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In Brazil, a huge scholarship program called 'Science Without Borders' could help to boost economic growth. By the end of 2015 more than 100,000 Brazilians – half of them undergraduates, the other half doctoral students – will have spent a year or so abroad at the best universities around the world studying subjects such as biotechnology, ocean science and petroleum engineering which the government regards as essential for the nation's future. The one and a half billion dollar project will be financed by businesses and the Brazilian taxpayer.

'Science Without Borders' is Brazil's boldest attempt to improve its economy. The country's rate of growth is slightly below the Latin American average and far slower than many other comparable countries. Officials hope that improving the quality of the workforce could make a big difference, though it will take time to have an effect.

Employers complain about the difficulty of finding well-qualified staff. Unemployment is at a record low. Brazilians with university degrees earn almost four times as much as high school graduates, a situation which is unmatched in other rich countries. Staff trained in science and related subjects are particularly scarce. A think-tank with links to the government, says that too many of the 30,000 engineers Brazil produces each year come from mediocre institutions and that, anyway, the country needs twice that number. Officials hope that students returning with fresh ideas picked up abroad will raise standards in their home universities too.

Foreign universities and governments are leaping at the chance of teaching Brazilian students. The United States has already signed up to take 20,000; Britain, France, Germany and Italy will take half that number each. Other countries are scrambling to attract the rest. The Brazilians will pay full fees. And host countries are thinking of the longer-term return of building mutually profitable contacts, in business as well as education.

"The scale and speed of this program are unprecedented," says the head of a non-profit group that is managing the program for American universities. It is organizing three-month industry placements for all its Brazilian visitors.

Until now, few Brazilians have studied abroad but those who have foreign degrees have had a disproportionate influence back home. In the 1960s and 1970s the government paid for doctorates abroad in oil exploration, agricultural research and aircraft design. Brazil is now a world leader in all three fields.