



“Better Policies” Series

MEXICO

POLICY PRIORITIES TO
UPGRADE THE SKILLS AND
KNOWLEDGE OF MEXICANS FOR
GREATER PRODUCTIVITY AND
INNOVATION

MAY 2015



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Foreword

In recent years, Mexico has distinguished itself for having a solid macroeconomic framework with low inflation and strong openness to international markets. This has increased the country's attractiveness as a destination for international investment, which is increasingly flowing into high value-added sectors. Since recently, Mexico hosts a large number of modern firms, notably in the sectors of aerospace, automobiles, foods and beverages, which employ high-skilled and well-educated workers. But other parts of the economy are characterised by high informality, low-skilled work, weak productivity and out-of-date technologies. As a result, the Mexican economy experienced a prolonged growth slowdown during the past three decades, leaving it behind other OECD countries and hurting the population's relative living standards.

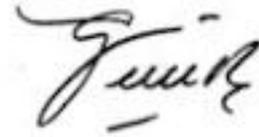
Fully unleashing the country's potential and lifting productivity also in the sectors that are lagging behind requires a comprehensive programme to improve the skills of all Mexicans, both at school and in the labour market. To this end, the objective of the education reform to increase the quality and relevance of education is key, as is motivating students to pursue education. This will also increase the value that Mexican society attributes to education. In contrast to other OECD countries, having a better education in Mexico does not necessarily reduce the risk of unemployment. The education system also needs to become more equitable to guarantee that all Mexicans have the same opportunities to succeed. In addition, it is crucial to avoid a further deterioration of the skills of low-skilled workers employed in precarious jobs that do not provide any training opportunities. This requires a commitment not only by the authorities, but also by businesses that need to invest in their workers and by society at large. This is important to improve the growth and well-being perspectives but also to face the demands of the information economy and the profound changes in the global economy.

The improvement of Mexicans' skills must be accompanied by other policies to enhance the innovation and business environment, including the modernization and expansion of infrastructure. Only a holistic approach is likely to help the country move up the value chain and become a knowledge economy.

The current administration, alongside other political actors, managed to approve an impressive package of economic reforms, promoted through the so-called Pact for Mexico (*Pacto por México*), which aims at boosting growth, fighting labour market informality and reducing the country's high levels of income inequality. As part of the Pact, major structural reforms have been legislated to raise competition, enhance the quality of education, improve the functioning of the labour market and the tax system, and improve the performance of energy, financial, infrastructure, and telecommunications sectors. The reform package has already improved confidence and promises to help putting the country back on a path of prosperity. If fully implemented, the reforms could increase annual trend GDP growth by as much as one percentage point over the next ten years. Accompanying these reforms with an improvement of the rule of law would add an additional half a percentage point to growth.

In order to fully reap the benefits of this impressive reform package it will be crucial to continue insisting and working on their effective implementation and on the construction of solid and efficient institutions to underpin their operation. Strong political commitment is required at all levels. In particular, education reform needs to become a national priority, framed by consensus and long-term policies. Mexicans need to give more importance, both at the individual and family level, to basic education and life-long learning in order to develop new skills in a more dynamic and productive environment. The new Productivity Law, which has human capital accumulation as a key element, is a welcome step in this direction, given its long-term vision. Drawing on the experience and expertise of OECD member countries, this publication also discusses other measures to tackle remaining structural bottlenecks to higher growth, including innovation policies, improvements in the business environment, the strengthening of the rule of law and measures to fight corruption. It also highlights the need to increase regulatory capacities at the regional and municipal levels, and the environmental awareness that must encompass the whole strategy of modern and sustainable development.

Mexico has a great potential to continue building a promising future. The economic reforms are already bearing fruits, but their effective implementation must continue. Given the demographic profile of the population, the size of the economy, and the level of development, the key to increase productivity and consolidate growth is to invest in the skills of Mexicans, taking advantage of the demographic bonus. This investment will also contribute to reducing inequalities of income and opportunity, which constitute one of the key obstacles for Mexico's development. In the OECD we are ready to back the country in this challenging and important effort.

A handwritten signature in black ink, appearing to read 'Gabriela Ramos', with a horizontal line underneath.

Gabriela Ramos
Chief of Staff and Sherpa
May 2015

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1. Introduction

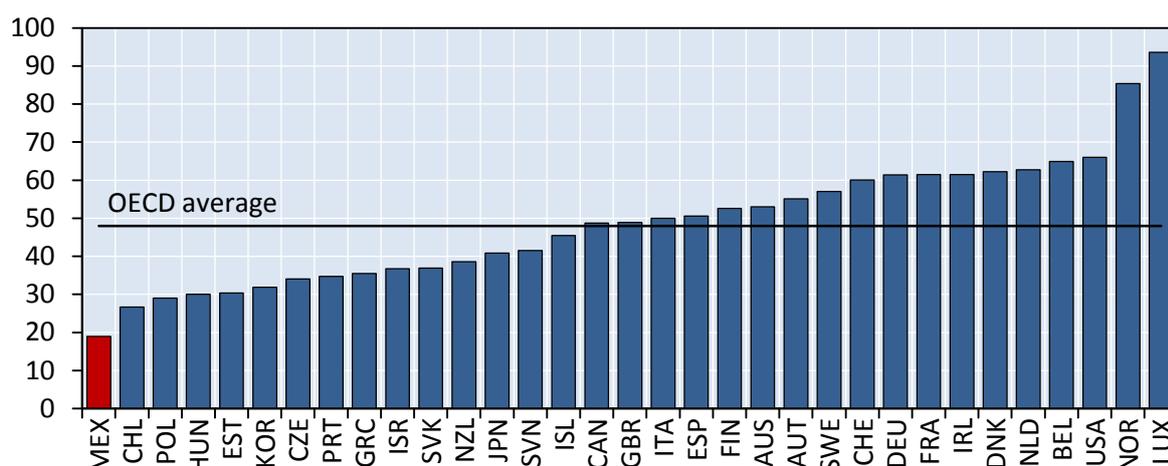
In Mexico having a higher level of education does not necessarily translate into a smaller risk of unemployment. This differs from the situation in most other OECD member countries, where having an undergraduate degree means better possibilities of finding quality, well-paid jobs. One of the main explanations behind this is the high levels of widespread informality. Even though these have shown a downward trend, Mexico still has a dual productive structure in which leading edge businesses coexist alongside low value added and low productivity activities. Increasing the productivity of sectors that are lagging behind requires a comprehensive program to enhance the skills of Mexicans (both in school and in the labour market); continued improvements to the competition framework, including in network industries, and the creation of a favourable business environment; as well as improvements to the framework conditions for innovation. The ongoing reforms in sectors such as telecommunications, energy and education will certainly contribute to these objectives and, hence, increase the productive potential of the economy, along with the recently created National Productivity Committee (NPC) and the new Productivity Law, which focuses on i) strengthening the coordination of strategic and long-term policies and programmes; ii) improving the coordination among the institutions in charge of this matter as well as business and union representatives; and iii) identifying policies to boost productivity.

In terms of skills, besides the current education reform, it is necessary to revise the policies and decisions that impact the improvement of the skills of those workers already employed. The objective is to avoid a further deterioration of the skills of already low-skilled workers because they are employed in precarious jobs where they have no opportunity of receiving training. This requires a commitment not only of the authorities in charge of education and labour, but also of businesses, who need to invest in their workers. It is also necessary to address the disconnection between the skills that are forged in schools and those that the labour market demands by investing in quality vocational education and training and further promoting the training of students in subjects related to science, technology and mathematics. Mexico is part of one of the regions in which a higher number of firms report having difficulties in finding the skills they require (30.9% against 14.8% in the OECD) and where, in turn, firms' investment in their workers is below the OECD average. Mexico will only be able to move up the value chain and fully insert itself into the knowledge economy through a comprehensive approach and significant investments to improve the skills and opportunities of its population. This plan should be accompanied by reforms aimed at modernizing Mexico's infrastructure and strengthening the institutions and conditions to boost innovation nationwide.

Productivity growth has been weak over the last two decades

In 2013, Mexico recorded the lowest labour productivity level amongst OECD countries, about 60% lower than the OECD average and 70% lower than the United States (Figure 1.1). This productivity gap has increased over the last two decades as productivity grew more slowly in Mexico than in the average OECD country (0.7% per year on average in Mexico compared with an OECD average of 1.6%). Total factor productivity even declined, in Mexico by 1.4% per year on average between 2000 and 2014, whereas it increased in most other OECD countries. Even setting aside crisis episodes, productivity growth has been weaker than would be expected from a country far away from the technology frontier. Such countries often show high productivity growth thanks to a reallocation of labour from low to high-productivity sectors. This has not occurred to a sufficient extent in Mexico.

Figure 1.1. Mexico has the lowest level of labour productivity within the OECD
GDP per hour worked, total economy, USD, current PPPs, 2013



Source: OECD Productivity Database.

The poor skill level of the workforce is a key factor behind Mexico's disappointing economic performance

Mexico's mediocre performance in terms of productivity can be partly explained by the poor skill-level of its workforce. The education level of the Mexican workforce is well below the OECD average. In 2012 19% of all adults aged 25 to 64 years had an upper-secondary or post-secondary non-tertiary degree as their highest-level of education and a further 18% had a tertiary degree. Both shares are well below the OECD averages of respectively 44% and 32%. And those skills that workers have are frequently not what employers are looking for. Some 30.9% of Mexican employers report facing difficulties in finding people with the skills needed for their vacancies.

Most Mexican students drop out of the education system already at the upper secondary level. In 2012, only 22% of all 25-34 year olds attained upper secondary or post-secondary non-tertiary education – half the OECD average. There are two main reasons behind the high dropout rates. First, education institutions generally do not equip students with either relevant or good-quality skills that would make pursuing high-school or tertiary education worthwhile. At present, having an upper secondary degree in Mexico does not reduce the risk of unemployment: at 4%, the unemployment rate among upper secondary educated individuals was even slightly higher in 2013 than it was among those who had not attained an upper secondary degree (3.8%).

Second, students who do not consider it worthwhile to invest further in education have a clear alternative: working in the informal economy. Mexico's informal economy is very large. According to data from the International Labour Organization (ILO), in 2013 around 54% of workers had an informal employment relationship, a much higher rate than in other emerging markets. The informal labour market is not the best context to stimulate further education. In the medium term, it does not allow people to have basic pensions for their retirement. The jobs provide no stable income, no comprehensive health care and no training opportunities. The latter means that informal workers get trapped in low-skilled jobs without much chance to transition into higher-quality employment. Affordable financial services are also typically unavailable for informal workers, further hampering their accumulation of human capital.

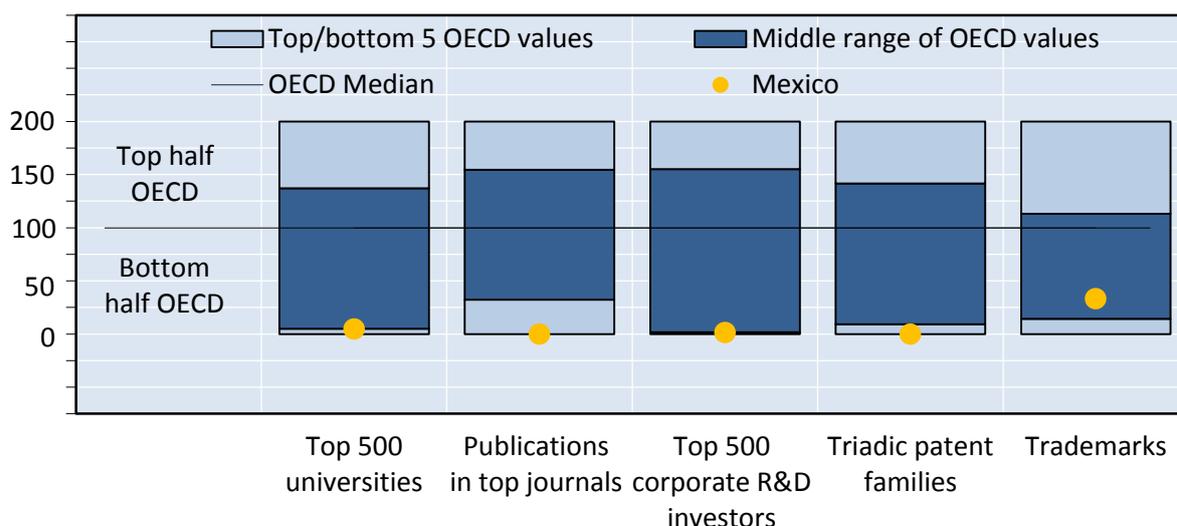
The topic of gender also requires close attention, given that investment in the education of girls has increased and yet many of them do not enter the labour market or do so only for short periods of time. In Mexico, the female labour force participation rate is 47% in comparison with an OECD average of 60%. Besides, the share of female students that choose to pursue university education in science, technology and mathematics is even lower than that of their male counterparts. This problem requires action both at the school, labour and cultural levels so that Mexico can take full advantage of its women's potential. This will contribute to the commitment adopted in the G20 Summit in Brisbane aimed at increasing female participation in the labour market by 25% by 2025 and help mitigate the effect that the exhaustion of the demographic bonus over the next decade will have on economic growth.

Poor education outcomes are not made up for in the labour market which is characterized by low-technology activities

Workers that join the labour market rarely connect themselves with high-tech activities. This is due to the low level of innovation of the Mexican economy. Among OECD countries, Mexico scores poorly on measures such as patents and top scientific publications (Figure 1.2) and both public and private R&D investment are well below that of nearly all OECD and BRICS countries (Figure 1.3). The current government has made a commitment to raise R&D intensity to at least 1% of GDP. This effort will have to be accompanied by private investment and greater training of Mexicans in technological fields. To trigger a virtuous circle between higher investment in technology and increased take-up of these technologies, the higher education sector should also focus on training a higher number of students in science, technology and mathematics.

Figure 1.2. Mexico's innovation performance lags behind that of other OECD countries

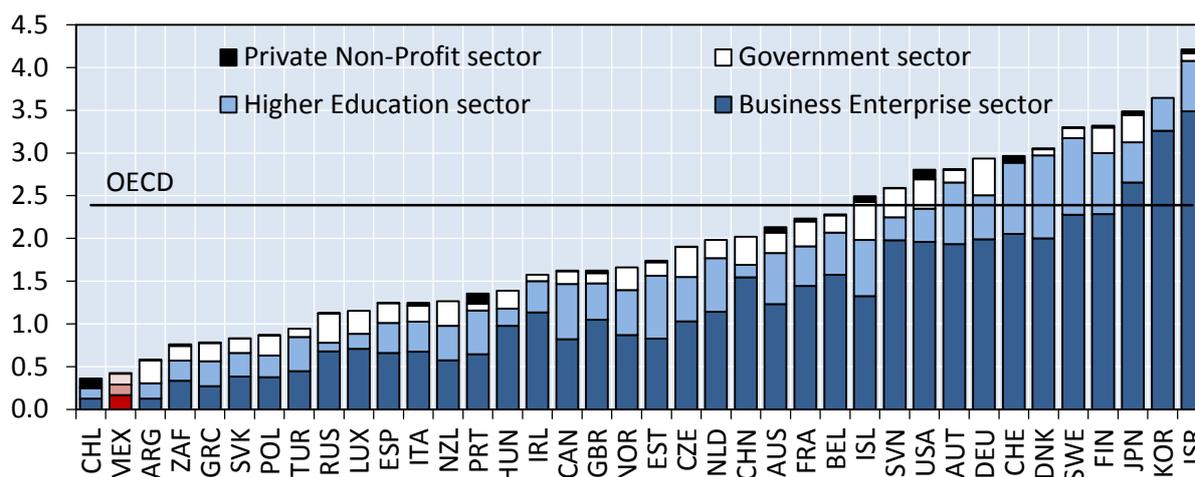
Normalised index of performance (measured per GDP) relative to the median values in the OECD area



Source: OECD (2014), *Science and Technology Outlook*.

Figure 1.3. Mexico's R&D expenditure is one of the lowest among OECD countries

Gross R&D expenditure by sector of performance, % of GDP, 2013 or latest available year



Source: OECD, *Main Science and Technology Indicators Database*.

In fact, obstacles to boosting the country's innovative potential include a weak domestic research base, an underdeveloped knowledge-based start-up environment and several institutional challenges. In addition, a well-educated workforce is essential for an innovative economy as it enables firms to invent and adopt new products and services, but also to undertake organizational change and to develop new processes to adapt to changes over time. The skills associated with innovation include specialised knowledge, general problem-solving and thinking skills, creativity, and social and behavioural skills, including teamwork. As many of these skills are developed from an early age, they need to be acquired in part through formal education. But even if

this is not the case, it is important to continue investing in workers that are already in the labour market to improve their skills and close the gap.

Growth is also held back by weak framework conditions and poor infrastructure

While improving the skill level of the workforce and upgrading the innovation ecosystem are essential, they alone won't be sufficient. While the SME sector accounts for almost three-quarters of employment, its share in value added is just over one half. Access to credit, especially in the seed and start-up phases, is still an important hurdle to fostering entrepreneurship. Poor infrastructure represents another barrier to higher growth. There are some transport infrastructure bottlenecks in hinterland connections to ports. Moreover, inefficiencies in administrative and regulatory procedures significantly add to trade cost. Moreover, substantial problems also remain in the competition environment. Legal barriers to the entry of firms remain significant in some sectors as does the protection of incumbent firms. Moreover, some sectors such as banking and aviation are still very much shielded from international investment, hampering the transfer of technology and knowhow.

Mexico's has embarked on a bold package of structural reforms to address the productivity problem...

To boost growth, Mexico embarked on a bold package of structural reforms initially organised around the Pact for Mexico. Each of these reforms is wide-ranging in scope, and addresses the main challenges in its respective areas. They include: a labour reform that substantially increased the flexibility of hiring; a reform of *amparos* that made the legal system more efficient and fair; the introduction of a national code of criminal procedure; a wide-ranging educational reform that introduced clearer standards for teachers and schools; a fiscal reform that improved the efficiency of the tax system, raised the revenue ratio and strengthened the fiscal responsibility framework; an economy-wide competition reform; reforms to the financial, telecom and energy sectors that have opened long-closed sectors to competition and strengthened the powers of regulators; and a reform of the political system to allow politicians to be re-elected, giving them a longer-term perspective on policymaking.

This impressive policy effort made Mexico the top reformer in the OECD over the past two years. The package of reforms has already helped to improve confidence and promises to significantly enhance Mexico's growth performance. OECD estimates suggest that, if fully implemented, the reforms could increase annual trend per capita GDP growth by as much as one percentage point over the next ten years (OECD, 2015). The energy reforms will have the most front-loaded effects, while the education reforms will have more lasting effects in the years to come.

In early 2015 Mexico launched another important initiative to lift growth and productivity. The new Productivity Law (*Ley para impulsar el incremento sostenido de la productividad y la competitividad de la economía nacional*) aims at addressing many of the elements that explain low productivity and coordinating actions at the national level.

... but challenges remain

The main challenge going forward is to ensure full implementation of these reforms and further progress in areas that have not yet been tackled. While the recent education reforms are important milestones towards better equipping the population with a firm base of foundation skills, additional efforts are needed to reduce dropouts by ensuring that students perceive it as worthwhile to pursue upper secondary and tertiary studies. At the upper secondary level, Mexico needs to raise the quality of teaching, professionalise school leaders and provide greater transparency in governance and funding across the system (**Chapter 2**). In addition, vocational education and training need to be upgraded. Achieving the commitment made by the government in the National Development Plan for 2013-2018 to increase education coverage in tertiary education to 40% will require improving the quality and relevance of tertiary education through better linkages with the labour market and ensuring more women take up and complete tertiary studies (**Chapter 3**).

Bringing down informality is also key for Mexican workers to improve their skills and knowledge (**Chapter 4**). While the measures introduced with the 2012 labour market reform and the 2014 fiscal tax reform go in the right direction (the 2 percentage point decline in the share of informal employment in total employment between the last quarter of 2012 and the first quarter of 2015 is likely to be largely due to these reforms),

evidence suggests that there is no “silver bullet” to tackle the problem: a broad package of policies will be needed, including strengthened legal institutions and reduced corruption. Recent efforts to strengthen the anti-corruption regulator and prosecutorial system should help, as should implementation of judicial reforms. Such institutional reforms are essential to ensure that firms can expand and rely on the legal system for contract enforcement.

Mexico also needs to upgrade its innovation eco-system, including by promoting innovation hubs and expanding its ICT infrastructure (**Chapter 5**). Mexico is among the OECD countries with the lowest fixed and wireless broadband penetration, the lowest share of enterprises engaged in e-commerce sales and the lowest Internet usage rate among adults. In addition, the general framework conditions for growth and innovation have to be improved. To this end, Mexico needs to upgrade its transport infrastructure, clear remaining regulatory barriers to the creation and growth of firms, and further enhance the financing environment for start-ups (**Chapter 6**).

2. Giving all upper secondary students good chances to succeed in further education or the labour market

Considerable efforts have been made recently to improve the quality of education, and provide all students with stronger education foundations for further education in life. Mexico has increased the number of compulsory education years by making early childhood and upper secondary education compulsory. Key reforms are now being implemented to improve the equity and quality of the system in areas such as teacher quality and school leadership as well as to strengthen school autonomy, resources and evaluation. Mexico needs to continue its efforts to raise the quality of compulsory education and also make it more relevant to students' needs by strengthening the link with the labour market. To support this improvement process, it is also key to reduce the number of school dropouts and ensure that more students move on to tertiary education.

Many students leave school with an inadequate level of education

Expenditure on education and skills is an investment in the future: developing the skills of young people and adults and preparing them for lifelong learning must be a priority, particularly in a world where knowledge assets are critical and when young people struggle to gain a foothold in the labour market if they lack work-relevant skills. Mexico has made progress in strengthening compulsory education, but important challenges remain. Mexico is among the few countries with improvements in both equity and quality in PISA 2012 (OECD, 2014). Although its performance remains below the OECD average, Mexico has achieved improvements in mathematics and reading across PISA cycles, while performance in science has remained stable.

Nevertheless, wide regional variations remain according to PISA. For example, in the state of Guerrero the majority of 15 year old students (46.9%) are, at best, able to only perform very direct and straightforward mathematical tasks such as calculations with whole numbers. The state of Jalisco performs much better, with a share of only 13.9%. Similarly, in the state of Chihuahua 9.2% of students can at least use formal or public knowledge to hypothesize or critically evaluate a text and interpret it to understand the nuances of language used in that section. In Tabasco, students perform less well: only 1.5% of them demonstrate this level of proficiency.

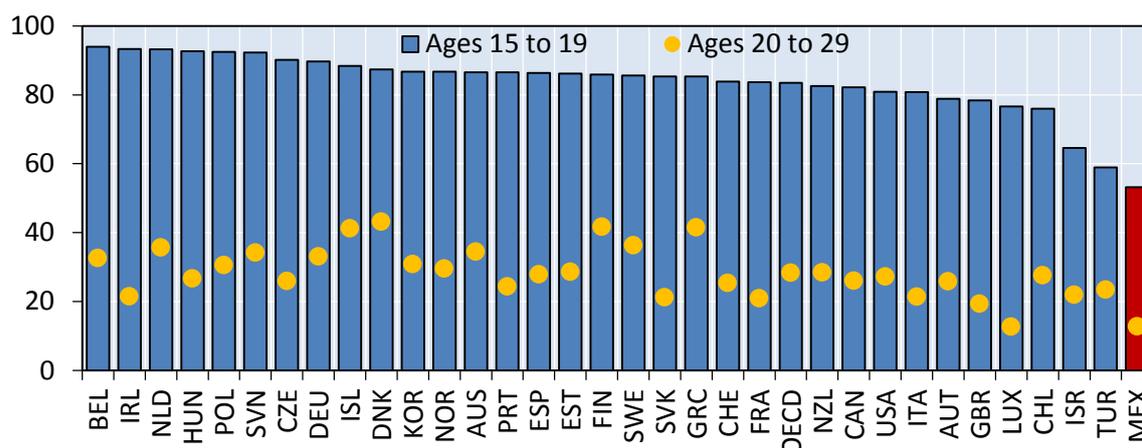
The socio-economic background of students had less impact on their performance in PISA 2012 than in the OECD average, demonstrating improvements in equity of learning opportunities. Nevertheless, large performance and completion gaps persist, especially for indigenous and low socio-economic status populations. The correlation between the quality of schools' educational resources and students' socio-economic status remains high in comparison with the OECD average. The distribution of spending on different education levels (see Chapter 3) suggest that there is room for resource reallocations from the tertiary to the upper-secondary level, especially since upper-secondary education is a pre-requisite for students to move on to tertiary education.

Mexico's demographic transition also poses challenges. While access to education for 5-14 year-olds is universal in Mexico as in virtually all OECD countries, Mexico has one of the smallest proportions of 15-19 year-olds enrolled in education among OECD and partner countries, despite having the largest population of this age group in the country's history (Figure 2.1). Mexico suffers from a secondary school dropout rate of almost 50% – one of the highest in Latin America. The level of school dropout is even higher in those states with higher levels of income inequality.

The likely consequences for Mexico of a high dropout rate reach far beyond strict economic outcomes. Education is a strong predictor of labour market outcomes and well-being more generally. In all countries, adults with lower literacy proficiency are far more likely than those with better literacy skills to report poor health, to perceive themselves as objects rather than actors in political processes, and to have less trust in others.

Figure 2.1. Enrolment in education among 15 to 19 year-olds is extremely low

Enrolment rate in percent, 2012



Source: OECD(2014), *Education at a Glance*, OECD Publishing.

Student dropout is a complex process of disengagement that can be explained by a variety of factors, such as academic performance, students' personal and family background, education policies and labour market conditions. Dropouts surveyed in 2007 in Mexico said that the main reason for leaving school was lack of interest in school, as it was of little use or inadequate for their interests and needs, followed by a lack of financial resources. Increasing relative demand for low-skilled labour in the manufacturing sector adds to the problem by raising the opportunity cost of remaining in school. Similarly, the migration of household heads to the United States may contribute to higher dropouts by reducing the time parents spend with their children and creating the expectation among children to work in low-skilled jobs in the United States later on in life.

Improving the equity and quality of compulsory education

To reduce dropouts, Mexico needs to improve learning opportunities during students' overall educational pathways while in compulsory education, as well as making upper secondary education more appealing and relevant to the needs and interest of students, but also of labour markets. Evidence shows that the earlier in education a government invests in equity and relevance, the higher the payoff will be for the individual and society. Societies therefore need to increase the chances of success of individuals while still in compulsory education so that they remain in education later on.

The Mexican government has implemented a range of reforms to improve both the equity and the quality of compulsory education. In 2009 the National System of Upper Secondary Education was introduced to provide a coherent framework of upper secondary education through better academic guidance, a larger education offer, a monitoring system for institutions, and mechanisms to deliver education. In 2012 upper secondary education was made compulsory and a comprehensive reform of basic education introduced a competency-based curriculum, and in 2013 a new Professional Teaching Service Law brought more coherence to the profession in primary and secondary education. In 2014 the *Construye-T* programme was introduced to develop socio-emotional skills in public upper-secondary schools. The government has also launched an initiative (*Movimiento contra el Abandono Escolar*) that brings together government officials, school directors, teachers, parents and students, among others, and aims at making the school climate more conducive to staying in school.

The key issues that remain to be tackled are raising the quality of teaching, professionalising school leaders, and providing transparency in governance and funding across the system. The OECD has proposed an action-oriented policy agenda for schools, directors and teachers to receive better support to accomplish their tasks in Mexico:

The key issues that remain to be tackled are raising the quality of teaching, professionalising school leaders, and providing transparency in governance and funding across the system. The OECD has proposed an action-oriented policy agenda for schools, directors and teachers to receive better support to accomplish their tasks in Mexico:

- Raising the quality of teaching: Mexico needs to enhance the role of teachers by setting clear standards of practice, ensure high quality initial teacher preparation programmes, attract better candidates,

professionalise the recruitment, selection and evaluation of teachers, and better link teachers and their professional development to schools' needs.

- Professionalising school leaders: Leadership and management can be strengthened by setting clear standards for school directors, providing training, professionalising recruitment, supporting school autonomy, and ensuring social participation. Schools also need to be better supported with stable sources of funding for their specific needs.
- Evaluating to drive improvement: It is important that the universal teacher evaluation system that has been established provides opportunities for improvement and is aligned with the curricular reform. Once it is implemented and its rules are embedded, it can include formative and summative consequences, including rewarding excellent teachers and supporting less well-performing teachers. Teachers who are persistently poor performers should be excluded from the education system.

Promoting greater equity and quality across education systems also requires making funding strategies more responsive to students' and schools' needs as they have a considerable influence on students' learning opportunities. To this end, funding strategies need to guarantee access to quality early childhood education and care, especially for disadvantaged families. Moreover, funding strategies should take into consideration that the instructional costs of disadvantaged students may be higher than for other students. Finally, it is important to balance decentralisation/local autonomy with resource accountability to ensure support for the most disadvantaged students and schools.

For education reforms to succeed in Mexico, they need to be conceived as a national priority, framed by consensus and long-term policies, and capable of enduring through successive administrations to ensure continuity. The new Productivity Law is a good step in the right direction as it promotes a long-term vision, in which investment in human capital plays a key role. Education reform should be a nationwide effort sustained by national and state authorities. Other key stakeholders such as the teacher unions, academics, civil society and parents must also be involved in the process. There is plenty of scope for the federal and state governments to precisely define the distribution of responsibilities in order to maximise results.

Upgrading vocational education and training

School- and work-based programmes help smoothing the transition from school to work. Vocational education and training (VET) increasingly plays a central role in preparing students for the future by combining academic and more relevant training to develop skills needed in the labour market. VET programmes can also prepare students for further education, and many countries are increasingly recognising that the quality of initial VET can make a major contribution to economic competitiveness, especially considering the size of Mexico's manufacturing sector.

The graduation rate for vocationally oriented upper secondary programmes in Mexico is amongst the lowest in the OECD: just 4% of students finish these programmes compared with an OECD average of 48%. In addition, Mexican firms invest little in vocational training, the connection between the vocational and training system and employers is relatively weak, and only 1% of tertiary students are enrolled in vocational-oriented programmes, compared to an OECD average of 25%.

The establishment of the National Productivity Committee (NPC) in 2013 (see Chapter 6) was an important step towards addressing some of these problems. Among others, the NPC has the mandate to permanently update the National Catalogue of Occupations and to analyse the labour competencies required in activities that correspond to industrial and service sectors through the dialogue between various stakeholders, including the public sector, trade unions and academia. In addition, after a successful pilot phase, the Mexican Dual Training Model (*Modelo de Emprendedores de la Educación Media Superior*) is now being mainstreamed in order to better integrate students into the labour market and contribute to the improvement of their skills and job opportunities.

Still, further efforts are needed. In particular, Mexico could consider strengthening the existing national certification scheme for skills. Furthermore, adopting quality standards and making apprenticeships an integral part of training programmes can help address the variation of quantity and quality of workplace training for VET students. VET teachers, many of who have work experience and continue to work in the industry, should receive pedagogical training before or immediately after they start teaching. Mexico could also further strengthen and promote upper-secondary programmes (such as CONALEP) that train the professional

technicians needed to meet the increasing demand for technical labour in high productivity sectors. Finally, Mexico could allow transitions between vocational and academic education streams and remove any dead ends from the system.

Improving youth's incentives to stay in school

Evidence suggests that the rise of Mexico's manufacturing sector has had an important impact on educational attainment. According to a recent study, for every 20 jobs created, one student dropped out at grade 9 rather than continuing on through grade 12 (Atkin, 2012). The policy remedy to this problem should consider the trade-off between creating more jobs and keeping kids in school. One simple solution would be to raise the employment age for manufacturing industries to ensure that kids cannot be employed in these industries until they have reached high-school graduation age. Expanding VET as discussed may also help as it allows students to combine work and education.

Another option would be to modify the conditional cash transfer programme (*Oportunidades/PROSPERA*) to encourage students to remain in school until graduation, offsetting the negative effect generated by the strong demand of low-skill manufacturing jobs. Under PROSPERA children can receive scholarships for college or technical college and those looking for a job have priority in the National Employment Service. Furthermore, the programme facilitates access to financial education, savings, insurance and credit. One shortcoming of the *Oportunidades/PROSPERA* is its focus on school attendance rather than graduation. A potential solution could be to change the flow of payments towards a large final payment conditional on graduating. A programme like this has been tested in Colombia and proven to be successful in increasing enrolment rates at the tertiary levels (Barrera-Osorio et al. 2011). In Brazil, a similar conditional cash-transfer programme for families who send their 7-14 year-old children to school (*Bolsa Escola*, inspired by the Mexican *Oportunidades en Mexico* programme) proved very successful. Teachers found it a useful tool for enhancing attendance; they could threaten parents with withdrawal of the bonus if their children's attendance slipped.

A way to offset the negative incentive of family members' migration to the US on school retention could be to channel more remittances to education. Evidence shows that remittances can have a large and significant effect on school retention, particularly in poor areas, by alleviating credit constraints of the left behind (e.g. Taylor and Mora, 2006). Mexico already has a programme called *Tres Por Uno* that encourages Mexican migrants abroad to invest in their communities of origin, with migrants having contributed USD 15 mn annually since the programme began. In 2015 the range of education projects under the programme was expanded, with a focus on financing education infrastructure and equipment and maintaining scholarships and grants in the communities that receive remittances. This shows the importance of channelling resources from remittances into educational improvement.

Better linking the education system to the labour market

Overall, in Mexico 30.9% of employers believe that an inadequately educated workforce is a major constraint on their operations, double the OECD average of 14.8%. Such a high rate suggests that still more should be done in Mexico, both through the education system and by employers themselves in providing training to meet skill requirements in the labour market. However, shortages are not limited to highly skilled jobs: amongst the top-10 jobs in which Mexican firms experience recruitment difficulties are sales representatives, secretaries, assistants, administrative personnel, labourers, and receptionists (OECD/ECLAC/CAF, 2014; World Bank, 2013). Many employers find socio-emotional skills particularly difficult to find.

To tackle growing skill shortages, the government must focus on ensuring that the education system, including upper-secondary and VET, is linked to labour market demand and fosters employability. Orienting a higher number of students towards areas linked to science, technology and mathematics is also a good investment. Mexico also needs to make better use of the existing human capital by tapping into the large pool of workers currently working in the informal economy (see Chapter 4) and those population groups not participating in the labour market at all (notably women and youth). Upscaling the *Servicio Nacional de Empleo*, Mexico's public employment service (PES), could also contribute to reduce mismatches and shortages. In Mexico, the PES serves only a very small segment of the workforce and is not commonly used by employers (World Bank, 2013). Mexico's current public expenditure (as share of GDP) on the PES and administration of labour market programmes is the lowest in the OECD.

Key OECD Recommendations

- Make education reform a national priority, framed by consensus and long-term policies, and capable of enduring through successive administrations. It should be a nation-wide effort sustained by national and state authorities with the full involvement of such key stakeholders as the teacher union, academics, civil society and parents.
- Extend initiatives for building up interpersonal and socio-emotional skills among students, such as the *Construye-T* programme, to reduce dropout rates and strengthen soft skills.
- Investigate the implementation of cost-effective policies at school to improve students' performance. This includes increases in the instructional time and better feedback from the principal to teachers and to students' parents.
- Make upper secondary education more appealing and relevant to the needs and interests of students and improve learning opportunities during students' overall educational pathways while in compulsory education. This can be done by making funding strategies responsive to students' and schools' needs and by designing equivalent upper secondary education pathways to ensure completion.
- Focus system-level policies on improving the success of students from diverse backgrounds and delivering quality education across all schools.
- Explore the possibility of strengthening the existing national certification scheme for skills.

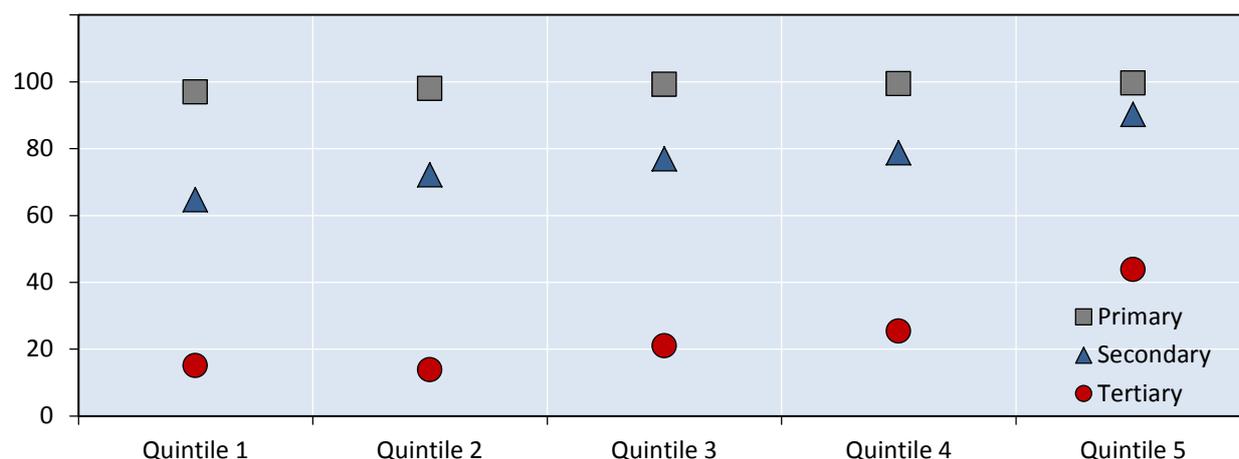
3. Increasing the quality and relevance of tertiary education

A highly qualified workforce is key to foster innovation and supporting Mexico's transition to a knowledge economy. As such, the current low quality and low relevance of tertiary education continues to hold back Mexico's development. Improving the availability of information on which skills/fields of study are most in demand in the labour market and better integrating women in tertiary education could help address these shortcomings. The distribution of spending on different education levels points to room for resource reallocations.

Tertiary education coverage remains low

Even though tertiary education graduation rates have been increasing in Mexico, they remain below the OECD average, with just 25% of 25-34 year-olds attaining tertiary education, compared to an OECD average of 40%. The total population that has attained tertiary education has evolved in line with the low educational attainment of other age groups in Mexico: only 13% of 55-64 year-olds have attained tertiary education. This attainment rate is one of the lowest among OECD countries. The gap between Mexico's attainment rates and those of other OECD countries is narrowing gradually, but is still large. Moreover, there are large disparities within the population: While 44% of children from rich families are enrolled in tertiary education, the share is only 15% for children from poor families (Figure 3.1).

Figure 3.1. Children from rich families are more likely to go to university than children from poor families
Net enrolment rates by income quintile in percent, 2011



Source: SEDLAC and World Bank (2014), Socio-Economic Database for Latin America and the Caribbean.

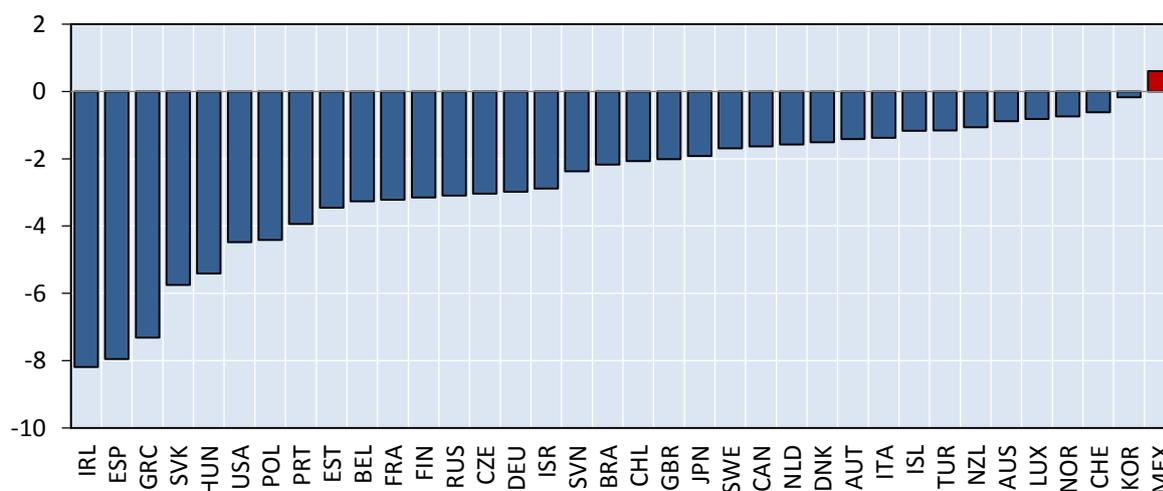
Increasing the supply of study places in higher education without diluting quality would increase human capital, raise economic growth, further equality and mobility by increasing access to higher education and potentially contribute to lowering wage differentials. A constitutional reform in Mexico (2012) set out commitments on education to increase education coverage in tertiary education to 40%. To achieve this goal, it will be crucial to improve the quality and relevance of tertiary education to make it more attractive for students to pursue tertiary studies as well as ensuring more women take up and complete tertiary studies – especially in science, technology, engineering and mathematics.

Improving the quality and relevance of tertiary education

Unemployment rates for Mexicans increase with better education. In 2013, the unemployment rate among tertiary-educated individuals was higher than it was for those who had attained upper secondary education, which again was higher than for those who had not attained upper secondary education. While upper secondary graduates face a higher unemployment rate than people without such a degree also in Brazil, Chile, Iceland and Korea, Mexico is the only OECD country where the unemployment rate is highest among tertiary educated persons (Figure 3.2). Skill mismatches likely contribute to the comparatively high unemployment rate among tertiary graduates.

Figure 3.2. Unemployment rates for Mexicans increase with better education

Percentage point difference in unemployment rates between tertiary educated and upper secondary educated persons, 2012



Source: OECD (2014), *Education at a Glance*.

Interweaving learning and working processes to benefit from the strengths of both formal learning and from realistic experiences in the workplace is being pioneered in a number of countries. Such interweaving means developing good networks and partnerships between education, on the one hand, and companies and communities, on the other.

Mexico is also fostering linkages between higher education institutions and employers through the National Productivity Committee. Building on the work of this Committee, the country could identify strategic sectors in which to further forge alliances among VET institutions, universities and employers to create centres of excellence that can supply skilful graduates and benefit from access to cutting-edge technologies and specialised knowledge. A good, existing example of this is the state of Puebla, which is pursuing such initiatives with the automobile, agriculture, and tourism industries. As has also been demonstrated by the success of the Querétaro regional aerospace cluster, establishing institutional links between education institutions and employers can improve the match between educational programmes and employment requirements. In regional areas this can especially be helpful in supporting their local needs.

Financing higher education

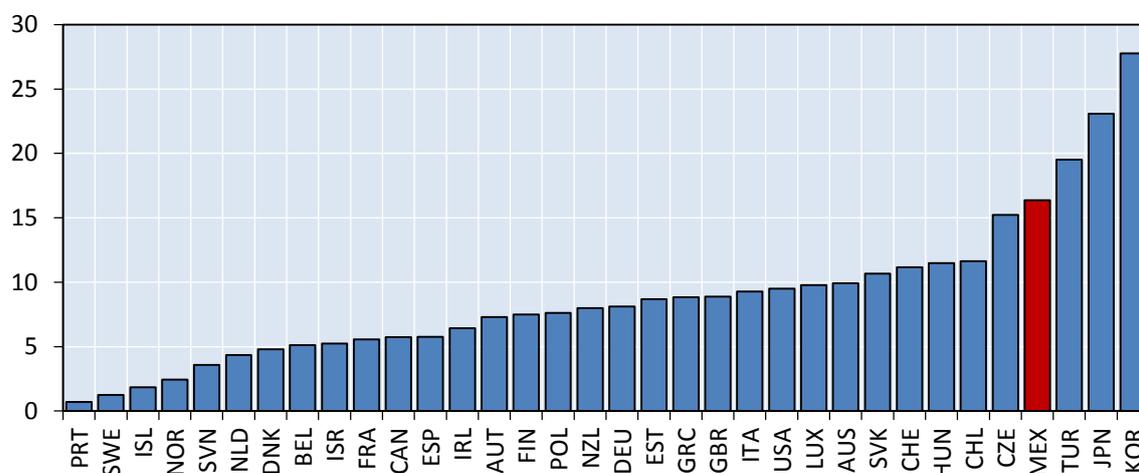
Expenditure per student in Mexico from primary to tertiary education remains the lowest among OECD countries (USD 3,286) even if it is higher than in Brazil (USD 3,066) and on a par with Turkey (3,240). Mexico spends comparatively more on university students, who come in very large proportions from high income families (Scott, 2009). Spending per student at the tertiary level is around three times the spending per student at the primary level, compared to a ratio of less than two in the average OECD country. Indeed, public spending on tertiary education is one factor contributing to high levels of inequality (Scott, 2014). There is scope for improving the balance of cost sharing between students and government. This should be done by looking at different options capable of ensuring that fair access is achieved. Other countries have for instance consolidated their universal student support system with an income-contingent loan system complemented with a scheme of means-tested grants to assist those students who would otherwise be prevented from attending university. Some existing scholarships granted by the Education Ministry already follow this principle (e.g. *Becas de Manutención para la Educación Superior*).

Reducing gender gaps in education and employment

Employment rates for women with tertiary-type A and research diplomas are more than 15 percentage points lower than those for men with similar education (72% for women and 88% for men). This is the fourth largest gap among OECD countries, after Korea, Japan and Turkey, (Figure 3.3). Many women remain out of the labour force in Mexico. While, on average across OECD countries, 62.7% of women are employed or seeking employment, this is the case for only 47.3% of Mexican women. Almost 40% of Mexican young women are

neither in employment nor in education or training (NEETs), the second highest rate among OECD countries after Turkey.

Figure 3.3. Highly educated women are less likely to be employed than men
Difference between the employment rates of men and women with a tertiary-type A or an advanced research degree, 2012



Source: OECD (2014), *Education at a Glance*.

In Mexico, there was a gap of 14 PISA score points in mathematics performance between boys and girls in 2012, up from 11 points in 2003 (compared to an OECD average difference of 11 score points in 2012). But even when boys and girls are equally proficient in mathematics and science, their attitudes towards learning and aspirations for their future are markedly different – and that has a significant impact on their decision to pursue further education and their choice of career. For instance, despite some improvement in recent years, women are severely under-represented in the science, technology, engineering and mathematics (STEM) fields of study and occupations. Graduates of these fields are both in high demand in the labour market and among the most highly paid.

Narrowing these gender gaps does not require extensive – and expensive – education reform. Supporting girls' positive attitudes towards and investment in learning mathematics will go a long way towards achieving this goal. Boys and girls are also not equally likely to plan a career that involves a lot of mathematics, compared to careers that involve more science. On average, 8% of Mexican girls (OECD average of 5%) but 27% of Mexican boys (OECD average of 18%) plan to pursue a career in engineering or computing. If so few women aim for the so-called STEM professions, there will continue to be few role models in these fields for young girls to emulate, and the cycle will simply perpetuate itself. In the short term, changing these mind-sets may require making mathematics more interesting to girls, identifying and eliminating gender stereotypes in textbooks, promoting female role models, and using learning materials that appeal to girls. Over the longer term, shrinking the gender gap in mathematics performance will require the concerted effort of parents, teachers and society, as a whole, to change the clichéd notions of what boys and girls excel at, what they enjoy doing, and what they believe they can achieve. Education systems could also strengthen their career advice services by ensuring that all students, especially girls, are aware of what opportunities are available in the labour market and which college degrees are most promising in terms of employability.

Key OECD Recommendations

- Build on the work of the National Productivity Committee to strengthen cooperation between VET institutions, universities and employers and create centres of excellence that can supply skilful graduates and benefit from access to cutting-edge technologies and specialised knowledge.
- Balance better the cost of tertiary education between students and the state. Consider an income-contingent loan system complemented with a broadening of existing schemes of means-tested grants.
- Encourage young women to pursue tertiary studies in science, technology, engineering and mathematics through special counselling and by making mathematics more interesting for them at school, identifying

and eliminating gender stereotypes in textbooks, promoting female role models, and using learning materials that appeal to girls.

- Raise women's awareness of which college degrees are most promising in terms of employability.

4. Reducing informality

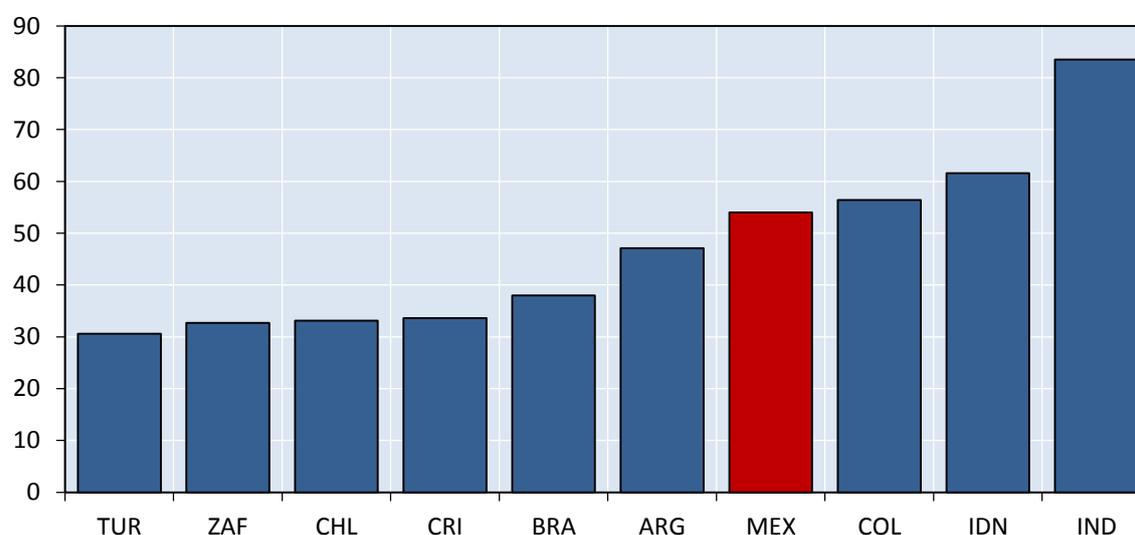
Mexico's high degree of informality dampens productivity and economic growth. It also represents a significant barrier to the development of skills in Mexico. Steps forward have been made recently through Mexico's Tax Reform and the comprehensive 2012 Labour Law reforms, which introduced special incentives to strengthen productivity among micro and small enterprises to help them expand and create more formal jobs. Also the "Go Formal" initiative, which raises awareness of the benefits of formality and strengthens inspections of enterprises regarding their fulfilment of social security obligations, is a welcome step to further reduce informality. Nonetheless, further work is needed to address the high rates of informality and its consequences, including the approval of a universal pension and the establishment of an unemployment insurance scheme integrated within the broader employment protection legislation. This would not only help to create more formal jobs, but also higher quality jobs.

Informality is a major obstacle to up-skilling the Mexican workforce

Although the Mexican labour market continues to perform better than most other OECD countries in terms of unemployment, the pervasiveness of informality remains a significant challenge. More than half of Mexican workers have an informal employment relationship, a relatively high figure if compared to that of other emerging economies (Figure 4.1). This said, a clear downward trend started recently, possibly reflecting the effects of the labour and tax reforms. Between the last quarter of 2012 and the first quarter of 2015 the size of the informal sector in Mexico declined by around 2 percentage points, with a particularly strong decline (by almost 1 percentage point) right at the beginning of this period (Figure 4.2).

Figure 4.1. Informality remains high, even compared to other emerging markets

Informal employment as a percentage of total non-agricultural employment, 2012 or latest available year



Note: The ILO measures employment in the informal economy as a percentage of total non-agricultural employment. Employment in the informal sector comprises all jobs in unregistered and/or small-scale private unincorporated enterprises that produce goods or services meant for sale or barter. In the case of Mexico, this corresponds to workers that have a relationship with the informal labour market, and not just workers who work exclusively in the informal sector. The data for Mexico correspond to 2012.

Source: International Labour Organisation (2015), Key Indicators of the Labour Market.

Figure 4.2 Informality has declined during the last two years
 Informal employment as a percentage of total employment, seasonally adjusted



Note: In its definition of informal worker, INEGI includes all those who work in unregistered microbusinesses or informal sector as well as other analogous modalities such as those occupied by own account in subsistence agriculture and workers that don't have social security and whose services are used by registered economic units.

Source: INEGI, Encuesta Nacional de Ocupación y Empleo and Instituto Mexicano del Seguro Social.

Informality has important implications for productivity and economic growth and represents a significant hurdle for the up-skilling of the Mexican workforce, further dampening productivity growth and prosperity. This can occur through two channels. First, firms in the informal sector do not provide learning and training opportunities and invest little (or not at all) in their workers, hindering their chances to maintain skills up-to-date. Second, the informal sector represents a viable alternative for students who drop out from education, halting the development of their skills in formal education or training. This phenomenon causes an inadequate distribution of resources that harms the economy's productivity levels because informal businesses, in general, are much less productive than formal ones.

Apart from its negative effects on skills and human capital, informality can also have an adverse impact on both equity and efficiency, as workers in the informal sector experience a higher degree of job insecurity and have no access to social rights, such as unemployment insurance, health care and pensions. Recent OECD work on job quality shows that informal jobs are generally worse in all the dimensions considered: earnings, labour market security and quality of the work-environment. In addition, greater informality is associated with more vulnerable social institutions and lower fiscal revenues.

The reluctance of workers and firms to operate formally in Mexico reflects a variety of social and policy factors which include not only a high tax wedge, but also stringent regulation, perceptions of corruption and weak enforcement of legal rights (Dougherty and Escobar, 2014). The lack of unemployment insurance also represents a major barrier to greater formality as it forces workers to find a job, any job, as quickly as possible and to move out from the formal sector into the informal one in order to maintain some income and avoid falling into poverty. Similarly, the absence of well-functioning active labour market policies often pushes workers to accept jobs that do not match their skills or qualifications. OECD countries are placing increased priority on policies such as job placement services, benefit administration, as well as training and job creation programmes, but Mexico's GDP share of public spending on active labour market policies is the lowest in the OECD.

Making the labour code more conducive to formal employment

The new Labour Law adopted in November 2012 is likely to have strengthened the creation of formal jobs while providing better protection for vulnerable workers and increasing the adaptability of the labour market. Among others, the labour market reform introduced new short-term training contracts, extended trial periods, and facilitated hiring in seasonal/temporary and part-time jobs with the aim of promoting higher formal employment, especially for youth and the lower-skilled. The National Productivity Committee, established in 2013, has also discussed the issue of labour market formality, with the dedicated subcommittee involving representatives from government, academia and social partners. Sectors with high levels of informality and employment, such as retail and tourism, are given priority.

At the same time, the Mexican President launched a broad publicity campaign to “Go Formal” in late 2014, which pools the benefits and rights of different programmes. Providing information and/or raising awareness of the benefits of formality has been shown to help in Brazil, particularly in the case of more marginal workers such as domestic employees, the self-employed as well as farmers. As part of the same campaign, labour inspections of enterprises regarding the fulfilment of social security obligations have been strengthened. Enhancing enforcement is particularly important in light of evidence suggesting that it can be an effective way of reducing informality in the short run (McKinsey, 2014), though it should be complemented by regulatory incentives that make formality more attractive for firms and workers. For instance, Mexico should improve enforcement capacity, especially the resources devoted to labour inspection (and increasing fines for violations), so that labour laws can work more effectively.

A key pending reform (currently being debated in the Senate) could increase the incentives for formality, namely the approval of an unemployment insurance scheme. The insurance scheme should be integrated within the overall employment protection legislation, specifically with firing costs (even conditioning to this event). Even better, the scheme could further incentivize formality if it is linked to active labour market policies.

Encouraging formality through tax reform

A key part of the effort to tackle informality is being addressed through Mexico’s recent tax reform, which aims at promoting equality and efficiency by spurring formal activity and strengthening government revenues. Mexico’s new fiscal regime for small firms, which started to operate in early 2014, includes substantially reduced personal, social security, value added and excise tax obligations in the initial decade of operation, to induce informal firms to regularise their status and start paying taxes. The scheme also includes special incentives to help raise productivity among micro and small firms, such as training, advisory and funding schemes – all of which are aimed at helping small firms expand and create more formal jobs. As part of further fiscal measures introduced in July 2014, social security reductions for low-income workers (earning up to three times the minimum wage) were introduced, amounting to a 50% subsidy during the first year and decreasing to 10% in the 10th year – which should encourage hiring into formal jobs. In early 2015, these benefits were extended to other groups of taxpayers. Evidence shows that these measures could significantly boost formality in the medium to long-run (Bosch, Melguizo and Pagés, 2013).

More ambitious reforms were also debated, including a full shift of taxation for social insurance from labour to consumption. Some authors argue that it is possible to provide all workers with the same health and pension benefits and compensate poor households for the VAT increase at limited fiscal cost (Antón, Hernández and Levy, 2013). Given political constraints, some pilots (e.g. with certain occupations) could be implemented. If this proves to be effective, they might be expanded.

Strengthening the legal framework

To reduce informality, Mexico also needs to strengthen legal institutions and reduce corruption. Such institutional reforms are essential to ensure that firms can expand and rely on the legal system for contract enforcement. Mexico is currently taking a series of measures to more effectively counter corruption, which will pave the way for stronger institutions, ease of doing business and increased trust in public institutions. The novelty of Mexico’s efforts lie on its comprehensive approach to build a national anticorruption system that brings together prevention, detection, compliance and enforcement. The OECD supports Mexico in designing policies for integrity and practical tools to address high-risk areas at the intersection of the public and private sectors to limit undue influence and build safeguards to protect the public interest.

In early 2015, the President has provided a strong signal of integrity by appointing a new Minister of Public Administration and publicly instructing him to implement measures to prevent conflict of interests and counter corruption in public procurement. Through an Integrity Review, the OECD is providing Mexico with international good practices to support the implementation of those measures and in addition strengthen the institutional architecture to curb corruption, instil a culture of integrity in the public sector and upgrade the internal control and audit systems. Mexico is also reviewing with the OECD the external control mechanism of its Supreme Audit Institution to strengthen its effectiveness and impact both at the Federal and regional level. Yet, the success of these ambitious programmes will depend on how effectively they will be implemented.

Reducing informality and fully realising the benefits from the tax, labour and anti-corruption reforms also strongly depends on Mexico's ability to secure the rule of law and effective functioning of judicial institutions. Improving court performance, effectiveness and access fosters the security of property rights, enforcement of labour and commercial contracts and trust in public institutions. A quality justice system is a key determinant of inclusive economic growth and national well-being by strengthening entrepreneurial activity, enhancing competition in the market and upholding citizens and businesses' legal rights and access to public services.

Fostering the formal employment of women

As mentioned in Chapter 3, many women nowadays remain out of the labour force. Since reducing the gender gap can have a significant impact on growth (Thévenon et al., 2012), policies to encourage more women to join the labour force and formal employment should therefore be a priority. Steps forward have been made lately to promote formal employment among women. The 2012 Labour Law reforms, for instance, have explicitly prohibited any type of discrimination against women in the labour market with the aim of spurring their participation in the formal sector and reduce incentives to informal employment. They have also made formal employment more attractive by recognizing teleworking, reducing the working day by one hour for working mothers breast-feeding, making maternity leave more flexible, and introducing paid paternity leave.

To reduce the gender gap further, policies should seek to increase job market options for women, while reducing the opportunity costs of joining the labour force. Evidence shows that female labour supply is much more responsive to wage changes than male labour supply, affecting the hours they work but even more their decision to participate in the labour market. Mexico is the OECD country with the lowest level of public spending devoted to active labour-market policies. Therefore, expanding spending in labour-market programmes could contribute to increasing women's labour participation and reduce the gender gap in the formal workforce. A priority should also be to expand high-quality childcare, especially for children aged up to three years, as Mexico is one of the OECD countries with the lowest share of children of that age in pre-school programmes. Only 39% of all 0 to 3 year-olds participate in early educational care compared to an OECD average of 70%.

Key OECD Recommendations

- Fully integrate the planned unemployment insurance scheme within the employment protection legislation and coordinate it with active labour market policies.
- Continue efforts to provide income support to the unemployed and ensure that such support is accompanied with adequate re-employment services and active labour market policies. Encourage a more active participation of firms in the design and provision of training.
- Closely monitor the impact of recent Tax and Labour Law reforms and ensure that these resources are leading to the expected results and are contributing to reduce informality and enhance female participation to the formal sector.
- Reduce pervasive corruption through the effective implementation of integrity measures.
- Reform justice institutions, strengthen the rule of law, address security issues with reforms centred on the efficiency of judicial resolution of civil, commercial and criminal matters.
- Encourage more women to join the formal labour force by improving access to quality childcare for children under three years of age, and extend active labour market policies.

5. Upgrading Mexico's innovation eco-system

Improving education and increasing the skill levels of the workforce is a necessary step towards creating a knowledge economy. In addition, shifting economic activity towards more knowledge-based industries and upgrading participation in global value chains requires investments in knowledge-based capital (KBC) by both the government and the private sector. While human capital is certainly a key underpinning of KBC – for instance, software is essentially an expression of human expertise translated into code – other infrastructure, institutional and framework conditions are also necessary.

Mexico's innovation performance lags behind that of other countries

On many indicators of innovation inputs and outputs, Mexico falls within the bottom five OECD countries. Overall spending on R&D is low – at 0.4% of GDP in 2012 it is half the level of countries such as the Russian Federation and Turkey, which have a similar GDP per capita. Mexico's President has made a commitment to raise R&D intensity to at least 1% of GDP – a very ambitious target and one that was not achieved in the past despite similar commitments under previous administrations. Mexico also scores poorly on measures of innovation outputs such as patents and top scientific publications. At the same time, Mexican businesses invest very little in R&D.

There is thus much ground to catch up in order to encourage firms to experiment and boost their investment in KBC (including R&D, intellectual property, skills, and organisational capital). Two particular policy areas stand out: promoting innovation hubs and investing in ICT infrastructure. In addition, improvements in the general framework conditions for investment (see Chapter 6) are key.

Promoting innovation hubs

Mexico does not yet have a strong innovation ecosystem to support the growth of knowledge-intensive firms and clusters. Linkages between the business sector and the public research sector are weak, as evidenced by a paucity of cross-sector funding. Business funds only 3.3% of research in the public sector, compared with over 9% in an average OECD country.

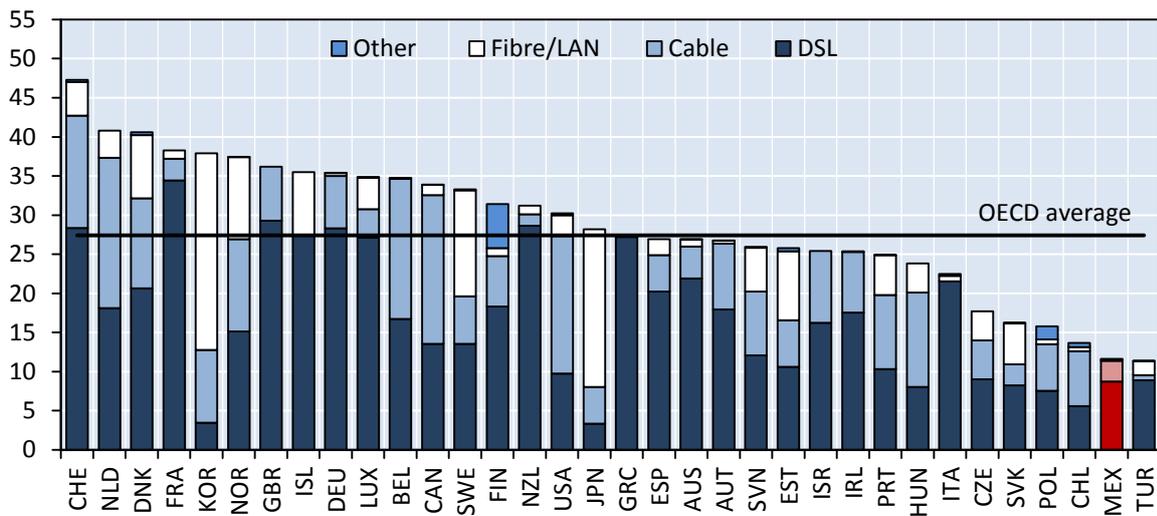
Reinforcing public R&D capacity and infrastructure is seen as a major policy priority and the Mexican government has taken some steps to address its weaknesses under its National Development Plan (2013-18) and the Special Programme for Science, Technology and Innovation (2014-18). Funding available to the National Council for Science and Technology (CONACYT) was increased by 20% in 2014, and the government has also introduced initiatives to increase the number of research positions and the share of young researchers in public research, while its international scholarship programme aims to promote linkages with global scientific communities. Fostering science-industry linkages is another priority, and Mexico has provided new incentives for co-operation and co-funding between public research and industry, via CONACYT's Innovation Incentives Programme. The commercialisation of public research is being targeted through the creation and strengthening of Knowledge Transfer Offices and the reform of intellectual property regulation in public research institutions.

Looking ahead, budget constraints mean that Mexico must strengthen efficiencies and synergies within the innovation ecosystem. Mexico has expressed interest in fostering a "smart specialisation" approach, and a recent diagnostic of Mexican states has identified local capacity and actors and the need for differentiated regional development strategies. This is also recognised in the Programme to Democratize Productivity. Ensuring coherence between national programmes and regional-level policy actions will be essential to strengthen the development of local innovation ecosystems, and help build centres of excellence that can play a role in knowledge-centred clusters. Government policies should avoid "picking winners" but rather work with existing centres of activity to enhance infrastructure and promote linkages with universities in particular. Recent evidence suggests that well-formed clusters can facilitate firm creation and boost innovative outputs. As the principal body in charge of co-ordinating the Mexican science, technology and innovation system, CONACYT will be central to this effort.

Investing in ICT infrastructure

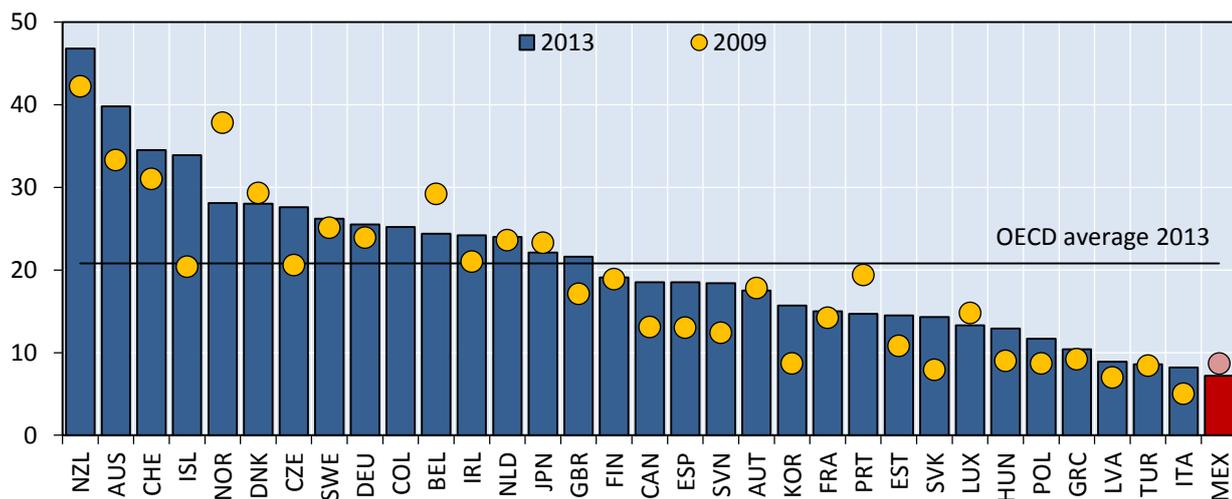
Much value creation is now found in upstream activities, such as R&D, the development of new concepts, or manufacturing key components, or in downstream activities, such as branding and customer service. In all these areas, ICTs underpin the ability of firms to innovate and boost their productivity. But Mexico faces important challenges for bringing ICT infrastructure in line with the needs of society, not only with respect to innovation, but also improved educational opportunities, health service delivery and other social needs. The ICT infrastructure and adoption gap is still enormous: For example, in June 2014, Mexico ranked 30th in 34 OECD countries in wireless broadband penetration and 33rd in fixed broadband penetration (Figure 5.1). The low broadband penetration is mirrored in a small number of companies engaged in e-commerce sales (Figure 5.2) and a low share of adults using the Internet (Figure 5.3).

Figure 5.1. Mexico’s ICT infrastructure and adoption gap is still enormous
 OECD fixed broadband subscriptions per 100 inhabitants, by technology, 2014



Source: OECD Broadband Portal.

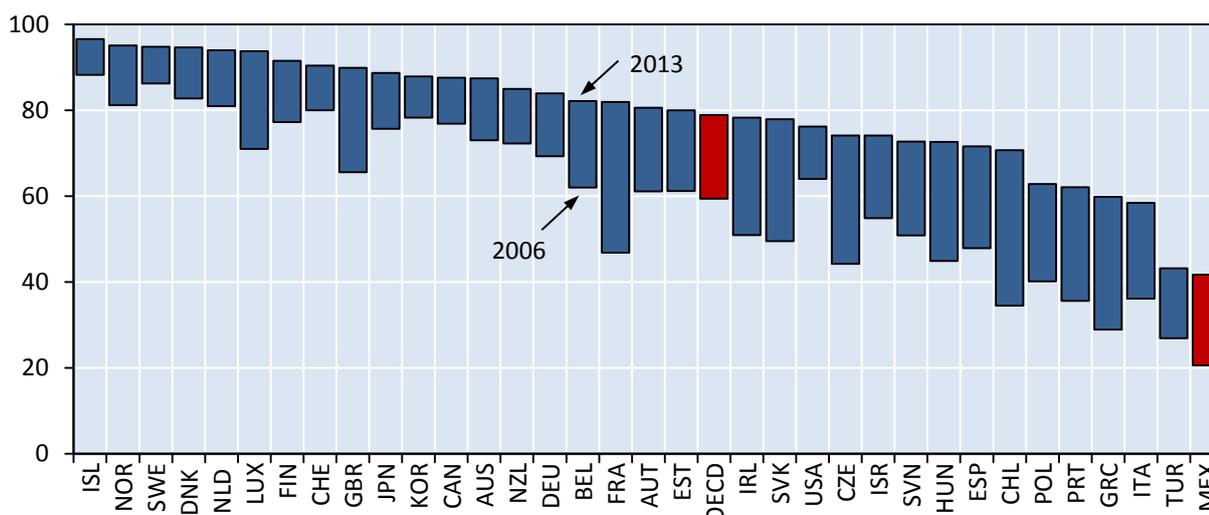
Figure 5.2. Only a small share of Mexican firms are engaged in e-commerce
 Enterprises engaged in e-commerce sales as percent of all enterprises



Note: Data refer to 2008 and 2012 for Mexico, 2007 and 2013 for Canada, the fiscal years 2008/09 and 2012/13 for Australia, the fiscal years 2007/08 and 2011/12 for New Zealand, and 2008 and 2011 for Switzerland.

Source: OECD, ICT Database; Eurostat, Information Society Statistics; national sources.

Figure 5.3. Internet usage remains low in Mexico
Change in the share of 16-74 year olds using the internet, 2006-2013



Source: OECD (2014), *Measuring the Digital Economy*, OECD Publishing, Paris.

Mexico has made some important progress in the past two years by promoting competition in telecommunications and broadcasting, through the adoption of the Constitutional Reform and the Federal Law on Telecommunications and Broadcasting (2014). It has also adopted a National Digital Strategy, a broader strategy that seeks reforms in education, government, health, innovation policy and ICT skills, among others, for Mexicans to take advantage of the digital economy. These reforms, generally ambitious, will bear fruit in the long-term but require the Mexican government to actively follow their implementation to make sure that the country's performance in the digital economy approaches the OECD average. Mexico is also expanding investment in ICT infrastructure. The 2014-18 National Infrastructure Programme earmarks MXN 674 bn for the development of communications infrastructure to enhance coverage and improve access to higher quality communications services.

Key OECD Recommendations

- Strengthen innovation ecosystems by working with existing clusters to improve linkages to universities and early-stage investment vehicles.
- Ensure coherence between national programmes and regional-level policy actions to strengthen the development of local innovation ecosystems.
- Ensure effective implementation of the Telecommunications Reform and the National Digital Strategy.

6. Improving the general business environment

A sound and enabling business environment is also key to unleashing Mexico's growth potential. Without good framework conditions, companies might be reluctant to invest in physical or intangible assets even if other supportive factors such as a high-skilled workforce are in place or . Three particular policy areas should be the focus of Mexico's immediate efforts: upgrading transport infrastructure, getting finance to small and medium-sized enterprises, and clearing regulatory impediments to firms' growth.

Unleashing Mexico's growth potential requires improvements in the general business environment

Following entry into NAFTA in 1994, Mexico curbed inflation, put in place a solid macroeconomic framework and opened up to world markets. While these policies are good preconditions for strong and sustainable growth, there is ample room to further improve the general business environment. Trade costs are still high due to transport infrastructure bottlenecks and inefficiencies in administrative and regulatory procedures. Competition in many sectors is hampered through regulations that protect incumbents and constrain the entry of new firms. Access to credit is still an important barrier for entrepreneurs to start up a business and for existing businesses to grow beyond the size of microenterprises. Tackling these issues would be an important step towards fostering competition and, hence, encourage firms to investment and be more innovative and efficient.

Upgrading transport infrastructure

Past investment in roads and ports, coupled with policies to promote the development of logistics clusters along trade corridors, facilitated inward investment as a motor for regional development. Particularly crucial was the deregulation of road haulage and rail services in the 1990s, which saw costs for transport decline substantially and stimulated private sector investment in rail infrastructure (ITF 2014). The 2014-2018 National Infrastructure Programme includes MXN 646 bn for investment in transport infrastructure (roads, ports, as well as metro and bus-rapid-transit systems), to be funded by private as well as public resources. Freight rail investment is mainly in the hands of private concessions but public funds will contribute to a number of city bypasses and port access lines.

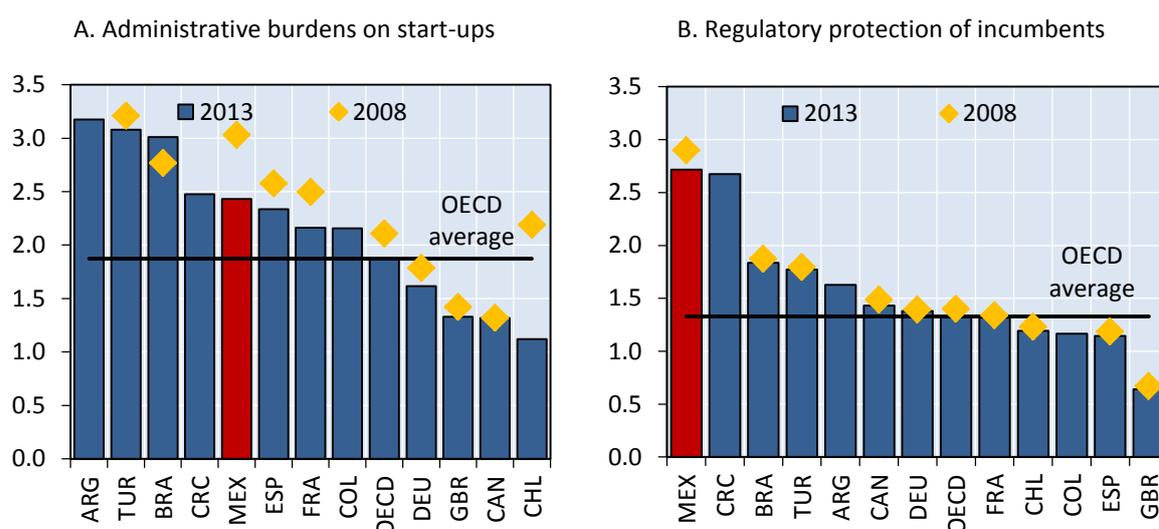
There are some infrastructure bottlenecks in hinterland connections to ports, notably rail and local access in port cities. But despite cuts in investment budgets, most recently in 2015 to ensure sound public finances in the wake of the oil price collapse, investment in port and road infrastructure has largely been maintained. Inefficiencies in administrative and regulatory procedures are currently a more significant cost factor for trade. Inspection facilities are inadequate in container ports and there is poor coordination between customs, security, phyto-sanitary and veterinary inspections. Investments in information technology to create a single window for port and customs paper-work have so far resulted in uncoordinated pilot projects that lack the organisational cooperation for full implementation. Coordination is now the priority with transformation of customs and inspection procedures into a service to facilitate trade.

Infrastructure investments have been made to improve road border crossings, but long queues for freight vehicles are common. Fast-track lanes have been established for registered users but access to these lanes is usually obstructed by trucks queuing to use regular channels. Modest investments in managing access could greatly improve crossing in addition to the large ongoing investment in a new crossing to California at Otay Mesa East. Peak hour congestion is widespread on the trunk roads in major cities and severe in the central areas of the Mexico City megalopolis. Recent investment and ongoing investments in highway bypasses and the national strategic highway network have greatly increased capacity but in central city areas stronger traffic management policies will be required together with investments in public transport, bus, bus-rapid-transit, metro and rail. The National Investment Programme reflects this need as does the policy of the Mexico City government to prioritise pedestrian access, public transport and freight delivery over car mobility in the allocation of road space and investment in transport infrastructure. However, investment needs are substantial and the transport and grid infrastructure will have to be expanded further.

Clearing regulatory barriers to firms' growth

In recent years the OECD has been collaborating with the Mexican government to promote decisions that enhance regulation. Substantial changes have been made to the country's competition environment, notably with (i) the enhanced ability of competition law enforcers to review sectors in which there is insufficient competition and, in certain circumstances, to undertake structural reforms, (ii) the introduction of competition assessment of new regulations as a systematic process under COFEMER, with guidelines and clear reporting, and (iii) reforms of the telecom sector. Nonetheless, it is important to recognise further areas in which reform is needed, as substantial problems remain in the competition environment. The OECD's Product Market Regulation indicators suggest that significant efforts remain to be taken with respect to regulatory protection of incumbents and legal barriers to entry (Figure 6.1).

Figure 6.1. Regulatory burden remains high in international comparison
Index from 0 (least restrictive) to 6 (most restrictive)



Source: OECD Product Market Regulation Database, www.oecd.org/eco/pmr.

Moreover, Mexico still has ample room to extend the recent initiatives to open its economy to foreign investment. Because of a longstanding general foreign investment screening rule that applies to foreign investments in many industries, Mexico's performance in the OECD FDI Regulatory Restrictiveness Index found Mexico has one of the most restrictive regimes for FDI in the OECD. Having said this, many of the sector-specific restrictions have been lifted or eased under the present Government. For example, the Telecoms Reform removed the 49% foreign investment limit in fixed-line telephony, and the energy reform allows foreign investment in exploration, production, refining and transportation of hydrocarbons. However, some restrictions were left untouched. The Programme to Democratize Productivity seeks to boost investment, promote a change in the productive structure of the economy towards sectors with higher productivity and competitiveness, increase the technological content and value-added of national production and strengthen the formation of human capital to promote formal employment, among others.

Promoting dialogue and concerted action among public, social and private actors through the National Productivity Committee (NPC) and other institutional mechanisms is another key aspect of this new initiative, which has already been approved by Congress and published on 6 May 2013. The NPC includes different government ministries, the National Council for Science and Technology (CONACYT), as well as representatives from the private sector, trade unions and research institutions. Recently, the NPC identified transversal policy areas in which coordinated action is crucial to improve productivity levels. Preliminary assessment suggests that the NPC is working properly and contributing to analyse challenges and build consensus for the implementation of reforms, particularly in areas related to public sector management. The exchange of practices in terms of coordination among institutions focused on promoting productivity could further enrich the performance of the NPC. A new joint project by the OECD and Mexico's Ministry of Economy aims at providing concrete suggestions for revising regulation using the OECD's Competition Assessment toolkit and at establishing guidelines for state and municipal officials.

Getting finance to SMEs

Small- and medium-sized enterprises (SMEs) account for almost three-quarters of employment in Mexico, more than in most other OECD countries. However, the SME sector as a whole makes a considerably lower contribution to GDP, accounting for just over half of value added in the country. This more modest contribution of SMEs reflects the high share of very small and less productive microenterprises in Mexico. Part of the difficulty is the large spread between interest rates to large firms and SMEs, which is much higher than in most other OECD countries, though Mexico's loan guarantee programme has helped to bring this down considerably.

Concerns about the high cost of credit and lack of competition in the banking sector have motivated a major financial reform. Legislation passed in January 2014 strengthens regulation, increases competition and lowers the cost of borrowing. These changes should allow for more robust and sustainable private credit deepening, the penetration of which is currently far below the OECD average. Large segments of the population do not use formal banking services, and there is much progress still to be made to promote financial inclusion and increasing banking penetration. As part of the changes, brought about by the financial reform, the Federal Economic Competition Commission now reports competition conditions in the financial sector, and is strengthening competition and transparency in payment system networks.

Access to credit, especially in the seed and start-up phases, is still an important barrier to fostering start-ups in Mexico. Private equity and venture capital represented only 0.06% of GDP last year, one of the lowest among emerging markets. A National Institute of the Entrepreneur was created in 2013 to refine and implement schemes to address entrepreneurs' needs, including forming a seed capital "fund of funds", and a programme to assist high-potential SMEs access the bond market. Partly as a result of government support, equity finance in Mexico almost doubled between 2007 and 2012, from MXN 2.4 bn to MXN 4.2 bn. This effort must continue and must be complemented with measures to make the business environment more dynamic and innovative.

Key OECD Recommendations

- Further strengthen the start-up environment by enhancing and expanding seed capital financing programmes and increasing the capacity of local banks (e.g. savings banks, rural banks, and co-operative banks) and of non-bank financial intermediaries to boost SME lending through increased competition in the banking sector.
- Improve regulation at the local, state and national levels where it undermines productivity or is deficient in terms of safety or environmental protection.
- Open up banking and aviation to FDI.
- Establish mechanisms to exchange and adopt best practices in terms of inter-institutional coordination for the functioning of the NPC in order to further strengthen actions aimed at boosting productivity.

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