

## Discussion Paper

# When Developing Countries Meet Transnational Universities: Searching for Complementarity, Not Substitution

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**José Guimón**

Autonomous University of Madrid, Spain

**Rajneesh Narula**

Henley Business School, University of Reading

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[dunning@henley.ac.uk](mailto:dunning@henley.ac.uk)

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## **Abstract**

During the last two decades a growing number of universities, mainly from developed countries, have established campuses in developing countries. From the developing countries' perspective, attracting foreign universities helps mitigate financial constraints and capacity shortages that impair the state's ability to provide greater access to tertiary education, while also improving teaching and research in general. However, foreign universities may also be detrimental if they crowd-out their domestic counterparts. We explore different scenarios and policy options for developing countries aiming to attract foreign universities, building upon a review of four case studies (from Chile, China, Kazakhstan and Malaysia). Our analysis suggests that policy-makers should provide incentives that properly align incoming foreign universities so that they complement and strengthen the areas of weakness in the national tertiary education system.

## **Keywords**

tertiary education; transnational university; international branch campus; embeddedness; crowding-out

## **JEL Classifications**

I23, I25, I28, O19, O38

## **Contacts**

José Guimón, Department of Development Economics, Autonomous University of Madrid, Spain  
Email: jose.guimon@uam.es

Rajneesh Narula, Henley Business School, University of Reading, RG6 6UD  
Email: r.narula@henley.ac.uk

# 1 Introduction

Higher education constitutes a key input to the development and growth strategies of countries, and one that is regarded as a public good (Schoenenberger, 2005). Beyond its impact on the welfare of individuals, higher education influences the overall welfare of nations by building the technological capabilities that drive industrial development (Geuna and Rossi, 2015; Hanushek, 2016). Public support for higher education is also instrumental for reducing income inequalities, by providing citizens with a more equitable access to better living conditions (Nixon, 2015; UNESCO, 2015). On top of providing higher education, universities also contribute to economic development by performing research that leads to the creation and diffusion of knowledge.

Unfortunately, most developing nations prove unable to develop and maintain a viable university sector. This is in large part because developing country governments are faced with limited resources, as well as a number of other significant priorities for these resources. Health, primary and secondary education, and other key infrastructure are considered more urgent priorities, which also have more immediate development (and political) returns. Relative to primary and secondary education, higher education is much more capital intensive on a per-student basis. Specialized facilities require expensive equipment and laboratories, as well as highly skilled educators. Governments of developing countries therefore tend to underinvest in universities (Agarwal, 2015; Williams, 2016; World Bank, 2000). Nevertheless, higher education is a necessary input for other public goods: hospitals need medical doctors and nurses; schools require teachers; construction companies need civil engineers and technicians; government offices require competent administrators. Thus, demand for higher education remains high in developing countries and continues to grow, often at a faster pace than the economy as a whole.

The continuing weakness of developing countries' university sector is leading to brain drain, as more privileged students attend foreign universities, and do not always return (Gribble, 2008). For example, in the US over half of PhD's in science and engineering are awarded to developing country students, a majority of whom stay on after graduation (Han and Appelbaum, 2016). Besides the risk of brain drain, outward mobility of students is a suboptimal solution given the high costs. As such, this option is not practical for most developing countries.

A common response to these challenges has been to promote private actors' participation in the higher education landscape. But governments have not always been able to effectively regulate private universities, and depending upon them has led to an overall decline in the quality of higher education in developing countries (Balán, 2015; Knobel, 2015). Private universities have

also accentuated the inequality challenge, as they are generally accessible only to the wealthy (Leihy and Salazar, 2017; Marginson, 2015; Yang and McCall, 2014).

An increasing number of developing countries have also permitted foreign universities to offer training and grant academic qualifications *in situ* (Wilkins, 2016). Allowing foreign investments in the higher sector may be more cost effective than setting up public universities, since it transfers part of the cost (and organizational burden) to experienced foreign actors. In principle, it also reduces brain drain and contributes to the local economy through direct and indirect effects. In addition to teaching, foreign universities may also become involved in research domestically, contributing to the development of technological capabilities in the industrial and commercial sectors. However, relying on foreign universities is not without its drawbacks, especially if foreign-owned institutions end up replacing rather than complementing efforts to improve national universities.

The objective of this paper is to examine the policy options for developing countries to attract foreign universities. Theoretically, the paper aims to contribute to the interface of higher education and economic development research, drawing extensively on concepts taken from the international business literature to analyze the local embeddedness of international branch campuses and its developmental implications. This kind of “theory borrowing” contributes to expanding international business studies beyond the boundaries of the firm (Ritvala et al., 2017; Toyne and Nigh, 1998) and is useful for theory development at the early days of a field of research (Kenworthy and Verbeke, 2015). Empirically, the paper follows an exploratory and qualitative method, building on a multiple case study. Although this method is inevitably challenged by the risk of sampling bias that hampers the generalizability of its results, it can still serve the purpose of illustrating the opportunities and challenges associated with different policy options.

## 2 Analytical background

### 2.1 The unfulfilled demands placed on developing countries’ universities

Universities are regarded as key institutions supporting the process of economic catching-up in developing countries (Mazzoleni and Nelson, 2007; Yusuf and Nabeshima, 2007). Higher education and industrial development policies are closely connected because a country’s educational attainment structure shapes its feasible patterns of technological and industrial transformation (Cimoli et al., 2009; Nübler, 2014). Besides the formation of human capital, academic research conducted by universities is necessary for developing countries to be able to

develop the *absorptive capacity* required to select, acquire and generate new knowledge adapted to local contexts (Criscuolo and Narula, 2008; Wang and Cuervo-Cazurra, 2017). As discussed in Lall (1992) the priority at the early stages of development is to build basic human capital, but as industrial development proceeds the need for more sophisticated training grows, and so does the need for research efforts to build technological capabilities. More recently, the need for qualified skills and specialized knowledge is regarded as a precondition for developing countries to participate in the knowledge-based economy (UNESCO, 2015) and achieve the sustainable development goals (McCowan, 2016).

Demand for university education in most developing countries is rapidly expanding, not only as a result of demographic growth, but also as a consequence of progress in the provision of primary and secondary education. For example, the percentage of the population 25 years or older that had attained an upper secondary education increased from 5.8% in 1980 to 32.3% in 2015 in India, and from 6.65% in 1982 to 22.3% in 2010 in China.<sup>1</sup> Trends are similar in the rest of the developing world, where population growth has also outstripped the developed world. Consequently, demand for university education has grown much faster in developing countries than in developed countries.

Indeed, global enrolment in tertiary education increased from 67 million students in 1990 to 181.5 million in 2010; a strong increase that can be mainly attributed to developing countries (Table 1). Annual growth reached almost 7% in Asia and Africa, and just under 6% in Latin America, compared to less than 3% in Europe and North America. China has become the largest market for higher education, with over 35 million students enrolled in 2010, following an annual growth above 10% since 1990. In relative terms, however, the gross tertiary enrolment ratio in developing countries remains well below high income countries (Figure 1), which combined with fast demographic growth in much of the developing world suggests that demand for university education in these countries will maintain its fast growth in the foreseeable future.

<INSERT TABLE 1>

<INSERT FIGURE 1>

Ultimately, developing countries are struggling to build the capacity of universities to cope with increasing demand without compromising equity nor quality, and to mobilize the financial resources to achieve this (Agarwal, 2015; Mok and Yu, 2014; Schendel and McCowan, 2016; Yang and McCall, 2014). The next section identifies different policy approaches to deal with these challenges.

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<sup>1</sup> Data from UNESCO extracted on 05 June 2017 from UIS.Stat.

## 2.2 Enhancing the university sector of developing countries

Considering the different types of universities by ownership structure, governments of developing countries may rely on three broad policy approaches: (i) investing further in the development of public universities; (ii) encouraging the emergence and growth of private domestic universities; and (iii) attracting foreign universities to establish a presence locally. These three policy approaches may be adopted jointly, although different countries place a different emphasis on each.

### 2.2.1 Expanding the public sector university system

The most obvious solution is to increase public investment to cope with demand. However, severe budget constraints and other more pressing priorities often make this option unviable. Class sizes in public universities and staff-student ratios have exploded in many developing countries in an effort to manage demand, as the cost of expanding existing universities is much lower than the capital cost of establishing new ones. In addition to challenges on the education front, universities in developing countries are also struggling to keep up with the minimum level of academic research required to develop absorptive capacity. This is primarily due to a shortage of faculty holding doctoral degrees and the difficulties and high costs of recruiting quality faculty. Research in science and technology can also be capital-intensive, requiring considerable investment in laboratories and equipment. These resource constraints prevent the development of science-industry links and constitute major obstacles to industrial development (Saad and Zawdie, 2011; Yusuf and Nabeshima, 2007).

### 2.2.2 Private domestic universities

Many developing countries have opted to supplement the public university system with private universities (Verger, 2016). However, without proper regulation, this can compromise the quality of higher education while leading to greater inequality of opportunity (Agarwal, 2015; Balán, 2015; Knobel, 2015; Marginson, 2015; Schoenenberger, 2005). In countries such as Brazil, the private sector has expanded to meet this demand (Marcus, 2015). One single company in Brazil has more than one million students on as many as 130 campuses across the country. However, while this has managed to ameliorate the pedagogical challenge, it has not helped reduce the shortage of skilled faculty to do research and teaching – in many instances, staff from the public sector moonlight in the private institutions, further stretching resources available for the purposes of research.

### 2.2.3 Foreign universities

The third policy approach is to rely on the attraction of foreign universities. This has been spurred by the inclusion of higher education within the category of tradable services in recent rounds of international trade negotiations (Altbach, 2015). Many developing countries have opened up their higher education systems to foreign investment and a growing number of universities, mainly from high-income countries, have established branch campuses overseas to tap into new markets and sources of funding (Knight, 2014; Wilkins, 2016). According to data from the Cross-Border Education Research Team (C-BERT), universities from 32 countries controlled 233 branch campuses across 73 countries in 2016.<sup>2</sup> In the rest of this paper we examine the policy implications of this trend in greater detail.

## 2.3 Attracting foreign universities: opportunities, risks and policy options

A growing number of developing countries now rely on foreign universities to ramp up their university sector, yet the potential benefits and risks remain largely uncharted. Compared with financing selected students to enroll in world class universities abroad, the establishment of international branch campuses to operate *in situ* allows more students to obtain a quality education at a lower cost, while mitigating the risk of brain drain (Knight, 2014; Wilkins, 2016). Beyond education, attracting the research activities of foreign universities can enhance a country's technological capabilities and build critical mass in designated priority areas (Hird and Pfothenauer, 2017; Horta and Patrício, 2016). Moreover, it represents an opportunity to enhance international technology transfer and diffusion; to bolster learning and demonstration effects on local universities; and to increase a country's attractiveness for R&D-related investments by multinational companies (Klerkx and Guimón, 2017; Pfothenauer et al., 2016).

However, as argued by Knight (2014: 213), relying on world class universities does not necessarily assure quality and attention to local needs. The entry of international universities can even be detrimental to the host country if they just replace (rather than complement) efforts to upgrade national universities. Indeed, when government subsidies are given to foreign universities, national universities inevitably receive less public funding and face greater difficulties in attracting talented faculty and students. Thus, an excessive reliance on foreign universities for the development of a country's higher education system can produce a *crowding-out* of its national universities. The notion of crowding-out has been used extensively in the international business literature to analyze the impact of FDI in developing countries (Agosin and Machado, 2005; Farla et al., 2016) and is equally relevant for the specific case of

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<sup>2</sup> Available at: <http://globalhighered.org/branchcampuses.php>

transnational universities. The extent of crowding-out and the developmental effect on host countries depend on the *entry modes* of universities (Malhotra et al., 2003; Matoo et al., 2004). International branch campuses can be established through different entry modes (typically either as greenfield investments or as joint ventures), each with different potential implications for host countries.

The challenge for host countries consists in avoiding crowding-out and fostering crowding-in effects; a delicate balance that is influenced by host country characteristics and institutions, as discussed by Farla et al. (2016) in relation to FDI. To this end, incentives need to be in place to stimulate the local embeddedness of international branch campuses, such that they become aligned with domestic interests. But international branch campuses need to respond to the sometimes conflicting demands of their host and their home country academic authorities, and this *dual embeddedness* may lead to tensions. The concept of dual embeddedness was originally developed in the international business literature to understand the scope of multinational subsidiaries' mandates and the associated spillovers on the host country (Heidenreich, 2012; Meyer et al., 2011). More recently, this notion has been used in analyses of international branch campuses (Beerkens and Derwende, 2007; Healey, 2016; Shams and Huisman, 2016). In a similar vein, recent research on higher education policy has stressed that the increasing demands placed on universities along their different missions (teaching, research, innovation, regional development) may exceed universities' capacities to respond, leading to a *mission overload* (Enders and De Boer, 2009; Kitagawa et al., 2016). The risk of mission overload is more acute in the case of international branch campuses, given their dual embeddedness.

Against this background, it becomes critical to reflect further on the policy options available for developing countries. Different universities may have varying motivations to establish an overseas campus abroad and may opt for different entry modes (Guimón, 2016; Seeber et al., 2016). Likewise, nations aiming to attract foreign universities may have different objectives (e.g. undergraduate or graduate studies; teaching or research, etc.) and may rely on many different policy programs and operational approaches (Dobos, 2011; Mok, 2011; Olds, 2007; Pfothenauer et al., 2016). In this paper we draw attention to the following policy options for host countries:

### **2.3.1 Establishing joint-ventures between foreign and local universities**

Under this model, local universities can increase their reputation by linking with a global brand, while enhancing their teaching and research capacities. The expectation is that the local university will learn from the experience of a world class university, while both institutions share

risks and rewards (Olds, 2007). In the following section we use the case of China to illustrate this policy option.

### **2.3.2 Creating a new public university in partnership with foreign universities**

This is similar to the previous model, but the host country retains full ownership of the new university. The government may partner with one or several universities to create a new institution with strong teaching and research capacities. This option implies higher national control over the new venture but also higher costs, given the lack of financial commitment of foreign universities. The case of Kazakhstan's Nazarbayev University is used in the following section to illustrate this policy approach.

### **2.3.3 Attracting foreign universities to provide university degree**

In this case, foreign universities are allowed to establish fully-owned campuses in the country. Some governments have launched dedicated programs to attract a group of selected foreign universities into a newly developed campus, such as the case of Malaysia discussed in the next section. Through the attraction of several foreign universities, the objective is to provide better education opportunities to national students, and also to develop a "higher education hub" that attracts foreign students (Knight, 2014).

### **2.3.4 Attracting foreign universities to create research centers**

Rather than the formation of human capital, in this case the primary objective is to contribute to creating a critical mass for research that contributes to enhancing the absorptive capacity of local firms, and in some cases to foster a purposeful redirection of domestic research efforts towards designated priority areas (Hird and Pfothenauer, 2017). This policy option is discussed in the following section through the case of the International Centers of Excellence program in Chile.

## **3 Findings from case study research**

We proceed by exploring four recent case studies that illustrate each of the policy approaches discussed above (Table 2). The empirical analysis relied on secondary sources as well as field research and personal interviews with key stakeholders, including high level policy-makers in charge of running these programs and senior directors of the international branch campuses or research centers. We first analyze each of the cases in isolation and then draw general policy implications that follow from comparative analysis.

<INSERT TABLE 2>

### 3.1 Joint-ventures between foreign and national universities in China

China's higher education system was opened up to foreign universities in 2003 through a new legislation that allowed the establishment of international branch campuses in partnership with Chinese institutions. The opening up of the Chinese higher education system responded to the aim of supporting a cost-effective solution to expand the provision of higher education, while learning from international best practices (Ennew and Fujia, 2009). It was also a result of growing concerns over brain drain and over increasing financial outflows spent on overseas education (Mok and Yu, 2014).

Under the new law, a Chinese institution must hold at least a 50 per cent share of the joint venture and the President of the international branch campus must be Chinese (Fazackerley, 2007). Applications for establishing these joint-ventures are subject to the examination and approval of the Chinese government, upon presenting a detailed report of planned activities, a draft of the cooperation agreement between the foreign university and the local partner, and a financial plan, among other documentation. According to our interview with the director of a European international branch campus in China:

A key challenge when operating in China is that it takes a lot of time and effort to find the right local partner and to establish personal contact with the key local players. Relationship building is critical. It is also essential to have a clear endorsement from the local government; finding support at the highest level facilitates things a lot.

At least 25 international branch campuses have been created so far in China as joint ventures (Table 3), most of which are US (10) or UK universities (8). The establishment of some of these campuses is a response to local government efforts to attract foreign universities, most notably by the cities of Shenzhen, Suzhou and Ningbo (Chen and Kenney 2007). Some of these are large campuses covering a wide range of disciplines, while others are small units focusing on a specific program. For example, the Chinese campus of the Johns Hopkins University - the oldest in the list dating back to 1986 - is a small center focusing on international relations, which currently hosts around 100 Chinese and American students. Particularly noteworthy among the larger interdisciplinary campuses are those of Nottingham and Liverpool universities, with 6000 and 7000 students respectively, which are amongst the biggest international branch campuses in the world (Wilkins, 2016). These branch campuses offer degrees in the name of the foreign university, and in some occasions they offer joint degrees – a Chinese and a foreign one. Tuition fees have been reported to be around three times lower than in the home campus of the foreign universities, albeit around ten times higher than in Chinese public universities (Ong and Chan, 2014).

<INSERT TABLE 3>

The governance of these joint-venture campuses is facing a wide range of challenges including legal and regulatory problems, financial issues (such as the difficulty for foreign universities to repatriate earnings), cultural frictions, management challenges, and unresolved issues regarding degree recognition, accreditation and quality assurance (Fazackerley, 2007; Mok and Xu, 2008; Ong and Chan, 2014). On the political front, the traditional commitment to academic freedom and autonomy in western universities that establish a presence in China clashes with the Chinese government's stance to avoid infiltration of western values, as evidenced by recent inspections to universities undertaken by the Communist party's Central Commission for Discipline Inspection (Feng, 2017).

The case of the University of Nottingham in China highlights the complexity of the process of campus development and the risks to be managed, suggesting that the key factors of its success so far have been the careful and reciprocal relationship building with the Chinese partner and the approach to managing the relationships between the Chinese campus and the home campus (Ennew and Fujia, 2009). In particular, a common area of local-global friction is associated with the different views and expectations regarding the hiring of academic staff, as illustrated by the following quote from the founding Provost of the University of Nottingham in China (Gow, 2007: p. 8):

The biggest single problem for any institution setting up a campus in China is continually securing enough high quality staff able to teach in English to the highest levels (...). The Chinese government want us to send our top research staff – especially core research staff in the sciences – to work full-time for three years or longer. There is a reluctance to let foreign institutions hire Chinese academic staff.

Although the initial focus of most international branch campuses in China was on the delivery of educational programs, in recent times a stronger emphasis on enhancing their research activity can be observed (Li et al., 2016; Sharma, 2016). In fact, some of the recently established campuses had a strong focus on research from their offspring. This is the case with the Australian Monash University campus in China created in 2014, which offers PhD programs in IT and Engineering and hosts a Joint Research Institute in these areas aiming to build a critical mass of researchers that collaborate actively with industry. Another example is the partnership formed in 2010 between the University of Michigan and Peking University to create in China the Joint Institute for Translational and Clinical Research (Kolars, et al., 2016). Given their complementarities, this joint venture offers clear benefits to both partners. The objective of the Chinese partner was to develop clinical research capacity, which was relatively weak in the

country. Meanwhile, Peking University Health Science Center offered a huge number of patients which made it an attractive testing environment for the University of Michigan Medical School.

### 3.2 Building a ‘world class’ university with international partners in Kazakhstan

During the last decade Kazakhstan has undertaken different initiatives to modernize and expand its higher education system (OECD, 2016a). One of the most ambitious has been the creation of Nazarbayev University in 2010 with an initial investment of US\$ 2 billion. This brand new state-owned university was developed through strategic partnerships with a set of twelve foreign universities -mainly from the US but also from the UK and Singapore- that were selected to develop each of the University’s schools and departments (Table 4). Partnerships with foreign universities included course licensing agreements, consultation and advice, and services in the form of specified deliverables based on contracts with limited terms (Schweber, 2013). Ownership of the university remained fully in the hands of Kazakhstan’s government.

<INSERT TABLE 4>

The objective was to create an institution that would train the next generation of the country’s leaders, build the country’s research capacities, and lead the much needed reform of Kazakhstan’s higher educational system. Nazarbayev University was conceived as a pilot project to provide a model for the reform of the old Soviet-style university system, by adhering to higher academic standards, academic freedoms, and a model of shared faculty governance (Schweber, 2013). Nazarbayev University was granted the status of “autonomous educational institution”, and thereby the freedom to create its own governing structures and curricula. A former vice-president of the World Bank, of Japanese origin, was hired as President of the University. The administrative authorities of the university are the executive council; the board of trustees, comprised of government officers (50%) and representatives of NU’s international partners (50%); and the supreme board of trustees, which is headed by the President of Kazakhstan.

The University focusses on some disciplines closely aligned with the country’s industrial needs and the perceived shortcomings in the higher education system, including engineering, science and technology, mining, medicine, business and education. The first students were admitted in 2011. Currently, the university has around 200 faculty members and around 2000 students, 7 schools, and 16 undergraduate programs (OECD, 2016b). All teaching is done in English and 85% of faculty are foreign.

Although initially focused only on teaching, more recently a plan is underway to enhance the university's research activity also with the support of foreign actors. A new science park called the Astana Business Campus adjacent to Nazarbayev University was created in 2015 with the advice of the High Tech Business Campus Eindhoven, a Dutch science park. As explained in the following quote from our interview with the university's President:

We are a very young university and our priority up to now has been to consolidate our teaching programs, but we are now also making strong efforts on research. We aim to become an attraction pole for multinational companies and we also want to inspire a cultural change in the country, introducing new models of university-industry collaboration and public-private partnerships, as well as more advanced strategies for technology transfer and commercialization.

Along these lines, Nazarbayev University has signed memoranda of co-operation with several foreign companies that have agreed to locate in the Astana Business Campus, such as Philips, Intel, Huawei, Cisco and IBM. The Samruk-Kazyna sovereign wealth fund, Kazakhstan's largest corporation which groups together most state-owned enterprises, has established its main corporate research center on campus. The International Scientific and Technological Centre<sup>3</sup> has also relocated from Moscow to the Astana Business Campus.

### 3.3 Developing a higher education hub in Malaysia

The entry of foreign universities into Malaysia was first regulated by the Private Higher Education Institutions Act of 1996, which enabled the establishment international branch campuses in the country subject to approval of proposals by the Ministry of Higher Education (Mok, 2011). In 2007, the National Higher Education Strategic Plan 2020 advanced further the government's plan to transform the country into a higher education hub through the attraction of foreign universities. This strategy set the target of having an enrolment of 200,000 international students by 2020 and becoming one of the top six destinations of choice for international students globally (Dobos, 2011).

Malaysia's agenda for establishing itself as an education hub through the attraction of foreign universities responds to two interrelated motivations (Morshidi et al., 2011). The first is to develop the human capital base needed to shift from its current economic model based on

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<sup>3</sup> The International Scientific and Technological Centre is an intergovernmental organization established in 1992 by an agreement among the European Union, Japan, the Russian Federation and the United States. It serves as a clearinghouse for developing and financing research projects aimed at engaging weapons scientists, technicians and engineers from the Commonwealth of Independent States in peaceful, civilian science and technology activities.

natural resources and low-cost manufacturing, towards a knowledge-based economic development model. The second objective is to exploit the opportunities of higher education as a lucrative export sector in light of growing demand for higher education services across the region. The aim here is to position the country as an attractive destination for international students based on its geographic position, affordable costs of living, wide use of English in higher education, and stable institutional environment.

In this context, several international branch campuses have been established around Kuala Lumpur and in the Southern province of Johor, close to the border with Singapore. We will focus here on the latter, where a special project called EduCity was developed to attract foreign universities within 205 acres of state-owned land located at the Iskandar special economic zone (Shams and Huisman, 2016). EduCity offers incentives to selected international universities including access to buildings to host the branch campuses, as well as shared student accommodation, conference centers, and sports facilities. So far, the Malaysian government, in coordination with the regional government of Johor, has concluded agreements with seven foreign universities to create branch campuses (Table 5). The first branch campus to be established was the Newcastle University Medicine in November 2011, which offers medical degrees recognized by the British Medical Council.

<INSERT TABLE 5>

The selected universities specialize in different disciplines within EduCity, including business, digital media, ICT, engineering, medicine and pharmacy, among others. These disciplinary focus forms part of a policy approach aimed at developing the necessary skills for a knowledge-based economy, while complementing current shortages in the national higher education system. All the international branch campuses established in EduCity offer qualifications in the name of a foreign university, and some of the programs also envision the possibility for students to spend a term or a year abroad in the home country of the university. This is the case of the University of Reading, where second or third year students are allowed, but not obliged, to spend a year of study in the UK, although the option requires students to pay additional registration fees. Likewise, the Management and Development Institute offers students at its Malaysian branch campus opportunities to move to its other campuses in Singapore and Uzbekistan.

A key challenge behind this model is that international branch campuses are subject to a double accreditation process: from the Malaysian Ministry of Higher Education and from their home country academic authorities. As discussed in Section 2.2, this dual embeddedness inevitably leads to higher administrative hassles and may potentially result in institutional conflicts (Mok,

2011; Shams and Huisman, 2016). As illustrated in the following quote from a vice-chancellor of one of the international universities located in EduCity, the initial expectations of foreign universities were not always fulfilled:

The local environment was presented to us as very favorable, but we found that the real environment in the ground was not as favorable as expected. First, the accreditation process for our degrees was much longer than what Malaysian authorities had promised, and this led to a delay in the recruitment of students. We did not meet our recruitment targets and this led to high costs in the interim. Second, the government has recently introduced very stringent visa requirements for international students, which is also an important obstacle to student recruitment. This contradicts the country's strategy of becoming a higher education hub. Third, the shared facilities of EduCity, such as student accommodation and sport facilities, which were an attractive incentive for us to locate there, are failing to meet the standards that we expected. In sum, we feel that Malaysian partners have failed to comply with their initial commitments.

Another challenge relates to the possible crowding-out of local universities through the labor market, since the best qualified Malaysian academic staff often prefer to work for incoming international universities than for local universities. Similar challenges were observed in the case of China. While the Malaysian government is aware of this risk and tries to dissuade overseas universities from hiring too many national academics, it is only natural that incoming universities want to progressively switch towards hiring as many local staff on lower wages as possible (Whitehead, 2012). The Provost and CEO of one of the international branch campuses established in EduCity explained to us the challenges of hiring international staff in the following terms:

The Ministry of Higher Education gives international branch campuses a target of 30% of academic staff being from the parent university (which is not met by any campus, so far as I am aware); however, immigration rules mean we cannot offer work to a foreign national which could be done by a Malaysian, and since work permits are only issued for two-year periods we are not allowed to offer anything longer than a 2-year fixed term contract of employment. Understandably, not all international academic staff find that a tempting prospect (...) In Malaysia, most government-funded research schemes are only open to principal investigators who are Malaysian citizens, so the international academics who have been encouraged to come to Malaysia do not have access to research funding of this kind. It might be argued that this policy will encourage those staff to seek collaboration with Malaysian staff in other HEIs, which is desirable; in our experience it makes hiring international staff more difficult.

In the future, beyond education activities, the Malaysian government also expects that the development of EduCity will serve to stimulate R&D activities in cooperation with firms, within the context of the broader development of an economic corridor in Iskandar. This is consistent with the second phase of Malaysia's National Higher Education Strategy, launched in 2011 with the objective of transforming the country not only into an education hub to attract international students, but also into a technology and innovation hub (Aziz and Abdullah, 2014).

### 3.4 Creating research centers with foreign universities in Chile

The previous cases focused on attracting foreign universities that contribute to the higher education agenda of host countries. In contrast, the International Centers of Excellence program in Chile focused from the offset on providing incentives for world-class universities and public research institutes to create new R&D centers. Launched in 2009, the program aimed at strengthening the technological capabilities of Chilean industries and at triggering a systemic change in the national innovation system by promoting science-industry collaboration (Klerkx and Guimón, 2017). As explained in an interview with one of the policy makers in charge of the program:

Our aim was to bring into the country foreign research institutions with demonstrated experience in linking with industry and commercializing technology, so that they would produce a shaking effect to address a key gap that we had identified in the national innovation system. The centers are expected to foster linkages and joint projects with Chilean universities and companies, leading to more relevant, multidisciplinary and applied research.

Through the two calls for proposals issued so far (2009 and 2011), a total of three universities and five public research institutes from seven different countries have established an R&D center in the country.<sup>4</sup> Each of the selected centers was offered a grant of up to US\$ 20 million for a 10-year period, covering up to 40% of the center's total budget. The program focused on a set of strategic industries and technologies including traditional industries (i.e. food processing and mining), emerging industries (i.e. renewable energy) and general purpose technologies with applications across different industries (i.e. ICT, biotechnology and nanotechnology) (see Table 6).

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<sup>4</sup> The second call was also open to multinational enterprises, although they were offered a lower incentive. In particular, four multinational enterprises from three different countries have established Centers of Excellence in Chile under this program: Emerson, Laborelec, Pfizer and Telefonica.

The centers were selected (and are thereafter evaluated every three years) based on their capacity to establish linkages with local firms and universities. On the industry side, the centers are expected to develop and transfer new technological solutions to increase the competitiveness of Chilean industries through joint research projects, contract research and technology commercialization. On the university side, the centers are required to hire Chilean scientists and to establish collaboration agreements with Chilean universities, so as to ensure that appropriate linkages are established with local actors that lead to knowledge spillovers and learning opportunities. Moreover, these research centers are expected to contribute to the training of young scientists by hosting and co-supervising PhD students and postdocs and by participating in postgraduate programs ran by Chilean universities.

The first and largest center established in Chile under the International Centers of Excellence program is an affiliate of the German public research institute, Fraunhofer. It started operating in 2011 with an agenda focusing on biotechnology applied to agriculture, aquaculture, mining, biomedicine and the sustainable use of natural resources. Fraunhofer also applied and was selected under the second call of the program, for an expansion of its Chilean research center to include a new unit focusing on solar energy technologies, which was opened in 2015. The Chilean R&D center of Fraunhofer currently employs over 140 researchers and has signed more than 50 contracts with industry in its first years of operation (Fraunhofer Chile Research, 2015). The range of services provided by the center to Chilean firms includes consultancies, product prototype development, IP strategy and new business model development. The center has developed an intense research agenda and has already created its own intellectual property based on research carried out in Chile, including 2 granted patents and 9 additional patent applications as of 2015 (Fraunhofer Chile Research, 2015). According to one of our interviewees:

Fraunhofer has demonstrated a strong commitment to expanding its activities in Chile, and has compromised more funding than originally expected, as it is perceived that the Chilean center will contribute substantially to the overall ambitions of Fraunhofer of becoming a global research institute. Chile offers a unique environment for some of the research carried out at Fraunhofer, for example in the area of agriculture and mining technologies. Moreover, the center's presence in Chile has provided new customers to Fraunhofer institutes in Germany.

The motivations of the different centers established in Chile under this program are very diverse, as well as the channels through which they lead to positive externalities on the national innovation system. For example, the case of the University of California (UC) Davis is markedly different from Fraunhofer. The center was opened in 2014 and its research agenda focuses on

agriculture, genetic improvement, adaptation to climate change, post-harvest waste treatment, viticulture and enology. The reasons why UC Davis decided to open an affiliate in Chile are manifold, but top among them is the fact that the new establishment was fully funded (at least initially) by the Chilean government and three Chilean universities that partnered with UC Davis (Universities of Tarapacá, Talca and Andrés Bello). Other reasons include the attractiveness of Chile as a location to conduct certain types of research given its extreme natural environments and the fact that the seasons for agriculture overlap with those of California, allowing for around-the-year testing of certain technologies. Besides engaging in collaborative research, the local universities that partnered with UC Davis were interested in enhancing their reputation and climbing positions in university rankings as a result of this alliance. UC Davis is also helping these universities in the design and initial delivery of new postgraduate programs. The new center of UC Davis in Chile is expected to collaborate with Chilean firms to raise their productivity and innovative capacity. Moreover, the center has a strong focus on promoting technology-based entrepreneurship, and for this purpose in 2016 it created the Research to Business Catalyst (R2B) program, which provides support to start-ups including legal advice, access to venture capital, mentoring, and access to research labs and equipment. This program replicates UC Davis' well-established Venture Catalyst program in California, and adapts it to the Chilean context.

The main challenge expressed by the five executive directors of the International Centers of Excellence that we interviewed is the difficulty of earning income from contract research with local firms, which will become increasingly important to ensure the long term sustainability of the centers after they stop receiving baseline funding from the Chilean government. It has also been argued that a condition for the centers' longer term sustainability is to demonstrate not only that the centers are having an impact locally, but that they are providing benefits for the university of origin and its home country that could justify future funding (Klerkx and Guimón, 2017). In other words, the sustainability of the International Centers of Excellence requires a proper balancing of Chilean interests and the interest of the universities at their home countries, in response to their dual embeddedness.

## 4 Discussion

Many developing countries are experimenting with new policy measures to enhance their university sector, in order to cope with increasing demands. As discussed in section 2, these policies may target existing public universities, promote privatization, or rely on partnerships

with foreign universities. In our study we have focused on the latter, but we do not mean to imply that this is the best option.

Our research has illustrated different policy programs to attract foreign universities that have been launched over the last decade across a variety of emerging countries. The case studies capture different scenarios with respect to the focus on teaching or research, and with respect to the extent of local ownership and linkages (Figure 2). A limitation of our study is the lack of evidence to measure impacts (among other things because the cases discussed are quite recent) and even less to compare relative impacts. What is clear is that each policy approach has its own advantages and disadvantages (see Table 2), and that there is no such thing as a best practice policy to deal with the attraction of foreign universities.

<INSERT FIGURE 2>

Taken together, the results of the case studies lead us to propose three broad guidelines to maximize opportunities and minimize risks associated with the attraction of foreign universities. First, developing countries should avoid an excessive reliance on foreign universities that leads to a substitution or crowding-out of national universities. Instead, governments of developing countries should try to align incoming foreign universities with identified problems in their national higher education systems, searching for complementarity with existing universities. This might involve, for example, targeting specific disciplines where national universities lack capacities, as in the case of Malaysia. In the case of Chile, the concern of the government was not to address shortages in education, but rather to improve the national innovation system by attracting foreign universities and public research institutes with a proven capacity of performing applied research in collaboration with industry. In Kazakhstan, given the lack of world class universities in the country and the rigid education system inherited from the Soviet era, the government decided to create a new university in partnership with foreign institutions that could instigate a demonstration and learning effect on local universities. For China, the rationale for attracting foreign universities was to keep up with the high growth of demand for higher education as well as to foster internationalization at a time when the country was opening up to the world.

Second, policy makers should aim at nurturing linkages of international branch campuses with local actors, such that externalities can unfold. To this end, for example, foreign universities are only authorized to operate in China through joint ventures with local institutions. In all four case studies, increasing efforts are being made to encourage foreign universities to engage in applied research in collaboration with local firms and universities. In the case of Chile, the capacity of

incoming universities to establish collaboration agreements with local universities and to work with local firms were among the main criteria in the selection and evaluation process. In general, the case studies suggest that by nurturing linkages between foreign universities and local actors (including universities and firms), policy-makers can contribute to avoiding substitution and encouraging complementarity.

Third, in view of the challenges associated with the dual embeddedness of international branch campuses, it is important to balance the benefits for the host country with those of the parent unit at the home country. For international branch campuses to be sustainable in the middle to long term, they need to demonstrate not only local impact, but also benefits for the foreign university. Therefore, Pareto-optimal foreign/local relations should be recognized and promoted more explicitly by policy makers. The rights and responsibilities of both the host government and the international branch campus should be clearly articulated from the outset in contracts or memoranda of understanding that commit the different parties and reduce the risk of misunderstandings (Hénard et al., 2012; Olds, 2007).

## 5 Concluding remarks

Building stronger human capital and research capacities has become a more pressing priority for developing countries to catch-up and integrate in the global knowledge-based economy. Among other policy measures, some developing countries have started to rely on the attraction of foreign universities to ramp up their national higher education and innovation systems. The cases in this study illustrate the variety of policy options available for developing countries to attract foreign universities, including different kinds of regulations, co-finance schemes, and targeted subsidies. There are different models that serve different purposes, and it is important for developing countries to be aware of the benefits, but also the costs. The expected benefits include an increase in the quantity and quality of education and research; a demonstration effect on other domestic universities and firms; and a reputation effect that may help attract other investments by universities or multinational companies. However, the positive impact of foreign entry should not be taken for granted, as the attraction of world class universities does not guarantee quality and attention to local needs. Moreover, not all developing countries have the financial resources to duplicate the policy programs discussed in our case studies.

All countries need to establish a clear regulatory framework to set the rules of the game with regard to the entry of foreign universities, including registration and degree recognition processes, quality assessments, access to direct and indirect subsidies, taxation, regulations for

money transfer, etc. Beyond that, some countries may adopt a more passive approach, while others may feel the need to engage actively in reaching out to foreign universities and negotiating co-financing schemes and incentive packages to attract them. Many world-class universities are naturally interested in creating branch campuses in large and dynamic markets such as China. But other smaller countries will have to offer strong financial incentives if they want to be considered as potential locations by international universities, and the cost might be too high relative to other alternative uses of public funds.

As with any policy analysis, the decision to allocate public resources to (often costly) programs to attract foreign universities should be judged against its *opportunity cost*. It is evident that if the government provides funding to foreign universities, less public funding will be available for national universities and research institutes. Thus, sound arguments based on a realistic assessment of expected benefits are necessary to justify public funding of incoming foreign universities rather than expanding the capacity of national universities. In line with Rodrik (2005), those initial assessments should be followed by ongoing monitoring and evaluations that incorporate mechanisms for learning and for recognizing failures and withdrawing support from them.

In this paper we have emphasized that policy programs to attract foreign universities should avoid crowding out national universities, searching instead for complementarity. In view of the trade-offs and global-local tensions associated with the dual embeddedness of international branch campuses, we have also argued that policy programs aimed at attracting foreign universities should be carefully designed and implemented, with the aim of aligning foreign universities with national needs; fostering local linkages and spillovers; and ensuring the sustainability of international branch campuses over time.

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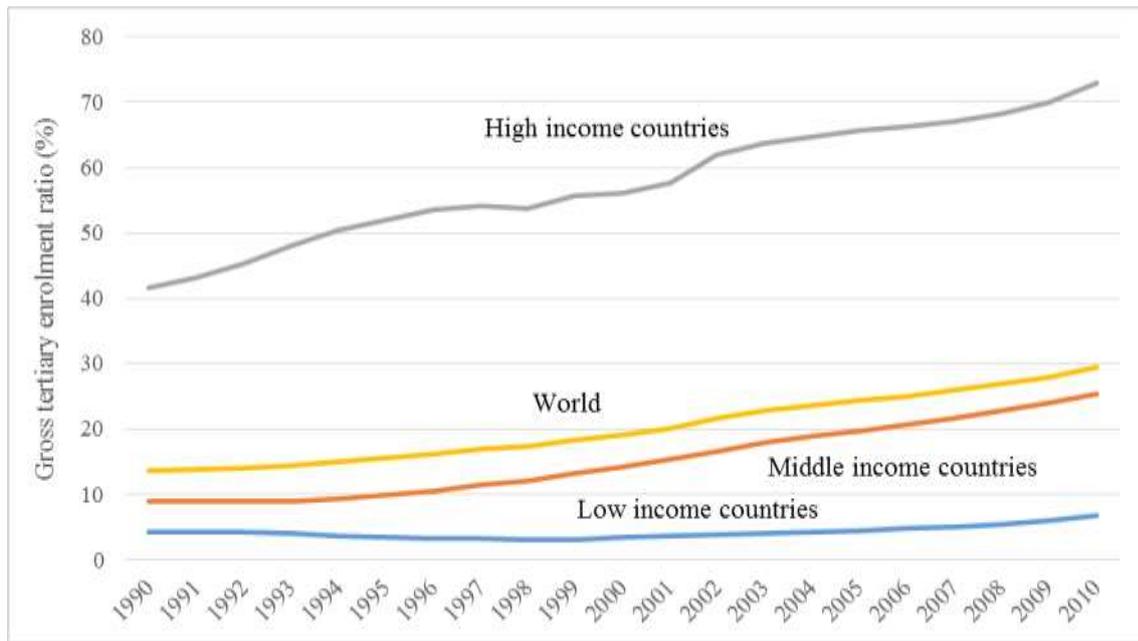
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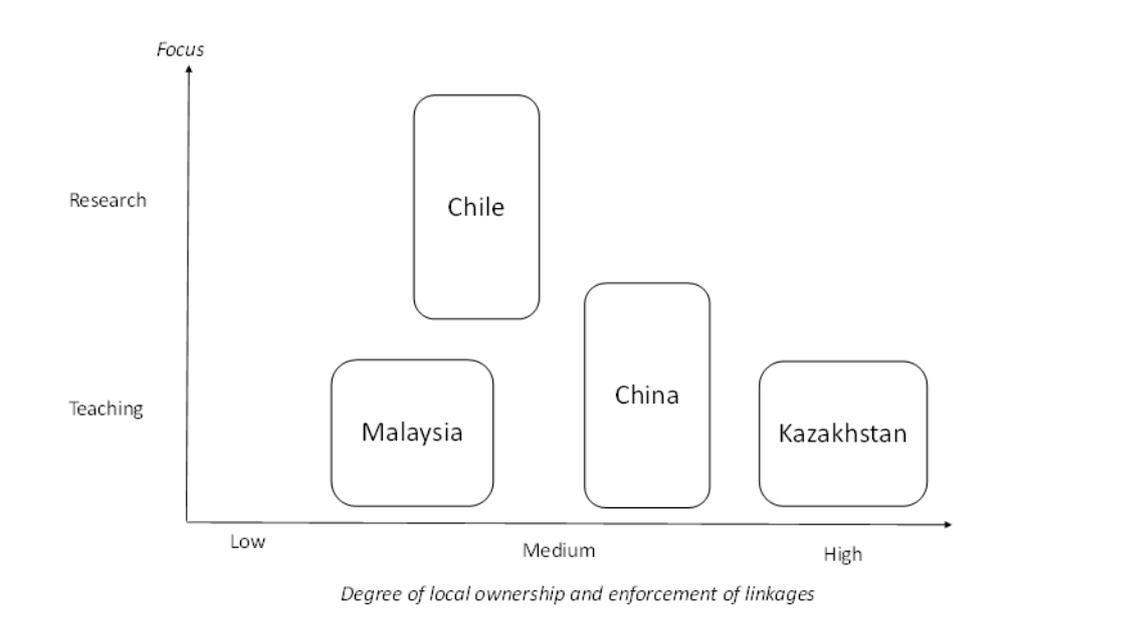
**Figure 1. Gross tertiary enrolment ratio**



Note: Enrollment in tertiary education regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.

Source: UNESCO, data extracted on 02 Sep 2016 from UIS.Stat

**Figure 2. Characterization of the four case studies**



Source: Authors' elaboration

**Table 1. Enrolment in tertiary education (million students)**

	1990	2000	2010	% of World total, 2010	Annual growth rate, 1990-2010
World	67.90	99.74	181.53	100%	4.79%
By region:					
Africa	2.84	6.09	11.45	6.31%	6.87%
Asia	23.22	41.14	91.20	50.24%	6.73%
Europe	18.61	25.51	33.69	18.56%	2.87%
North America	17.70	17.70	27.28	15.03%	2.08%
South America	4.93	8.26	16.34	9.00%	5.87%
Oceania	0.62	1.04	1.57	0.87%	4.56%
Selected countries (sorted by number of students in 2010):					
China	3.92	7.36	31.05	17.10%	10.35%
India	4.78	9.40	20.74	11.43%	7.24%
United States	13.54	13.20	20.43	11.25%	1.98%
Russian Federation	5.20	6.33	9.33	5.14%	2.82%
Brazil	1.54	2.78	6.55	3.61%	7.14%
Indonesia	1.52	3.13	5.00	2.75%	5.85%
Japan	2.68	3.98	3.84	2.11%	1.72%
Turkey	0.69	1.46	3.53	1.94%	8.12%
Republic of Korea	1.63	3.00	3.27	1.80%	3.37%
Mexico	1.31	1.96	2.85	1.57%	3.75%
Philippines	1.52	2.21	2.77	1.53%	2.92%
United Kingdom	1.18	2.02	2.48	1.37%	3.61%
Thailand	0.95	1.90	2.43	1.34%	4.56%
France	1.59	2.02	2.25	1.24%	1.67%
Poland	0.51	1.58	2.15	1.18%	7.13%
Italy	1.36	1.77	1.98	1.09%	1.81%
Spain	1.17	1.83	1.88	1.04%	2.30%

Source: UNESCO, data extracted from UIS.Stat on 02 Sep 2016.

**Table 2. Overview of the four case studies**

Case study	Launch date	Policy approach	Key opportunities & challenges
China: International joint-ventures	2004	Creating regulations and incentives to induce foreign entry through joint ventures with local universities	Develops strong linkages that facilitate spillovers
			Requires bargaining power (large market/incentives)
Kazakhstan: Nazarbayev University	2010	Building a world class university with international partners	Full national ownership of the university
			High cost and lack of financial commitment of foreign partners
Malaysia: Educity	2010	Developing a higher education hub through the attraction of several foreign universities to a new campus	Shared facilities and potential to exploit the benefits of higher education as an export market
			High cost and weak linkages with local universities/firms
Chile: International Centers of Excellence Program	2009	Attracting research centers of foreign universities and public research institutes	International technology transfer to build critical mass in priority areas
			High cost and potential crowding-out of national research centers

Source: Authors' elaboration.

**Table 3. International branch campuses established through joint ventures in China up to 2015**

International university	Country of origin	Local partner	Year established	Number of students
Carnegie Mellon University	USA	Sun Yat-sen University	2012	-
Duke University	USA	Wuhan University	2013	-
Fort Hays State University	USA	Shenyang Normal University	2005	3200
Johns Hopkins University	USA	Nanjing University	1986	100
Kean University	USA	Wenzhou University	2014	448
Missouri State University	USA	Liaoning Normal University	2000	700
New York University	USA	East China Normal University	2012	-
University of Pittsburgh	USA	Sichuan University	2015	200
University of Michigan	USA	Shanghai Jiao Tong University	2006	1234
New York Institute of Technology	USA	Communication University of China	2015	150
Liverpool University	UK	Xi'an Jiaotong	2005	7000
Nottingham University	UK	Zhejiang Wanli Education Group	2004	6000
Bangor University	UK	Central South University of Forestry & Technology	2013	-
The Queen's University of Belfast	UK	China Medical University	2013	58
University of Central Lancashire	UK	Hebei University	2014	250

University of Edinburgh	UK	Donghua University	2014	480
University of Surrey	UK	Dongbei University	2006	350
University of Leeds	UK	Southwest Jiaotong University	2015	-
Monash University	Australia	Southeast University	2014	-
University of Technology Sydney	Australia	Shanghai University	1994	3500
The University of Applied Sciences Esslingen	Germany	Tongji University	2005	-
University College Dublin	Ireland	Beijing University of Technology	2012	-
Ritsumeikan University	Japan	Dalian University of Technology	2013	100
Eindhoven University of Technology	Netherlands	Northeastern University	2005	-
University of Ulsan	South Korea	Ludong University	2013	-

Notes: Refers only to mainland China, excluding Hong Kong where at least 4 other international branch campuses are present. Two campuses opened by universities from Hong Kong in China are also excluded from this table.

Source: C-BERT Branch Campus Listing (<http://globalhighered.org/branchcampuses.php>) and universities' websites. Last accessed June 7 2016.

**Table 4. International partners of Nazarbayev University, Kazakhstan (2010-2016)**

Name of university	Country of origin	Nazarbayev's School / Department
University of Chicago	USA	National Laboratory Astana (Energy and Life Sciences)
Colorado School of Mines	USA	School of Mining
Duke University	USA	Graduate School of Business
University of California Berkeley	USA	National Laboratory Astana (Energy and Life Sciences)
National University of Singapore	Singapore	Graduate School of Public Policy
Oak Ridge Associated Universities	USA	Nazarbayev University Research and Innovation System
University College London	UK	School of Engineering
University of Cambridge	UK	Graduate School of Education
University of Pennsylvania	USA	Graduate School of Education
University of Pittsburgh	USA	School of Medicine
University of Warwick	UK	Nazarbayev University Foundation Year Program
University Wisconsin-Madison	USA	School of Humanities and Social Sciences

Source: <http://nu.edu.kz/>

**Table 5. International branch campuses at EduCity, Malaysia (2010-2016)**

Name of branch campus	Country of origin	Year created	Number of students (expected)	Disciplines
Management and Development Institute of Singapore	Singapore	2013	2000	Business, Tourism & Hospitality, Mass Communication, Information Technology, and Digital Media.
Multimedia University - University of Southern California	USA	2014	500	Cinematic arts
Netherlands Maritime Institute of Technology	Netherlands	2010	1600	Transport, shipping, seafaring, maritime and logistics management
Newcastle University Medicine Malaysia	UK	2011	1000	Medicine
Raffles University	India	2012	5000	Design & Art, Business, Education & Social Sciences, ICT
University of Reading	UK	2015	2000	Real estate, construction, finance, law, chemistry and pharmacy
University of Southampton	UK	2012	1100	Electrical, mechanical and aerospace engineering

Notes: Number of students refers to estimation for 2016-2019 provided in EduCity website.

Source: <http://www.nusajayacity.com> and universities' websites.

**Table 6. Universities and public research institutes established in Chile under the International Centers of Excellence Program (2010-2016)**

Institution	Country of origin	Year created	Main research lines
CSIRO	Australia	2013	Mineral processing, geo-resources and mine planning; intelligent mining systems; metallurgical systems; water, energy and environmental impact.
DCNS	France	2015	Marine renewable energy, including tidal power and wave power.
Fraunhofer	Germany	2011 & 2015	Biotechnology applied to raw materials, agriculture, aquaculture and the sustainable use of natural resources. Solar energy technologies. Cities of the future.
Inria	France	2012	Digital technologies, computer science, and mathematics, with applications across different sectors including aquaculture, mining, astronomy, solar energy, recycling, e-government, etc.
LEITAT	Spain	2015	Nanotechnology, advanced materials, renewable energy, sustainability.
University of California Davis	United States	2014	Agriculture, genetic improvement, adaptation to climate change, post-harvest waste treatment, viticulture and enology.
University of Queensland	Australia	2016	Sustainable mining, mineral processing, mining and geology, water management.
Wageningen University	Netherlands	2013	Food processing, food safety, agriculture, sustainability.

Source: Information provided by CORFO and websites of the research centers.