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The Prevalence and Impact of Skills Gaps on Latin America and the Caribbean

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La prevalencia y el impacto de la brecha de habilidades en América Latina y el Caribe
A prevalência e o impacto das lacunas nas competências na América Latina e nas Caraíbas

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In Latin America and the Caribbean anecdotal evidence from business leaders, the press, and numerous government reports suggest many firms express a serious concern that they face internal employee skills deficiencies that limit performance, a phenomenon that has been labeled as a "skills gap". This article explores the extent of national skills gaps; the importance of skills gaps relative to other business challenges; the industries facing the most severe skills gaps; and the prevalence of skills gaps by firm size. Based on international example, the article also discusses the ramifications of skills gaps on firms and regional competitiveness.

Las evidencias anecdóticas de líderes empresariales, de la prensa y de numerosos informes gubernamentales sobre América Latina y el Caribe sugieren que son muchas las empresas que muestran una seria preocupación respecto a las deficiencias en las habilidades de competencia y conocimiento de sus empleados internos y cómo estas deficiencias merman su rendimiento. El fenómeno se ha bautizado como "brecha de habilidades" y en este artículo analizamos su alcance en cada país, así como la importancia de la brecha de habilidades comparada con otros retos empresariales, los sectores industriales que se enfrentan a brechas de habilidades más graves y la prevalencia de la brecha de habilidades según el tamaño de la empresa. A partir de ejemplos internacionales, el artículo también analiza el modo en que la brecha de habilidades se extiende por la empresa y afecta a su competitividad regional.

As provas especulativas retiradas dos relatórios de líderes empresariais, da Imprensa e de vários organismos públicos da América Latina e das Caraíbas sugerem que muitas empresas revelam uma séria preocupação, porquanto enfrentam deficiências ao nível das competências dos colaboradores internos que limitam o seu desempenho, um fenómeno que foi denominado "lacunas nas competências" (skills gap). *Este artigo aborda a dimensão das lacunas nas competências a nível nacional, a importância das lacunas nas competências relativamente a outros desafios empresariais, os sectores que enfrentam as maiores lacunas nas competências e a prevalência das lacunas nas competências por dimensão das empresas. Com base em exemplos internacionais, o presente artigo também abrange as ramificações das lacunas nas competências no que diz respeito à competitividade das empresas e das regiões.*

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1. Introduction: The Theoretical Origins of Increasing Global Demand for Skilled Labor

There are several competing theories to explain increasing relative demand for skilled workers worldwide. The prevalent demand side theories maintain that expanding international trade ties, skill-biased technological change, or a combination of both forces are the main drivers of this increase. New forms of work organization and practices have also had a significant impact on the skills required of employees. The Latin America and Caribbean region[1] is no exception, with many of the same trends linked to increasing demand for skilled labor also unfolding in the region.

1.1. Increased Trade

From 2000 to 2009, world trade, as measured by the amount of global exports and imports of goods and services as a share of world domestic product, increased by 16.3%, underscoring how much trade has increased over the past decade (Bank 2010). Much of this increase can be explained through expanded trade with developing countries. Globalization increases the importance of skills, rather than resources, as a source of competitiveness. Workers employed in exporting industries tend to be well educated and highly skilled (Autor, Katz *et al.* 1998). Thus, a trade-induced flow of workers from importing, traditionally lower skilled, labor intensive industries, to higher skilled, export-driven industries would increase the overall demand for high skilled workers in economies. Over the last decade, Latin American and Caribbean countries have substantially transformed their economies while adopting policies to support export led growth strategies. From 2000 to 2009 the value of global exports from the region increased by 90% with export volumes up an average of 35% across the region at the country level (Development 2010). This reflects a growing orientation toward value added exports from the region likely accompanied by an increasing demand for skilled labor.

1.2. Technological Upgrading and High levels of Foreign Direct Investment

Skill-biased technological change (SBTC) has also been advanced as a main driver for the relative increase in global demand for skilled labor. A major corollary of SBTC is technology-skill complementarity which theorizes that pairing skilled workers with capital has productivity enhancing effects that contribute to productivity convergence of developing toward developed countries. From 2000 to 2009, gross fixed capital formation, which includes investments in land improvements, plant, machinery, and equipment, globally grew at a compound annual growth rate of 10%, representing a flow of US$1.5 quadrillion into capital investments over the past decade (Bank 2010). In Latin America and the Caribbean from 2000 to 2009 gross fixed capital formation increased at a compound annual growth rate of 25% (Bank 2010). Globalization has further increased technology imports as firms seek productivity growth from higher capital intensity matched with skilled workforces (Mayer 2000). A higher level of human capital enables capital investment to be more productive while increasing return on investment

1. This analysis uses the World Bank's definition of Latin America and the Caribbean region.

Key words
Competitiveness, skills gaps, human capital development, knowledge-based economy, economic development

Palabras clave
competitividad, brecha de habilidades, desarrollo de capital humano, economía basada en el conocimiento, desarrollo económico

Palavras-chave
competitividade, lacunas nas competências, desenvolvimento do capital humano, economia baseada no conhecimento, desenvolvimento económico

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(Ashton, Green *et al.* 1999). Slaughter also provides evidence that foreign direct investment stimulates skill upgrading in developing countries (Slaughter 2002). From 2002 to 2010 foreign direct investment in Latin America and the Caribbean increased at a compound annual growth rate of 19% (Bank 2011). Such rapid levels of technological change and high rates of foreign direct investment in Latin America and the Caribbean have likely resulted in increased relative demand for higher-skilled workers.

1.3. Adoption of New Forms of Work Organization and Practices

Traditional Taylorist and Fordist forms or work organization decreased the threshold of skills and training required by employees since work was organized according to a strict division of labor with work broken down into specific subtasks (Bank 2004). However, globalization, trade openness, and technology-driven development have led to new patterns of work organization. Firms are moving towards more flexible and innovative forms of organization and production to increase efficiency, accommodate technological change, respond to evolving consumer behavior, as well as adapt to broad macroeconomic forces (Organization 1998). The tendency of firms to adopt what has been labeled as "high performance enterprise" forms of flexible work organization and practices has a significant impact on the skills required by employees. The OECD (1998) describes several organizational characteristics and work practices common to flexible high performance enterprises:

- Marked specialization of enterprises or business units on "core" activities;
- Horizontal inter-firm links, for subcontracting or outsourcing;
- Effective use of technology;
- Increasingly flattened hierarchies in which greater importance is placed on horizontal communication and links with less dependence on vertical or hierarchical models of authority;
- Information gathering at more levels and channeled less hierarchically;
- Authority to act is less dependent on hierarchical models of authority;
- Employees are better-trained and more responsive;
- Multiskilling and job rotations increase, blurring differences between traditional work activities;
- Small self-managed or autonomous work groups are common and take more responsibility.

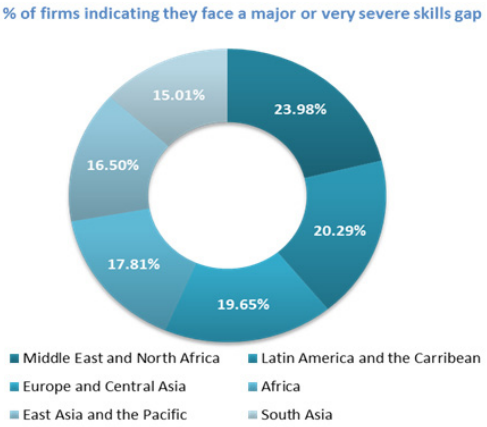
Similar patterns of participatory management, team orientation, and focus on continuous improvement have been described in Latin American and Caribbean businesses (Ogliastri 2007). For employees this means more involvement in continuous improvement and production which requires social and problem solving skills in addition to technical skills. The adoption of new forms or work organization and practices in Latin America and the Caribbean requires higher skilled, more flexible workforces.

2. Increasing Demand for Skills Has Led To Gaps in Latin America and the Caribbean

Regardless of causality or which theory is ultimately more accurate, labor economists agree in general that the demand for skilled labor has increased. Globally employers are demanding greater levels of skills from their existing workforce, and, based on the discussion above, this trend appears applicable to Latin America and the Caribbean as well. In many countries firms express a serious concern that they face internal employee skills deficiencies that limit performance, a phenomenon that has been labeled as a "skills gap[2]." In Latin America and the Caribbean, anecdotal evidence from business leaders, the press, and numerous government reports suggests skills gaps are an increasing business concern. In 2009, for example, a regional survey of 192 senior executives in 22 countries in the region found that 85% of businesses do not believe their workforce has sufficient skills (Unit 2009). This survey, however, did not provide analysis by country, industry, or firm size nor present a basis for international cross-country comparison.

Middle income countries, which make up the majority of the countries in Latin America and the Caribbean, are particularly susceptible to skills gaps since their rapid development often is underpinned by foreign direct investment, accessing more sophisticated technology, and a gradual movement to export-oriented production of higher value added goods and services (Lall 2000). Human capital requirements increase as countries become more developed, as industry structures become more diversified and competitiveness oriented, and as firms move from smaller patriarchal family structures to larger size firms (Lall 1999; Lall 2000; Porter, Sachs *et al.* 2002). The transition to a high income country requires significant government commitment to fostering innovation, enhancing the quality of education systems, improving capital markets, and improving the regulatory environment for business (Porter, Sachs *et al.* 2002). Market failures in human capital formation are rampant in middle income countries as education and training institutions struggle to keep pace with economic growth (Lall 1999).

Figure 1. Global Skills Gaps Prevalence by Region



Source: World Bank Enterprise Surveys 2002-2010.

2. This analysis defines a Skills Gap as a situation in which an employer feels their existing workforce has inadequate skills to meet their business objectives or where new entrants to the labor market are apparently trained and qualified for occupations but still lack a variety of the skills required.

Given that many of the forces thought to lead to increased demand for skilled labor are present in Latin America and the Caribbean and the proposition that education and training systems are seldom able to keep pace with economic growth in middle income countries, it would be reasonable to hypothesize that skills gaps are likely widespread in many countries in the region. While there are comparatively more employer surveys examining skills gaps in countries such as the United States, United Kingdom, and Australia, few attempts in Latin America and the Caribbean have been made to determine the extent of national skills gaps; the importance of skills gaps relative to other business challenges; the industries facing the most severe skills gaps; and the prevalence of skills gaps by firm size.

3. Methodology

One dataset which can shed light on the presence of skills gaps in Latin America and the Caribbean while providing international comparative benchmarks is the World Bank's Enterprise Survey. Administered globally since 2002 with a standardized international survey questionnaire in local languages, the World Bank Enterprise Survey dataset covers over 100,000 private companies with more than five employees in the manufacturing and services sectors in 125 countries. For the purposes of this analysis, a proxy for the extent to which businesses perceive skills gaps as a hindrance to their operations was calculated as a ratio of the number of firms who answered Major Obstacle or Very Severe Obstacle to the World Bank Enterprise Survey question "Is an inadequately educated workforce No Obstacle, a Minor Obstacle, a Moderate Obstacle, a Major Obstacle, or a Very Severe Obstacle to the current operations of this establishment?" to the total number of firms surveyed in a country. Many labor force surveys utilize educational attainment as a proxy for a worker's skill level. Gonzaga *et al.* (2006) provide evidence that educational attainment is particularly useful as a proxy for skills in Latin America. The World Bank dataset includes full data for 116 countries 20 of which are located in Latin America and the Caribbean.

4. Findings

4.1. Gaps Are Widely Prevalent and Getting Worse

Figure 1 shows that 20% of firms in Latin America and the Caribbean report that they face a major or very severe skills gap, slightly lower than the level in the Middle East and North Africa and slightly more than Europe and Central Asia. Figure 2 shows a global ranking of countries according to the percentage of firms which report facing major or very severe skills gaps. Latin American and Caribbean countries, highlighted in yellow, generally fall in the top

Figure 2. Global Skills Gaps Ranking

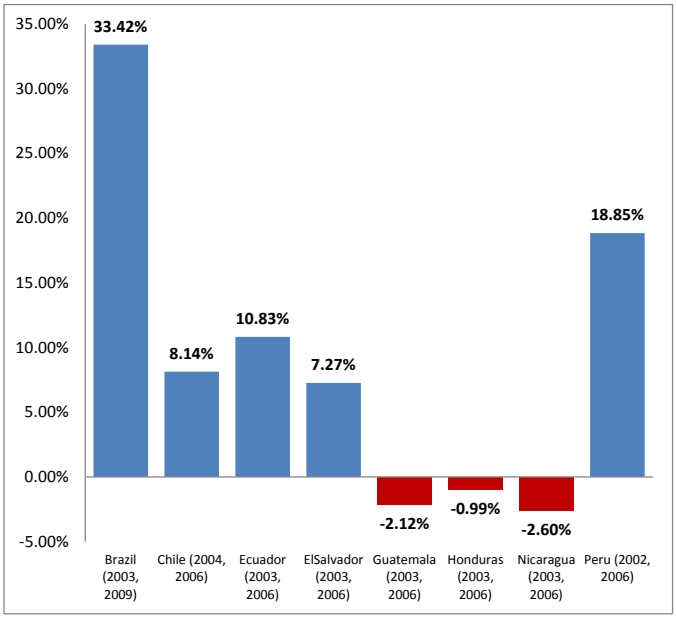
Global Skills Gaps Prevalence Ranking

Rank	Country and Survey Year	% of Total Firms Surveyed Which Have a Major or Very Severe Skills Gap	Rank	Country and Survey Year	% of Total Firms Surveyed Which Have a Major or Very Severe Skills Gap
1	Brazil 2009	73.03%	59	Mauritania 2006	22.03%
2	Chad 2009	57.33%	60	Croatia 2007	21.64%
3	Belarus 2008	55.31%	61	Sri Lanka 2004	21.33%
4	Cape Verde 2009	53.85%	62	Mali 2003	20.78%
5	Kazakhstan 2009	50.18%	63	Bosnia and	20.50%
6	Russia 2009	48.90%	64	Bulgaria 2009	20.14%
7	Argentina 2006	48.35%	65	Angola 2006	20.00%
8	Romania 2009	46.21%	66	Bangladesh 2002	19.83%
9	Mauritius 2009	44.97%	67	Tanzania 2006	18.38%
10	Micronesia 2009	44.12%	68	Timor Leste 2009	18.00%
11	Ukraine 2008	43.48%	69	Mongolia 2009	17.96%
12	Lithuania 2009	43.12%	70	Mozambique 2007	17.95%
13	Moldova 2009	42.98%	71	Afghanistan 2008	17.94%
14	Tonga 2009	42.67%	72	Ethiopia 2002	17.90%
15	Latvia 2009	41.70%	73	Serbia 2009	17.78%
16	Jamaica 2005	41.57%	74	Togo 2009	17.42%
17	Gabon 2009	41.34%	75	Sierra Leone 2009	17.33%
18	Congo 2009	40.40%	76	Lesotho 2009	17.22%
19	Guyana 2004	40.37%	77	Bhutan 2009	17.20%
20	Niger 2009	38.67%	78	Ireland 2005	15.63%
21	Paraguay 2006	36.22%	79	Fiji 2009	15.24%
22	Burkina Faso 2009	35.79%	80	Mexico 2006	15.14%
23	Zambia 2002	35.75%	81	Dem. Rep. of Congo	14.71%
24	Cameroon 2009	35.26%	82	Madagascar 2009	14.61%
25	Tajikistan 2008	35.00%	83	India 2006	14.47%
26	Poland 2009	34.51%	84	Kosovo 2009	14.44%
27	Albania 2007	33.88%	85	Nicaragua 2006	14.44%
28	Ecuador 2006	33.13%	86	Panama 2006	14.24%
29	Ivory Coast 2009	32.32%	87	Macedonia 2009	14.21%
30	Chile 2006	32.06%	88	Burundi 2006	14.07%
31	Uzbekistan 2008	31.97%	89	Spain 2005	13.81%
32	Peru 2006	31.33%	90	Costa Rica 2005	13.41%
33	China 2002	30.73%	91	Swaziland 2006	13.36%
34	Dominican Republic 2005	30.67%	92	Liberia 2009	13.33%
35	Estonia 2009	30.40%	93	Guinea Bissau 2006	13.21%
36	Malawi 2009	30.00%	94	Slovenia 2009	13.04%
37	Thailand 2004	29.96%	95	Pakistan 2002	12.76%
38	Kyrgyz Republic 2009	29.36%	96	Guinea 2006	12.56%
39	Guatemala 2006	29.31%	97	Portugal 2005	12.39%
40	Vanuatu 2009	28.91%	98	Azerbaijan 2009	12.37%
41	Kenya 2003	27.64%	99	Gambia 2006	11.49%
42	Slovak Republic 2009	27.64%	100	Montenegro 2009	11.21%
43	Samoa 2009	27.52%	101	Albania 2005	10.45%
44	Venezuela 2006	27.40%	102	Rwanda 2006	10.38%
45	El Salvador 2006	27.27%	103	Uganda 2006	9.24%
46	Georgia 2008	27.08%	104	South Africa 2007	8.96%
47	Turkey 2008	26.82%	105	Senegal 2007	8.70%
48	Bolivia 2006	26.26%	106	Greece 2005	8.60%
49	Honduras 2006	25.46%	107	Vietnam 2009	8.26%
50	Colombia 2006	25.40%	108	Nepal 2009	7.34%
51	Benin 2009	25.33%	109	Hungary 2009	7.22%
52	Czech Republic 2009	25.20%	110	Germany 2005	6.95%
53	Laos 2009	25.00%	111	South Korea 2005	6.84%
54	Malaysia 2002	25.00%	112	Cambodia 2003	6.57%
55	Armenia 2009	24.06%	113	Indonesia 2009	5.82%
56	Namibia 2006	23.71%	114	Philippines 2009	5.73%
57	Uruguay 2006	23.51%	115	Ghana 2007	4.86%
58	Botswana 2006	22.22%	116	Eritrea 2009	1.68%

Source: World Bank Enterprise Surveys 2002-2010.

50 countries with the most severe skills gaps. In Brazil, for example, 73% of firms surveyed indicated that an employee skills gap is a major or very severe obstacle to their current operations. It is clear that several countries in Latin America and the Caribbean are facing skills gaps, and in many countries the problem is getting worse. Particularly alarming is the rate at which skills gaps afflict the region's largest economies of Brazil, Mexico, Venezuela, and Argentina that make up 78%[3] of regional output (Bank 2010). The dataset contains multiyear survey information, shown in Figure 3, for eight regional countries which suggest that skills gaps are generally increasing in severity. Figure 4 reveals that a significant level of firms in the region identifies skills gaps as an important obstacle to the operation and growth of their firms. Amongst a litany of business climate constraints (such as access to finance; access to land; business licensing and permits; corruption; courts; crime, theft and disorder; customs and trade regulations; electricity; labor regulations; political instability; practices of competitors in the informal sector; tax administration; tax rates; transportation of goods, supplies, and inputs), a sizable percentage of companies in several countries identify skills gaps as the most severe business constraint hindering growth and operations.

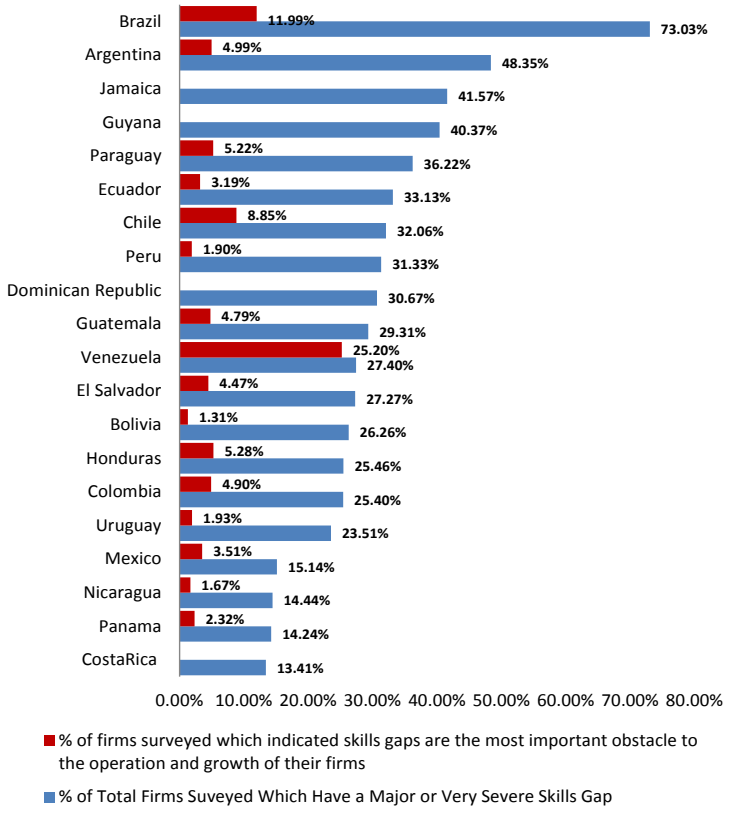
Figure 3. Increase or Decrease in the Level of Skills Gaps by Country



Source: World Bank Enterprise Surveys 2002-2010.

3. Excludes data from Antigua and Barbuda, El Salvador, Honduras, Paraguay, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines for which official GDP figures were unavailable.

Figure 4. Skills Gaps Prevalence and Impact on Operations and Growth by Country



Source: World Bank Enterprise Surveys 2002-2010.

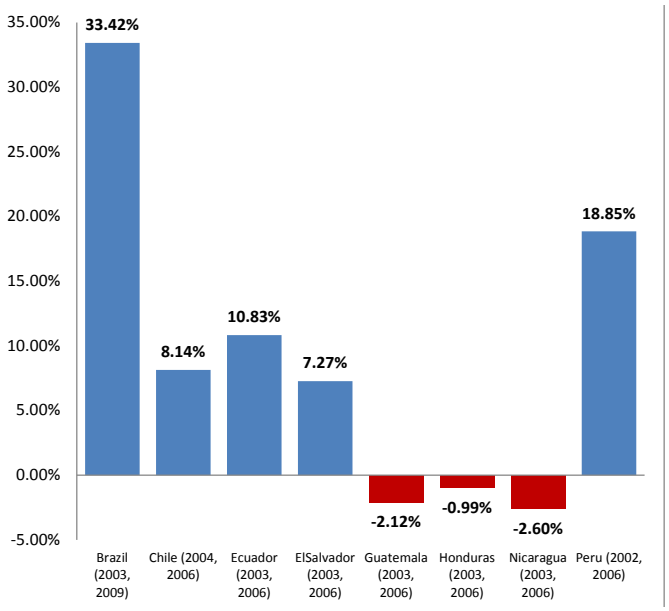
4.2. SMEs are Particularly Hard Hit

In small firms (less than 20 employees), 42% of respondents indicated skills gaps are the most important obstacle to the operation and growth of their firms while 39% of medium sized (20-99 employees) and 18% of large (100 or more employees) firms responded this way. Such a finding is particularly troublesome in a region such as Latin America and the Caribbean in which the economy is comprised of a high number of SMEs that employ the majority of the workforce. In Latin America and the Caribbean SMEs account for 95% of businesses; employ 60% to 70% of the workforce; and contribute 20-35% to GDP (Llisterri and Garcia-Alba 2008). Firm level skills gaps are thus a binding constraint on the competitiveness of Latin American and Caribbean SMEs. A conclusion supported by Ibarrarán, Maffioli *et al.* (2009) who provide evidence that small firms are 22% less productive than large firms and medium-sized firms are 15% less productive than large firms.

4.3. Key Industries are Affected

In terms of industries, Figure 5 shows that both manufacturing as well as service industries suffer from skills gaps. Firms operating in skill intensive industries such as automobile production as well as less skilled industries such as textiles report skills gaps. Many of the industries that contribute strongly to the regional economy in Latin American and the Caribbean such as motor vehicles, machinery and equipment, food and beverages, tourism, and textiles suffer from significant levels of skills gaps.

Figure 5. Skills Gaps Prevalence and Impact on Operations and Growth by Industry



Source: World Bank Enterprise Surveys 2002-2010.

5. Implications

There is very little research exploring the ramifications of skills gaps on firms in Latin America and the Caribbean. However, current international studies suggest several impacts.

5.1. Impaired Productivity, Profitability, and Growth

The inter-American Development Bank (IADB) highlights low productivity as a key factor inhibiting growth in many countries in Latin America and the Caribbean. According to the IADB "the root problem of productivity in the region is too many resources allocated to too many small low-productivity companies, and a dearth of middle-level and high-productivity firms (Pages-Serra 2010)". International studies show that skills gaps have a significant negative impact on firm-level productivity depending upon the industry, product type, level of innovation, and capacity utilization. In the UK, for example, firms with significant levels of skills gaps were found to be 23% less productive in companies that produced innovative products. Firms with skills gaps were 50% less productive in the manufacture of machinery equipment, an industry of significant importance in Latin America and the Caribbean (Harris, Li *et al.* 2006). The same study showed that productivity declines were noticeable in capital-intensive industries as well as labor intensive such as textiles. Lower productivity due to skills gaps may reduce incentives to invest in capital and R&D and may influence firms to focus on lower-value added products requiring less sophisticated technologies (Booth and Snower 1996). Thus, international experience suggests that skills gaps are likely a key source of impaired productivity amongst SMEs in Latin America and the Caribbean. Such skills induced productivity impairment has likely contributed to dampened economic growth.

International studies find a significant negative relationship between the severity of skills gaps and revenue. As mentioned previously many of the firms in Latin America and the Caribbean are small, single location firms. Forth and Mason (2004) find evidence that single site firms are particularly affected by skills gaps: skills gaps associated with 26-50% of employees decreased revenues by 38% while skills gaps involving 50% or more of employees decreased revenues by 43.1%. Assuming that similar trends are applicable in Latin America and the Caribbean, many firms in the region are likely operating at significantly impaired levels of profitability in light of the skills challenges they face.

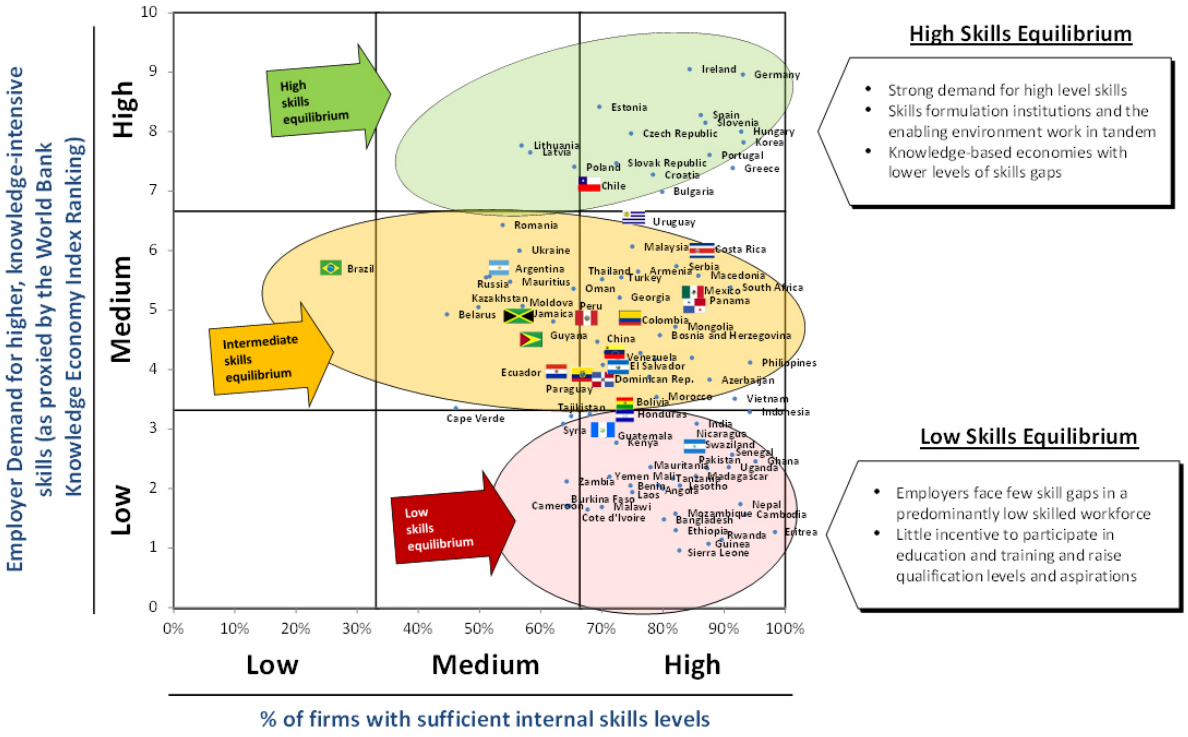
5.2. Compromised Competitiveness

Finegold (1999) describes a scenario, which he labels as a low skill equilibrium, in which economies adopt a low quality, lower value added production orientation when faced with a low supply of skills. In such economies, workers acquire little training because few high-quality goods are produced and investment in education and training is not sufficiently rewarded. At the other end of the spectrum, Feingold conceptualizes a high skills equilibrium in which skills formulation institutions and the enabling environment work in tandem to produce high level skills suited to knowledge-based economies that thrive on competitive advantage, high wages, and innovation capacity. Bonser, Daniel *et al.* (2006) show that the industry which firms choose to compete in is highly related to the skills of the workforce at their immediate disposal. While Wilson and Hogarth (2003) show that skill requirements increase as firms move from low value-added industries to operating in high value, knowledge-intensive industries.

A review of the Boston Consulting Group's ranking of the 25 fastest-growing multinational Latin American companies reveals a high degree of concentration in the food manufacturing and processing, textile, transport, and energy and extractive industries with few firms operating in knowledge-based manufacturing or service industries (Group 2009). The industry choices reflected by this ranking suggests Latin America and the Caribbean cannot be characterized neatly as exhibiting the characteristics of a high skill or low skill equilibrium: the industry structure can neither be characterized as focused on high value added, knowledge-intensive sectors nor oriented around low value added industries.

To further explore the relationship between skills levels and industrial orientation of countries in Latin America and the Caribbean Figure 6 layers the findings of the skills gap rankings presented in the previous section over the World Bank's Knowledge Economy Index. Assuming that knowledge-based economies exhibit much of the interconnectivity required by a high skills equilibrium, countries with developed knowledge-based economies would be expected to be more effective at producing the skills required by businesses. While the lack of institutional cohesion to produce high level skills combined with less skill intensive industrial structures of economies at low skills equilibrium states would be expected to generate low demand for skills and few skills gaps. Figure 6 confirms these generalized expectations as high income, developed countries with knowledge-based economies (contained in the green oval) exhibit less skills deficiencies consistent with a high skills equilibrium state while

Figure 6. The Relationship between National Skills Levels and Industrial Orientation



Source: World Bank Knowledge Economy Index, World Bank Enterprise Survey 2002-2010.

low income countries (contained in the red oval) exhibit low demand for skills with few skills deficiencies corresponding to a low skills equilibrium state. However, there is a large clustering of countries (contained in the amber oval), which includes many countries in Latin America and the Caribbean, that fall in the middle in an apparent "intermediate skills equilibrium". This analysis shows that the lack of effectiveness of Latin American and Caribbean skills formation systems to produce high level skills serves as a constraint to knowledge-based economic development and entry into high value, knowledge-based industries. Given the level of skills available at their disposal, businesses in Latin America and the Caribbean are seemingly influenced to contest lower-skilled, non-knowledge intensive industries at the detriment to regional competitiveness.

6. Conclusion

Wade (1992) describes several essential functions of governments according to neo-classical economics: 1. Maintain macroeconomic stability; 2. Provide high fixed cost physical infrastructure; 3. Supply public goods such as national security, education, basic research, etc.; 4. Contribute to the development of institutions for improving the markets for labor, finance, technology etc.; 5. Offset or eliminate price distortions which arise in cases of demonstrable market failure; 6. Redistribute income to the poorest in sufficient measure for them to meet basic needs. The neo-classical view of the role of government in skills formation is rooted in the logic of human capital theory advanced by Becker: general training will be will be funded by employees while firm-specific training will be financed by employers. In such an idealized scenario education and training investment would be pareto optimal without government intervention. If government intervention was required, the neo classical approach dictates that interventions would be in the form of supply side policies for schools, colleges, universities, and training organizations (Brown, Green *et al.* 2003). However, market forces on both the supply and demand side routinely lead to underinvestment in human capital requiring government intervention (Wade 1992). Insufficient investments in skills at rates below the socially optimal level are referred to as market failures and occur at all components of the skills formation system: trainees, employers, and institutions providing training (Lall 2000).

As this analysis shows, such failures negatively impact productivity, growth, and economic development in Latin America and the Caribbean. Large macroeconomic trends such as expanding international trade ties, skill-biased technological change, globalization, changing forms of work organization, and knowledge-based economic development necessitate the need for opportunistic as well as responsive education and training systems. These economic trends have led to an increased demand for skilled labor. However, as discussed above and demonstrated by the descriptive statistics from the World Bank Enterprise Survey, education and training systems in Latin America and the Caribbean are struggling in their response to global macroeconomic forces by not creating the skills needed for development and increasing industrial sophistication. This situation is compounded by regional population growth and

demographic trends which have stressed education and training systems and created a need for job creation. Due to the extent of these market failures, Stiglitz (1996) argues "The appropriate question to be asked is not whether government should play a role, but what role and how can it be performed most effectively." Investment in human capital is thus a political as well as economic goal in which governments must intervene with corrective measures (Brown, Green *et al.* 2003).

A key theme that emerges from this analysis is the adaptability and congruence of skills formation systems and constituent actors in response to factors such as economic development, skill demands of employers, technological progress and industrial strengthening, and macroeconomic trends. Such factors lead to a cat-and-mouse game in which skills demands in the labor market are perpetually evolving while the supply side institutions evolve to these changing needs. Stiglitz (1996) describes the role of government in coordinating sustainable national skills formation systems as the adaptive ability to respond to environmental changes and learn from mistakes in policy making that serves to facilitate economic growth, parallel industrial complexity, and promote higher levels of technology and higher value-added industries. In light of this need for adaptability, feedback loops, responsive policymaking, and coordination of education and training actors, institutionalist approaches to national skills formations in which governments play a center role have emerged as a preferred approach to national skills formation. The economic and political exigency of skills formations systems to constantly respond to evolving skills needs requires an institutional setting similar to a complex adaptive system. Such a system must have at its center a government able to "... affect the rate of change by the ways in which they adapt their internal structures and processes, by creating actors and providing them with premises of action, and by ignoring or modifying external pressures and influencing environments and thereby future environmental inputs (Olsen 2009)."

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