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ACHIEVING HIGHER PERFORMANCE: ENHANCING SPENDING EFFICIENCY IN HEALTH AND EDUCATION IN MEXICO

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ABSTRACT/RESUMÉ

Achieving higher performance: Enhancing spending efficiency in health and education in Mexico

Despite progress over the past two decades Mexico's health and education indicators remain well below the average of the OECD and some of its Latin American emerging market peers. Health insurance coverage is incomplete, especially for low-income families, and access to health services is highly uneven. There are several separate vertically integrated insurance networks, which increases administrative costs and results in an inefficient use of facilities. In education, lower secondary schools enroll only two thirds of the relevant age group and the quality of education is low, as indicated by poor PISA scores. This reflects poor teaching quality, a consequence of non-transparent teacher selection processes until recently, and limited school autonomy in budgeting, instruction and personnel decisions. Accountability to the government and parents is also low as there is no national exit exam after secondary education and the existing evaluation schemes are fragmented. Recent health and education reforms have started to address these issues, but more needs to be done to increase the efficiency of spending by increasing the coverage of health insurance, reducing the fragmentation of the health system, increasing enrolment in lower secondary education, and improving the quality of teaching.

This Working Paper relates to the 2009 Economic Survey of Mexico.

(www.oecd.org/eco/surveys/Mexico)

JEL classification: I20; I28; C61

Key words: Mexico; education policy; health policy; data envelopment analysis

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Améliorer les performances : renforcer l'efficience des dépenses de santé et d'éducation au Mexique

Malgré les progrès réalisés ces vingt dernières années, les indicateurs du Mexique dans les domaines de l'éducation et de la santé restent nettement inférieurs à la moyenne OCDE et aux indicateurs de certains pays émergents d'Amérique latine. La couverture par l'assurance-maladie est incomplète, en particulier pour les familles à bas revenu, et l'accès aux services de santé est très inégalitaire. Plusieurs systèmes d'assurance verticalement intégrés coexistent, ce qui accroît les coûts administratifs et empêche une utilisation efficiente des services. Dans le domaine de l'éducation, seuls deux tiers des enfants en âge d'être scolarisés dans le premier cycle de l'enseignement secondaire le sont effectivement et la qualité du système éducatif laisse à désirer, comme en témoignent les mauvais résultats obtenus dans le cadre de l'enquête PISA. Cette situation résulte d'une mauvaise qualité de l'enseignement, qui s'explique par le manque de transparence qui, jusqu'à une période récente, caractérisait les procédures de sélection des enseignants et par le manque d'autonomie des établissements scolaires sur les plans du budget, de l'enseignement et des décisions relatives au personnel. La responsabilité du système éducatif vis-à-vis du gouvernement et des parents est également limitée du fait qu'il n'y a pas d'examen de fin d'études au terme de la scolarité secondaire et que les systèmes d'évaluation existants sont fragmentés. Les réformes engagées récemment dans les domaines de la santé et de l'éducation ont commencé à remédier à ces faiblesses, mais des efforts supplémentaires s'imposent pour améliorer l'efficience des dépenses en étendant la couverture par l'assurance-maladie, en réduisant la fragmentation du système de santé, en augmentant le taux de scolarisation dans le premier cycle du secondaire et en améliorant la qualité de l'enseignement.

Ce document de travail se rapporte à *l'Étude économique de l'OCDE du Mexique 2009*

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Classification JEL : I20 ; I28 ; C61

Mots clés : Mexique ; politiques de santé ; politiques d'éducation ; analyse d'enveloppement des données

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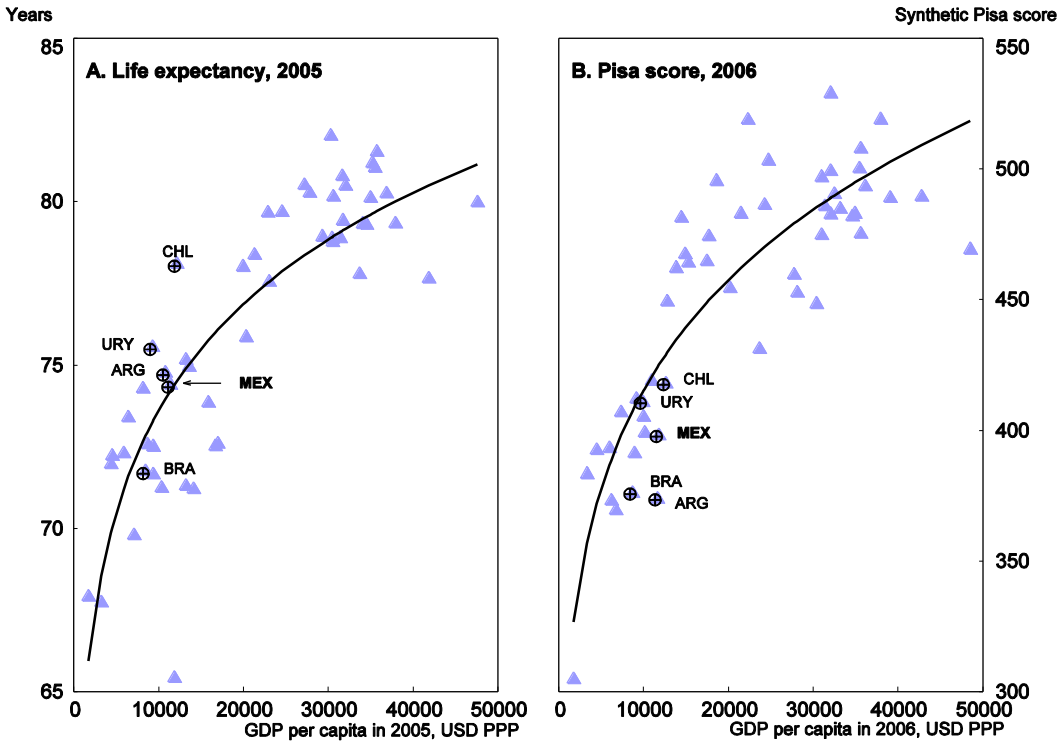
Achieving higher performance: Enhancing spending efficiency in health and education in Mexico

By Cyrille Schwellnus[1]

Introduction

1. Mexico's health and education indicators lag behind those of higher income OECD countries and of some Latin American emerging markets. Although population health indicators have improved over the past two decades, life expectancy at birth remains lower and child mortality higher than in most OECD countries. Mexico also ranks at the bottom of the OECD in secondary school enrolment and on standardised student tests. This partly reflects Mexico's level of *per capita* income and *per capita* spending on health and education. Compared to other emerging markets with similar spending levels, Mexico performs about average but better outcomes in some Latin American countries suggest that there is scope for improving the efficiency of spending (Figure 1).

Figure 1. Performance in health and education



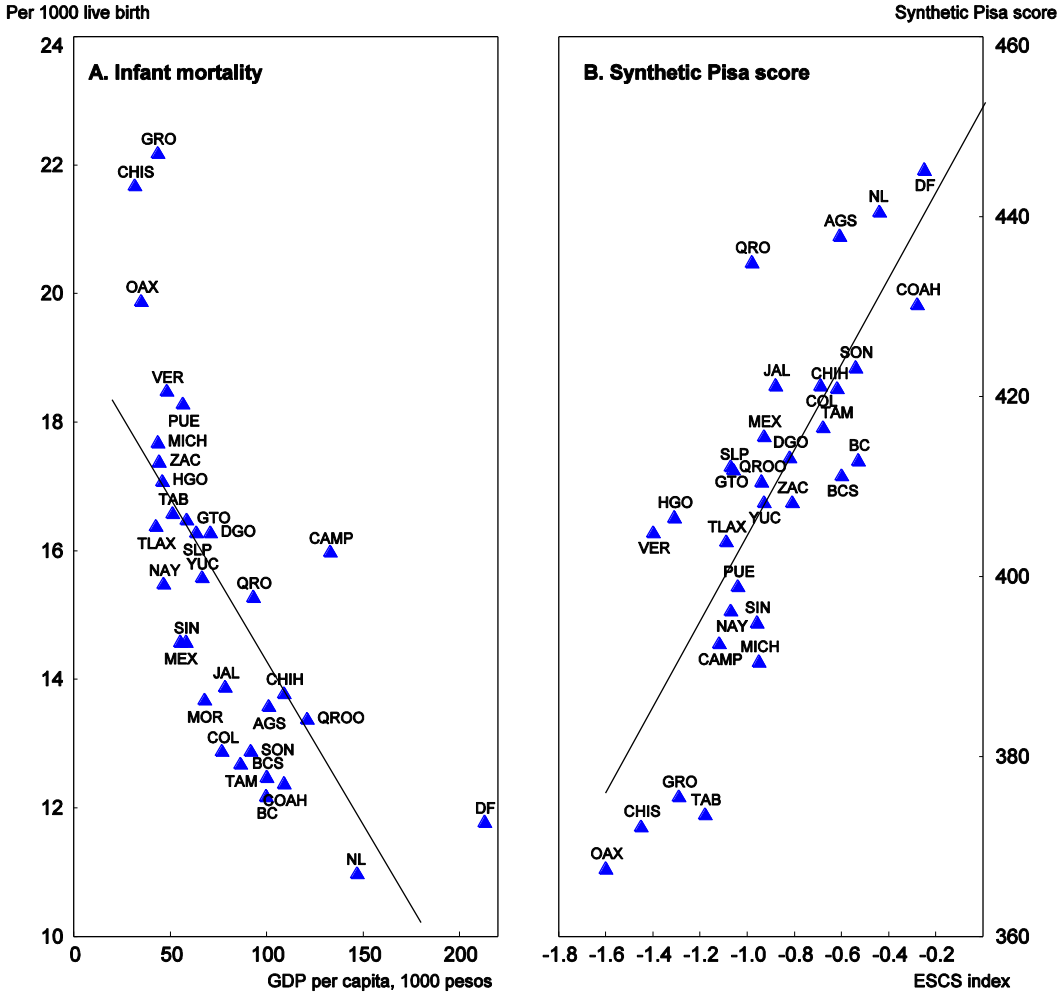
Source: World Bank WDI database; OECD PISA Results.

1. The paper was originally produced for the *2009 OECD Economic Survey of Mexico*, published in July 2009 under the authority of the Economic and Development review Committee of the OECD. I would like to thank, without implicating, Andrew Dean, Robert Ford, Patrick Lenain, Piritta Sorsa, Howard Oxley, Greg Wurzburg, Mariana Barraza Llorens and Jacqueline Arzoz. I am also grateful to Roselyne Jamin for statistical assistance and to Pascal Halim and Heloise Wickramanayake for editorial assistance.

2. In addition to below average outcomes by international standards, inequality in health and education results across social groups and federal states is high. The ratio of child mortality for mothers without education to mothers with secondary education is one of the highest in the world (WHO, 2007) and child mortality in the poorest federal states is around twice the rate in the richest ones (Figure 2). Similarly, results on the standardised PISA tests of student performance display one of the strongest correlations with socio-economic background of students among OECD countries (OECD, 2007a). They vary by around 80 points between the socio-economically most advanced states and those that are most backward, as measured by the PISA index of economic, social and cultural status (ESCS) (Figure 2). This corresponds roughly to two school years.[2]

Figure 2. Health and education outcomes by state

2007



Source: OECD, National Accounts and Analytical database; Anexo Estadístico del Segundo Informe del Gobierno.

3. The inequality in health and education outcomes across social groups and federal states reflects incomplete coverage, low quality of services for parts of the population, and fragmentation in services provision. Only two thirds of children complete lower secondary school, and one third of the population,

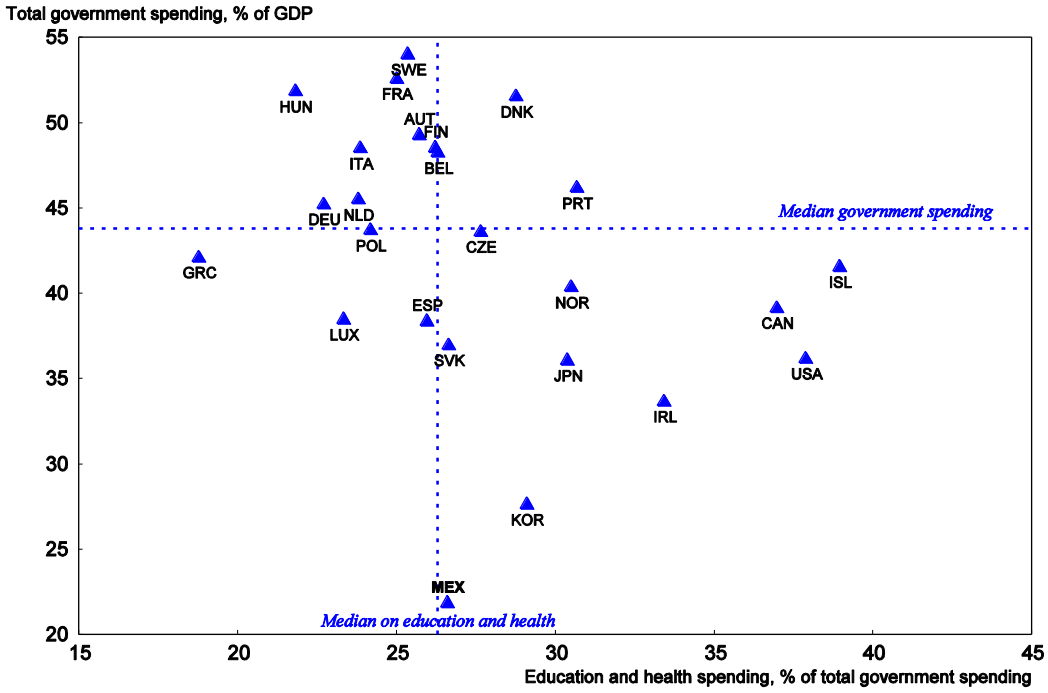
2. OECD (2007a) identifies 38 points on the PISA science scale as the average difference between two students in successive grades.

mostly in low income groups, has no health insurance. Weak outcomes on standardised student tests point to problems with the quality of education. In health care, the fragmentation into several separate systems that vertically integrate financing, insurance and provision functions contributes to inefficiencies, for example by duplicating facilities and by increasing administrative costs.

4. Several reforms to improve social outcomes are under way so that social spending is likely to increase in the near term despite tight budgets. Public spending on health and education in Mexico is more than a quarter of total government expenditures, which is close to the OECD average (Figure 3).[3] Further spending pressures will arise from the plan to achieve universal health insurance by 2011. In education, a voluntary agreement between the government and the main teachers' union aims to improve the quality in primary and secondary education, including by increasing spending on school infrastructure.

Figure 3. Government spending[1]

2006



1. Refers to general government.

Source: OECD, National Accounts and Analytical database; Anexo Estadístico del Segundo Informe del Gobierno.

5. While additional spending may help if it is well targeted, improving social outcomes will result primarily from increasing the efficiency of existing spending. Using an international comparison of health and education spending, this chapter suggests that there is great potential for improving value for money. It first assesses lack of efficiency of social outlays in Mexico and then discusses potential causes of weak performance. It then reviews ongoing reforms and suggests a number of policies to get better results for the pesos spent on social needs. This is particularly important in the current context of tightening budget

3. Public social spending in Mexico, defined as the Social Development (Desarrollo Social) budget category, accounted for around 44% of total government spending and around 69% of programmable spending in 2006. The main item within this budget category is social security (9% of total), consisting mainly of retirement pensions, which is left out of the present study as it is not directly related to outcomes.

constraints with oil and non-oil revenues likely to decline sharply in 2009 and remaining low in 2010, as growth is set to be negative in 2009 with only a tepid recovery in 2010.

Health spending

The structure of the Mexican health system

6. The Mexican health care system is fragmented into numerous, unconnected providers. The various social security institutes (such as IMSS, ISSSTE and PEMEX) cover about 40% of the population, while the "popular health insurance" scheme (*Seguro Popular*) introduced in 2004 and run by the Ministry of Health (MoH) account for another 25%.[4] The *Seguro Popular* works through decentralised state health services (SHS), which also provide health services to the uninsured population against an income-related user fee (see Box 1). Horizontal integration between the different schemes is weak. Affiliates to one scheme cannot, in general, access services provided through the others, and regulation, financing and provision functions are vertically integrated within each scheme (Table 1). In addition, there are several non-contributory schemes (such as IMSS-Oportunidades and the health component of Oportunidades) that cater to the uninsured population, as well as private insurers and providers.

Box 1. Seguro Popular

Objectives

- Reduce the incidence of catastrophic health expenditure.[1]
- Universal health insurance coverage by 2010, which was recently extended to 2011.

Means

- Basic health insurance package, which covers 266 interventions including primary care and general hospital care (2009 data) and is managed at the state level.
- Fund for Protection against Catastrophic Expenditures (FPGC), which covers 49 high-cost tertiary care interventions (2009 data) and is managed at the federal level to pool risks.
- Health Insurance for a New Generation (since 2007), which covers 116 interventions for newborn children (2009 data) that are not covered by the basic packages of social security or *Seguro Popular.*
- The Strategy for a Healthy Pregnancy covers 14 interventions for pregnant women (2009 data).

Financing

- Central government contribution (0.6% of GDP): fixed premium per family (*Social Quota*) which is equivalent to the one payed to IMSS and ISSSTE plus adjustment for health risks and needs (*Federal Solidarity Contribution*). The *Federal Solidarity Contribution* is compared to the amount the state receives as an earmarked grant for health services and additional resources are only disbursed if the *Federal Solidarity Contribution* is larger than the current earmarked grant.
- State contribution (*State Solidarity Contribution*): half the annual *Social Quota.*
- Family contribution. Fixed proportion of income capped at 5% of income. Lowest two income deciles are exempted.

1. A household faces catastrophic health expenditure when the share of out-of-pocket health expenditure in disposable income exceeds a critical threshold, usually 30%.

4. Using Ministry of Health (MoH) definition of covered population. See OECD (2005, p. 32) for a discussion of different definitions. *Source:* MoH submission.

7. Financing of the various schemes is complicated and out-of-pocket spending as a share of total spending is the highest in the OECD.[5] The private insurers are fully financed through affiliates' fees, while the social security schemes rely on a combination of employer and employee contributions and a transfer from the federal government budget.[6] The *Seguro Popular* is financed through federal and state subsidies and a small income-related family fee. Part of the uninsured population has access to a programme providing health care services free of charge in remote areas that are without access to other health care facilities (IMSS-Oportunidades). Most of the uninsured resort to state health facilities against payment of income-related user fees and pay out-of-pocket for services and pharmaceutical drugs in the private sector.

Table 1. The Mexican health care system

Functions	Private insurers	Social security institutes			Seguro Popular	Uninsured	
Regulation (standards, quality)	Commercial enterprises	IMSS	ISSSTE	Others (PEMEX, Navy, SEMAR, other public)	MoH, SHS	IMSS-Oportunidades	MoH, SHS
Financing (contributions, fee for service)							
Provision							
Percentage of population	2%	32%	6%	2%	25%	10%	23%

Note: All figures except *Seguro Popular* and IMSS-Oportunidades are estimated using the coverage rates reported in the 2005 Population Census and population projections for 2007. The *Seguro Popular* coverage rate is calculated using total population covered by March 2009 and the IMSS-Oportunidades estimates refer to figures submitted to the MoH by IMSS-Oportunidades in 2007. Coverage differs depending on whether census data or administrative data are used. According to administrative data 48% of the population is insured at IMSS and 10% at ISSSTE.

Source: MoH submission.

Efficiency frontier analysis

8. The efficiency of health spending can be analysed by comparing the distance of health outcomes from an efficiency frontier. The frontier is obtained through Data Envelopment Analysis (DEA) that relates monetary and non-monetary inputs into the health system to health indicators (for details see Box 2. and Annex 1.A1). Following Joumard *et al*. (2008) outcomes of the health system are proxied by life expectancy at birth. Total health spending *per capita*, GDP *per capita*, and fruit and vegetable consumption *per capita* are used as input variables. Deviations from the estimated efficiency frontier indicate inefficiencies.

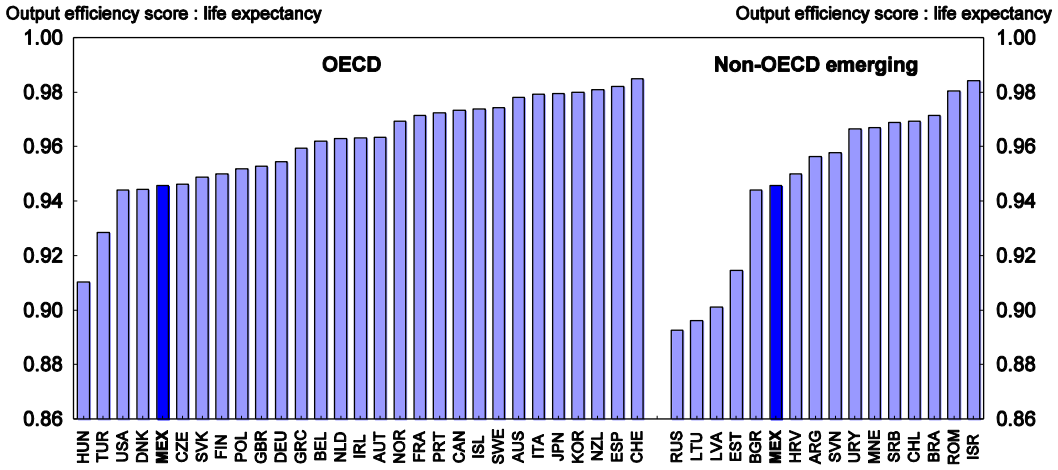
9. Mexico is among the least efficient within the OECD on the indicator of life expectancy at birth and about average among emerging markets (Figure 4). Although it is relatively far from the OECD frontier, it scores better than Poland and the Slovak Republic, at similar income levels, and better than some of the higher income OECD members – Denmark and the United States. Among non-OECD

5. At over 50% of total health expenditure, Mexico had the highest share of out-of-pocket payments in the OECD in 2005 (OECD, 2008a). This may be partly due to the poor availability of pharmaceutical drugs in the federal and state health services, obliging the uninsured population to purchase drugs in private pharmacies.

6. Social security contributions are fully deductible from income taxes, both for employers and employees. Social security contributions are split between *i)* a federal contribution equal to 13.9% of the inflation adjusted minimum wage in the federal district in 1997, *ii)* a flat employer contribution equal to 20.4% of the minimum wage, and *iii)* an income related contribution equal to 1.5% of workers' wages above three times the minimum wage. While employees earning less than three times the minimum wage are exempt from social security contributions, employers always pay the flat rate contribution.

emerging markets Mexico's efficiency score is about average but it falls behind Argentina, Brazil and Chile. Although quantitative measures of potential efficiency gains have to be taken with a grain of salt due to potentially omitted determinants of health outcomes, the DEA suggests large potential gains for Mexico from improved efficiency. Life expectancy at birth could be increased by over 4 years at the current level of health care spending if resources were spent more efficiently.

Figure 4. Efficiency of the health system



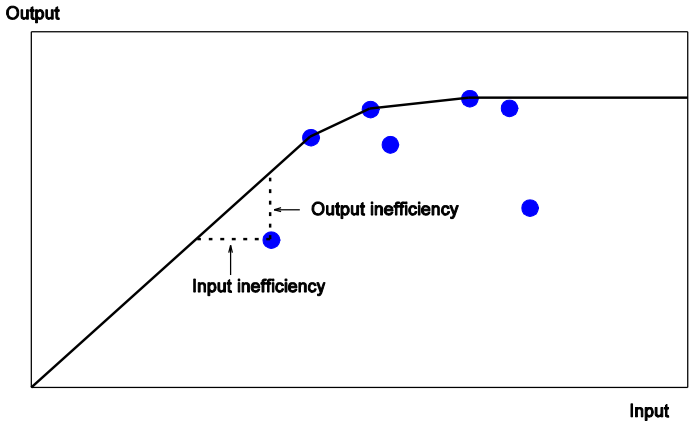
Source: World Bank, World Development Indicators database; FAO, Faostat database.

Box 2. Measuring efficiency of social spending

The analysis conducted for this chapter estimates an efficiency frontier that relates outcomes of the health and education system to monetary and non-monetary inputs through Data Envelopment Analysis (DEA). The method uses linear programming techniques to construct a frontier from the most efficient observations, which "envelop" the less efficient ones (Figure 5).

Figure 5. Efficiency frontiers

Non-increasing returns to scale



Source: Sutherland et al. (2007).

The method distinguishes between input and output efficiency, and technical and allocative efficiency. Input efficiency requires the use of a minimum bundle of inputs to produce a given output, while output efficiency requires the maximum amount of output from a given bundle of inputs. Allocative efficiency is more relevant than technical efficiency as it requires cost minimisation or benefit maximisation.[1] This section uses output efficiency in the allocative sense to measure efficiency of social spending in Mexico. This is the appropriate concept for the Mexican case in that, rather than minimising costs at the current level of health and education outcomes, the objective of the Mexican authorities is to reduce the gap in outcomes with the other OECD countries at the current level of costs. Technical efficiency allows conclusions on the efficient use of physical health inputs to be drawn but not on the efficiency of spending.

While the DEA analysis provides a neat summary measure of efficiency of spending, it has a number of drawbacks that have to be addressed in its practical implementation.

- **Sensitivity to outliers.** A country that has an atypical combination of inputs and outputs is likely to be classified as efficient because there are no appropriate comparator countries in the sample. The efficiency analysis in this chapter therefore includes 15 non-OECD emerging countries for which data are available in addition to OECD members.
- **Sensitivity to small samples.** If the sample is small, the efficiency level is likely to be overestimated because the most efficient country is likely to be excluded from the sample. The efficiency scores reported in this chapter are therefore corrected for small sample bias through a statistical procedure (see Annex 1.A1).
- **Sensitivity to the number of included inputs and the form of the efficiency frontier.** Only a limited number of inputs can be included in the estimation and an assumption on economies of scale in production has to be made. The efficiency scores reported in this chapter are robust to various sensitivity checks on included inputs and economies of scale. On grounds of economic plausibility, only efficiency scores using the assumption of non-increasing returns to scale are reported.

1. Note that a country may be technically efficient but may not be minimising costs.

Sources of inefficiencies

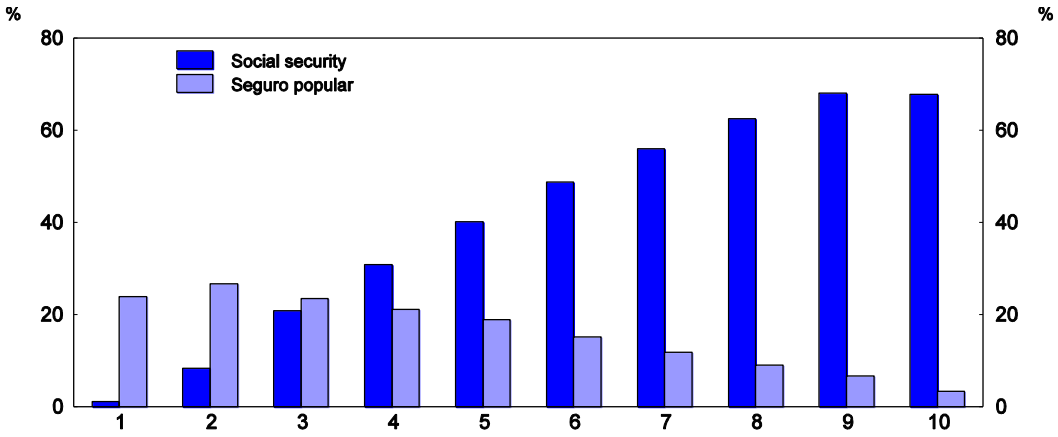
10. The low efficiency of health spending in Mexico reflects a number of structural factors. Compared to better performers, Mexico stands out with low health insurance coverage of the population - around one third of Mexicans are not covered. Along with the United States it is the only OECD country that does not have universal health insurance.[7] Insurance status is closely related to health outcomes as the uninsured are less likely to receive appropriate preventive care, which often leads to less successful and more costly treatment when sick (Docteur and Oxley, 2003). For instance, cancers among the uninsured are more likely to be diagnosed at later stages, when treatment is less successful and more costly. The uninsured are also less likely to receive timely care for chronic conditions which may lead to further deterioration in their health and more costly interventions. For instance, uninsured individuals are less likely to receive drug therapy for high blood pressure, resulting eventually in a more costly heart condition.

11. Another important source of inefficiency is the high fragmentation of the system. Several social security institutes, private insurers, federal and state health services each have their own vertically integrated service providers with no access to each others' services. This has resulted in a costly duplication of health administration and infrastructure, curtailment of patient choice and lack of competition between providers. Chile, for instance, where the functions of insurer and provider of care have been split, spends less on health care *per capita* than Mexico but has a higher life expectancy at birth and a lower child mortality rate.

7. Turkey has passed legislation on mandatory universal health insurance in 2008.

Figure 6. Health insurance coverage by income decile

2006



Source: ENIGH Household Income Survey 2006.

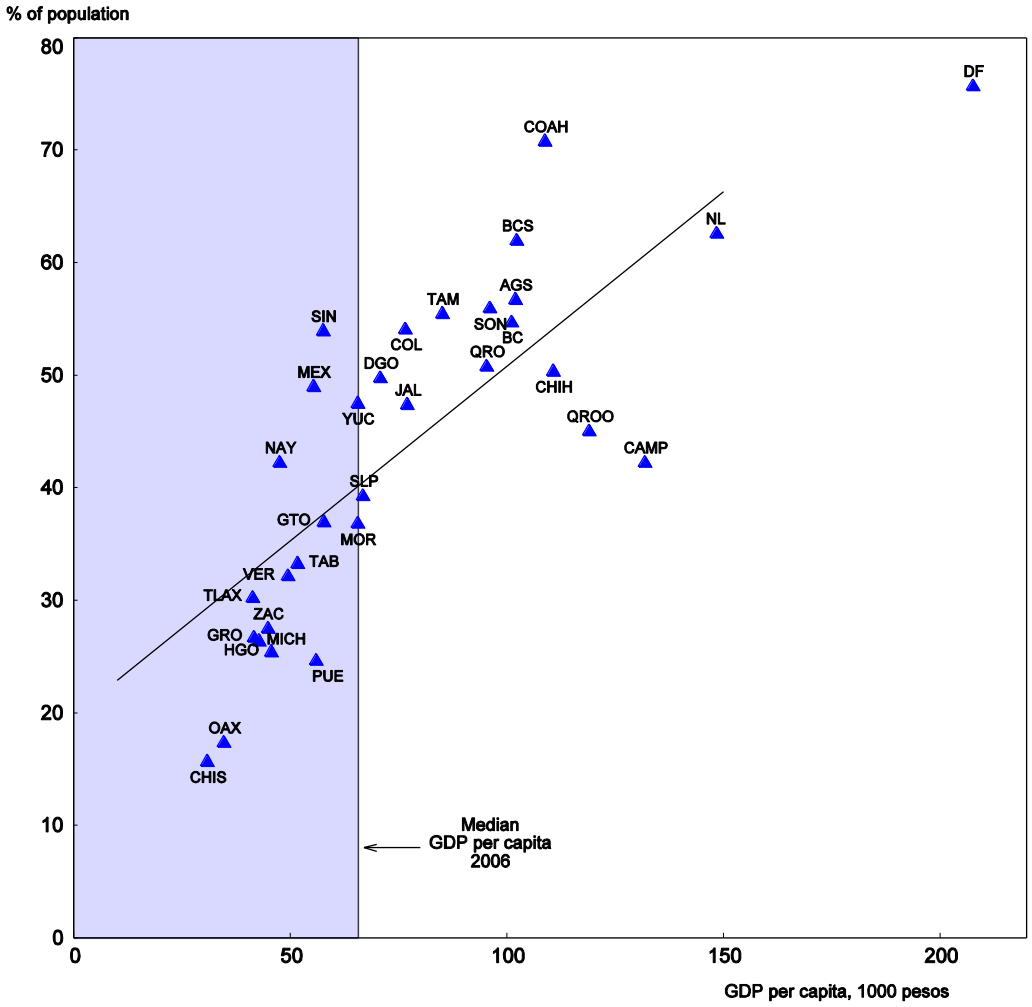
12. The weak outcomes are also affected by the bias in coverage against the lower income groups. In 2006 only about 20% of the poorest income group (lowest decile) were insured compared to about 70% in the highest deciles (Figure 6).[8] Only salaried workers in the formal sector have access to health insurance through the social security institutes, whereas low-income non-salaried workers or workers in the informal sector are either uninsured or have access to the voluntary health insurance scheme (*Seguro Popular)*. The introduction of *Seguro Popular* in 2004 improved coverage and reduced regressivity. However, as its enrolment is still only about a third of that of the social security institutes, overall coverage remains higher for the richer part of the population. Given that health insurance status is positively associated with health outcomes (Hadley, 2003), increasing insurance coverage among the lower income groups would have a large pay-off in terms of overall population health outcomes.

13. The weak outcomes may also reflect lower insurance coverage and spending *per capita* in states with lower incomes. The bias in total public *per capita* spending is partly due to higher social security coverage in the richer federal states (Figure 7) and partly to the lower own resources allocated to health care in the poorer states that have lower tax collection capacities. The earmarked federal transfer to the states (the *Fondo de Aportaciones para los Servicios de Salud*, FASSA) used to be regressive before the introduction of *Seguro Popular*. Currently there are no clear distributional effects, mainly because the transfer now depends on the number of families enrolled in *Seguro Popular*. The fact that intensity of resource use is higher in the states with scarce resources suggests that there may be excess demand and rationing of patients in some states and oversupply in others (Figure 8). This could be addressed by better linking public spending on health to states' needs.

8. The difference in coverage of Seguro Popular in the MoH calculations in Table 3.1. and Figure 3.6. is mainly due to the strong growth in affiliation of SP between 2006 and 2008.

Figure 7. Social security coverage by state

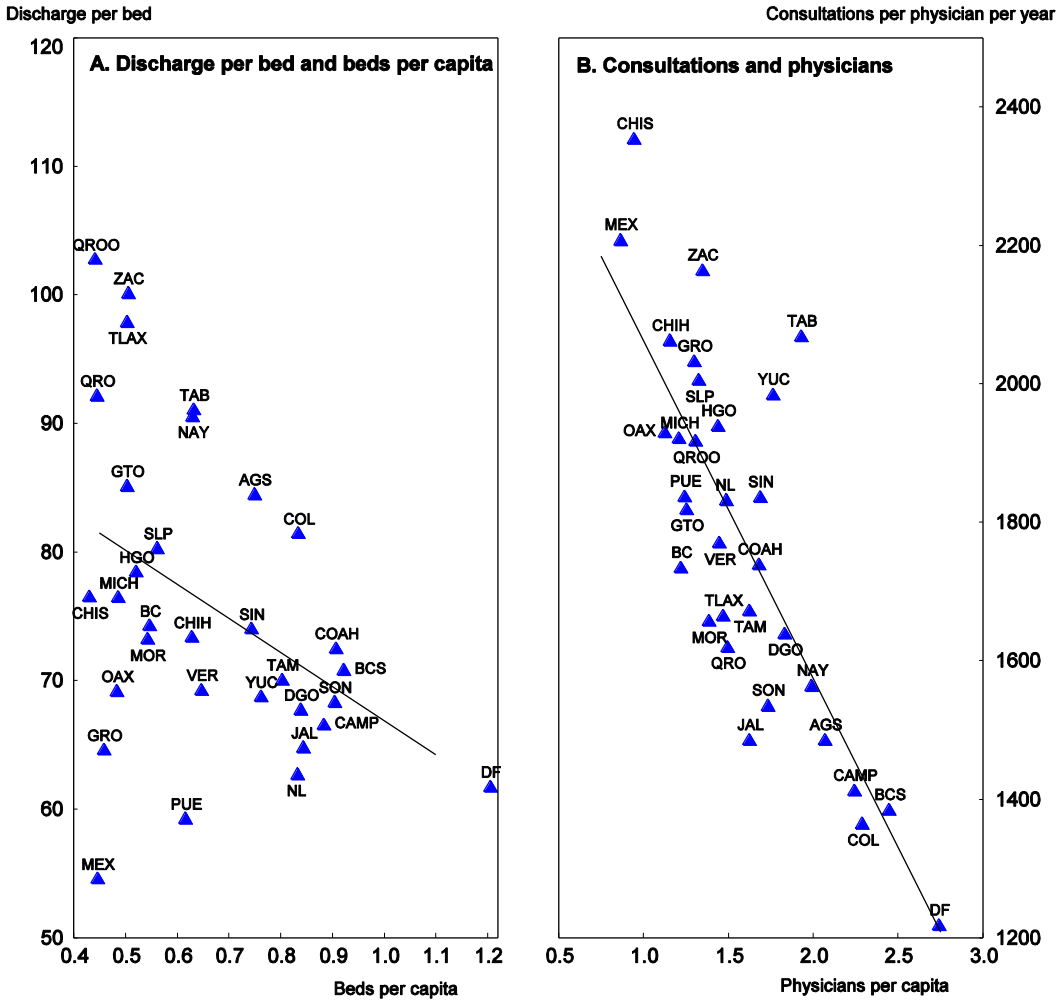
2006



Source: OECD, National Accounts and Analytical database; Ministry of Health, Boletín de Informaciòn Estadística.

Figure 8. Health consumption by state

2006

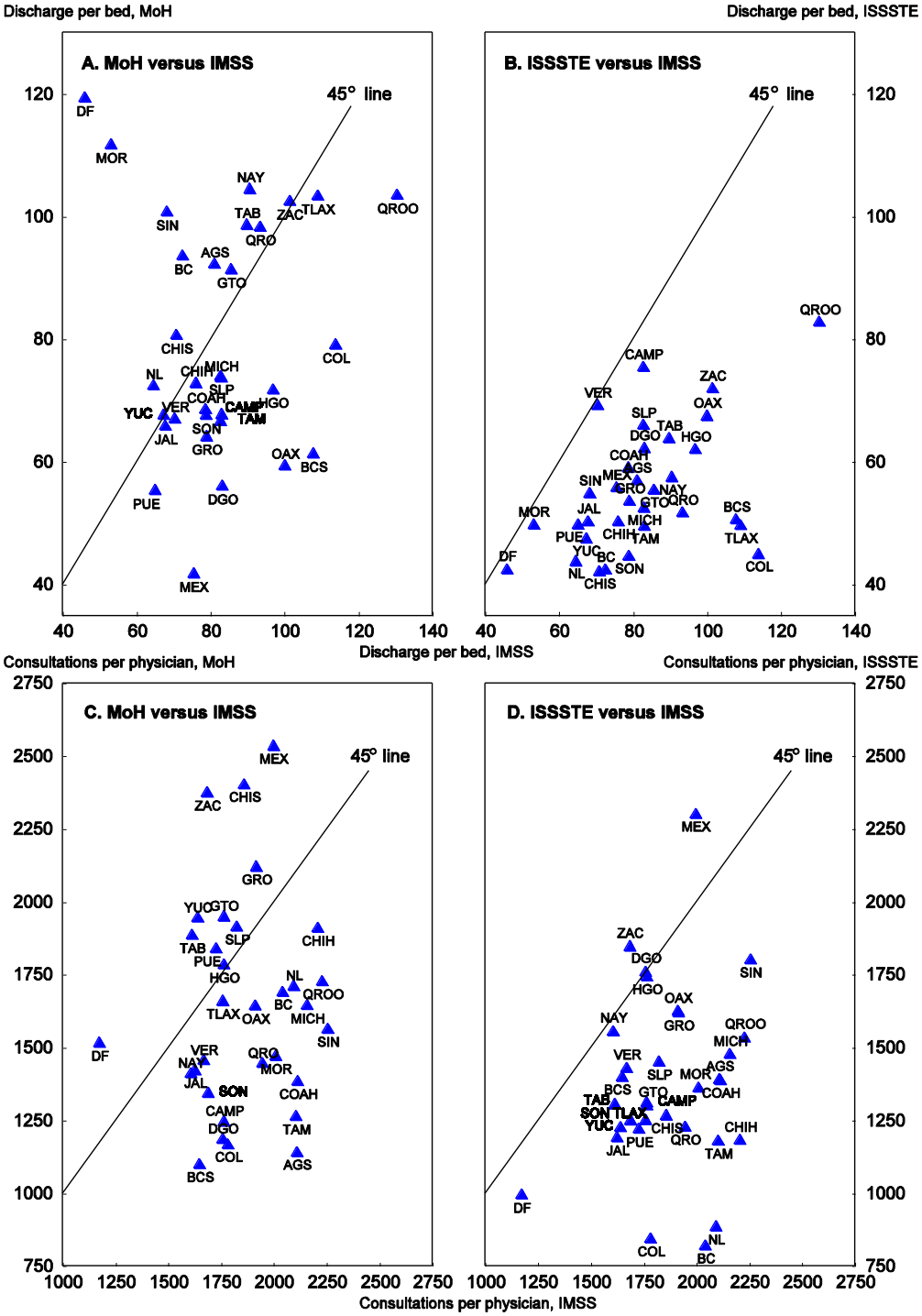


Source: Ministry of Health, Boletín de Informaciòn Estadística.

14. The fragmentation of the health system into several unconnected networks has led to under- or overuse of facilities. There may be excess supply of care provision in one network and excess demand in another. On the supply side, this results in inefficiencies due to the non-equalisation of marginal costs. On the demand side, inefficiencies arise from implicit rationing of patients in the over-utilised scheme. For example, utilisation rates of MoH and ISSSTE facilities compared to those of IMSS at the state level are very different. In the federal district (mainly Mexico City, DF) discharges per hospital bed in the MoH network are around three times the rate in IMSS (Figure 9). This suggests that in the federal district there may be rationing at MoH facilities while those of IMSS may be under-utilised. If MoH patients had access to IMSS facilities overall costs could be reduced by shifting patients to the lowest marginal cost providers, and patients' satisfaction improved by reducing implicit rationing. While there is no general pattern of utilisation rates across MoH and IMSS resources, ISSSTE services appear to be generally underutilised - they are below those of IMSS in most states (Figure 9).

Figure 9. Health consumption by state and network

2006



Source: Ministry of Health, Boletín de Informaciòn Estadística.

15. The fragmentation of the Mexican health system also reduces efficiency by increasing administrative costs. The existence of several vertically integrated insurer-providers leads to the duplication of administrative structures and precludes taking advantage of economies of scale in

administration. Comparing administrative costs across countries is difficult and quantitative estimates have to be interpreted with caution. However, according to available data, the Mexican health system has the highest relative administrative costs in the OECD (Figure 10). To reduce administrative costs in health systems with multiple insurers, other OECD countries have introduced centralised claims management systems. In Turkey, for instance, a reform in 2007 established a centralised claims management system for the existing contributory and non-contributory insurance schemes (OECD, 2009). All providers in Turkey are required to submit claims through this system, which leads to economies of scale in administration and, through standardisation, reduces the administrative burden to both providers and insurers. The introduction of a centralised claims management system would, of course, only make sense if all providers could sell services to all insurers, which, as in Turkey, requires an insurer-provider split (see Box 3. on the Turkish reform).[9]

Box 3. Health reform in Turkey

Pre-reform situation

Before the reform initiated in 2003 the Turkish health system was highly fragmented, both in insurance and in provision. Three separate social security institutes for formal sector workers with differing benefits packages co-existed, with the main social security institute for blue and white-collar workers (SSK) acting both as an insurer and as a provider. Additionally, a programme introduced in 1992 for the poor that were incapable of paying for health services was managed by the Ministry of Health (Green Card). Nevertheless, in 2003 only around 85% of the population was covered by some type of health insurance.

Objectives of the 2003 reform (Health Transformation Programme)

The main objectives of the Health Transformation Programme were *i)* to establish universal health insurance by making health insurance mandatory and *ii)* to split insurance and provision functions. Health insurance would be fully subsidised for the poorest parts of the population. The three social security institutes and the Green Card would be merged into a single payer, that would provide the insurance function and contract with both private and public providers.

Current status of the reform

The Social Security and Universal Health Insurance Law was operationalised in October 2008 and health insurance is now mandatory for all Turkish citizens. Premium rates have been set at 12.5% of salaries. Contributions are fully subsidised for poor households and reduced rates apply for non-poor households who were previously holding a Green Card. SSK has given up its provision functions to the Ministry of Health but the Ministry still acts as both insurer (through the management of the Green Card programme) and provider. A unified claims management system has been introduced as a first step towards merging the three social security institutes and the Green Card programme. All providers have to process their claims through this system.

16. Decentralisation contributes to inefficiencies by further fragmenting the Mexican health care system. Health care provision by the MoH was decentralised to the states in two waves in the 1980s and the 1990s. In this system the central government would only set the overall policy framework (objectives, the regulatory framework, coordination and evaluation) while state authorities organise and operate health care services**.** The aim was to reduce bureaucratic and highly centralised decision making, which was perceived to be the source of a mismatch between resources and needs. This reform was also expected to improve coordination between providers that serve the uninsured population. However, it has not led to efficiency gains (OECD, 2005) as the MoH tends to have weak regulatory and supervisory powers. There is also lack of coordination between the federal and the state levels, and marked differences in financial

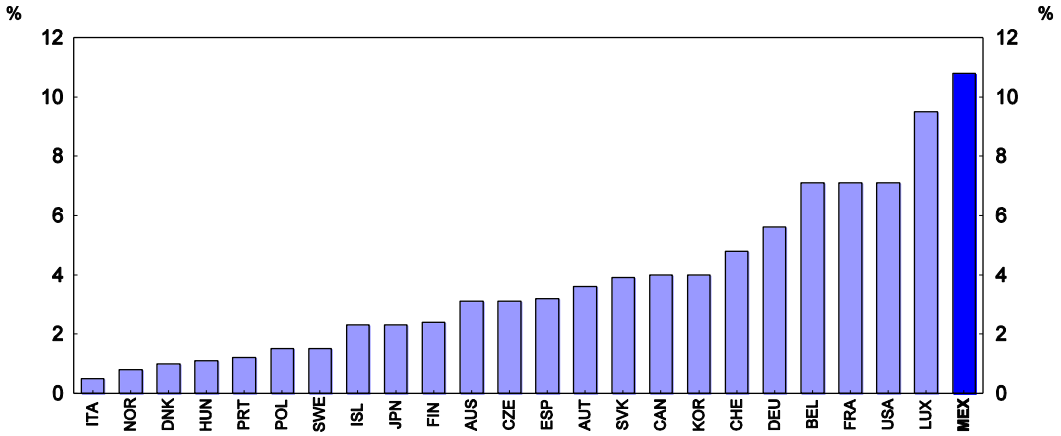
9. In systems without an insurer-provider split, there is generally only one vertically integrated insurer-provider to keep administration costs in check. This type of system is in place in the Nordic countries, Australia, Italy, Greece and Portugal, for instance.

resources and management capacities across federal states. The historically-based federal transfers to the states have only recently been reformed, and many states still lack information and management systems for output-based management of their health care facilities. Moreover, the states' autonomy in organising and operating health care services is constrained by the centrally negotiated collective labour contract for health care employees, which limits the funds for non-wage uses. Coordination between IMSS, IMSS-Oportunidades and MoH providers has improved but remains weak, reducing potential efficiency gains.

17. Compared to best practice countries, the use of block grants to reimburse providers in Mexico can be another source of inefficiencies.[10] Providers are reimbursed based on block grants with no clear link between service provision and financing. Some OECD countries have introduced payments for providers using prospective or pre-negotiated fee-for-service arrangements as a way to improve efficiency (Docteur and Oxley, 2003). This requires a clear split between insurers and providers, with insurers focusing on collecting premiums and purchasing services and providers focusing on providing quality services at minimum cost.

Figure 10. Administrative costs

As a percentage of total health care spending, 2005

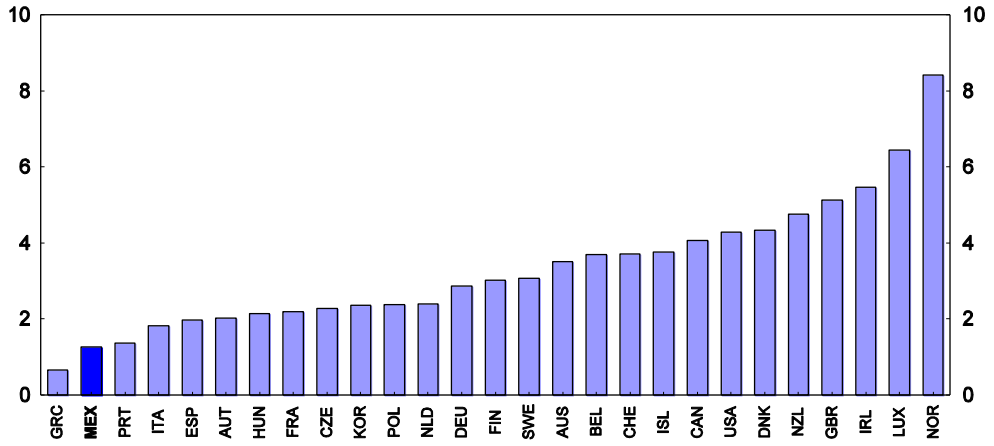


Source: OECD, OECD Health Data 2008.

18. The input-mix can be another source of inefficiencies in the Mexican health care system. As costs of health care services may not be comparable internationally, costs efficiencies are often analyzed with input mix indicators. The low nurses-to-physicians ratio suggests that there is little pressure on hospitals to explore more cost-efficient input mixes (Figure 11). Since Mexico has a large number of nurses who are currently not practising in the health sector (Nigenda *et al.*, 2003) this may not reflect a supply constraint.

10. An exception are IMSS hospitals. However, only spending on material inputs, which correspond to less than 10% of total spending, is financed through prospective payment arrangements.

Figure 11. Ratio of nurses to physicians



Source: OECD, OECD Health Data 2008.

19. Finally, the multitude of programmes targeted at the currently uninsured may lead to targeting errors and inefficiencies. Around one third of IMSS-Oportunidades users, a non-contributory scheme for the poor run by the main social security institute, are also insured by the main social security provider (IMSS).[11] There is also some overlap between IMSS and *Seguro Popular*, which results in higher fiscal costs through the double payment of the subsidy per enrollee both insurers receive from the federal government.

Recent reforms

20. Several reforms have aimed to improve efficiency in the Mexican health system. The last major reform was the introduction of the System for Social Protection in Health (*Sistema de Protección Social en Salud*, SPSS) in 2004, which was a continuation of earlier reform efforts in 1995-97. The main longer-term objectives of the reforms have included policies to address many of the problems identified above: achieving more horizontal integration between the various insurance schemes, expanding coverage of the currently uninsured population, separating insurance and provider functions, and achieving more equity in financing (Frenk *et al.*, 2006), and strengthening the oversight role of the federal MoH.

21. Despite reforms, public spending on health remains regressive.[12] The correlation between health care spending *per capita* and GDP *per capita* at the state level has become slightly less regressive between

11. IMSS-Oportunidades does not have a roster of covered individuals which would preclude this type of targeting errors.

12. The 2004 reform aims at increasing health care funds available to poorer states by providing additional federal funds through a subsidy to the states for every family affiliated to SP (Social Quota, SQ). Additionally, the federal transfer may be topped up by a Federal Solidarity Contribution (FSC) that takes into account, among others, the health risks and needs of the federal states. The SQ and the FSC are progressive, in the sense that new federal funds are mostly channelled to the poorer federal states. Moreover, federal states are required to contribute a minimum amount per affiliated family from own resources to health care (State Solidarity Fund). Since richer states, in general, already contribute more to health care than the required amount, this increases public spending on health care mostly in the poorer federal states.

2003 (the year before the reform) and the latest available year (2007) (Figure 12).[13] While a 10% positive deviation of GDP *per capita* from the average was associated with 5.9% *per capita* supplementary spending on health care before the reform, it is still associated with 5.3%. The small size of these figures suggests that there remains considerable room for making spending more equitable, notably through efforts to increase affiliation rates to *Seguro Popular* in the poorer states.

22. The *Seguro Popular*, the main pillar of the 2004 reform, aims at achieving universal coverage by 2011 through voluntary enrolment. It also aims at reducing the existing segmentation of the system by letting the *Seguro Popular* contract services from the SHS, the social security institutes or private providers, although in practice most of the services are still contracted from the SHS. The oversight role of the MoH is strengthened through certification requirements for providers, new infrastructure and through an expansion of its competencies in evaluation and assessment. The reform further aims at reducing the regressivity of the earmarked grants to the states and better linking resource allocation and needs. This is achieved by the new *Social Quota* and *Federal Solidarity Contribution* funds that are currently mainly distributed according to the number of families affiliated to *Seguro Popular*. Finally, funding for health-related public goods, such as oversight, evaluation, research or community health services, is separated from funding for personal health services. The aim is to prevent public health activities from being neglected or under-financed during the reform process.

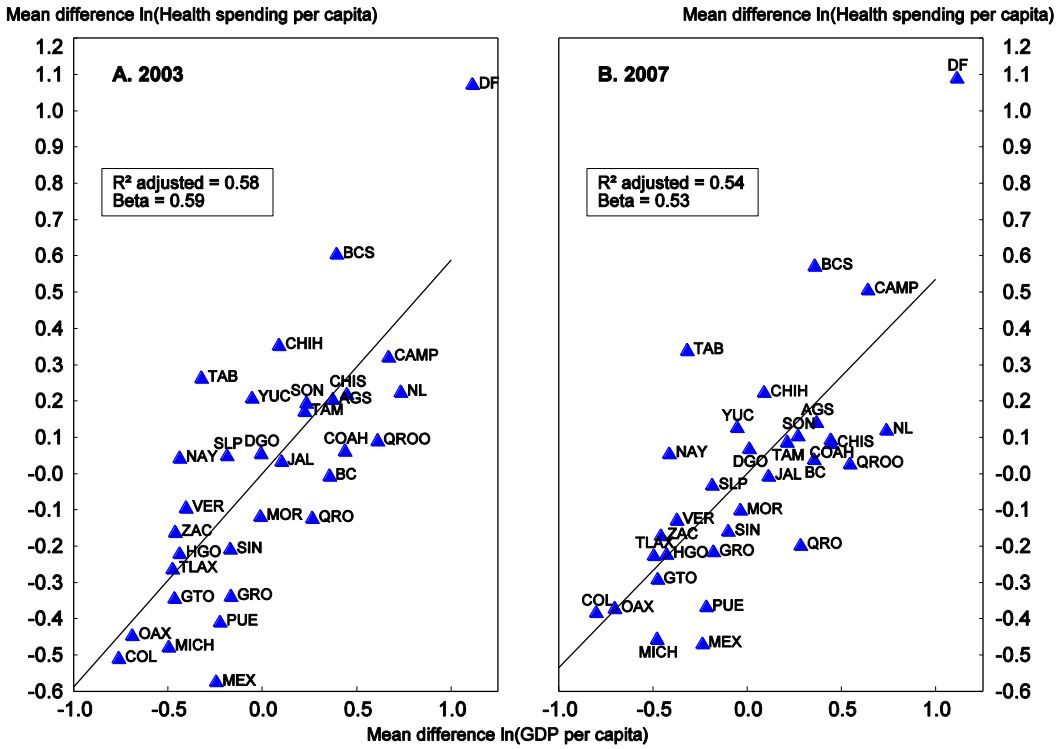
23. The *Seguro Popular* has been successful in increasing coverage and improving the composition of spending. Health insurance coverage has increased from around 40% in 2004 to around 65% of the population in 2008, with the *Seguro Popular* now covering more than 25%.[14] This should gradually improve health indicators. In view of the above analysis, channeling new funds to insure the uninsured population who may delay treatment in case of an ailment, which increases future costs of curative care, should be an efficient way of allocating health care spending. Since 2001 there has also been an important shift in the composition of spending away from personnel towards operations (mainly pharmaceutical drugs) and investment, and spending on prevention has been stepped up substantially.

24. The *Seguro Popular* has been ineffective in reducing fragmentation, but recent policies are going in the right direction. A recently launched programme, for instance, allows pregnant women to use any healthcare facility regardless of their insurance and a master plan for health infrastructure is being developed under which newly built healthcare facilities will be shared by the different insurers, as needed. IMSS and *Seguro Popular* are estimating costs of providing services in order to be able to bill each other and have teamed up with ISSSTE to negotiate prices on patented drugs with pharmaceutical companies for the first time in 2008. Nevertheless, progress in reducing fragmentation has been slow. The *Seguro Popular* still contracts most of its services from the SHS and the social security institutes grant the *Seguro Popular* only very limited access to their health facilities.

13. The results are obtained from a state-level regression of health spending per capita on GDP per capita. All variables are mean-differenced to purge the data from differences in average GDP per capita levels and average health spending per capita.

14. According to the MoH, by the end of 2008 the SP was covering around 27 million Mexicans.

Figure 12. Public health spending by state



Source: Ministry of Health, Boletín de Informaciòn Estadística.

25. Problems with the implementation of the *Seguro Popular* suggest that its targets may not be met as envisaged, and that the potential for improving outcomes may not be realised. A report of the Auditor General (Auditoría, 2007) noted that the *Seguro Popular* does not systematically monitor performance on catastrophic health expenditure. The problem has been partly addressed. A 2008 evaluation found that catastrophic health expenditure appeared to be lower for *Seguro Popular* enrollees than for the uninsured (INS, 2008). But as it is not clear from the report whether a causal interpretation of the figures can actually be made, further evaluation seems warranted.[15] Secondly, the Auditor General points out that the *Seguro Popular* is unlikely to achieve universal coverage by it original target date of 2010, mainly because the MoH may have underestimated the demographic growth of the target population. It is currently estimated to be around 12.6 million families in 2010, but Auditoría (2007) thinks it will grow to 14 million. Thus even if the MoH target is met, 1.4 million families (around 5% of the population) would remain without health insurance coverage. More generally, there appears to be a high degree of uncertainty about the exact size of *Seguro Popular's* target population because a centralised roster of individuals covered by any of the various insurers has not been set up. Finally, the report points out that the increases in the number of interventions included in the basic insurance package of *Seguro Popular* have led to a deficit of 12 billion

15. Figures differ across surveys used for the evaluation. According to the SP impact survey (Encuesta de Impacto del Seguro Popular), the difference between the two groups is 2.2 percentage points, but only 3.5 according to the National Survey of Health and Nutrition (ENSANUT). The National Survey of Household Income and Expenditure (ENIGH) shows no significant difference between the two groups. While the study controls for individual characteristics of SP enrollees and the uninsured, and attempts at correcting for self-selection into SP, there are not enough details to judge the validity of the statistical procedures and results.

pesos in 2005 as income only covered around 60% of costs.[16] If this trend continues, implementation may be confronted with budgetary problems, which may be further aggravated by the states' practice of waiving the family contribution for those that are not in the two lowest income deciles (Gakidou *et al.*, 2006).

26. The social security institutes haves voiced concerns that the introduction of the *Seguro Popular* may lead to a deterioration of their risk pools (IMSS, 2008). If younger and healthier individuals prefer the less comprehensive but cheaper *Seguro Popular* package, older and less healthy individuals may select into the higher-cost social security because of its more comprehensive health care package. To date, there is no empirical evidence to back this hypothesis, and its practical relevance may be limited by the fact that the *Seguro Popular* and the social security packages are not directly comparable due to additional benefits in the latter.

27. A potentially more serious risk to the success of the *Seguro Popular* in achieving universal coverage is voluntary enrolment. OECD countries that have recently adopted universal health insurance have made it mandatory to avoid adverse selection issues. In a voluntary scheme, such as *Seguro Popular*, the healthiest individuals may not take up insurance in order to save on insurance premia. This is not an issue for those in the two lowest income deciles since they are exempted from paying the premia. However, adverse selection may affect the higher income deciles and could, through a deterioration of the programme's risk pool, eventually undermine its financial sustainability. To date no empirical evidence is available on the health characteristics of *Seguro Popular* affiliates as compared to the uninsured population. An evaluation would be warranted to determine the existence and extent of adverse selection into *Seguro Popular* and to devise appropriate policy responses.

28. Some have raised concerns that the rise in the number of non-contributory social programmes in Mexico may undermine the financial sustainability of the social security institutes.[17] Employees and employers may have an incentive to shift employment from salaried employment in the formal sector to non-salaried employment in the informal sector to save on social security contributions. The family contribution to the *Seguro Popular* is significantly lower than the wage-based social security one. This could erode the tax base of the social security institutes. However, a simple inspection of the time series of IMSS enrollees does not indicate any clear changes since the introduction of the *Seguro Popular* (Figure 13) suggesting that there are other benefits of being part of the formal sector. The package of health care interventions of *Seguro Popular* is less comprehensive than the social security package, which also work-risk, disability and life insurance, retirement pensions, daycare centers, sports facilities and a housing fund. The increase in income from shifting to non-salaried employment could also be subject to income taxes, lowering the net benefit to the parties concerned. Since social security contributions are deductible from income taxes and non-salaried employment is in principle subject to income taxes, the after-tax increase in income is lower than the difference between social security contributions and the *Seguro Popular* family contribution. Finally, the fact that social security is both explicitly and implicitly subsidised but formal employment covers only 38% of the workforce (Levy, 2008) suggests that there may be other barriers to formal employment such as rigidities in the formal labour market.[18]

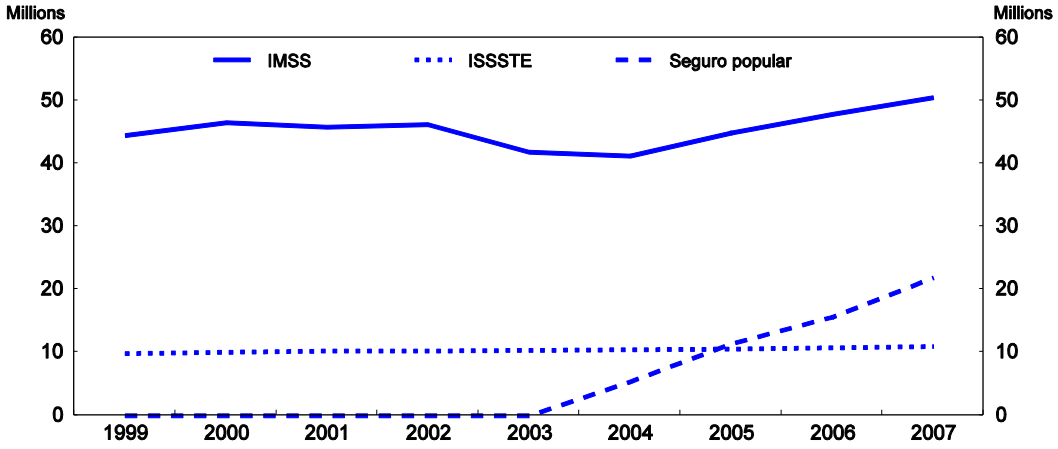
16. Auditoría (2007) expects the deficit to increase to 84 billion pesos by 2010, with the ratio of income to costs remaining at around 60%.

17. Formal employment is defined as salaried employment with registration at IMSS. Informal employment is defined as legal non-salaried employment (self-employment and workers remunerated through commissions) and illegal salaried employment, in the sense that employees receive a salary but are not registered with IMSS. Comisionistas are remunerated through commissions but do not receive a salary. In contrast to self-employed workers they do not own any productive assets and work for a firm.

18 Social security is explicitly subsidised through a federal transfer and implicitly subsidised through the deductibility of social security contributions from income taxes.

29. Although the impact of *Seguro Popular* on social security enrolment seems to be weak, at the margin 10-20% of workers tend to switch from the informal to the formal sector or vice versa every year (Levy 2008). For these marginal workers the trade-off between higher take-home wages and social security benefits may well matter. This could partly be addressed by not waiving the *Seguro Popular* insurance premia for non-poor households in contrast to current practice, which would make non-salaried employment in the informal sector financially less attractive to them.

Figure 13. Enrollees by network



Source: Ministry of Health.

What can be done to improve efficiency in the Mexican health system?

30. Efforts to achieve universal health insurance coverage through *Seguro Popular* should be continued. Apart from improving the overall efficiency of the health system with preventive and timely care, the *Seguro Popular* seeks to reduce inequality in health outcomes across socio-economic groups and federal states by channelling additional public funds to the poorest families without social security coverage and to the states where the needs are the greatest.

31. Discussions on making health insurance coverage *mandatory* should be initiated as soon as possible. Under mandatory health insurance all uninsured citizens would have to subscribe to a health insurance policy, either private or *Seguro Popular*. This would reduce adverse selection and ensure full coverage if potentially important enforcement problems can be overcome. In the longer term, the authorities should consider financing a higher share of public health spending through general taxation with the aim of reducing the duality in financing of the social security institutes mainly through payroll contributions and *Seguro Popular* mainly through general taxation.

32. The efficiency of the health system could also be improved by introducing a clear split between insurer and provision functions. Any insurer should be allowed to contract with any provider. This would reduce the cost of provision to the insurers who would have an incentive to choose the providers with the lowest cost, thereby encouraging providers themselves to become more efficient. With a split between insurers and providers, economies of scale in administration could be reaped by requiring all providers to submit claims through a centralised claims management system.

33. Further improvements in the efficiency of the health system could be achieved by improving the targeting of *Seguro Popular* and IMSS-Oportunidades. Health insurance through *Seguro Popular* should be fully subsidised for poor households but the requirement for non-poor households to pay their family contribution should be enforced. Overlap between IMSS and *Seguro Popular* should be eliminated by setting up a centralised roster of enrollees.

Efficiency of spending on primary and secondary education

The Mexican education system

34. The Mexican education system has three basic levels, as in most other OECD countries (Box 4). While the coverage of primary education is close to 100%, that for 15-year old students, at 64%, is low compared to peers (OECD, 2008b) despite schooling being compulsory until the age of 15. Education quality is another problem, as indicated by the poor PISA scores, which would likely be even lower if the low enrolment was accounted for. Higher education only reaches a small part of the population. Although the share of education spending in GDP is higher than the OECD average (6.5% against 5.8%), it is low in per student terms (adjusted for PPP). This partly reflects Mexico's age structure, which is younger than in most OECD countries (Figures 14 and 15). At the same time, the low PISA scores for those currently in schools suggest that resources could have been spent more efficiently. Improving quality and enlarging coverage are difficult tasks in an environment of tight budget constraints from declining oil revenues and competing social needs. This underlines the importance of improving efficiency of current spending on schools.

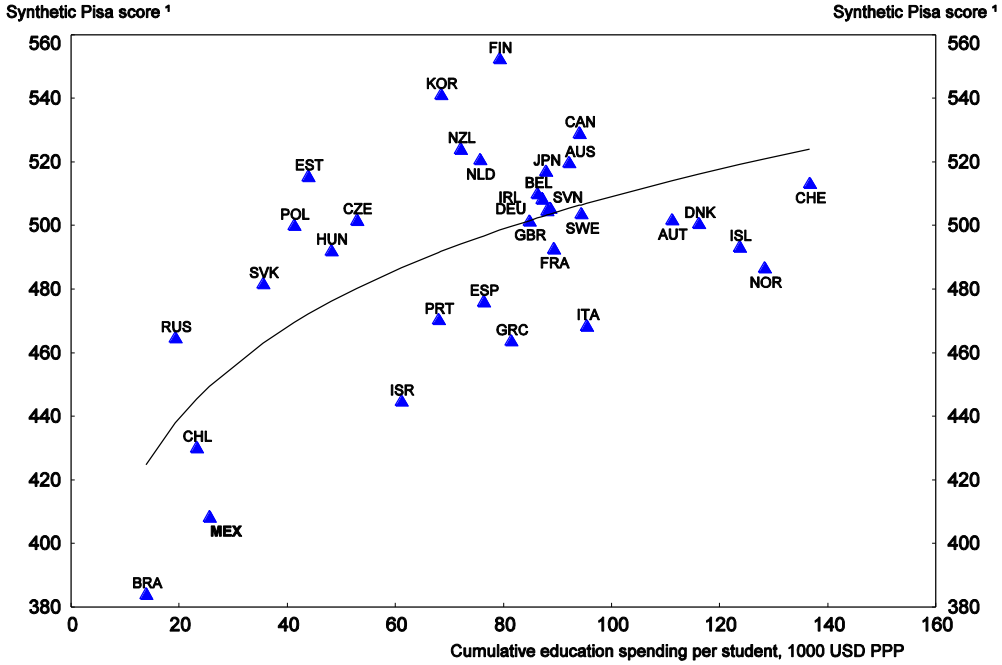
Box 4. The Mexican education system

The Mexican education system is structured into basic education (*educación básica*, pre-school, primary and lower secondary), upper secondary education (*educación media superior*) and higher education (*educación superior*). Children attend the three grades of pre-school between the ages of 3 and 5, the six grades of primary school between the age of 6 and 11, and the three grades of lower secondary education between the ages of 12-14. Regular schools are complemented by special community schools (around 10% of students enrolled in basic education) that cater to students in marginalised areas or those with large indigenous populations, the so-called *Telesecundaria* (around 20% of students enrolled in lower secondary education) that provides lower secondary learning via television in remote areas, and technical lower secondary education (*secundaria técnica*, around 25% of lower secondary students). School attendance is mandatory until the completion of lower secondary education. Upper secondary education lasts, in general, three years and includes a general or technical baccalaureate (*bacchillerato general* and *bachillerato tecnológico*) or vocational training (*profesional técnico*). After upper secondary education students can move on to undergraduate (3-6 years) and post-graduate (1-4 years) university studies. During the 2007-08 school year around 25 million students were enrolled in basic education, 4 million in upper secondary and 3 million in higher education (INEE, 2008). Public spending shares were, respectively, 66%, 14% and 20% (OECD, 2008b). Around 90% of students in primary and lower-secondary education go to public schools.

35. To assess the efficiency of education spending, this chapter focuses on secondary school coverage and quality of education, which are the main challenges in Mexico's education system. Covering the one third of children currently not completing lower-secondary education is an important challenge and together with improving education quality are likely to demand more resources. Part of these can be met by a more efficient use of existing outlays.

Figure 14. Pisa score and education spending per student

2007

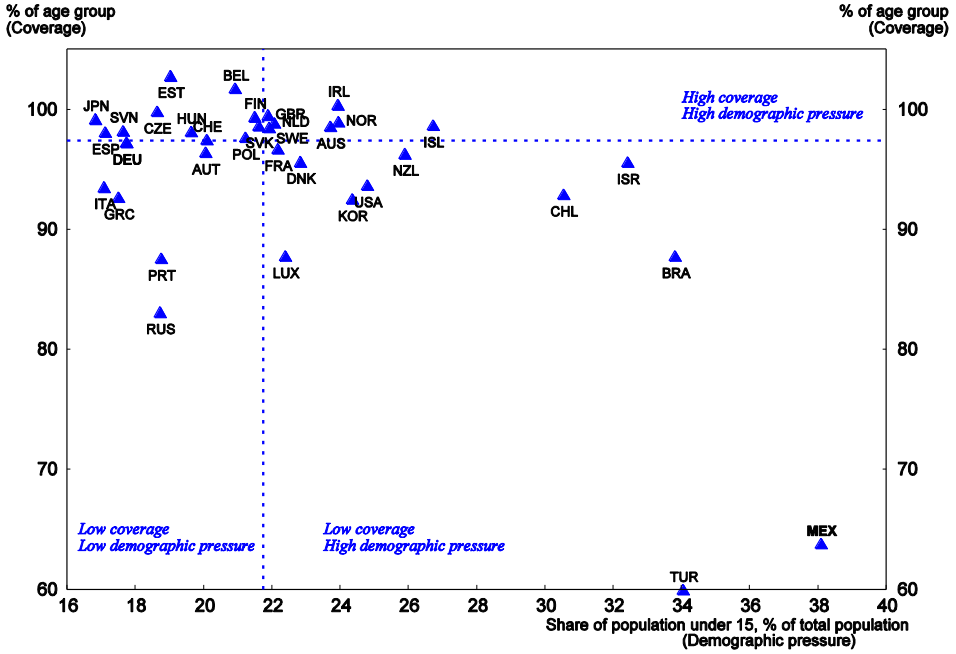


1. The synthetic PISA score combines the scores on the reading, mathematics and science scale through factor analysis.

Source: OECD, PISA Results 2006.

Figure 15. Secondary enrolment at age 15

2006

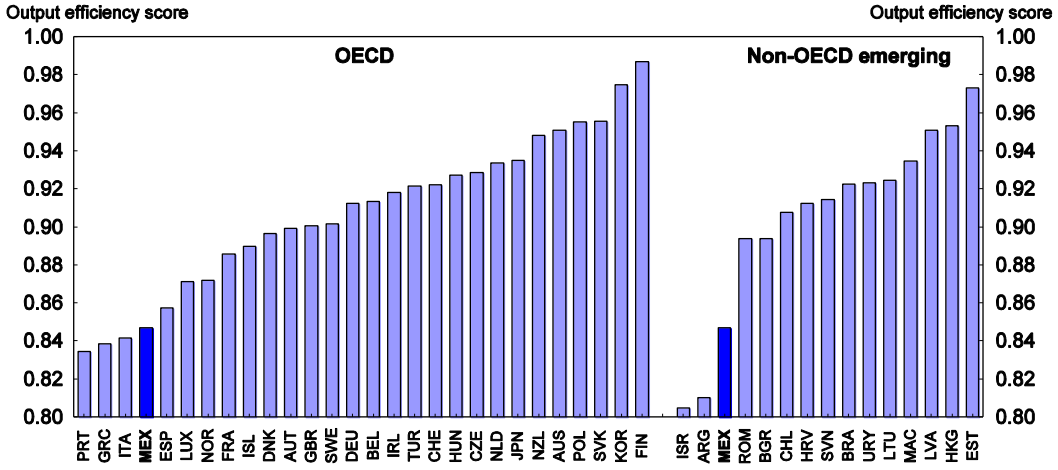


Source: OECD, Education database.

Efficiency frontier analysis

36. The results from the efficiency frontier analysis show that Mexico is one of the least efficient among both emerging and OECD countries in education spending (Figure 16). The outcome variable used in the analysis is a synthetic PISA score that combines the reading, mathematics and science scores through factor analysis. The input is education spending per student, and the PISA ESCS index is used as an environmental variable (Annex 1.A1 for details). Mexico has one of the lowest scores among OECD and non-OECD emerging markets and ranks between Argentina and Chile in Latin America. Subject to the usual caveats, the scores suggest that Mexico could increase its synthetic PISA score by 74 points at the current level of education spending if resources were spent efficiently.

Figure 16. Efficiency of education spending



Source: OECD, PISA Results 2006; World Bank, WDI database.

37. Mexico's PISA scores are also low across the different subject areas. The results on reading are about 80% of the OECD average with no improvement since the first PISA evaluation in 2000.[19] Progress has been better in maths and Mexico increased from 77% to 81% of the OECD average since 2003. On the science test, which was included for the first time in 2006, results are at around 82% of the OECD average. This means that Mexican students are on average 2-3 years behind the OECD average. The results also show that around half of Mexican students do not reach basic proficiency levels, against an OECD average of around a fifth.[20]

38. The Mexican PISA scores are also highly dispersed according to income levels. The share of the variation in PISA scores explained by the ESCS index is one of the highest in the OECD (OECD, 2007a). The importance of socio-economic background is also evidenced in PISA scores across states. The performance gap between the high-income federal district and some more advanced OECD economies,

19. There has been an improvement since the PISA 2003 evaluation, in which Mexico scored at 399 points on the reading scale.

20. PISA 2006 classifies students into six proficiency levels in the three subject areas (five for reading). Students below level 2 are only able to solve straightforward and familiar problems. According to OECD (2007a), students who score below level 2 on the science scale, for instance, do not "demonstrate the science competencies that will enable them to participate effectively and productively in life situations related to science and technology." In the three PISA subject areas around 50% of students score below level 2 against an OECD average of around 20%, 47% on the reading scale (OECD average: 20.1%), 56.5% on the mathematics scale (21.3%), 51% on the science scale (19.3%).

such as Greece, Italy or Portugal, is small, while it remains large for poorer federal states, such as Oaxaca or Chiapas. The main challenge in improving overall educational outcomes in Mexico is to provide equal learning opportunities for all students, which should help increase test scores for the large number of students from weak socio-economic backgrounds.

Sources of inefficiencies

39. The outcomes are influenced by an allocation of federal resources that does not take into account states' needs or performance. Federal transfers are based on cost shares that existed before the 1998 fiscal reform (Law on Fiscal Coordination), which has tended to favour some of the higher-income states (Joumard, 2005). However, needs for additional resources are generally higher in the poorer income states. According to SEP (2007), more than 150 students have to share one computer with internet access in low-income Chiapas, but less than 25 have to do so in richer Colima. Even though recent studies have shown that additional resources do not mechanically result in performance improvements (Hanushek, 2003), re-balancing the federal transfer in favour of the lower-income states is likely to improve efficiency if additional funds are made conditional on performance improvements. In the United States, the recent "No Child Left Behind" initiative makes additional funds available for states that improve academic achievement (see Box 5.).

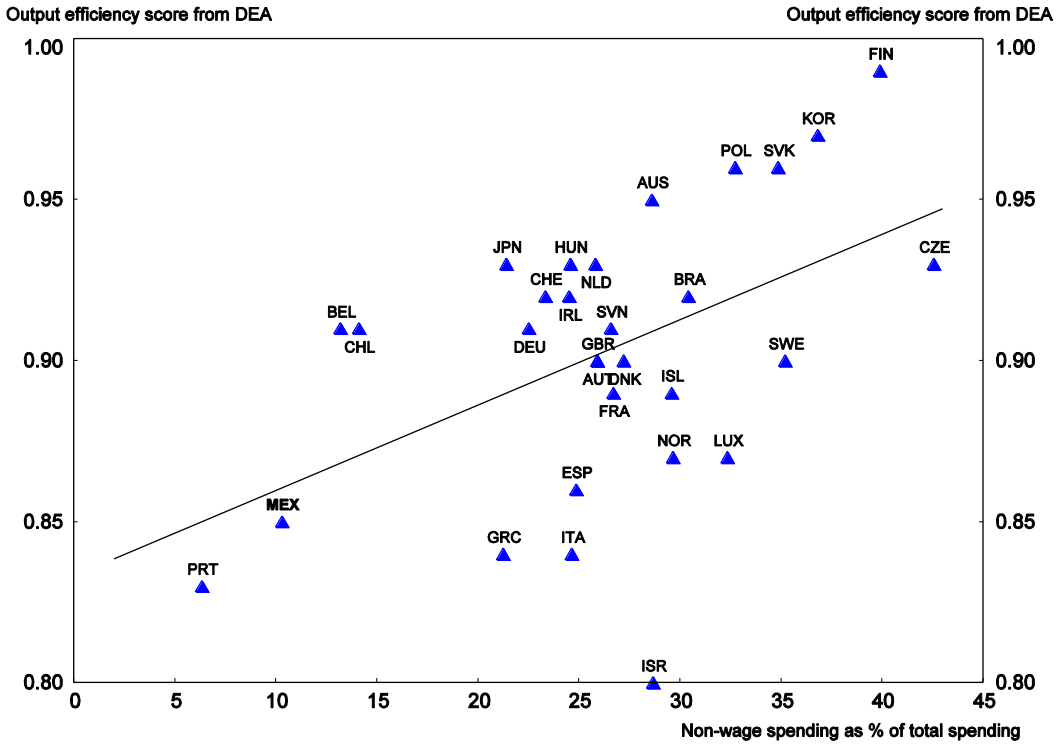
Box 5. "No Child Left Behind" and additional funds for US states

The "No Child Left Behind" initiative gives US states more flexibility in the use of federal funds in return for complying to strict accountability requirements, and makes additional funds available in return for improvements in academic achievement. States can request even more flexibility if they submit a five-year performance improvement plan to the Secretary of Education and if they agree to be regularly evaluated during the course of the plan. States that fall short of the performance improvement objectives in the plan are sanctioned. Additional funds are made available through the "Achievement in Education" fund rewarding the states that have made the greatest progress in improving academic achievement, as measured by states' and national assessments.

40. Quality of education may also be influenced by the allocation of resources in favour of labour versus capital. Countries with high shares of non-wage spending in total education spending generally achieve higher DEA efficiency scores (Figure 17).[21] If there are complementarities between labour and capital, disproportionately high spending on either can result in an inefficient input mix. For instance, increasing spending on teachers' salaries may not result in improved outcomes if it is not accompanied by increased spending on teaching materials, school infrastructure and training. The share of these non-wage spending items in total education spending in Mexico is one of the lowest in the OECD. Allocating new spending predominantly to non-wage items would reduce the undercapitalisation of the Mexican school system and could improve efficiency.

21. Note that Simar and Wilson (2007) argue that the second-stage regression of DEA efficiency scores on environmental variables results in biased estimates. The size of the coefficient in the second-stage regression of DEA efficiency scores on the share of non-wage spending in total spending should therefore be interpreted with caution. However, plotting efficiency scores against the share of non-wage spending in total spending reveals that the most efficient countries are generally those with the highest share of non-wage spending.

Figure 17. Non-wage spending and efficiency



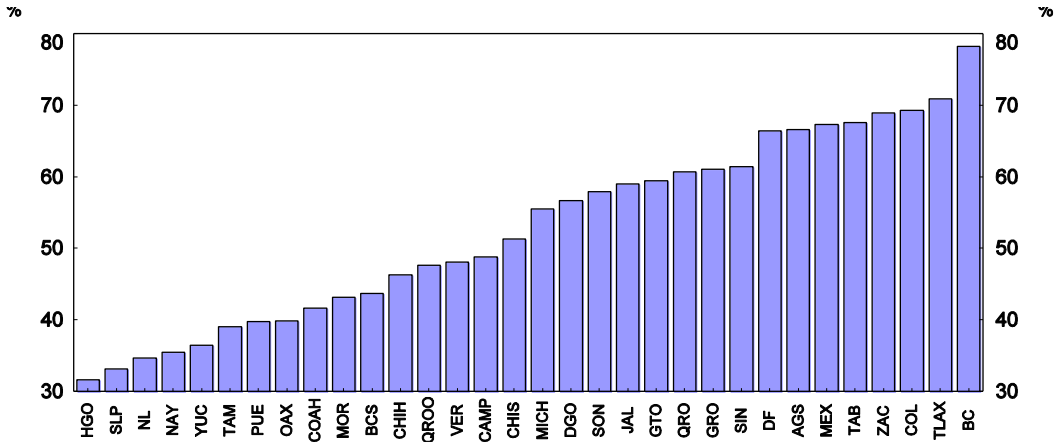
Source: OECD, Education at a Glance 2008.

41. Uneven teacher quality across states is another important determinant of education outcomes. Selecting the most qualified teachers and setting the appropriate incentives for them is crucial to improving the efficiency of schools. In Mexico, teachers started to be selected based on nation-wide entry examinations only in 2008-2009. Some federal states have used state entry examinations, others have shared responsibilities or relied on the teachers' union to fill new positions (Guichard, 2005). This has resulted in a high dispersion in secondary school teachers' professional qualifications across federal states (Figure 18). In some states only a third of secondary school teachers hold a university degree, whereas in others the share is close to 80%.[22] The introduction of a nation-wide entry examination for the selection of teachers in the *Alianza* is an overdue and welcome measure to improve the quality of teaching in all federal states (see below). However, its implementation in 2008 faced resistance from teachers in some states.

22. The absence of centralised entry exams suggests that other determinants of teachers' professional qualifications, such as teaching competencies, also vary widely across federal states. A survey of the empirical evidence (Hanushek and Rivkin, 2006) concludes that these other determinants of teachers' qualifications tend to be more important than teachers' academic background.

Figure 18. Secondary school teachers with university degree

As % of all teachers



Source: Secretarìa de Educacìon Pùblica.

42. Quality is also affected by the absence of a link between teachers' professional development to performance. The main programme which encourages and rewards teachers' professional development is the *Carrera Magisterial,* which was created in 1992 as part of an education reform. It is managed jointly by the Ministry of Education and the teachers' union. Most of the teachers can apply for training and about a third are enrolled (INEE, 2005). The scheme provides salary adjustments based on teachers scores on six criteria, including teacher and student performance, seniority and participation in training courses. In practice, the scheme is closer to a salary schedule than an incentive programme. Its design ensures that teachers that have enough years of seniority and regularly attend training courses, but who get average scores on evaluations, are promoted (Santibañez *et al.*, 2007). The teacher and student tests also focus more on knowledge of facts than on cognitive abilities, and the evaluation of teaching competencies is generally carried out by teachers from the same school instead of external evaluators, reducing reliability. Furthermore, once admission or promotion has been granted, the salary bonus remains effective for the rest of the teacher's professional life. This lack of incentives to improve performance has resulted in a weak association between student performance and the *Carrera Magisterial* status. Santibañez *et al*. (2007), for instance, detect only a modest improvement in student performance for teachers who are applying for *Carrera Magisterial* admission and no effect after the salary adjustment has been granted.

43. The low degree of school autonomy in Mexico compared to other OECD countries is another factor that can explain poor outcomes. School autonomy on budget allocations within schools, organisation of instruction, its content and personnel decisions are generally found to be positively related to student performance (Wößmann, 2007). In Mexico, decisions are generally taken at the central government or state level. While there are some policy initiatives that promote school autonomy, such as the quality school programme, these tend to be limited in school coverage and scope. The quality school programme, for instance, only covers around 20% of schools. While the programme grants schools considerable autonomy in budget allocations, this does not extend to the organisation of instruction, its content or personnel management. The choice of textbooks, instruction time and teaching methods, and decisions about hiring and firing of teachers remain outside the purview of school principals. Moving towards international best practice would require a broader reform which would grant schools more autonomy in areas identified as improving school performance.

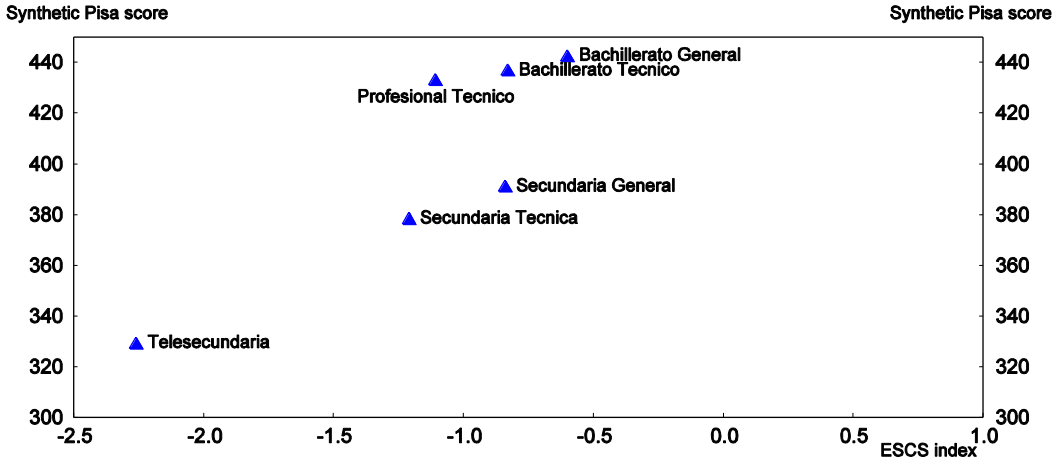
44. Autonomy needs to be complemented by nation-wide exit exams to be effective (Wößmann, 2007). For instance, autonomy of schools to set teachers' salaries has been found to have a negative effect on student performance if it is accompanied by nation-wide exit examinations. This result may reflect opportunistic behaviour by school principals. Without exit examinations bad performance is not

sanctioned, and school principals can set salaries in a way that promotes their own interests but not necessarily student performance. In Mexico there are no nation-wide exit examinations after lower secondary education (OECD, 2008b).

45. School autonomy is likely to boost performance most when linked to effective evaluation. Apart from setting nation-wide standards through central exit examinations, better outcomes can be achieved through evaluation and public posting of results (OECD, 2007a) that tend to promote parental and government pressure for quality. Schools in Mexico are evaluated on a regular basis through several evaluation tools (ENLACE, EXCALE, *Carrera Magisterial* tests among others) and the results are distributed to parents, teachers and school principals.[23] However, these assessment tools mainly test rote knowledge rather than analytical capabilities, and do not adjust for socio-economic background. Therefore they do not assess school "value added", as distinct from the socio-economic composition of students. Other OECD countries have introduced longitudinal testing to address this issue (OECD, 2008c). Finally, evaluation results do not explicitly trigger government actions. For instance, schools repeatedly performing poorly on the evaluations face no sanctions nor do they have to propose a restructuring plan to improve performance.

46. Some types of schools have particularly poor outcomes, pushing down average PISA scores (Figure 19). There are large differences between *Telesecundaria* that provides lower secondary education with television support and the "regular" schools. While this is partly explained by the weak socio-economic background of students attending the *Telesecundaria*, as measured by the PISA index of economic, social and cultural status (ESCS), there may be quality issues as well. While *Telesecundaria* has been a cost effective tool to increase participation rates in the past - its target students had had little access to schools previously - the main challenge is now to ensure that students learn more when attending this type of school. There are also large differences between "regular" lower secondary schools (*Secundaria General*, *Secundaria Técnica*) and the upper secondary schools (*Profesional Tecnico*, *Bachillerato Tecnico, Bachillerato General*), which do not appear to be explained by socio-economic background.[24] Instead, they may reflect both quality issues and the selection of better performing students into higher secondary education. To determine the part due to quality, the government should consider a careful evaluation of the various types of secondary schools.

Figure 19. Pisa score by secondary schools



Source: INEE, Pisa en México.

23. According to a government submission.

24. The Secundaria para Trabajadores and Capacitación para el Trabajo have been excluded from the analysis as according to INEE (2007) the sample size is too low for these schools to allow statistical inference.

47. There are also large differences in PISA outcomes between public and private schools – more than 40 points in the three PISA subject areas. These are likely to be explained by differences in socio-economic background. Although INEE (2007b) does not report the ESCS index by school ownership, it notes that differences between public and private schools vanish at the upper secondary level. This can reflect the fact that only the better performing students in public lower-secondary schools are selected into public upper secondary schools, or that enrolment in private schools is higher at the upper secondary level, with a higher intake of students from weaker socio-economic backgrounds.[25] Settling this issue would require further evaluation. Determining whether performance is explained by quality issues or socio-economic background would help identify "best practices" and possible avenues for reform of the lower performing school types.

48. Competition between schools does not seem to be a barrier to better performance in Mexico. OECD (2007a) finds that countries with competition between schools achieve higher scores in the PISA science tests. According to principals' answers in the PISA 2006 evaluation, 84% of students in Mexico are enrolled in schools which are subject to competition from at least one other school, which is higher than the OECD average of 74%.

Education reforms

49. Mexico is addressing performance issues with reforms. A number of programmes aim to allocate more spending to non-wage items. *Enciclomedia* digitalises the school curriculum on CD-ROMs and makes the necessary computer equipment available to the participating schools to help students learn interactively with the aid of computers.[26] In 2006-07, the programme covered 150 000 fifth and sixth grade classrooms with a budget of around 1 500 million pesos (around 0.4% of total public education expenditure). Evaluations of the programme have generally been positive, but point out that more emphasis should be put on training teachers and providing basic infrastructure (electricity, appropriate classrooms, desks, etc.) as a precondition for using the relatively sophisticated computer equipment in the programme (Reimers, 2006). The quality school programme provides basic infrastructure to disadvantaged schools, which, however, must develop and implement a school restructuring plan (see Box 6). Finally, the Ministry of education has put in place several compensatory programmes, mostly financed through loans from the World Bank, that aim to improve school infrastructure, teaching material, teachers' and principals' incentives under the umbrella of CONAFE (National Council for Education Promotion). They cost about 200-300 million pesos (less than 0.1% of total public education spending per school year) (Santibañez *et al.*, 2005).[27]

25. According to SEP (2008), 7.6% of lower secondary students are enrolled in private schools against 19.2% of upper secondary students.

26. It also makes the Encarta software, an electronic encyclopedia developed by Microsoft, available to the participating schools.

27. There is also an efficiency issue with regards to the allocation of spending between pre-school and primary/secondary education. The government is currently expanding pre-school education which, on the one hand, may divert resources from primary and secondary education. On the other hand, pre-school education is generally found to improve educational achievement later in life.

Box 6. The Quality school programme

The *Programa Escuelas de Calidad* (PEC), or quality school program aims at re-balancing the allocation of spending between wage and non-wage items. Although every Mexican primary and secondary school can participate, the PEC targets disadvantaged schools through direct mail, radio and other media. Participating schools receive five-year grants of up to 50 000 pesos (around 4 000 US$) per school year which are topped up by one additional peso for every peso raised by the school community (up to a ceiling of 50 000 pesos) in return for developing and implementing a re-structuring plan. This plan is jointly developed and implemented by the school community - teachers, parents, students and school administrators - and includes formal training for school principals. In the first four years schools must spend 80 per cent of the grant on supplies, infrastructure, and other non-wage items. In the fifth year, much of the spending goes to teacher training and development.

The programme started ín 2001 in around 2 200 schools and had reached 38 000 schools in 2006-2007 (around 20% of all primary and secondary schools). Its relatively low budget (around 1 400 million pesos or 100 million US$) and the positive outcomes and feedback it has provided have turned the PEC into one of the Ministry's most praised programmes. Overall, formal evaluations by various organisations give it positive ratings (posted on the programme's website at http://basica.sep.gob.mx/pec/. A World Bank study, for instance, finds that the PEC decreases dropout and failure rates by 0.24 percentage points and repetition rates by 0.31 percentage points (Skoufias and Shapiro, 2006).

50. Another recent initiative, The *Alianza* for quality education (Box 7) aims to base teacher selection on national tests, improving school infrastructure and introducing performance incentives for teachers. While it addresses important weaknesses in the system, its voluntary nature may reduce effectiveness. In some states, the teachers' union has already refused to adopt it, and teachers have been striking against the tests.

51. Alianza aims at basing professional development on student performance, scores on teacher training programmes, and teacher performance. It is a welcome step towards improving teacher quality. This would improve on the "double counting" of seniority and highest academic degree in base salaries and the *Carrera Magisterial (CM)*. Nevertheless, a more ambitious reform appears necessary to get the most out of *Carrera Magisterial*. Teacher and student tests should be reviewed and stronger emphasis put on cognitive abilities. There should be clear standards on the peer review of teacher performance, which should be carried out by external evaluators, possibly teachers who have reached the highest achievement level in the reformed *Carrera Magisterial*. Instead of granting salary bonuses for the rest of the career, there should be longitudinal testing of teachers. In this testing scheme teachers are evaluated repeatedly over time, and the test results of students are taken into account (OECD, 2008c). This would give teachers stronger incentives to continually improve their professional competencies and compensate for the initial disadvantage of teachers with students from weak socio-economic backgrounds.[28]

28. These reforms would possibly lead to a higher satisfaction rate with CM. According to INEE (2005) around one third of teachers expressed in 2003 that CM was either not contributing or contributing litte to professional development.

Box 7. Alliance for Quality Education

In May 2008 President Calderón announced a voluntary agreement between the government and the 1.5 million member teachers' union (*Sindicato Nacional de los Trabajadores de la Educación*, SNTE) to improve the quality of education in Mexico, in the *Alianza por la Calidad de la Educación*.

Objective: Improve quality of education in Mexico.

Instruments:

- School modernisation: Infrastructure improvements; upgrading of information technology, creation of participatory school councils.
- Teacher professionalisation: Selection through independent agency; training and certification; improve incentives through reform of *Carrera Magisterial* and a new scheme exclusively based on student performance (*Programa de Estímulos a la Calidad Docente*).
- Improvement of student welfare: Improve health status (diet, lifestyle) and access (additional *Oportunidades* grants).
- Reform of curricula: Align with personal and professional needs.
- Evaluation: Evaluate all actors in the system (principals, teachers, students) and make them accountable.

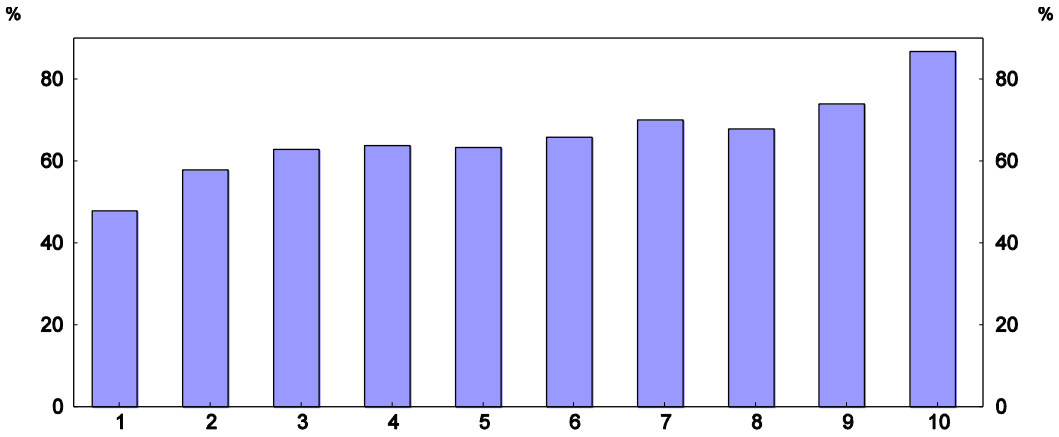
The World Bank has signaled its support for the *Alianza* by committing to produce a yearly report on education in Mexico and to assist the government in its implementation. The *Alianza* addresses several of the main weaknesses of the Mexican education system. However, its implementation is facing resistance from some teachers. For instance, in the federal state Morelos a strike of the Morelos Section of the SNTE (Section 19) and the *Movimiento Magisterial de Base* has obliged the government to negotiate a separate agreement, mainly due to teachers' resistance against centralized entry exams for teachers. According to the newspaper *El Universal*, currently a large share of teachers' positions in Morelos are inherited.

52. The Oportunidades program aims to increase secondary enrolment rates. This cash transfer programme pays grants to low-income households conditional on regular school attendance and medical visits by children. It has been shown to boost school attendance rates, in particular of girls (Todd and Wolpin, 2006, Schultz, 2004). While this has increased enrolment rates in primary and lower secondary education to levels close to the OECD average, secondary school enrolment at age 15 remains low, especially among low-income groups (Figure 20).[29] To improve coverage from age 15 onwards, the government has recently introduced the *Jóvenes con Oportunidades* programme which gives cash-grants conditional upon secondary school completion. Increasing the scope of this program can be an efficient way to increase coverage. The efficiency of the programme should be evaluated continually, in particular to determine the optimal level of the grant.

29. Following OECD (2008b) secondary school enrolment rates are calculated as the share of children at between age 15 and 16 who are enrolled in secondary school.

Figure 20. Secondary enrolment rate by income decile

2006



Source: ENIGH Household Income Survey 2006.

What can be done to improve the efficiency of the education system?

53. The main challenges of the Mexican education system are to enhance performance incentives for schools and teachers, increase lower-secondary completion rates and enrolment in upper-secondary education. Weak incentives have contributed to low performance on the standardised PISA tests in which Mexico scores well below other OECD countries and its emerging market peers. Until recently the teacher selection process was non-transparent and the main professional development scheme puts excessive weight on seniority instead of teacher performance. Schools have limited autonomy in budgeting, instruction and personnel and there is no national exit exam after secondary education that would increase accountability to the government and parents. Existing evaluation schemes are fragmented and focus on knowledge instead of cognitive abilities. The *Alianza* for quality education addresses some of these issues but more needs to be done.

54. The teaching quality of newly hired teachers can be improved by basing teacher selection on the national teacher entry examination, as planned by the *Alianza* and implemented for the first time in 2008. Incentives for existing teachers can be raised by introducing voluntary re-certification and turning the *Carrera Magisterial* into a fully fledged incentive scheme, with a strong focus on student results and teaching performance. The reform of the *Carrera Magisterial* planned by the *Alianza* is welcome but the authorities should ensure that the evaluation of student results appropriately takes into account initial disadvantages related to weak socio economic backgrounds, either through regression analysis or through longitudinal testing. The peer review of teaching performance should be carried out by an independent panel.

55. Performance can also be improved by making schools more autonomous in budgeting, organisation, content of instruction, and in personnel decisions. This should be accompanied by steps to make schools more accountable to parents and the government through a national exit exam after lower secondary education. Consolidating the existing patchwork of evaluation schemes should also improve accountability of schools. Given that a national curriculum is in place, the authorities should focus on creating a single, comprehensive evaluation system that focuses strongly on cognitive abilities.

56. Low scores on the standardised PISA test are also related to the strong bias of education spending in favour of wages and against non-wage spending. New funds should mainly be allocated to the improvement of school infrastructure and educational material, and to the training of teachers. This could be achieved by expanding the existing *Enciclomedia* and Quality School Programmes that have received

positive evaluations but currently only account for a small fraction of total education spending. The *Telesecundaria* programme, which has contributed to increases in secondary school coverage in remote rural areas in the past, should be evaluated to assess whether low performance is attributable to operation in disadvantaged areas or to quality issues.

57. To increase secondary school coverage the *Jóvenes con Oportunidades* programme should be expanded. Efficiency requires continual evaluation to make sure the level of the grant balances the objectives of increased coverage and low fiscal costs.

Concluding remarks

58. The recent government initiatives to reform the health and education systems go in the right directions. In health, substantial progress has been made in enrolling families that were previously not covered by existing insurance schemes. The overarching objective of health policy should be to achieve universal health insurance coverage, as well as to better integrate the existing insurer-provider networks. In education, the *Alianza* initiative includes some very promising measures for teachers and schools. The authorities should seize the opportunity to provide all children with a high-quality basic education. Box 8. provides a list of measures in health and education that would help to reach these goals.

Box 8. Main recommendations on increasing efficiency of spending on health and education

In health, the main challenges are to achieve universal health insurance coverage and reduce the fragmentation of the system.

- Continue efforts to achieve universal health insurance coverage through *Seguro Popular.* In particular, start discussions about making health insurance mandatory to avoid that adverse selection of less healthy individuals into *Seguro Popular* undermines its fiscal sustainability.
- Introduce a clear split between the functions of insurer and provider of care. Allow all insurers to contract with any provider. Establish a unified claims management system to reduce administrative costs.
- Set up a centralised roster of enrollees to reduce overlap between insurers and to improve the targeting of *Seguro Popular*.

In education, the main challenges are to improve teaching quality and to increase coverage of lower secondary education.

- Implement the national teacher entry examination to improve the professional qualification of newly hired teachers and introduce voluntary re-certification for existing teachers.
- Turn the *Carrera Magisterial* into a fully-fledged incentive scheme, with a strong focus on teaching performance.
- Make schools more autonomous in budget and personnel decisions.
- Accompany increased autonomy with measures to increase accountability, including by the introduction of a national exit exam after lower secondary education.
- Consolidate the existing patchwork of evaluation schemes.
- Channel new funds mainly to the improvement of school infrastructure, educational material and teacher training.
- Improve lower-secondary completion rates and enrolment in upper-secondary education by expanding the *Jóvenes con Oportunidades* programme.

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ANNEX 1.A1

DETAILS ON DATA ENVELOPMENT ANALYSIS (DEA)

Health

1. DEA efficiency scores for health spending are calculated using life expectancy as a proxy of health system outcomes. Life expectancy at birth has the advantage of being a very broad measure of the population's health status, summarising status in a multitude of health areas, but has the drawback that it is influenced by factors not directly related to the health care system. On the input side it is accounted for one input and two environmental variables. Total health spending *per capita* measures the resources spent on health care, both private and public. GDP *per capita* measures the income level of the population and can be thought of as summarising a broad variety of influences on the population's health status. Fruits and vegetables consumption proxies the population's way of life which may also have an influence on its health status. The reference year for the outcome and input variables is the year 2005. To test the robustness of the obtained results estimations have been repeated replacing GDP *per capita* by the PISA index of economic, social and cultural status (ESCS), which summarises occupational, educational and cultural attainment of the population. Results obtained using the ESCS index are similar to the ones reported here. The estimation sample includes 29 OECD and 15 emerging countries with GDP *per capita* above 8 000 PPP US$ for which all outcome, input and environmental variables are available. The reported efficiency scores are corrected for small sample bias using the procedure proposed by Simar and Wilson (1998, 2000). This procedure accounts for the fact that due to the small sample of countries the efficient country is likely to be omitted, which would bias the efficiency scores upward. Moreover, it provides confidence intervals around the obtained efficiency scores. Due to the small sample correction procedure no country is found to be on the efficiency frontier. The detailed DEA results including observed values of the outcome and input variables, confidence intervals and potential efficiency gains are reported in Tables 1.A1.1 and 1.A1.2. The reported results are obtained under the assumption of non-increasing returns to scale in production.

Education

2. Efficiency scores for the Mexican education system are calculated using as the outcome variable a synthetic PISA score that combines the reading, mathematics and science scores of the 2006 evaluation through factor analysis. The input variables are education spending per student and the PISA ESCS index as an environmental variable. Education spending per student is measured as the average of spending per secondary student in PPP US$ over the 2000-2007 period. It would be preferable to use a measure of cumulative spending over a student's theoretical years of schooling but this data is only available for a subset of OECD countries. Results in terms of efficiency ranking are similar to the ones presented in the main text if this alternative measure of education spending is used. The estimation sample includes 28 OECD and 14 emerging countries with GDP *per capita* above 8 000 PPP US$ for which all outcome, input and environmental variables are available. The reported efficiency scores are corrected for small sample bias using the procedure proposed by Simar and Wilson (1998, 2000) and are obtained under the assumption of non-increasing returns to scale in production.

Table 1.A1.1. Life expectancy at birth as outcome variable

Country	Life expectancy at birth	Total health spending	GDP/capita	Fruits & vegetables consumption	Output efficiency score	95% confidence interval	Potential increase in life expectancy
ARG	74.8	1107	10815	1.50	0.956	[0.938, 0.971]	3.41
AUS	80.8	3000	31656	1.96	0.978	[0.968, 0.984]	1.81
AUT	79.4	3487	34075	2.27	0.963	[0.956, 0.967]	3.02
BEL	79.5	3088	31699	1.98	0.962	[0.952, 0.968]	3.13
BGR	72.6	722	9328	1.89	0.944	[0.926, 0.959]	4.30
BRA	71.8	666	8474	1.35	0.971	[0.941, 0.999]	2.11
CAN	80.2	3425	34972	2.39	0.973	[0.966, 0.977]	2.19
CHE	81.2	4072	35182	2.00	0.985	[0.976, 0.989]	1.24
CHL	78.2	666	12173	1.57	0.969	[0.933, 0.999]	2.48
CZE	75.9	1445	20280	1.50	0.946	[0.934, 0.957]	4.32
DEU	78.9	3269	30445	2.03	0.954	[0.945, 0.961]	3.77
DNK	77.8	3063	33645	2.48	0.944	[0.937, 0.948]	4.60
ESP	80.6	2254	27180	2.55	0.982	[0.975, 0.989]	1.48
EST	72.6	831	16677	1.73	0.915	[0.900, 0.924]	6.78
FIN	78.8	2309	30462	1.61	0.950	[0.932, 0.964]	4.15
FRA	80.2	3329	30591	2.37	0.971	[0.964, 0.977]	2.36
GBR	78.9	2597	31371	2.06	0.953	[0.944, 0.961]	3.92
GRC	79.0	2954	29261	4.22	0.959	[0.953, 0.964]	3.34
HRV	75.2	985	13231	1.98	0.950	[0.937, 0.959]	3.96
HUN	72.6	1328	17014	1.88	0.910	[0.901, 0.916]	7.16
IRL	79.4	3139	37887	2.19	0.963	[0.955, 0.967]	3.04
ISL	81.1	3344	35465	1.61	0.974	[0.952, 0.988]	2.18
ISR	79.7	1850	22886	3.36	0.984	[0.978, 0.990]	1.27
ITA	80.3	2474	27750	3.08	0.979	[0.973, 0.985]	1.71
JPN	82.1	2498	30290	1.58	0.980	[0.959, 0.999]	1.72
KOR	78.4	1263	21273	2.74	0.980	[0.970, 0.986]	1.61
LTU	71.3	837	14084	1.68	0.896	[0.882, 0.907]	8.25
LVA	71.4	840	13215	1.52	0.901	[0.885, 0.913]	7.84
MEX	**74.4**	**725**	**11387**	**1.78**	**0.946**	[0.929, 0.960]	**4.26**
MNE	74.3	657	8160	2.23	0.967	[0.920, 0.999]	2.54
NLD	79.3	3187	34492	2.55	0.963	[0.956, 0.967]	3.05
NOR	80.0	4307	47538	1.90	0.969	[0.959, 0.975]	2.53
NZL	79.7	2223	24566	2.44	0.981	[0.975, 0.986]	1.55
POL	75.0	843	13571	1.47	0.952	[0.936, 0.964]	3.79
PRT	78.1	2046	19956	2.97	0.972	[0.965, 0.977]	2.21
ROM	71.7	513	9368	2.43	0.981	[0.952, 0.999]	1.42
RUS	65.5	615	11861	1.44	0.893	[0.867, 0.909]	7.88
SRB	72.6	520	8644	2.23	0.969	[0.923, 0.999]	2.34
SVK	73.9	1129	15881	1.29	0.949	[0.920, 0.966]	4.00
SVN	77.6	1959	23010	2.14	0.958	[0.951, 0.963]	3.42
SWE	80.5	3013	32016	1.93	0.974	[0.964, 0.981]	2.13
TUR	71.3	593	10370	3.37	0.928	[0.909, 0.945]	5.50
URY	75.6	745	9266	1.25	0.967	[0.917, 0.999]	2.62
USA	77.7	6350	41813	2.36	0.944	[0.938, 0.947]	4.60

Table 1.A1.2. PISA scores as outcome variable

Country	Synthetic Pisa score	Spending per student (secondary)	ESCS	Output efficiency score	95% confidence interval		Potential increase in Pisa score
ARG	382	1591	-0.64	0.832	[0.785,	0.832]	90
AUS	520	4301	0.21	0.967	[0.932,	0.967]	27
AUT	502	9107	0.2	0.908	[0.887,	0.908]	56
BEL	510	8043	0.17	0.923	[0.901,	0.923]	48
BGR	416	1534	-0.21	0.913	[0.863,	0.913]	49
BRA	384	855	-1.12	0.997	[0.854,	0.997]	32
CHE	514	9817	0.09	0.931	[0.909,	0.931]	43
CHL	430	1640	-0.7	0.933	[0.878,	0.933]	44
CZE	502	3966	0.03	0.944	[0.910,	0.944]	39
DEU	505	6530	0.29	0.921	[0.900,	0.921]	49
DNK	501	11543	0.31	0.905	[0.884,	0.905]	58
ESP	476	6104	-0.31	0.875	[0.835,	0.875]	79
EST	516	3427	0.14	0.987	[0.951,	0.987]	14
FIN	553	8224	0.26	0.998	[0.974,	0.998]	7
FRA	493	8440	-0.09	0.897	[0.869,	0.897]	64
GBR	502	7621	0.19	0.909	[0.888,	0.909]	56
GRC	464	5894	-0.15	0.851	[0.822,	0.851]	90
HKG	542	6308	-0.67	0.997	[0.912,	0.997]	27
HRV	479	3012	-0.11	0.929	[0.889,	0.929]	46
HUN	492	3404	-0.09	0.943	[0.907,	0.943]	39
IRL	509	6705	-0.02	0.928	[0.903,	0.928]	45
ISL	494	6953	0.77	0.898	[0.878,	0.898]	61
ISR	445	5079	0.22	0.818	[0.790,	0.818]	108
ITA	469	7733	-0.07	0.852	[0.827,	0.852]	88
JPN	517	6430	-0.01	0.945	[0.920,	0.945]	36
KOR	542	4617	-0.01	0.997	[0.958,	0.997]	14
LTU	481	2670	0.04	0.944	[0.897,	0.944]	39
LUX	485	15652	0.09	0.880	[0.859,	0.880]	72
LVA	485	2478	-0.02	0.968	[0.924,	0.968]	25
MAC	509	2666	-0.91	0.998	[0.891,	0.998]	36
MEX	**409**	**1833**	**-0.99**	**0.882**	**[0.812,**	**0.882]**	**74**
NLD	521	7765	0.25	0.943	[0.921,	0.943]	37
NOR	487	13343	0.42	0.880	[0.859,	0.880]	72
NZL	524	5285	0.1	0.962	[0.932,	0.962]	29
POL	500	2669	-0.3	0.981	[0.928,	0.981]	24
PRT	471	6332	-0.62	0.867	[0.798,	0.867]	93
ROM	410	1258	-0.37	0.924	[0.858,	0.924]	49
SVK	482	2360	-0.15	0.973	[0.930,	0.973]	22
SVN	506	6061	0.13	0.924	[0.901,	0.924]	47
SWE	504	8762	0.24	0.911	[0.889,	0.911]	55
TUR	432	1408	-1.28	0.997	[0.852,	0.997]	37
URY	423	844	-0.51	0.997	[0.864,	0.997]	35

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