-provision of both health and educational services, and to examine recent reforms on such a mix that occurred in some countries. Such reforms are mainly devoted to introduce competition and economic incentives even in the public side of the two sectors.

The paper is organized as follows. In section 2, we briefly review the main reasons that justify a public intervention both in the health and the educational sector. In section 3, we present the most important features of the industrial organization and institutional design of the health sector while, in section 4, we present some evidence on two countries, The Netherlands and Australia, where recent reforms have introduced a new design of the public-private split in the financing-provision of health care services. Section 5 illustrates the main characteristics of the industrial organization and institutional design of the educational sector, while section 6 presents evidence on the mix between public-private financing-production in the educational sector with respect to three case studies, England, The United States and The Netherlands. Finally, section 7 contains some concluding remarks.

2 EFFICIENCY-EQUITY TRADE-OFF OF PUBLIC INTERVENTION IN THE HEALTH-CARE AND THE EDUCATIONAL SECTORS

In the main industrialized countries, the health and the educational sector represent a meaningful share of (private and public) aggregate expenditure with respect to GDP (Table 1). However, the role of public intervention is quite different independently of the results and performance in terms of efficient resources allocation and of fulfilling the citizens' needs.

According to normative public economics, although health and education are considered private goods, both of them share peculiarities that justify a public intervention on efficiency other than equity grounds.³ First, health care and education are *multi-dimensional services*. Health care includes all those goods and services aiming at improving health or preventing its deterioration, such as primary and specialized health care, hospitalization, and pharmaceuticals. Education does not only spread know-how and abilities, but it also promote socialization, and guarantee custody where, of course, the importance of each feature changes with respect to the educational level.

³ For surveys on this point, see, for example, Cutler and Zeckhauser (2000) and Hurley (2000) for the health sector, and Checchi (2005) for the education sector.

Table 1. Expenditure on health and education as a percentage of GDP (2010)

Countries	Total health expenditure	Public health expenditure	Private health expenditure	Total education expenditure	Public education expenditure	Private education expenditure
France	11.9	9.0	2.7	6.3	5.8	0.5
Germany	11.9	8.9	2.7	5.3 (2009)	4.5 (2009)	0.8 (2009)
Italy	9.3	7.4	1.9	4.7	4.3	0.4
Netherlands	12.0	9.6	1.6	6.3	5.4	0.9
Spain	9.6	7.1	2.5	5.6	4.8	0.8
UK	9.6	8.0	1.6	6.5	5.9	0.6
Australia	8.7 (2008)	5.9 (2008)	2.8 (2008)	6.1	4.6	1.5
USA	17.4 (2009)	8.3 (2009)	9.1 (2009)	7.3	5.1	2.2
OECD average	9.6	6.9	2.7	6.3	5.4	0.9
EU average	9.0 (EU27)	6.5 (EU27)	2.4 (EU27)	6.0 (EU21)	5.5 (EU21)	0.5 (EU21)

Source: OECD (2013) *Education at Glance*, OECD (2012, 2011) *Health at Glance*.

Second, both health care and education are experience goods: consumers learn about the nature and the quality of such goods only after consumption.

Given such peculiarities, on equity grounds, health care and education can be considered merit goods, thus justifying a paternalistic public intervention superimposing policy-makers' preferences to individual ones. Further, both health care and education are also recognized by many modern Constitutions as primary rights which should be granted universally independently from the working of the market.

Most importantly, the peculiarities of health and education justify a public intervention on efficiency grounds. First, both goods are characterized by positive externalities. In the

health sector, the option-value of some health-care services is an externality, and more generally a public intervention should ensure an efficient provision of health care to counter communicable diseases passed either directly among humans or indirectly through the physical environment. In the education sector, positive externalities arise within the family, the labour market, and more generally within the social set-up, thus positively affecting economic growth. Even if empirical investigations on the extent of such externalities are difficult to carry on, it seems that such an extent tends to decrease with respect to the increase of the educational level, thus providing policy implications for the proper mix between public and private financing. Second, for both health care and education, a sole private provision

would lead to *lack of supply* or *monopolistic supply* on some non-profitable areas, and further such inefficiency would be amplified by *cream-skimming* possibilities. Third, borrowing capabilities of individuals are constrained by *credit market imperfections*, which do not allow to finance the efficient level of investment in education or of medical expenditures. Finally, both the health and the educational markets are characterized by *asymmetric information problems*. In health insurance markets, market failures arise because of informational asymmetries concerning the demand for health care and the effectiveness of medical treatments, typically of the form of adverse selection and moral hazard. Similarly, in the labour market, adverse selection creates inefficiencies which can partly be countered by signaling and screening devices provided by education.

In sum, equity and efficiency concerns offer the rationale for public intervention in terms of *public provision* of both health and educational services, i.e. by funding them outside price-setting independently on the nature and ownership of the providers. Public provision of such services is however a distinct concept with respect to their public production, and industrialized countries have experienced various *organizational* and *financial models*. Even if the two concepts are of course linked each other, industrially organizing and funding a health care system or an educational system are two different issues and two different economic problems, although, of course, linked each other.

In this respect, we can immediately stress the fact that, for some services, “industrial

configuration failures” may occur so that it is socially desirable to join together *public provision* and *public production*. For example, in order to guarantee a fair territorial distribution of supply, the public sector should be engaged both to funding and to providing the services. This may occur whenever local monopolies can easily take place for extracting spatial rents: for instance, it may be convenient to localize services provision in urban areas where there are economies of scale, and the private returns to invested capital are higher. Alternatively, the inadequacy of supply and the rationale for a public production may also arise whenever an excess-demand of services results because of lower expected returns, and thus a scarce network of providers or whenever there are numerous private providers which, however, supply low-quality services. In these cases of inefficient industrial organization, a well-organized public production is justified both on efficiency and equity grounds.

3 HEALTH SECTOR: INDUSTRIAL ORGANIZATION AND INSTITUTIONAL COMPETITION MECHANISMS

3.1 Types of mixed systems

Different models of a health care system can be defined with respect to the provider-producer split (Petretto 2013). The two extreme organizational cases are the *Pure Public system* and the *Private insurance system*. The purest version of the former is the so-called *Beveridgean* model which is based on full public provision through general taxation, and public production, as for example, the English and the

Italian National Health Systems before the reforms of the last two decades. Another public model is the so-called *Bismarkian* model, i.e. the original social insurance model where public Health Funds are directly financed by health contributions. In principle, both *Beveridgian* and *Bismarkian* models are universalistic ones. The *Private insurance system* is instead based on private insurance companies. The U.S. health system resembles such an organizational structure even if, especially after the Barack Obama's reform, it is going to be transformed into a mixed system (Sullivan, 2010).⁴ Nowadays, all European countries have *mixed systems* where public and private programs are acting simultaneously for guaranteeing an universalistic provision of health services while the two extreme models can by now be considered as academic curiosities.

In order to distinguish several types of mixed systems, we have to consider some features. First, we need to specify what is meant by degree of *health care coverage*, keeping in mind that this concept is not unique as it may be

referred to: i) the *extent* of coverage, i.e. the share of population whom health care is guaranteed; ii) the *depth* of coverage, i.e. the number and the features of services included in the insured package; iii) the *highness* of coverage, i.e. the fraction of treatment costs directly financed by the insurer or the National Health Service, and then not directly paid by patients. Second, we need to specify the criteria according to which the general practitioner (the agent who makes the order of purchasing the service) is assigned to each household. Third, it is important the degree of individual freedom in selecting the health care provider. Fourth, we need to specify the ways of paying the providers, i.e. if production costs are covered ex-post, or if an ex-ante budget is fixed, or if a system of prospective standardised tariffs for each treatment is in place. Finally, mixed systems may differ with respect to the forms of organizing the supply of drugs, the ways their prices are determined, and finally the ways co-payments and coinsurance rates are designed.

On the basis of these criteria, three main types of mixed systems can be identified: the *reimbursement model*, the *integrated model*, and the *contractual model*. Under the first one, insurance companies or decentralised health districts (or regional governments) reimburse patients for health expenditures which they have paid at administered prices to both public and private providers. Under the second one, a unique connected public structure is built between the health district and the health care providers. Patients have a low degree of freedom in selecting the provider, and do not have to pay the cost of the health services which are financed by taxes. Further, hospitals and clinics

⁴ The U.S. health system has few public programs for specific categories of patients: *Medicare* for elderly people (over 65 years-old) and *Medicaid* for poor people (selected by means testing). The recent Obama's reform 1) has introduced some measures for protecting the insured individuals against rent seeking behaviours of insurance companies; 2) has created a publicly regulated market where several insurance companies competitively supply bundles of homogeneous services according to some common rules; 3) has obliged all citizens to buy a health insurance, providing tax allowances and benefits for those individuals or firms unable to pay for the premia; 4) has created a sort of "*new insurance exchange model*" which should be financed by general taxation, and with expected efficiency gains coming from a higher competition among insurance companies.

are financed by referring to the costs of inputs or, sometimes, to a fixed budget. Under the third system, the funding body, the insurer or the health district, is separated from the public or private providers which are committed and rewarded according to a procurement contract with prices which, in most cases, are fixed ex-ante and standardised along the system of Diagnostic Related Groups (DRG). Consumers-patients usually can choose the provider and the general practitioner they prefer. A peculiar type of such contractual models are quasi-markets, i.e. managed or internal competition.

3.2 Vertical separation versus vertical integration

In order to analyse such an organizational set-up, notice that a necessary but not sufficient condition for creating competition in the health care industry is the *vertical separation* of purchasing structures from providers. The alternative option is to have instead a *vertical integration* between them. In order to ascertain which option is better than the other, we need to perform a cost-benefit analysis of the two options with respect to production costs, economies of scale and scope, network and coordination economies. In doing this, we need to take into account some different features of the two options. In particular, under vertical separation, the exchange between a buyer, e.g. a health district, and a seller, e.g. a hospital, can be realized via a contract while, under vertical integration, via an internal transfer within a unitary body. In other words, we face the usual alternative between hierarchy and market, by comparing the administrative costs of

managing a complex structure (the *firm*), to the costs for signing incomplete contracts with the providers (the *market*). In this respect, a variety of industrial issues matter, like the degree of complementarity of the purchasing and production assets, the *rent-seeking* behaviours of the several agents, i.e. those making the choice and those applying it for the relevant activities, the existence of sunk costs and irreversible investments, and the consequent hold-up issue. Of course, all the transaction costs concerns, as the contractual size and complexity, and the time and costs requested for settling the eventual controversies on trial are also relevant (Williamson 2005). Thus, by limiting the opportunistic behaviours and the ex-ante and ex-post contract inefficiency, the integration will be preferable to a system based on market exchanges and transactions. This will happen when its advantages can exceed the static and dynamic inefficiencies due to huge bureaucratic centralised structures, such in the case of public administration.

In a *de-integrated (separated) model*, as the Dutch one, there is a limited degree of industrial concentration. A specific Authority, i.e. a public Sponsor of citizens, expresses the demand for health care on the behalf of patients, and establishes the appropriateness of treatments. The providers are governmental or non-profit institutions, but they must be, in any case, appropriately ex-ante selected as “reliable providers”. The selection procedure aims both at controlling and limiting the provider power in the negotiation due to asymmetric information problems, and at assuring that the several necessities and urgencies of users are suitably fulfilled.

In a *public-public integrated model*, like that one prevailing in some European countries, there is a strong industrial integration, so that planning, demand rationing, financing, production, and supply of services are unified in one structure, a “Local health firm”, as for example the Italian Aziende Sanitarie Locali (ASL). In milder versions of the model, some hospital firms, even if publicly owned, may be separated from the “Local health firm”. This *semi-integrated* configuration is wholly working in the UK, where there is a *Health District Authority* separated from *Trust hospitals*, which can be almost freely chosen by the patients.

In conclusion, by also taking into account Political economy considerations with respect to conflicting relationships, e.g. between citizens and politicians and/or public providers and pressure groups, a cost-benefit analysis of separation versus integration may suggest the following pros and cons of the separation in the industrial health organization. On the pros side, first, separation may provide positive incentives coming from the conflict of interests between the demand of an ASL and the supply of a provider, as an Azienda Ospedaliera. However, on the cons side, this may lead to an insufficient exploitation of economies of scale and scope with respect to an integrated set-up. Second, on the pros side, there may be positive incentives from competition-quality-choice conduct arising from purchasing contracts, even if, on the cons side, this may also lead to high transaction costs due to signing and implementing incomplete contracts. Third, still on the pros side, separation may lead to more transparent accountancy procedures and better performance measures, even if there may be

difficulties in effectively controlling demand and supply. Fourth, separation may guarantee a higher level of specialization of the managers on insurance (risk and need perception), production (measurement and control of costs and returns), and purchasing (demand input control). However, on the cons side, separation may have as a drawback the phenomenon of demand induction from providers mainly boosted to increase their revenues. Finally, still on the pros side, separation may lead to improved controls on costs and quality because of a Health Authority which acts as “aware bidder contractor” and not as “blind purchaser”.

3.3 Quasi markets

On the basis of such an analysis, we may state that quasi-markets, the most advanced form of the contractual model,⁵ are organized on a clear separation of structures, i.e. set of national or regional authorities regulating public and/or private production, a set of agencies conveying the users demand and needs, and a set of public and/or private health providers. Again, by using a cost benefit analysis, we may examine such an organizational structure more in depth, and summarize its pros and cons.

On the pros side, first, we may stress the fact that by limiting its productive role, the State could better concentrate its efforts in

⁵ For an analysis of an emblematic quasi-market, like the English one during Margaret Thatcher’s era, see Maynard (1994) and Jones and Cullies (1996). For an evaluation of the today English National Health System, after Tony Blair partial revisions of the latter, see the OECD Report by Smith and Goddard (2009).

purchasing health services on the behalf of the citizens enrolled in the National Health System. Of course, the corresponding cons is that cream-skimming procedures by providers could take place. Second, as the prices of health treatments are generally fixed, stimulating competition among providers (especially public providers) may have beneficial effects on the quality of health treatments. However, on the cons side, such a competition requires complex ex-ante and ex-post performance controls by a public authority which also has to properly regulate the internal market with plans, hard budgets, efficient bidding and contractual activities. Third, the *voice* of patients-consumers can be valued through the role of sponsor played by the insurers. On the cons side, this, however, could lead to an increase in both private and public health expenditure because of moral hazard and phenomena of inducing distorted demand by highly competitive providers engaging to acquire as many customers as possible. Fourth, on the pros side, patients-consumers may *exit*, i.e. they have the freedom of choosing the preferred provider. This may not be always possible when, at least in some areas, competition among hospitals is simply not possible, so that local monopolies arise (*industrial configuration failure*). Fifth, quasi-markets may boost cost-containing and quality enhancing actions. The drawback of this could be that the incentive to increase observable features of quality could be matched to the incentive to decrease the not observable ones. Propper *et al.* (2008) have shown that Trust hospitals competition in NHS has reduced average waiting lists (observable feature), but it has also increased other no-observable relevant

features of quality, like death rates. Finally, on the pros side, R&D activities in medical industries, as hospitals, could be improved because being “residual claimant”, hospitals can re-invest their “profits”. On the cons side, insuring patients-consumers more freedom of choice is somewhat misleading given their imperfect information, and the potentially non-benevolent pay-off and behaviour of the physicians prescribing the treatments.

From this analysis, it turns out that quasi-markets may be socially desirable in some institutional and economic set-ups while they may not be desirable in others. Evidence shows that only a limited number of European countries have reformed their Health Systems in pure contractual quasi-markets. Nowadays, after several succeeding reforms in the nineties, in The Netherlands, UK, Germany, and Sweden, quasi-markets which are organized in potentially pro-competitive systems are prevailing. Instead, in countries like Spain and Italy, Health Systems have only adopted some elements of managed competition. Indeed, although internal competition features were supposed to be introduced, at the end, their limits have been emphasized, and they have not been fully applied. Further, other countries, like France, Denmark, and Finland, even if aware of the efficiency disadvantages of the purely planned systems, have introduced only very few or no pro-competitive items at all.⁶

⁶ Notice, however, that in those federal countries where health care organization is decentralized at a regional or state level, many different health organizational models may prevail, as it is indeed the case in Italy where in Lombardy there is a quasi-market system while in

3.4 The ownership design of the health care structures

The trade-off between cost-containment and quality may also affect the institutional design, and the ownership options for health structures. In particular, the PPP choice could be justified in terms of investment tasks' assignment, i.e. the convenience of transferring the responsibility for certain elements of the treatments to private hands, while maintaining other elements in public hands.

Hoppe and Schmitz (2010) have proposed a model of the public or private provision of a good (service), where contracts on privatization of infrastructures projects, like new hospitals, do not only specify the transfer of ownership rights, but also assign the responsibility on design construction, maintenance, and modernization of the structure itself. The main results suggested by Hoppe and Schmitz (2010) for the health sector are the followings. First, partnerships between the public and the private sector in running a hospital can be desirable when their bargaining power is relatively balanced, and the side effects of cost and quality innovations are relatively unimportant. Second, public (private) ownership should instead prevail when the side effects of cost (quality) innovations are sufficiently strong. Finally, it is important noticing that the private bargaining power is inversely related to the degree of competition among hospitals. On the other side, the government's bargaining power is likely to be ex-post weak because it may be

difficult to find alternative providers during the renegotiation. Furthermore, evidence suggests that improving the treatments' quality highly affects a hospital production costs because of high costs of more sophisticated equipment. Instead, an innovation leading to a decrease in costs could imply relatively low side effects on quality when the hospital is far from x-efficiency.

An intermediate solution to the ownership issue for hospitals and other facilities with respect to the public/private dichotomy is to build up a no-profit organization. Such no-profit organizations usually pursue aims as fairness, education, values' preservation, etc. Since hospital activities have a multi-product nature, a no-profit organization may prefer some products, i.e. mission-oriented services, although privately unprofitable goods, while it may not prefer others, i.e. minor services, although profitable revenue-goods. However, an efficient management of a no-profit hospital should take advantage from this by producing "no-preferred" goods at the maximum profits so to earn resources to finance the production of "preferred" goods (Weisbrod, 2006). Such a cross-subsidization could be beneficial from a second best perspective trying to maximize an implicit multidimensional objective function.

In this respect, evidence on mixed industries, mainly hospital, facilities for the mentally handicapped, and nursing homes, shows behavioural differences in many dimensions as in efficiency, mortality rates, satisfaction of staff members and among patient's families. For example, Weisbrod (2006) has shown that observed behavioural differences across

Tuscany there is a somewhat command & control system.

institutional forms reflect two specific perspectives: The different constraints that a no-profit firm face with respect to a for-profit firm, i.e. a “no-distribution constraint” limiting the size of profit, and the fact that no-profit firms can have access to volunteer labour and private donations of money.

4 SOME EVIDENCE ON THE MIX BETWEEN PUBLIC AND PRIVATE PRODUCER-PROVIDER IN THE HEALTH SECTOR: THE NETHERLANDS AND AUSTRALIA

The *Dutch health care system* is characterized by a majority of private health care providers and no-profit hospitals, and since the early 1990s it has been characterized by a series of reforms which have switched it from a supply-side government-regulation towards a regulated competition. Following Van de Ven (2012), we illustrate the main features of the recent reform occurred in 2006 (Health Insurance Act) which has obliged every Dutch citizen to buy a private health insurance based on open enrollment, community rating, and risk equalization.

Such an health insurance covers a number of items which are defined by the law, namely primary and specialized health care, hospitalization, pharmaceuticals, maternity, dental health care for children, and other minor items. This type of private insurance has substituted the previous system according to which 67% of the population had a public mandatory health insurance, and the rest of the population had a voluntary private insurance. Insurance companies have to apply an open enrollment, namely they are obliged to insure

every Dutch citizen (no cream-skimming), and they have to apply the same premium to those living in the same area for the same type of insurance contract according to a community rating. The insurance contract can last one year at maximum, and after the patient may decide whether to remain with the same insurance company or to change. Consumers are thus free to choose the preferred insurance company. However, consumers face a true freedom of choice only when transaction costs in case of changing the insurance company are very low. This could not be the case if the new insurance company denies a supplementary health insurance to the high-risk individuals who would like to buy a mandatory health insurance or if the old insurance company asks a higher premium for the supplementary health insurance to those individuals who do not buy anymore the mandatory health insurance from it.⁷ In the Dutch health care system, insurance companies receive ex-ante risk-adjusted payments to counter the higher health care expenditures for elders, and chronically-ill patients, but also ex-ante risk-adjusted payments based on age, gender, socio-economic and employment status, etc. Since such payments are not sufficient to cover the higher expenditures, insurance companies also receive some ex-post reimbursements based on their true expenditures.

⁷ Although after the reform insurance companies have agreed not to use such cream-skimming procedures, a higher percentage of the population (4% in 2006 and 7% in 2009) did not take into account the possibility to change the insurance company because of the fear to be denied a supplementary health insurance by the new insurance company for age or health status.

All Dutch citizens pay a tax based on their income to finance the Fund to equalize risks, and a premium to the insurance company (in 2008, the average premium was 1105 euro per year). However, about 2/3 of the Dutch families receive a care allowance based on their income from the government. Residents below 18 years old do not have to pay any premium because the government covers their health expenditures. Patients can also buy a supplementary health insurance which covers items that are not covered by the mandatory health insurance, such as dental care for adults, physiotherapy, etc. For such supplementary contracts, insurance companies can determine the premium with respect to the patient's risk, and cream-skim. In 2010, 87% of the population has a supplementary health insurance bought from the same insurance company providing the mandatory health insurance. Insurance companies may also propose some premium reductions (for a maximum of 10%) for some groups of patients, as for example members of unions, employees of the same firm, members of sport club, etc. In 2009, about 60% of the population had a lower group premium of an average of 7%.

On the supply side, there is a large freedom in contracting: insurance companies can contract with the health care providers or integrate with them, and the treatments' prices can now be negotiated while before they were completely regulated by the government. For example in 2009, 34% of the hospitals' total revenues is negotiated with the insurance companies. The insurance market is considered sufficiently contestable because of the presence of several

independent authorities which are separated from the government. In particular, there is a first authority that is responsible for the health care quality (Inspectie voor de Gezondheidszorg); a second authority (The Dutch Central Bank and the Authority on Financial Markets) responsible for controlling that insurance companies have sufficiently financial resources to bear their obligations; a third authority for ensuring competition and avoiding cartels and market dominance (Nederlandse Zorgautoriteit) which operates together with the Antitrust Authority; a fourth authority for the legal protection of consumers, for example checking that information provided by insurance companies to consumers are truthful and complete, that insurance contracts supplied on the market obey the Dutch legislation, etc. In this respect, in order to provide consumers with sufficient information on insurance companies and health care providers, the government has created a web site where consumers can compare health insurance contracts supplied by different companies with respect to premia, health care services, consumer satisfaction, etc., and where consumers can also find information on performance indicators for hospitals' quality.

To sum up, the benefits of the 2006 reform seem to be the following: A standard package of health care treatments for all Dutch residents, insurance contracts based on open enrollment and community rating, freedom to choose the insurance company every year, risk equalization mechanism to take into account redistributive objectives, strong price competition among insurance companies, more

information for consumers on health insurance contracts and health care providers. On the other side, the drawbacks of the reform which should be improved in the following years are for example the followings: insurance companies are reluctant to supply preferred providers contracts to consumers, the risk equalization mechanism can be improved in order to reduce ex-post payments to insurance companies that do not push up their efficiency, and finally the development of improved performance indicators both for the insurance companies and the hospitals would be desirable.

Nowadays, *Australia* is also characterized by a mix of private and public financing mechanism of the health care system which has followed a series of reforms in the last 40 years. Before such reforms, namely in 1984, the Australian health care system was characterized by a voluntary private insurance mechanism (77.6% of the population covered in 1971). Following Paolucci *et al.* (2012), we now briefly illustrate some main features of the Australian health care system after the reform in 1984 and the subsequent ones. In 1984, the government introduced a public health program, Medicare, which is a public national universal health insurance financed through general taxation. Medicare covers hospitalization in public hospitals without costs for the patients, primary and specialized health care provided by private providers, and it contributes through subsidies to a list of treatments included in the Medical Benefit Scheme and in the Pharmaceutical Benefit Scheme. Following the introduction of Medicare, the percentage of the population covered by a private health insurance is

decreased: 50% in 1984 to 30% in 1997. Such phenomenon describes a typical “*adverse selection death spiral*” given that low-risk individuals have reduced their purchase of private health insurances while high-risk individuals, on the contrary, have increased their purchase.⁸ Together with the introduction of Medicare, between 1997 and 2000, the government has introduced the following new schemes. First, it has introduced the *Private Health Insurance Incentives Scheme* which provides a subsidy of 30% to those with a private health insurance, and a tax with a tax rate of 1% on the imposable income to those individuals with incomes higher than \$70.000 per year (\$140.000 per year for a couple) who have not a private insurance. Then it has also introduced the *Lifetime Health Cover* which introduces higher premia for those individuals with more than 30 years for each year after the thirtieth without a private health insurance. Following such reforms, the percentage of the population who has bought a private health insurance has increased, and the risk profile of those individuals purchasing a private health insurance has also improved, even if the “*adverse selection death spiral*” still persists also because of the extension to the long-term care to private health insurance, and higher discounts on the premia for the elders.

The introduction of subsidies and regulations in order to favour the enrollment in private

⁸ For example, during the period between 1984 and 1998, elders (>70 years) increased their purchase (from 31% to 37%) while youngsters (25 years<age<34 years) decreased their purchase (from 46% to 22%).

health insurance has been justified with respect to reducing cream-skimming, and positive externalities coming from a higher coverage. From a political point of view, the government hoped to reduce health public expenditure by increasing private coverage which could have decreased the use of Medicare. However, this did not occur: although the number of individuals purchasing a private health insurance increased, in the last ten years, the total amount of private health expenditure decreased meaning that those individuals, who have both the public and the private coverage, use the former. Thus, taking into account also the public subsidies in favour of private insurance purchasing, public health expenditures increased. Another drawback of the present system is linked to the existence of perverse effects in terms of waiting lists due to the fact that the public sector has not enough incentives to reduce them hoping that the patients will thus choose a private provider.

In order to improve the present health system several proposals have been made. In particular, it has been proposed to eliminate the present partial duplication in coverage for private health insurance holders either by allowing individuals to “opt-out” from Medicare or by confining private health insurance to a supplementary insurance with respect to the mandatory public one. Further, it has been proposed to substitute the present subsidies for purchasing private health insurance by ex-ante risk-adjusted subsidies of the type of those used in The Netherlands.

5 EDUCATIONAL SECTOR: PRIVATE/PUBLIC PARTNERSHIPS AND COMPETITION MECHANISMS

Even if the educational sector is under the state supervision in basically all countries, there are wide differences in the mix of its public/private provision and financing across them. The following table categorizes four possible cases stressing the importance of separating financing of education from its provision.

Table 2. Public/private financing and provision of education

	Private provision	Public provision
Private financing	Pure private schools	User fees Student loans Private finance initiative (PFI)
Public financing	Vouchers Contracting out Student loans	Traditional public schools

Source: Patrinos and Sosale (2007).

On the one extreme, we have the pure private school system where both financing and provision are private while, on the other extreme, we have the traditional pure public school system where both financing and provision are public. The other two cases are based on a collaboration between public and private entities, which according to Woessmann (2009) can be both referred to as

PPPs. However, in a first case, for-profit or not (e.g. religious) private schools are publicly financed, while in a second case, schools are managed by a public entity but are privately financed (e.g. by tuition fees). Based on such a classification, we can maintain that the majority of OECD countries have a purely public system, but an average public expenditure of 12% is in favour of educational institutions which are privately managed (Patrinos et al. 2009). Netherlands, Belgium, Ireland, the United Kingdom, and Denmark are examples of such first type of PPP, with Australia, Canada, France (Catholic schools), Japan, and the United Kingdom using vouchers for private school participation while Mexico is an example of the second type.

Even if PPPs in education are a much-debated topic, systematic theoretical and empirical analyses are still few. On the one hand, theoretical analyses points out which are the pro and cons of PPPs in the case of institutional set-ups characterized by more and more binding financial constraints. On the other hand, evidence is usually in the form of case-studies, with some recent works trying to estimate the impact of PPPs on outcomes, such as students' achievements, enrollment, education inequality, and costs (see the next section).

Let us now concentrate our attention on the first type of PPP, namely private schools receiving public financing. The arguments *in*

favor of such a scheme can be summarized as follows (Patrinos *et al.* (2009), LaRocque, 2009). First, the existence of both public and private provision allows parents to choose the type of school for their children with more freedom in accordance with their preferences (Friedman, 1955). Second, the coexistence of public and private provision creates a quasi-market, and competition among schools can increase the quality of education provided. Third, market forces may foster cost containment. Usually private providers are chosen through an open bidding process: the contract specifies the quality of education required and the best proposal in terms of costs is then chosen. Further, PPP contracts clearly assign responsibilities between the financier and the provider, identify objectives and outputs, and can better fit changes in the demand for education because private schools have more autonomy than public schools in hiring teachers and in running their organization. Fourth, PPP contracts may allow a higher level of risk sharing between the public sector and the private one.

On the contrary, the arguments *against* private provision of education financed by public funds stress the following points. First, PPPs can create socioeconomic segregation among students with the high-ability and/or richer students enrolled in the high-quality schools and the low-ability and/or poorer students

enrolled in the low-quality schools. Second, the quality of the public school may decrease by enrolling mostly low-ability and/or poorer students (see also peer-group effects). Third, costs may not decrease because the public sector has to spend more on writing different types of contracts (e.g. for management, educational services, infrastructures), and on running independent authorities to monitor the contracts' implementation (e.g. curricula, quality of education, quality of infrastructures, etc.). Fourth, private schools may be less prone to promote among the students ideological and cultural values that the government would like to be pursued. Fifth, bidding procedures may foster corruption.

The importance of each pro and cons depends on the type of PPP contract that the public sector decides to implement. In this respect, we now analyze the main features of PPP contracts. First of all, contracting can be defined as «the process whereby a government procures education or education-related services of a defined quantity and quality at an agreed price from a specific provider. The agreement between the funder and the service provider is recorded in a contract and is valid for a specified period of time» (Patrinos et al. (2009) p. 9). In particular, there exist different types of PPP contracts depending on the type

of service that the public financier buys from the private sector, as it is shown in the table No. 3.

The object of the contract can be inputs, such as school management, support services, professional services or infrastructure and building maintenance; it can be the process of education, for instance, managing and operating public schools; it can also be outputs, by enrolling specific students in private schools. Depending on the type of object, the contract has different features that we now specify in more details following Patrinos and Sosale (2007).

Contracts for management, professional services, support services

Contracts for management services usually concern financial management, staff management, and leadership while public sector employees continue to perform all non-managerial functions. On the one side, potential benefits of this type of contracts are linked to the bidding procedure to select the private organization that will be in charge to provide the managerial services, the reduction in bureaucratic and union constraints of the public sector, and the higher freedom to manage of the private managers.

Table 3. Types of PPP contracts in education

What governments contract for	What governments buy	Contract type
Management, professional, support services (inputs)	<ul style="list-style-type: none"> • School management (financial and human resources management) • Professional services (teacher training, curriculum design, textbook delivery, quality assurance, and supplemental services) • Support services (meals and transportation) 	<ul style="list-style-type: none"> • Management contracts • Professional services contracts • Support services contracts
Education services (outputs)	<ul style="list-style-type: none"> • Student places in private schools (by contracting with schools to enroll specific students) 	<ul style="list-style-type: none"> • Contracts for education of specific students
Facility availability (inputs)	<ul style="list-style-type: none"> • Infrastructure and building maintenance 	<ul style="list-style-type: none"> • Infrastructure services contracts
Facility availability and education services (both inputs and outputs)	<ul style="list-style-type: none"> • Infrastructure combined with services (operational or educational outputs) 	<ul style="list-style-type: none"> • Infrastructure and education services contracts
Operational services (process)	<ul style="list-style-type: none"> • The education of students, financial and human resources management, professional services, and building maintenance 	<ul style="list-style-type: none"> • Operational services contracts

Source: Patrinos et al. (2009).

However, on the other side, asymmetric information problems make very difficult to specify in advance the features of the required managerial services, and to monitor the managers' performance given that it is hard to disentangle the contribution of managers from all other factors to a school performance.

Contracts for professional services can regard activities such as teacher training, curriculum design, and quality certification while contracts for support services usually concern non-

instructional services such as pupil transportation, school meals, and building maintenance. The latter services are contracted out very often in public education systems. Potential benefits come from the fact that support services contracts are easier to design because it is relatively easy to specify the features of the required inputs in contractual terms, to monitor the quality of the provided services, to sanction the contractor if it fails to respect the contract. Further, cost-effectiveness

may increase because of the bidding procedure to select the contractor, and economies of scale coming from the fact that one contractor usually serves many schools. Contracts for professional services may be less easily designed with respect to the previous ones, but potential benefits may come from the fact that school employees can have more time to devote to educational core services.

Contracts for education of specific students

Contrary to the Italian case, in some countries, public schools may not supply specialized services for specific students with some disadvantage which, instead, are provided by private schools. In these cases, contracts may be designed so that the public sector buys an output, namely it pays the enrollment of specific students in private schools. Potential benefits from these agreements may come from the competitive process through which private schools are chosen, and a higher education quality public financed students receive when no-profit schools are willing to subsidize these students via the tuition fees paid by privately funded students.

Contracts for infrastructure services

On the one hand, these type of contract may be appealing for the public sector especially when public finances are stressed because the private sector finance and construct facilities that the government pay for over time. On the other hand, these type of contract may be not appealing for private investors because of political risks associated to changing legislators and/or public policies. Further, asymmetric information problems on capital costs of the infrastructure may lead to increases in the cost

with respect to the one quantified at the outset. As it is shown in the table n. 4, contracts can differ a lot with respect to the arrangements between the public and the private sector, but all of them share some common features.

Some main common features of PPP contracts for infrastructures are the following: the contract has usually a long-term (25/30 years), and specifies the services that the private sector must deliver, their quality level, and payments; a competitive tender process selects the private investor; the private sector invests in the school infrastructure, provides related services as building maintenance, and may also provide some nonteaching staff; the public sector provides the core service (teaching). Contrary to traditional procurement methods, with PPP contracts, the capital needed to finance the infrastructure is provided by the private sector; the contract specifies the output and not the input required by the public sector; as soon as the infrastructure is built, its ownership is retained by the private sector, and only at the end of the concession it is passed to the public sector (LaRocque, 2009). The most common contract is the build-operate-transfer: the private investor finances, builds, and operates a school (or other infrastructures such as laboratories) for a given period of time during which the school is leased to the public sector for a certain rental. At the end of that period, the ownership of the school building is turned over to the government.

Table 4. Different PPP contracts for infrastructures

Type of partnership	Features
Traditional design and build	The government contracts with a private partner to design and build a facility to specific requirements
Operations and maintenance	The government contracts with a private partner to operate a publicly owned facility
Turnkey operation	The government provides financing, the private partner designs, constructs, and operates facility for a specified time period, while the public partner retains ownership of facility
Lease-purchase	The private partner leases a facility to the government for a specified time of period, after which ownership is vested with government
Lease or own-develop-operate	The private partner leases or buys a facility from the government and develops and operates the facility under contract to the government for a specified time period
Build-operate-transfer (BOT)	The private partner obtains an exclusive contract to finance, build, operate, maintain, manage, and collect user fees for a facility for a fixed period to amortize its investment, and at the end of the franchise, the title reverts to the government
Build-own-operate	The government either transfers ownership and responsibility for an existing facility or contracts with a private partner to build, own, and operate new facility in perpetuity

Source: Patrinos and Sosale (2007).

Contracts for infrastructure and education services (comprehensive contracts)

These type of contract have been used in the health sector, but not in the educational sector. The private sector invests in the infrastructure, and then it also runs it. This requires that two contracts have to be signed. The private sector should have more incentives to be involved in investing in the infrastructure (and paying interest rates usually higher with respect to those of the public sector) when it also has the

guarantee that it will be able to provide the service for a given period of time.

Contracts for operational services

Under this type of contract, the operation of a public school is entirely contracted out to the private sector. Usually this type of contract is addressed to disadvantage areas where the public school does not perform well, and providing more school autonomy may lead to improvements in the quality of education. Often the operation of the school by the

private sector is accompanied by the involvement of local communities through building or improving of existing facilities.

6 SOME EVIDENCE ON THE MIX BETWEEN PUBLIC AND PRIVATE PRODUCER-PROVIDER IN THE EDUCATIONAL SECTOR: ENGLAND, THE USA, THE NETHERLANDS

Woessmann (2009) has shown the positive impact of PPPs on the quality of education, i.e. on students' achievements measured by students' cognitive skills. His econometric analysis is carried on across OECD countries,⁹ and it allows investigating whether the existence of private schools may positively affect the performance of nearby public schools because of a quasi-market configuration. The sample size used counts at an average of 4,500 students in 168 schools per country. Data concerning public vs. private provision and public vs. private financing of schools are obtained by the PISA database of the year 2000.¹⁰

Woessmann's main results show that PPPs which combine public funding with private provision perform more than one third of an international standard deviation better than

pure public systems. On the contrary, PPPs which combine private funding with public provision perform worse than purely public systems. Further, there are no differences in students' average performance in systems which combine high share of public funding with high share of public provision, and systems which combine high share of private funding with high share of private provision. Thus, the conclusion which can be drawn from this analysis suggests that PPPs in the form of public financing with both public and private provision seem to have the greater impact on cognitive abilities of students. Let us now analyse some examples where such policies have been implemented.

Starting with *England*, we may notice that there are three types of schools: private schools which are highly influential, paid by tuition fees, and attended by a small percentage of the population; public schools which charge no fees; and for-profit and not-for-profit schools attended by specific pupils whose fees are paid by the public sector. England has experienced PPP contracts mainly through infrastructure service contracts, namely Private Finance Initiative (PFI), and through the introduction of academy schools.

PFI was introduced by the Conservative government in 1992, and then it was supported by the Labor government since 1997. Typically, the private sector finances, builds, and manages the school infrastructure under a contract that last 25/30 years while teaching activities are left to the public sector. However, given the long term and highly complicated nature of such PFI contracts, it seems too difficult to discern

⁹ Out of 32 developed and emerging countries, 29 are used in the paper. Australia, Canada, and Liechtenstein are excluded, the first two because their data were not complete, the third one because too few schools were tested.

¹⁰ PISA is an international test conducted by OECD on random samples of 15-year-old students. It tests students' performance in reading, math, and science.

the true costs and benefits for the public sector (McIntosh, 2007). In other areas where PFI contracts have shown to produce positive results, the private sector typically both runs the service and maintain the infrastructure while the separation of such functions in the educational sector can potentially give rise to conflicting relationships between the private and the public sector. For this reason, a new program has been proposed, Building Schools for the Future (BSF) which is based not only on the private sector participation to the financing of schools' plants but also on a local education partnership (LEP) between local governments and private contractors to manage schools. However, given that local governments can opt for different degrees of private sector participation in the LEP, it is difficult to draw general conclusions on this point (McIntosh (2007)).

To show now how the still very popular *Academy model* introduced by the Labor government in 2002 works, in what follows, we refer to the paper by Machin and Veroit (2011). However, to appreciate the main features of such a model, we analyse it within the English secondary education system which is based on six different types of schools characterized by a different involvement of the three main actors: private, voluntary, and public ones.

Independent schools have the higher degree of autonomy. They are privately funded by tuition fees, managed by a body that establishes all the activities concerning the school, such as the curriculum, the admission policies of pupils, and the total budget.

Contrary to independent schools, since *academy schools* have a public status, they cannot charge tuition fees, but apart from this, they share all other features with independent schools.¹¹ Their management body is autonomous in setting the majority of the curriculum (except English, Mathematics, and other few core subjects), the time schedule, and the budget. They are also autonomous in all staffing decisions. They can hire teachers provided that they possess the national qualification, they can set wages, career development, and working conditions on the basis of the specific features of the school. They are all-ability schools apart from at most 10% of their intake. A government agency (the Office for Standard in Education – Ofsted) verifies the compliance of academy schools with minimum standards and publish both their evaluations and the results of standardized learning tests.

City technology colleges were firstly introduced in 1988 to allow the public sector to establish partnership with the private sector in the educational sector. They share all features with academy schools except that they do not have autonomy on the curriculum so they have to follow the national one. Their curriculum has also a technological target while this is not the case for academy schools.

The other three types of schools (*voluntary-aided schools, foundation schools, voluntary-controlled schools*) are characterized by a partnership between the public sector and the no-profit sector. In voluntary-aided schools their management

¹¹ They are financed by the central government and some private sponsors (Ichino and Tabellini, 2014).

body can only set some educational policies so, for example, they can set staffing decisions, but the curriculum is out of its control (the national curriculum has to be followed). Foundation schools share all characteristics with the previous ones, except that the majority sponsor cannot appoint the governing body, while voluntary-controlled schools share all characteristics with foundation schools except that they cannot set policies concerning admissions of pupils which, instead, are under the control of the Local Education Authority. At the end of the list, we find local community schools which have a very low degree of autonomy given that they are completely controlled by the Local Educational Authority.

The period between the 2002 (year of the introduction of academy schools) and the 2009 has shown a some important changes in the structure of the secondary school system. The importance of community schools declined from 64% to 52% while both academy schools and foundation schools increased their role, from 0.1% to 4% and from 15% to 24%, respectively. Concerning academy schools, their creation is mainly due to reasons such as to augment parental choice by providing more school diversity or improving standards in the lowest attaining schools. In the latter case, pre-existing schools can apply to be converted in academy schools. After the path to establish an academy school is completed¹², if the academy needs new buildings, these are built. Then it starts to receive public funds on the basis of

¹² See Machin and Veroit (2011) for all the details on this point.

the enrolled pupils' number, and all decisions on school policies are passed from the local authority to the academy trust.

Based on their econometric analysis, Machin and Veroit conclude that the creation of academy schools has led to an increase in the quality of their pupil intake, and an increase in their pupil's performance. The creation of academy schools seem also to have led to some positive externalities in favor of the neighboring schools which registered increases in their pupils' performance although the quality of their pupil's intake decreased.¹³ These positive results seem also to be larger for those schools which have been academies for longer and for those which obtained higher degrees of autonomy. Finally, according to the authors, these results could suggest that the introduction of academies allows to improve the rich/poor achievement gap given that academy schools enroll a higher proportion of both poor and low performing pupils with respect to other school types.

In the USA in the 2009-2010 school year 4638 *charter schools* exist for more than 1.6 million of students especially in large urban areas (Fryer,

¹³ Such positive external effects have not been found, instead, by Clark (2009) in a paper which analyses another UK educational reform, namely that occurred in 1988 which allowed public secondary schools to "opt out" of the control of the Local Education Authority, to become quasi-independent "grant maintained" (GM) schools directly receiving funds from the central government. His results on improvements in enrollment and pupil quality of GM schools is in line with that by Machin and Veroit (2011).

2011, Finn and Vanourek, 2007).¹⁴ Charter schools are similar to UK academy schools. They share common features across the nation, but are regulated by each state. In particular, they receive public funds together with private donations, and cannot collect tuition fees. However, they are privately run: they have a high degree of autonomy in the sense that they can set curricula, hire and fire teachers, and determine their salary. However, they cannot select students, and for example in New York if a charter school has more applicants with respect to its places, it has to hold a lottery among the applicants (Hoxby and Murarka, 2009). For each pupil enrolled into a charter school, this receives a fee which is tax financed so that charter schools have incentives to attract more students and parents can “vote with their feet”. To convert a school into a charter one or to create a new one, initial approval has to be obtained from an authorizer (a licensing body) which awards a performance contract, and can renew or not the charter after a certain period of time (usually five years). The charter contract is an agreement between a school board which can be made of parents, educators, entrepreneurs or a mix of them, and a public authority, e.g. the local educational agency, or a university. The sponsor has to evaluate whether the contract’s objectives are reached and, if they are not, it can even require that the school is closed (Ichino and Tabellini, 2014).

Charter schools attract especially disadvantages students. For example, in New York, charter schools are in neighborhoods with high percentage of black and Hispanic residents, enrolled pupils belong to families with low incomes and have parents with low educational attainment (Hoxby and Murarka, 2009). In general, charter schools have been introduced to pursue several aims such as improving the achievements of struggling pupils, increasing parental involvement and community support, leveraging private capital and fostering entrepreneurialism, increasing efficiency by means of the market forces (Finn and Vanourek, 2007).

Some recent papers have analyzed the effectiveness of charter schools in improving pupils’ achievements. For example, Abdulkadiroglu *et al.* (2009) by using data from Boston, show that large and significant test score gains for pupils attending in middle and secondary charter schools. These author also show that the greatest improvements were obtained by those pupils performing particularly poorly before starting to be enrolled in a charter school. By using a data set on Massachusetts charter schools, Angrist *et al.* (2011) show that charter schools seem to have different effects on pupils’ performance depending on whether they operate in urban or non-urban areas. In the case of urban areas, the authors show that achievements of students of charter schools are well beyond those of urban non-charter students, while in the case of non-urban areas, charter schools seem to be ineffective and in some cases they seem to worsen pupils’ achievements. The reason for this result seems to be linked to the different

¹⁴ For a theoretical analysis of quasi markets in the U.S. educational sector and the role of vouchers, see Nechyba (2009).

student demographics between urban and non-urban areas. In urban areas, charter schools enroll a high proportion of minority pupils coming from poor families, and with a low achievement level. For these types of students, charter schools seem more effective in improving pupils' achievements by keeping students in school longer and by using different pedagogical teaching activities. For New York city, Hoxby and Murarka (2009) show that charter schools attract more poorer pupils with respect to public schools. They show the existence of a correlation (not a causation) between charter schools' policies and their effects on pupils' achievements, as for example a longer school year and thus also longer school day.

Another important case is that of *the Netherlands*, where schools are highly publicly financed¹⁵, but most of them are privately administered (74% according to Woessmann, 2009). The Dutch educational system is based on a high degree of freedom in establishing schools and in choosing the preferred school by parents. The government favors such school choice by parents as a way to promote competition among schools, and thus to foster better performances (Patrinos *et al.*, 2009). The level of school autonomy is very high both for setting curricula and assessment practices, and for resource allocation (OECD, 2010). From the latter point of view, most schools are responsible for determining and allocating

resources and for hiring and dismissing teachers. However, public and private schools are controlled by the central government which sets the educational policy. Students perform very high scores both on TIMMS and PISA, even after controlling for national income and per-student expenditure. However, notice that while for primary education, the Dutch per-student annual expenditure is in line with the OECD average, it is higher at the secondary level, with the Netherlands being among the ten countries with the highest teachers' salaries at the secondary level (OECD, 2012).

7 CONCLUDING REMARKS

This paper has revised the main issues concerning the public-private mix in the financing-provision of both health and education services, and it has illustrated the case of some countries which have experienced recent pro-competitive reforms in such sectors. Re-thinking the role of the public sector in both the health and the educational systems seems a growing phenomenon in several countries, and recent proposals on education have been also made for Italy (see Ichino and Tabellini, 2014). However such phenomena are still in their infancy so that rigorous empirical analyses on the effectiveness of such reforms are quite few. Although most of the analyses examine specific case studies, they can provide interesting lessons by enlightening which are the success and the problematic factors. In particular, we can remark the importance of an enabling policy and regulatory environment and a strong legal framework (LaRocque,

¹⁵ The percentage of public expenditure is 86.8% for primary, secondary and post-secondary non-tertiary education and 98.7% for pre-primary education (Education at Glance, 2012).

2009). The contracting approach calls for a good policy design, transparent and competitive bidding procedures, and well-managed implementation. In particular, it is necessary that regulatory public agencies are able to design, monitor, and enforce complex contracts. To perform such tasks they need information, skills, and appropriate quantitative and qualitative indicators in order to evaluate the performance of the service providers, and to establish penalties for failures and rewards for success.¹⁶

¹⁶ Grazzini L., Petretto A., *Public-Private Partnership and competition in Health-Care and Education*. DOI: 10.12870/iar-10198

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