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Brazil

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BRAZIL

Brazil's economy is characterised by large and well-developed agricultural, mining, manufacturing and services sectors. Its USD 2 trillion economy is expanding rapidly into world markets, and is also changing structurally. Over the decade to 2008, high-technology manufacturing exports increased at an average annual 16%, faster than total manufacturing exports (13%), a sign of higher competitiveness.

Brazil's science and technology profile shows weaknesses, but some areas have improved over the past two years. In 2008, gross expenditure on R&D (GERD) was 1.1% of GDP. While this is below the OECD average, it is higher than in India, Russia and South Africa. Business expenditure on R&D (BERD) was 0.5% of GDP in 2008. To raise this, Brazil has a generous 25.5% tax subsidy rate for every US dollar of R&D.

Emerging economies produce few patents relative to R&D, as illustrated by Brazil's 0.3 triadic patents per million population in 2008. However, Brazil is increasingly involved in patent development in waste management, water pollution control and renewable energy. In 2008 it published 26 806 scientific articles; at 141 per million population, this indicator is well below the OECD average but has increased sharply over the past two years. In 2008, it had 1.6% of world scientific articles, more than the Netherlands, for example. Between 1998 and 2008, publications increased by 12.2% on an average annual basis. Only 3.6% of Brazil's firms introduced new-to-market product innovations during 2003-05, and a below average 36% of firms undertook non-technological innovation.

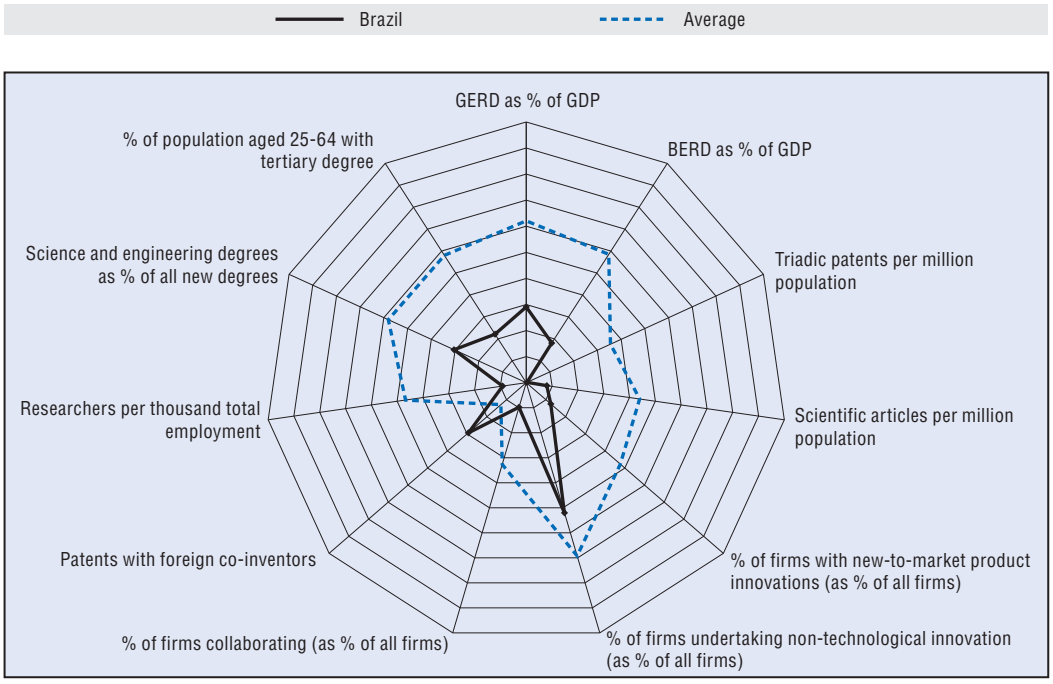
International integration appears weak. While the average ratio of exports and imports to GDP increased in all OECD countries between 1997 and 2007, it was less than 20% in Brazil. A small 3% of firms collaborated on innovation activities in 2003-05, but the percentage of Patent Cooperation Treaty (PCT) applications in 2005-07 with foreign co-inventors (18%) was above the OECD average of 7.7%.

Brazil's indicators for human resources in science and technology (HRST) remain weak. In 2006, there were only 1.5 researchers per thousand total employment. Science and engineering degrees increased to 11% of all new degrees in 2007, around half the OECD average. A comparatively low 11% of the population aged 25-64 is qualified at the tertiary level. However, there is a rising trend in doctorates awarded. In spite of low graduation rates, Brazil, like Russia, awards more doctorates per capita than the OECD average.

Brazil's GDP grew by 6.1% in 2007 and 5.1% in 2008 but contracted by 0.2% in 2009. However, it was one of the first emerging economies to begin to recover. The labour market remained resilient, and unemployment fell from 7.9% in 2008 to 7.4% in 2009. GDP per capita was 22% relative to the United States in 2009.

To complement the government's Growth Acceleration Plan, the Ministry of Science and Technology has launched its own Action Plan for Science, Technology and Innovation – *Plano de Ação para Ciência, Tecnologia e Inovação 2007-2010 (PACTI)* – with initiatives and programmes to enhance the role of science, technology and innovation in Brazil.

Science and innovation profile of Brazil



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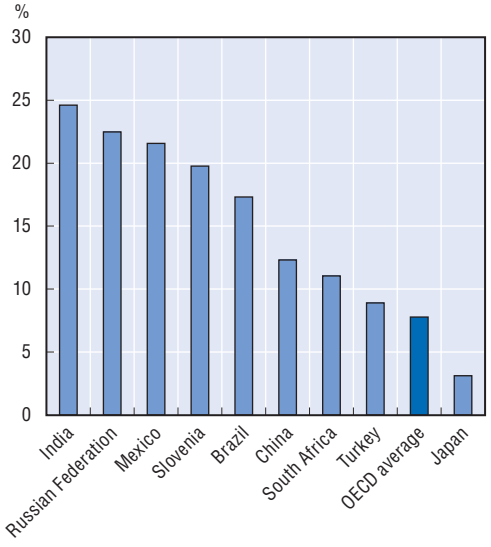
Patents with foreign co-inventors

Percentage of PCT applications, 2005-07



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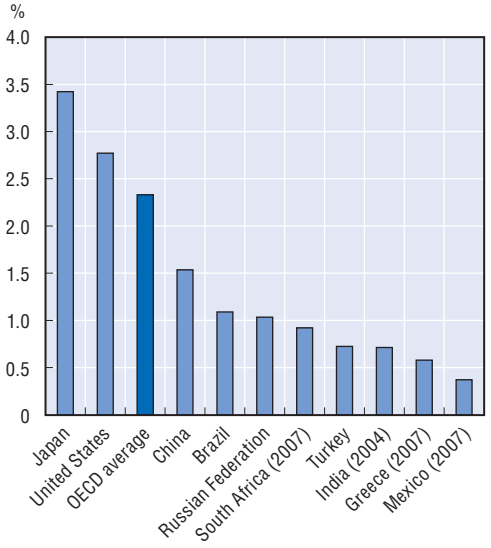
Gross expenditure on R&D

As a percentage of GDP, 2008



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